



CRANE

2019
ANNUAL REPORT

DEAR SHAREHOLDERS,

LEGACY. THOSE THINGS DONE AND TAUGHT BY PAST GENERATIONS THAT INFLUENCE US ALL NOW AND INTO THE FUTURE. THE PATHWAYS THAT GUIDE PEOPLE IN DECISIONS WITH WHAT TO DO OR WHAT NOT TO DO. AT CRANE WE ARE STEEPED IN THE LEGACY CREATED DURING CRANE'S INCREDIBLE 165-YEAR HISTORY. FROM OUR FOUNDER R.T. CRANE'S HUMBLE RESOLUTION PENNED IN 1855 THAT STILL GUIDES US TO THIS DAY, TO THE CONTRIBUTIONS OF THIS COMPANY'S LEADERS SINCE THEN. I AM PROUD AND HONORED TO BE THE 12TH LEADER OF THIS GREAT COMPANY AND REFLECT OFTEN WITH OUR LEADERSHIP TEAM ON THE SUCCESS, TEACHING, CULTURE AND LEGACY OF THOSE BEFORE US WHICH CONTINUE TO INFLUENCE US ALL.

In this annual report, I take particular note of the legacy of an exceptional man who has influenced all of us at Crane in many ways over a long and distinguished career. Our Chairman, Shell Evans, after 47 years with the Company, including 36 years as Chairman and 17 years as CEO, will be retiring from Crane and the Board this April. We are dedicating a special section in this year's annual report to highlight Shell's history and legacy which I think our shareholders will enjoy.

It would be difficult to overemphasize the impact that Shell has had on Crane over the last 47 years. He drove substantial change in the Company's portfolio, operations, strategy, and perhaps most important, its culture. The culture that Shell inculcated at Crane over the decades was one with a singular focus on building shareholder value with ethics and integrity, bringing to mind the words of William Shakespeare who once penned, "No legacy is so rich as honesty." That culture, along with Shell's strategic vision, are still very much core to Crane today, and a critical driver of our success over the years.

The shareholder returns speak for themselves. During Shell's tenure as Chairman and CEO, from February 24, 1984 through the end of 2000, Crane Co. total shareholder return (TSR) was 1,796%, or a compounded average return of 19.1% per year (assuming reinvestment of all dividends and proceeds from selling stock of spun-off companies). For that same period, the S&P 500 TSR was 1,250%, or 16.7% per year. For the subsequent 18 years, during which Shell served as non-executive Chairman of Crane, Crane continued to outperform with a TSR of 345%, or 8.2% per year, compared to the S&P 500 whose TSR was 255%, or 6.9% per year. An enviable record by any measure.

We thank Shell for his years of inspiration and guidance, and he will retire with Crane in an extremely strong position. I look forward to continuing to work closely with our new Chairman, Jim Tullis, and the Board as we continue to execute on our long-standing strategy.

2019 BUSINESS HIGHLIGHTS

We delivered another year of strong performance in 2019, including record adjusted EPS of \$6.02, record adjusted operating margin of 15.0%, and record free cash flow of \$325 million. We achieved these record results despite two temporary and unexpected market-driven factors related to customer inventory adjustments impacting both volumes and profitability at our Crane Currency and Engineered Materials businesses.

While end market conditions may change unexpectedly, as they did last year, for decades we have followed a consistent corporate strategy aimed at driving long-term shareholder value. We are a diversified manufacturer of highly engineered industrial products competing in niche markets where we continue to invest in proprietary and differentiated technology to drive above average returns. Executing on this strategy, we leverage our resources as an integrated operating company, and reinvest in our three global growth platforms, both organically and through strategic acquisitions. And our team of more than 12,000 global associates is focused on innovation like never before, which we believe will enable us to deliver above peer-average annual EPS growth and continued strong free cash flow. This strategy has served our shareholders well for many, many years, and we believe it represents a recipe for continued success as we look forward.

During 2019, in addition to delivering strong results, we continued to execute on this strategy, investing aggressively for long-term organic growth with increasing evidence that these growth initiatives are gaining traction, and we also continued to deploy capital inorganically through acquisition and with balanced returns of cash to shareholders.

All of our businesses executed well in 2019, and we continued to outgrow many of our underlying end markets. Our focus remains on driving profitable growth through a constant focus on both sales initiatives and our relentless pursuit of productivity.

» **At Aerospace & Electronics**, year-over-year sales improved an impressive 7.5% for a second consecutive year driven by the continued ramp-up of shipments related to production of the next generation of narrow-body aircraft, strong defense demand, and continued strength in the aftermarket. In 2020, while we do expect volumes to decline as a result of Boeing's temporary 737 MAX production pause, our core underlying business remains strong with backlog at a record level. During 2019, we received numerous new contract awards including the brake control systems on Boeing's T-7A trainer and MQ-25 platforms, the tire pressure sensing system for the U.S. Air Force's C-5M fleet, and the largest contract award in our defense power business' history for content on Raytheon's LTAMDS radar program. Aerospace & Electronics is extremely well positioned for many years of solid growth given the substantial industry new aircraft backlog, including the eventual return to service of the 737 MAX, and our strong position on virtually every major commercial and military aircraft platform.

» **In our Fluid Handling segment**, end markets softened somewhat in 2019, but compared to 2018, we delivered 4% core sales growth. We believe that approximately half of that growth was attributable to share gains driven by new product introductions and superior customer service. Adjusted segment margins also improved 190 basis points to 13.6%, exceeding our expectations. While end markets are likely to soften further in 2020, we expect to improve margins again this year.

» **At Payment & Merchandising Technologies**, core sales declined, as expected, given the non-repeat of substantial sales to Venezuela in 2018, although we did see continued strong mid single-digit sales growth at Crane Payment Innovations (CPI) driven primarily by continued success penetrating the retail end market. Margins were somewhat weaker than anticipated given temporary currency inventory destocking by the U.S. Government during the second half of 2019; we expect that destocking process to be completed before the end of 2020. The Crane Currency acquisition has now been successfully integrated, and we anticipate a favorable long-term demand outlook for this segment.

» **Lastly, in our Engineered Materials segment**, we had another challenging year as our customers in the recreational vehicle (RV) market continued to cut production to reduce wholesale inventory following overproduction of RVs relative to demand in 2017. Given the magnitude of the sales decline in 2018 and 2019, margins held up well reflecting impressive execution by our team. This business continues to deliver a differentiated value proposition consisting of high quality, reliable products with best-in-class customer service.



POSITIONING CRANE FOR THE FUTURE

The consistency of our execution at Crane has never been better. As we have made substantial progress developing our capabilities and management depth and breadth, as an organization, we have increasing bandwidth to devote to positioning Crane for the future. I am extremely proud of the progress we have made in this area during my tenure as CEO. In 2019, we continued to take actions to aggressively drive both organic and inorganic growth, while improving our cost position and returning cash to shareholders. More specifically:

» **We have a continued and substantial focus on new product development activities**, resulting in numerous new product introductions over the last year. For example, Payment & Merchandising Technologies launched the PayTower unattended retail solution, a smart safe product for the Japanese market, and rolled out MOTION® and RAPID® DETECT machine-readable micro-optic anti-counterfeiting solutions for the banknote market. At Aerospace & Electronics, we are capping an unprecedented period of engineering development for new, single aisle aircraft such as the Boeing 737 MAX, Airbus A320neo, Embraer E2, and COMAC C919. This business is shifting its engineering efforts from application- and specification-based programs to a focus on the emerging technologies we expect will be necessary to support the next generation of commercial and military aircraft; these technologies include wireless sensing, advanced pumps and fuel flow transmitters, high power management for more electric-based aircraft, directed energy for defense applications, landing gear monitoring and control, and advanced microwave systems, among others. Fluid Handling expanded the breadth of its product portfolio last year, successfully launching a new polypropylene-lined large diameter pipe product line, a range of metal seated ball valves, a family of digital pressure transmitters, and a cab air suspension valve; together, these new products increase our addressable market by more than \$1 billion.

» **We acquired Cummins Allison in December 2019** for \$160 million on a cash-free and debt-free basis. Cummins Allison is a leading provider of high-speed cash and coin counting and sorting machines, retail cash office solutions, along with a nationwide service network—an incredibly strong brand in the industry and a perfect bolt-on to our CPI business with opportunity for significant

synergies. Cummins Allison and CPI products are based on similar core technologies related to cash and coin sorting, counting and validation, and we expect substantial sharing of technology and R&D across the two businesses. And approximately half of Cummins Allison's sales are generated from recurring revenue derived from service contracts, another characteristic we believe we can leverage more broadly across CPI. The transaction is expected to meet Crane's ROIC target for acquisitions and be accretive to adjusted EPS in 2020.

» **We signed a definitive agreement in December 2019 to acquire Instrumentation & Sampling (I&S)** from CIRCOR International, Inc. for \$172 million on a cash-free and debt-free basis; the transaction closed on January 31, 2020. I&S is a strategic bolt-on adjacency to our ChemPharma Energy business that designs, engineers and manufactures a broad range of mission-critical fluid control instrumentation and sampling solutions with strong brands renowned for quality, performance and reliability. The company's products are used primarily in severe service environments, with a substantial portion of its sales driven by recurring replacement demand. The transaction is expected to meet Crane's ROIC target for acquisitions and be accretive to adjusted EPS in 2020. The I&S acquisition was one of several businesses that drove our public proposal, and subsequent tender offer, to acquire the entire CIRCOR company last year. While ultimately unsuccessful, I believe that our attempted acquisition of CIRCOR demonstrates how Crane's management and Board continue to aggressively pursue a wide range of options that we believe would create value for stockholders.

» **We continue to pursue proactive repositioning actions to drive incremental margin enhancement across the Company.** At the end of 2017, we initiated actions in our Fluid Handling, Payment & Merchandising Technologies, and Aerospace & Electronics businesses, which included the consolidation of certain facilities, all of which were substantially completed by the end of 2019. In December 2019, we approved further repositioning actions in Fluid Handling, including additional facility consolidation. This repositioning will not only improve our cost position, but enable us to meet higher expected future demand levels and provide a geographic footprint that will best serve our customers. The 2017 and 2019 actions combined should generate \$40 million of annual savings by 2022. During 2018, we also announced the closure of Crane Currency's banknote printing facility in Tumba, Sweden, with printing activity moving to a recently completed state-of-the-art facility in Malta; this move, which is now complete, will substantially improve the cost position and competitiveness of Crane Currency's international business.

» **We maintain a strong, investment grade balance sheet** which allowed us to deploy more than \$1.1 billion on three acquisitions since the start of 2018, while returning more than \$300 million to shareholders in dividends and share repurchases over the same period. Despite nearly \$1.5 billion in capital deployment since the beginning of 2018, our credit metrics remain consistent with our current investment grade rating, and we have ample capacity for additional acquisitions and/or share repurchases. Our funnel of acquisition targets remains robust, and we continue to actively pursue deals across all three of our global growth platforms.

We expect that the combination of our core, underlying business prospects, along with the recent acquisitions, repositioning initiatives and capital deployment potential, lay the groundwork for strong adjusted EPS growth for the foreseeable future. Reflecting our confidence in this outlook, we raised our dividend 10% in January 2020.

CONCLUSION

Our leadership team at Crane proudly embraces Crane's rich legacy which we believe has been a core element of shareholder value creation over the last 165 years, and we are working hard to build upon it in a way that will help guide our successors. As we build upon this legacy, we are fortunate to be working from a strong foundation, with a healthy portfolio of high-return businesses that have leading positions in their attractive end markets. We are outstanding operators, with a differentiated business system that drives continuous improvement. We are focused on innovation that is meaningful to our customers, and enabled by our engineering excellence. We generate significant free cash flow and are disciplined in capital allocation. And all of this is enhanced by our high-performance culture which is based on ethics and integrity. As we work to enhance Crane's legacy, we are ever mindful of the words of Idowu Koyenikan who wrote, "Even though your time on the job is temporary, if you do a good enough job, your work there will last forever."

On behalf of our entire global team, I wish to thank our customers, suppliers, and shareholders for their confidence in us, and the Board of Directors for their continued guidance and support.

Sincerely,



Max H. Mitchell

President and Chief Executive Officer

CRANE CO.'S HISTORY UNDER THE EVANS' FAMILY LEADERSHIP



Thomas Mellon Evans
(c. 1971)

THE THOMAS MELLON EVANS YEARS

Thomas Evans assumed control of Crane as Chairman in 1959 through a proxy fight. Once he became Chairman, he took quick and decisive action, cutting inventory, reducing the size of the workforce, and shifting from an in-house distribution model to greater reliance on independent wholesalers. Thomas also moved to a decentralized system where Crane divisions had autonomy to manage their own operations, with only finances strictly controlled by corporate.

Thomas also aggressively pursued new acquisitions, some of which were hostile. While he did substantially expand Fluid Handling's product breadth, he also entered new, heavy industries including steel, cement and building products, diversifying away from Crane's historical core strength in highly engineered industrial manufacturing. Most acquisitions were financially justified transactions, rather than "strategic" in nature. Shell discussed Thomas' approach in a 1995 *Forbes* interview: "He was never really an operator...he was a financial guy—a balance sheet buyer."



R.S. (Shell) Evans
(c. 1974)

THE 1984 TRANSITION

In 1968, Shell joined Crane shortly after receiving his MBA from Columbia University. Shell was initially focused on identifying acquisition opportunities, and he held several roles of increasing responsibility over the ensuing 16 years, including Senior Vice President of International Operations, Executive Vice President, and election to Crane's Board of Directors in 1979.

1984 was a pivotal year for Crane, as well as for Shell and Thomas Evans. Crane's increasingly complex business, combined with recessionary conditions in the early 1980s, weighed on Crane's financial performance. In early 1984, Thomas Evans negotiated a sale of most of Crane, excluding the troubled CF&I Steel Company subsidiary, to a private equity firm. Shell was opposed to the process and recommended that an investment banker be hired to determine the fair value. The Board agreed with Shell, leading to Thomas' resignation and Shell's election as Chairman and CEO. When Crane's stock price declined following the news, Crane repurchased \$51 million of Company shares, the first of many savvy financial moves that Shell would make over the decades that would follow.

After assuming the Chairman and CEO role, working with the other officers of the Company, Shell developed a long-term strategic plan to refocus Crane, starting with sizeable acquisitions and divestitures in 1984 and 1985.

REVISED STRATEGY AND PORTFOLIO TRANSFORMATION

Shell dramatically changed the composition of Crane's business portfolio during his time as CEO. By the time he wrote his second shareholder letter, included in the 1984 annual report, his strategy for Crane was refined, and similar to the strategy we follow to this day: "Crane Co. is a diversified manufacturer of engineered products for industry, and is a wholesale distributor of industrial and building products. During the past year, the company has begun implementing a strategic plan aimed at building upon its strength in special engineered, light-to-medium manufacturing and wholesale distribution. Crane's goal in this corporate repositioning will be to reduce the cyclicity of earnings and, with less capital required to operate its business, improve cash flow and increase earnings per share."

There were numerous, material portfolio moves in Shell's first few years. In July 1984, just months after his election as Chairman and CEO, Crane sold the highly cyclical U.S. Plumbing business. Shortly thereafter, in February 1985, Crane acquired UniDynamics which had a strong position in specialized manufacturing. The \$192 million UniDynamics acquisition included assets that, over time, were built into some of our major businesses today, including: National Vendors and NRI, which were Crane's initial entry into what became our Payment & Merchandising Technologies segment; Kemlite, which was Crane's first composites acquisition, subsequently forming the base of our Engineered Materials segment; and, Resistoflex, which is a substantial and important part of our current process valve business.

The key moves to shift away from heavily capital-intensive, commodity-oriented businesses included Crane's May 1985 spinoff of CF&I Steel, followed by the exit of the cement business with the 1988 spinoff of Medusa Corporation. At the same time, Crane had a renewed focus on its highly engineered valve business, and it actively invested in upgrading foundries to improve efficiency, while broadening the business' product range. Other actions to strengthen the valve business included a number of acquisitions

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— R.S. Evans in his 1986 shareholder letter

in 1985: Aloyco, which strengthened Crane's position in corrosion-resistant fluid handling solutions; Mark Controls which included the largest nationwide valve repair business in the United States; and, Valve Systems and Controls which added quarter-turn automated valves. Later, Pacific Valves was also acquired, adding a range of valves for high pressure steam applications associated with power generation and refining.

During the mid 1980s, these portfolio moves were accompanied by continued strategic refinements, and a focus on improving operations at businesses across Crane. As Shell noted in his 1986 shareholder letter: "The key to success in these businesses is aggressive, capable, committed management. Ultimately, our success as managers will be determined by our ability to increase shareholder value."

As he transformed and shaped the portfolio, Shell was equally focused on both dispositions and acquisitions, and he articulated his philosophy on this topic in that same 1986 shareholder letter: "We would consider selling certain businesses which do not fit on a long-term basis and which we feel will allow us to achieve higher returns with alternative investments. However, we must receive fair value for those businesses. We will not make poor financial decisions for the sake of strategic plans."

In total, from 1984 to 1988, Shell sold or spun-off businesses which created an aggregate \$291 million in capital which was returned to shareholders or reinvested. During that same period, he made eight acquisitions with a net cost of \$255 million. While Shell acted aggressively to transform the portfolio to align with his new strategy, he was also disciplined, noting in his 1987 shareholder letter that "All acquisitions must make financial sense and are judged against the opportunity to purchase our own shares."

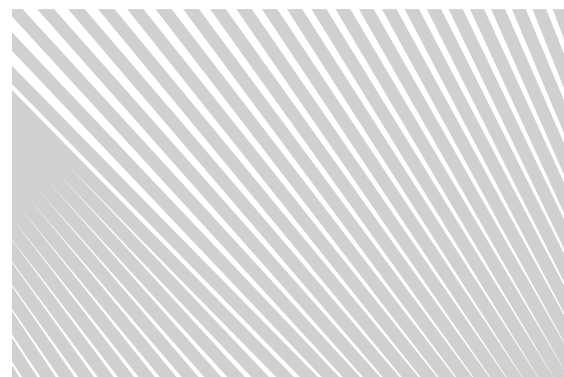
Acquisitions continued throughout the 1990s. Notable transactions in the Aerospace & Electronics space included the 1990 acquisition of Lear Romec, the 1994 acquisition of ELDEC, and the 1996 acquisition of Interpoint. Lear Romec became the core of Aerospace & Electronics' Fluid Management business, currently the fastest growing solution in the segment. ELDEC became today's Sensing Components & Systems solution, the largest and most profitable solution in today's Aerospace & Electronics segment. And Interpoint, acquired in 1996, substantially expanded the segments' capabilities in power solutions, adding numerous products for space and defense applications.

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— R.S. Evans in his 1987 shareholder letter

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The roll-up of the fiberglass reinforced plastic (FRP) business continued with the 1993 acquisition of Filon, securing Kemlite's position as the leading FRP supplier to the RV market, followed by the 1998 acquisition of Sequentia which expanded Engineered Materials' end markets to include building products. In 1993, Crane also acquired Burke Pumps, complementing the rest of the Crane's niche water/wastewater pumps business.

One of Shell's last major portfolio moves as CEO was the 1999 spin-off of Huttig Sash & Door. As he explained in his 1999 shareholder letter, "Our businesses have generally been effective in establishing strong, defensible positions in niche markets where we can earn good margins on high-value-added, engineered products we manufacture. Huttig is in a different business that does not fit our strategy or earnings goals. As a building products distribution business, it has inherently lower operating margins, which have made the impressive margins in our manufacturing business harder to see in our consolidated results. The Huttig spin-off will significantly increase Crane's overall operating margin, and should result in a higher price/earnings ratio for our stock. That, in turn, will help with acquisitions, which are an important part of our growth strategy."

CULTURAL TRANSFORMATION

Shell's strategic execution and resulting portfolio changes were closely tied to a cultural shift, with a relentless focus on driving shareholder value. Specifically, the alignment of management incentives, shareholder interests, and corporate strategy, was a constant focus throughout Shell's tenure. While many of the practices that Shell introduced in the 1980s and 1990s later became commonplace among public companies, his focus and execution in this area were ahead of their time.

A core element of his focus on shareholder value was to ensure that compensation drove alignment between management and shareholders, specifically with an increased use of equity. Shell explained in his 1988 shareholder letter that "Crane management's primary objective is to maximize the long-term value of the investment of our shareholders. In connection with the goal of long-term value creation, the Crane Board of Directors issued 323,000 shares of restricted stock to key management employees. The purpose of the restricted stock was threefold: one, to retain key management because it vests over five years; two, to provide a direct link between management and shareholders' interest; and three, to offer competitive compensation and benefits. I believe that this plan, combined with the use of stock options and stock appreciation rights, has been an important contributor to the performance we have achieved."

Shell attributed Crane's stock performance during his tenure, in part, to this alignment of incentives, and in 1999 wrote: "Our Board of Directors believes that it is important to align management and shareholder interests. Any management which has a significant percentage of their net worth invested in company stock, and whose short-term compensation varies with operating results is more focused on building shareholder value." Shell strongly encouraged management to retain the shares earned and he never sold any Crane stock while he was CEO.

Shell also focused on ensuring that the Board was properly measuring the performance on which compensation was based, introducing economic value added (EVA) in 1990 as the base for compensation. As he explained in his 1993 shareholder letter, "This concept is regarded by many experts, as noted in *Fortune* magazine in September of 1993, to be the best for creating wealth for shareholders. Our system uses the prior year as a benchmark with incentive awards paid over several years. This focuses managers on continuous improvement over the long-term, since awards are subject to adjustment based on subsequent years' performance. We are confident that the system, which is now firmly established throughout the organization, properly aligns management and shareholder interests."

Shell further formalized Crane's strategy and key elements of its overall philosophy into a Credo in 1996, a substantial portion of which is still core to Crane today:

- » "We strive for a dominant presence in niche markets.
- » We generate solid rates of return on invested capital and high levels of cash flow.
- » We use our cash effectively to grow and strengthen our existing businesses, and to acquire new businesses.
- » We acquire businesses that fit with our existing businesses and strengthen our position in niche markets.
- » We maintain an incentive compensation plan specifically designed to align the interests of management and shareholders.
- » We do this with one goal in mind: To build shareholder value."



R.S. (Shell) Evans
(c. 1987)

"ANY MANAGEMENT WHICH HAS A SIGNIFICANT PERCENTAGE OF THEIR NET WORTH INVESTED IN COMPANY STOCK, AND WHOSE SHORT-TERM COMPENSATION VARIES WITH OPERATING RESULTS IS MORE FOCUSED ON BUILDING SHAREHOLDER VALUE."

— R.S. Evans in his 1991 shareholder letter

“I AM RESOLVED TO CONDUCT MY BUSINESS IN THE STRICTEST HONESTY AND FAIRNESS; TO AVOID ALL DECEPTION AND TRICKERY; TO DEAL FAIRLY WITH BOTH CUSTOMERS AND COMPETITORS; TO BE LIBERAL AND JUST TOWARD EMPLOYEES; AND TO PUT MY WHOLE MIND UPON THE BUSINESS.”

— Richard Teller Crane, Founder of Crane Co.,
July 4, 1855

ETHICS AND INTEGRITY

One of Shell's most important contributions to Crane was his unwavering commitment to delivering results with ethics and integrity. While Crane's history of ethics dates back to its founding in 1855, Shell brought a renewed focus and attention to the matter. David Smith, Crane's CFO from 1994 to 2000, explained that “Shell Evans always wanted to hear the truth, and under his leadership, you never once had a question about honesty, integrity, doing the right thing and taking responsibility, which is particularly comforting for a CFO. Crane didn't need today's regulatory environment to get that right. One of Shell's sayings was, ‘Not telling the whole truth is not telling the truth.’”

Gil Dickoff, Crane's Treasurer from 1992 to 2006, added that “The tone at the top of the Company is integrity beyond reproach.” This view was reinforced by Ken Whitley, Crane's CFO from 1985 to 1989: “I think the strength of Crane has been financial integrity and Shell has had a lot to do with that. It's a fair environment at Crane—but tough. If you went to work for us, you had to be honest. Admitting mistakes is encouraged, but cover-up is never tolerated.”

This focus has been a constant at Crane for decades, and reinforced in many ways over the years, including in 1996 when Shell came across the original 1855 credo of R.T. Crane while visiting Crane Supply in Montreal. An associate in Montreal had posted the credo on the wall, and Shell noticed it immediately, explaining: “We had it framed and sent out copies for all of the presidents of the business units because I was so impressed with it. I thought it really summarized how you should do business, how you have to treat employees and the customers the right way.”

David Smith recalled: “I don't think Shell anticipated how much this simple act would resonate throughout the Company. Everyone quickly linked the cultural changes he was advocating with this proof of Crane's longstanding values.” Today, R.T. Crane's principles remain an integral part of how we operate at Crane, discussed at most company events, and gracing the lobbies, conference rooms and offices throughout our global operations.

OPERATIONAL EXCELLENCE

In addition to transforming the portfolio, developing a comprehensive strategy, and driving cultural change, Shell also started Crane's transformation from a holding company into an integrated operating company, with a new emphasis on operational excellence. In Shell's 1996 shareholder letter, he observed that “Our strong operating results reflect a consistent, company wide effort to make businesses not only bigger but better—by investing in more efficient equipment, by streamlining processes and by constantly looking for ways to reduce costs and increase our financing strength.”

This focus was further formalized in 1997 with the launch of Crane's Operational Excellence (OpEx) initiative intended to transform and reinvent the Company's internal workings on a continuous basis, and to institutionalize the thinking that fosters continuous improvement—always moving toward the goal of “perfection.” One of the first steps was the adoption of Six Sigma, an approach to statistical process control that sets as its goal a virtually defect-free performance in every one of a company's processes, whether manufacturing, distribution, cash management or customer service.

“OUR STRONG OPERATING RESULTS REFLECT A CONSISTENT, COMPANY WIDE EFFORT TO MAKE BUSINESSES NOT ONLY BIGGER BUT BETTER.”

— R.S. Evans in his 1996 shareholder letter

The Six Sigma initiative included a rigorous program to train team leaders, or “black belts,” who were assigned to analyze processes, and then to identify and execute projects to reduce errors and defects, with the intent of gaining significant cost- or time-savings and increasing customer satisfaction. Shell acknowledged, however, that training wasn’t enough, and that “The key to lasting results, of course, lies in changing the culture of the entire organization, getting everyone to think in terms of zero defects.”

By the late 1990s, this program was expanded beyond Six Sigma to include a focus on lean manufacturing and focused factory tools to shorten manufacturing cycle times, increase efficiency and reduce costs. Concurrently, Crane invested \$40 million during the 1990s to add ERP systems to drive further manufacturing and administrative efficiencies and lower costs. As global competition grew even sharper by 1999, Shell responded by identifying three critical, interrelated areas in which Crane needed to make solid and continuing progress: intellectual capital, customer focus, and operational excellence. To help drive that three-pronged strategy, and to ensure a smooth CEO transition, he hired Eric C. Fast as President and Chief Operating Officer in September 1999.

CEO TRANSITION

Eric had been co-head of global investment banking at Salomon Smith Barney and Salomon Brothers, and bringing years of experience in acquisitions and finance. He spent his first 18 months, from late 1999 through April 2001, focused on learning the manufacturing business, traveling with Shell throughout the organization, and meeting as many associates as possible. In April 2001, Shell stepped down as CEO, though he continued as Chairman of the Board, and Eric assumed the role of CEO. That was the first time in 42 years that Crane’s CEO was not a member of the Evans family.



R.S. Evans and Eric C. Fast at Crane Co. Offices in Stamford, CT. (c. 2005)

“THE KEY TO LASTING RESULTS, OF COURSE, LIES IN CHANGING THE CULTURE OF THE ENTIRE ORGANIZATION, GETTING EVERYONE TO THINK IN TERMS OF ZERO DEFECTS.”

— R.S. Evans c. 1997



R.S. Evans and Max H. Mitchell at Crane Co. Offices in Stamford, CT. (c. 2019)

The CEO transition was seamless, and Crane's core values were unchanged as Eric explained early in his tenure at Crane: "When I came to the Company, R.T. Crane's values were in place. For seventeen years, Shell Evans had not only sustained those values but also reinforced them. My job became one of carrying the torch for those values as opposed to having to light it."

Eric continued to execute on the strategy that Shell had developed with a particular focus on transitioning to an integrated operating company model. Eric described his approach in his first shareholder letter in 2001: "As a holding company, it was our view that value was created by business unit management operating closest to the customer, and that the corporate role was to select the right investments and enforce disciplined management through a compensation system based on EVA. While it is important to maintain these holding company precepts, we also believe that additional value for our shareholders can be created through aggressive pursuit of operational and strategic linkages among our various business units." Eric was also a firm believer in operational excellence, and it was under his management that the Crane Business System was further developed and implemented.

During Eric's tenure, he actively pursued these strategic linkages and internal mergers. From 1999 through 2014, Crane's sales nearly doubled, from \$1.55 billion to \$2.92 billion; during that same period, Crane started with 23 disparate business units which by 2014 had become 12 business units aggregated into four strategic platforms. That transformation included numerous internal mergers, along with the deployment of approximately \$2 billion on 20 separate acquisitions, along with the divestiture of 19 smaller units for proceeds of approximately \$250 million. As Crane focused on fewer, larger and more global businesses, Eric also built a stronger and deeper management team with increasingly robust and disciplined processes. Eric retired in January 2014 after ensuring plans were developed for another seamless CEO transition, this time to Max Mitchell.

"EXCELLENCE IS A MOVING TARGET, BUT WE ARE AN IMPROVING AND INCREASINGLY AGILE COMPANY. I BELIEVE THAT SPEAKS WELL FOR OUR ABILITY TO PROSPER AMID THE INEVITABLE UNCERTAINTY AND CYCLICALITY OF GLOBAL MARKETS."

— R.S. Evans in his 2000 shareholder letter



R.S. Evans and his executive team (c. 1987)

(seated from left) R.S. Evans, Chairman, Chief Executive Officer, and President; R. Kenneth Whitley, Vice President—Finance & Chief Financial Officer; Richard B. Phillips, Vice President, Human Resources.

(standing from left) Paul R. Hundt, Vice President, Secretary & General Counsel; Eric G. Dalrymple, Treasurer; Michael L. Raithel, Controller.



R.S. Evans and Max H. Mitchell with Crane Co.'s corporate leadership team at Crane Co. Offices in Stamford, CT. (c. 2019)

(seated from left) R.S. Evans, Chairman; Richard A. Maue, Senior Vice President & Chief Financial Officer; James A. Lavish, Vice President, People & Performance.

(standing from left) Anthony M. D'Iorio, Vice President, General Counsel and Secretary; Edward S. Switter, Vice President, Treasurer and Tax; Curtis A. Baron, Jr., Vice President, Compensation & Benefits; Max H. Mitchell, President & Chief Executive Officer.

NON-GAAP FINANCIAL DATA

RECONCILIATION OF NON-GAAP FINANCIAL MEASURES

Certain non-GAAP measures have been provided to facilitate comparison with the prior year.

The Company reports its financial results in accordance with U.S. generally accepted accounting principles (GAAP). However, management believes that non-GAAP financial measures which exclude certain non-recurring items present additional useful comparisons between current results and results in prior operating periods, providing investors with a clearer view of the underlying trends of the business. Management also uses these non-GAAP financial measures in making financial, operating, planning and compensation decisions and in evaluating the Company's performance.

In addition, Free Cash Flow provides supplemental information to assist management and investors in analyzing the Company's ability to generate liquidity from its operating activities. The measure of Free Cash Flow does not take into consideration certain other non-discretionary cash requirements such as, for example, mandatory principal payments on the Company's long-term debt. Non-GAAP financial measures, which may be inconsistent with similarly captioned measures presented by other companies, should be viewed in addition to, and not as a substitute for, the Company's reported results prepared in accordance with GAAP.

FORWARD-LOOKING STATEMENTS—DISCLAIMER

The information in this presentation includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements other than historical information or statements about our current condition. You can identify forward-looking statements by the use of terms such as "believes," "contemplates," "expects," "may," "could," "should," "would," or "anticipates," other similar phrases, or the negatives of these terms. We have based the forward-looking statements relating to our operations on our current expectations, estimates and projections about us and the markets we serve. We caution you that these statements are not guarantees of future performance and involve risks and uncertainties. In addition, we have based many of these forward-looking statements on assumptions about future events that may prove to be inaccurate. Accordingly, actual outcomes and results may differ materially from what we have expressed or forecast in the forward-looking statements. Any differences could result from a variety of factors, including those detailed on Page 1 of our Annual Report on Form 10-K for 2019 and in our subsequent disclosures filed with the Securities and Exchange Commission.

NON-GAAP FINANCIAL MEASURES

For year ended December 31,

INCOME ITEMS (\$ in millions, except per share data)	2019
Net sales	\$ 3,283
Operating profit	210
Percentage of sales	6.4%
SPECIAL ITEMS IMPACTING OPERATING PROFIT:	
Asbestos provision	229
Environmental provision	19
Acquisition and integration related charges	5
Repositioning related charges	30
Operating profit before special items	494
Percentage of sales	15.0%
Net income attributable to common shareholders	\$ 133.3
Per diluted share	\$2.20
SPECIAL ITEMS, NET OF TAX, IMPACTING NET INCOME ATTRIBUTABLE TO COMMON SHAREHOLDERS:	
Asbestos provision	180.9
Environmental provision	14.9
Acquisition and integration related charges	3.8
Repositioning related charges	25.6
Realized gain on marketable securities	(0.8)
Deconsolidation of joint venture	0.8
Impact of non-cash pension cost adjustment*	6.3
Net income attributable to common shareholders before special items	\$364.8
Per diluted share	\$ 6.02

CASH FLOW ITEMS

For year ended December 31,

(\$ in millions)	2019
Cash provided by operating activities	394
Less: Capital expenditures	(69)
Free cash flow	325

FLUID HANDLING

For year ended December 31,

(\$ in millions)	2018	2019	Change
Net sales	1,102	1,117	
Operating profit—GAAP	119	132	
Special Items	10	20	
Operating profit before special items	129	152	
Operating margin before special items	11.7%	13.6%	190 bps

Totals may not sum due to rounding.

*Non-service pension cost adjustment related to a reduction in expected pension returns.

COMMITTEES

The Board of Directors has four standing committees, namely the Executive Committee, Audit Committee, Management Organization and Compensation Committee, and Nominating and Governance Committee.

Other than the Executive Committee, each committee is composed entirely of independent directors as defined by the NYSE.

EXECUTIVE COMMITTEE

This committee, which meets when a quorum of the full Board of Directors cannot be readily obtained, may exercise any of the powers of the Board of Directors, except for: (i) approving an amendment of the Company's Certificate of Incorporation or By-Laws; (ii) adopting an agreement of merger or sale of substantially all of the Company's assets or dissolution of the Company; (iii) filling vacancies on the Board or any committee thereof; or (iv) electing or removing officers of the Company.

AUDIT COMMITTEE

This committee is the Board's principal agent in fulfilling legal and fiduciary obligations with respect to matters involving the accounting, auditing, financial reporting, internal control, legal compliance and risk management functions of the Company. This includes oversight of the integrity of financial statements, authority for retention and compensation of the Company's independent auditors, evaluation of qualifications, independence and performance of the Company's independent auditors, review of staffing and performance of the internal audit function and oversight of the Company's compliance with legal and regulatory requirements.

MANAGEMENT ORGANIZATION AND COMPENSATION COMMITTEE

This committee's responsibilities include recommending to the Board of Directors all actions regarding compensation of the Chief Executive Officer, approving the compensation of all other executive officers, reviewing the compensation of other officers and business unit presidents, annual review of director compensation, administration of the Annual Incentive Plan and Stock Incentive Plan, and review and approval of significant changes or additions to the compensation policies and practices of the Company. This committee will provide the Chief Executive Officer with an annual performance review. It is also responsible for determining that a satisfactory system is in effect for development and orderly succession of senior managers throughout the Company.

NOMINATING AND GOVERNANCE COMMITTEE

This committee is responsible for identifying, screening and recommending to the Board candidates for Board membership. It is responsible for sponsoring an annual self-assessment of the Board's performance as well as the performance of each committee of the Board. It is also responsible for determining the independence of the Company's Board members, and their fitness for service on the Board's various committees, and includes recommending the assignment of Board members to committees and appointment of committee chairs.

DIRECTORS

Martin R. Benante (2)
Retired Chairman and
Chief Executive Officer
Curtiss-Wright Corporation
*Supplier of products and services to
commercial, industrial, defense, and
energy markets*

Donald G. Cook (1, 3, 4)
General (Retired)
United States Air Force

Michael Dinkins (2)
Retired Executive Vice President
and Chief Financial Officer
Integer Holdings Corporation
*Leader in advanced medical device
outsourcing*

Robert S. Evans (1)
Chairman of the Board of
Crane Co.

Ronald C. Lindsay (3, 4)
Retired Chief Operating Officer
Eastman Chemical Co.
*Manufacturer of specialty chemicals,
plastic compounds & acetate fibers*

Ellen McClain (2, 3)
Chief Financial Officer
Year Up
*Not-for-profit provider of
job training services*

Charles G. McClure, Jr. (3, 4)
Managing Partner
Michigan Capital Advisors
*Private equity firm investing in global
automotive and transportation suppliers*

Max H. Mitchell (1)
President and
Chief Executive Officer of
Crane Co.

Jennifer M. Pollino (2, 3)
Retired Executive Vice President
Goodrich Corporation
*Diversified aerospace and industrial
manufacturer*

James L. L. Tullis (3, 4)
Chairman
Tullis Health Investors
*Venture capital investor in the health
care industry*

EXECUTIVE OFFICERS

Max H. Mitchell
President and
Chief Executive Officer

Christina Cristiano
Vice President, Controller & Chief
Accounting Officer

Anthony M. D'Iorio
Vice President, General Counsel
and Secretary

Bradley L. Ellis
Senior Vice President

Kurt F. Gallo
Senior Vice President

James A. Lavish
Vice President,
People & Performance

Richard A. Maue
Senior Vice President and
Chief Financial Officer

Kristian R. Salovaara
Vice President, Business
Development and Strategy

Edward S. Switter
Vice President, Treasurer
and Tax

(1) Member of the Executive Committee

(2) Member of the Audit Committee

(3) Member of the Management Organization and Compensation Committee

(4) Member of the Nominating and Governance Committee



CRANE

2019
FORM 10-K

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended: December 31, 2019

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____.

Commission file number 1-1657

CRANE CO.

(Exact name of Registrant as specified in its charter)

Delaware

State of or other jurisdiction of incorporation or organization:

13-1952290

(I.R.S. Employer identification No.)

100 First Stamford Place

Stamford

CT

06902

(Address of principal executive offices)

(Zip Code)

Registrant's telephone number, including area code: (203) 363-7300

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, par value \$1.00	CR	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act: Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15 (d) of the Act

Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer", "non-accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act):

(check one):

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

Based on the closing stock price of \$83.44 on June 28, 2019, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the voting common equity held by nonaffiliates of the registrant was \$5,002,100,003

The number of shares outstanding of the registrant's common stock, par value \$1.00, was 59,149,706 at January 31, 2020.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2020 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2019

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FORWARD-LOOKING INFORMATION

This Annual Report on Form 10-K contains information about us, some of which includes “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements other than historical information or statements about our current condition. You can identify forward-looking statements by the use of terms such as: “believes,” “contemplates,” “expects,” “may,” “will,” “could,” “should,” “would,” or “anticipates,” other similar phrases, or the negatives of these terms.

We have based the forward-looking statements relating to our operations on our current expectations, estimates and projections about us and the markets we serve. We caution you that these statements are not guarantees of future performance and involve risks and uncertainties. These statements should be considered in conjunction with the discussion in Part I, the information set forth under Item 1A, “Risk Factors” and with the discussion of the business included in Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” We have based many of these forward-looking statements on assumptions about future events that may prove to be inaccurate. Accordingly, our actual outcomes and results may differ materially from what we have expressed or forecast in the forward-looking statements. Any differences could result from a variety of factors, including the following:

- The effect of changes in economic conditions in the markets in which we operate, including financial market conditions, end markets for our products, fluctuations in raw material prices and the financial condition of our customers and suppliers;
- Economic, social and political instability, currency fluctuation and other risks of doing business outside of the United States;
- Competitive pressures, including the need for technology improvement, successful new product development and introduction and any inability to pass increased costs of raw materials to customers;
- Our ability to successfully integrate acquisitions and to realize synergies and opportunities for growth and innovation;
- Our ability to successfully value acquisitions;
- Our ongoing need to attract and retain highly qualified personnel and key management;
- The ability of the U.S. government to terminate our government contracts;
- Our ability to predict the timing and award of substantial contracts in our banknote business;
- The timing of regulatory approvals necessary for the return to service of the Boeing 737 MAX;
- A reduction in congressional appropriations that affect defense spending;
- The outcomes of legal proceedings, claims and contract disputes;
- Adverse effects on our business and results of operations, as a whole, as a result of increases in asbestos claims or the cost of defending and settling such claims;
- Adverse effects as a result of further increases in environmental remediation activities, costs and related claims;
- Investment performance of our pension plan assets and fluctuations in interest rates, which may affect the amount and timing of future pension plan contributions; and
- Adverse effects of changes in tax, environmental and other laws and regulations in the United States and other countries in which we operate.

Part I

Reference herein to “Crane,” “we,” “us” and “our” refer to Crane Co. and our subsidiaries unless the context specifically states or implies otherwise. Amounts in the following discussion are presented in millions, except employee, square feet, number of properties, share and per share data, or unless otherwise stated.

Item 1. Business

General

We are a diversified manufacturer of highly engineered industrial products comprised of four segments: Fluid Handling, Payment & Merchandising Technologies, Aerospace & Electronics and Engineered Materials. Our primary end markets include process industries (chemical production, oil & gas, power, and general industrial), non-residential and municipal construction, payment automation solutions, banknote design and production, aerospace, defense and space, along with a wide range of general industrial and certain consumer related end markets.

We have been committed to the highest standards of business conduct since inception in 1855 when our founder, R.T. Crane, resolved “to conduct my business in the strictest honesty and fairness; to avoid all deception and trickery; to deal fairly with both customers and competitors; to be liberal and just toward employees; and to put my whole mind upon the business.”

Our strategy is to grow earnings and cash flow by focusing on the manufacturing of highly engineered industrial products for specific markets where our scale is a relative advantage, and where we can compete based on our proprietary and differentiated technology, our deep vertical expertise, and our responsiveness to unique and diverse customer needs. We continuously evaluate our portfolio, pursue acquisitions that complement our existing businesses and selectively divest businesses where appropriate. We strive to foster a performance-based culture focused on productivity and continuous improvement, to attract and retain a committed management team whose interests are directly aligned with those of our shareholders, and to maintain a focused, efficient corporate structure.

We operate a comprehensive set of business processes, philosophies and operational excellence tools to drive continuous improvement throughout our businesses (collectively, the Crane Business System). Beginning with a core value of integrity, we incorporate “Voice of the Customer” teachings (specific processes designed to capture our customers’ requirements) and a broad range of tools into a disciplined strategy deployment process to continuously improve safety, quality, delivery, cost and growth. An embedded intellectual capital development process helps ensure that we attract, develop, promote and retain talent to drive continuity and repeatable results.

Reportable Segments

For additional information on recent business developments and other information about us and our business, you should refer to the information set forth under the captions, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” in Part II, Item 7 of this report, as well as in Part II, Item 8 under Note 3, “Segment Information,” in the Notes to Consolidated Financial Statements for sales, operating profit and assets employed by each segment.

Fluid Handling

The Fluid Handling segment is a provider of highly engineered fluid handling equipment for mission critical applications that require high reliability. The segment is comprised of Process Valves and Related Products, Commercial Valves, and Pumps and Systems.

Process Valves and Related Products manufactures on/off isolation valves and related products for critical and demanding applications in the chemical, oil & gas, power and general industrial end markets globally. Products are sold under the trade names Crane, Saunders, Jenkins, Pacific, Xomox, Krombach, DEPA, ELRO, REVO, Flowseal, Centerline, Resistoflex, Duocheck, Barksdale, Westlock, WTA, HOKE and DOPAK. Manufacturing locations, along with sales and service centers, are located across the North America, Europe, the Middle East, Asia and Australia.

Commercial Valves is engaged primarily in the manufacturing and distribution of valves and related products for the non-residential construction, general industrial, and municipal markets. The primary geographies served include Canada, the United Kingdom, the Middle East and continental Europe. Brands include Stockham, Wask, Viking Johnson, IAT, Hattersley, NABIC, Sperry, and Wade. Manufacturing facilities are located in the United Kingdom and China, with additional sales offices in continental Europe and the Middle East; distribution facilities are located throughout Canada.

Pumps and Systems manufactures pumps and related products for water and wastewater applications in the industrial, municipal, commercial and military markets, primarily in the United States. Products are sold under the trade names Deming, Weinman, Burks and Barnes. Facilities are located in the United States and Canada.

On January 31, 2020, we completed the acquisition of CIRCOR International, Inc.'s Instrumentation & Sampling Business ("I&S") for \$172 million on a cash-free and debt-free basis, subject to a later adjustment reflecting I&S' net working capital, cash, the assumption of certain debt-like items, and I&S' transaction expenses. I&S designs, engineers and manufactures a broad range of critical fluid control instrumentation and sampling solutions used in severe service environments. Facilities are located in the United States and the Netherlands. I&S will be integrated into our Process Valves and Related Products business.

Payment & Merchandising Technologies

The Payment & Merchandising Technologies segment consists of Crane Payment Innovations ("CPI"), Crane Currency and Crane Merchandising Systems ("CMS").

CPI provides high technology payment acceptance products that improve our customers' productivity in numerous global markets including retail self-checkout, vending, casino gaming, government lotteries, parking, transit fare collection, payment kiosks and financial services. Products for these markets include coin and bill acceptors, dispensers and recyclers, as well as cashless systems, and high-speed cash and coin counting and sorting machines. Facilities are located in the United States, Mexico, Japan, Switzerland, Germany and the Ukraine, with additional sales offices across the world.

Crane Currency is a supplier of banknotes and highly engineered banknote security features. A pioneer in advanced micro-optics technology, Crane Currency provides a wide range of engaging visual effects in features that increase the level of security and public trust in banknotes. Crane Currency offers uniquely designed banknotes, substrate (paper) and printing capabilities for over 50 central banks around the world, with facilities located in the United States, Sweden and Malta.

CMS is primarily engaged in the design and manufacturing of vending equipment and related solutions. Products include a full line of vending equipment that dispenses food, snack, and hot and cold beverages. Other solutions include vending management software, cashless payment products, and wireless connectivity to enable our customers to operate their businesses more profitably. Primary customers include vending operators and food and beverage companies, primarily in the United States and Europe. Facilities are located in the United States and the United Kingdom.

On December 31, 2019, we completed the acquisition of Cummins-Allison Corp ("Cummins-Allison") for \$160 million on a cash-free, debt-free basis, subject to a later adjustment reflecting Cummins-Allison's net working capital, cash, and Cummins-Allison's transaction expenses. Cummins-Allison is a leading provider of high speed, cash and coin counting and sorting machines and retail cash office solutions which are primarily used in back-office applications. Cummins-Allison also has a nationwide service network to support these hardware sales. Facilities are located in the United States and the United Kingdom ("UK"), with additional sales offices throughout the world. Cummins-Allison will be integrated into our CPI business.

Aerospace & Electronics

The Aerospace & Electronics segment supplies critical components and systems, including original equipment and aftermarket parts, primarily for the commercial aerospace, and the military aerospace, defense and space markets. The commercial market and military market accounted for 65% and 35%, respectively, of total segment sales in 2019. Sales to original equipment manufacturers ("OEM") and aftermarket customers were 72% and 28%, respectively, in 2019.

Crane Aerospace & Electronics has strong brands which have been supplying products to these end markets for several decades. Brands include Hydro-Aire, ELDEC, Lear Rometec, P.L. Porter, Keltec, Interpoint, Signal Technology, Merrimac Industries, and Polyflon.

Products include a wide range of custom designed, highly engineered products used in landing systems, sensing and utility systems, fluid management, seat actuation, power and microelectronic applications, and microwave systems.

Our products are sold directly to aircraft manufacturers, commercial Tier 1 integrators (companies which make products specifically for an aircraft manufacturer), defense and space prime contractors, airlines, government agencies including the U.S. Department of Defense, foreign allied defense organizations, aircraft seat manufacturers, and aircraft maintenance, repair and overhaul organizations.

Facilities are located in the United States, Taiwan, and France.

Engineered Materials

The Engineered Materials segment manufactures fiberglass-reinforced plastic ("FRP") panels and coils, primarily for use in the manufacturing of recreational vehicles ("RVs"), and in commercial and industrial buildings applications, with some additional applications including trailers and other transportation-related products. Engineered Materials sells the majority of its products directly to RV, trailer, and truck manufacturers, and it uses distributors and retailers to serve the commercial and industrial construction markets. Manufacturing facilities are located in the United States.

Other Matters Relating to Our Business as a Whole

Competitive Conditions

Our businesses participate in markets that are highly competitive. Because of the diversity of products manufactured and sold, our businesses typically have a different set of competitors in each geographic area and end market in which they participate. Accordingly, it is not possible to estimate the number of competitors, or precise market share; however, we believe that we are a principal competitor in most of our markets. Our primary basis of competition is providing high quality products, with technological differentiation, at competitive prices, with superior customer service and timely delivery.

Our products are sold into primary end markets which include process industries (chemical production, oil & gas, power, and general industrial), non-residential and municipal construction, payment automation solutions, banknote design and production, aerospace, defense and space, along with a wide range of general industrial and certain consumer related end markets. As such, our revenues depend on numerous unpredictable factors, including changes in market demand, general economic conditions, customer capital spending, timing and amount of contract awards and credit availability. Since our products are sold in such a wide variety of markets, we do not believe that we can reliably quantify or predict the potential effects of changes in any of the aforementioned factors.

Our engineering and product development activities are focused on improving existing products, customizing existing products for particular customer requirements, as well as the development of new products. We own numerous patents, trademarks, copyrights, trade secrets and licenses to intellectual property, no one of which is of such importance that termination would materially affect our business. From time to time, however, we do engage in litigation to protect our intellectual property.

Our Customers

No customer accounted for more than 10% of our consolidated revenues in 2019, 2018 or 2017.

Backlog

The following sets forth the unfulfilled orders attributable to each of our segments as of the indicated dates:

(in millions)	December 31, 2019	December 31, 2018
Fluid Handling	\$ 267.0	\$ 279.6
Payment & Merchandising Technologies	311.4	331.5
Aerospace & Electronics	567.4	446.6
Engineered Materials	9.4	14.9
Total Backlog	\$ 1,155.2	\$ 1,072.6

Our Employees

As of December 31, 2019, we employed approximately 13,000 people in the Americas, Europe, the Middle East, Asia and Australia. For a discussion of risks related to employee relations, please refer to Item 1A. "Risk Factors."

Raw Materials

Our manufacturing operations employ a wide variety of raw materials, including steel, copper, cast iron, electronic components, aluminum, plastics, cotton, flax and various petroleum-based products. We purchase raw materials from a large number of independent sources around the world. Although market forces have at times caused increases in the costs of steel, copper and petroleum-based products, there have been no raw materials shortages that have had a material adverse impact on our business, and we believe that we will generally be able to obtain adequate supplies of major raw material requirements or reasonable substitutes at acceptable costs. For a further discussion of risks related to raw materials; please refer to Item 1A. "Risk Factors."

Seasonal Nature of Business

In aggregate, our business does not experience significant seasonality.

Government Contracts

We have agreements relating to the sale of products to government entities, primarily involving products in our Aerospace & Electronics and Payment & Merchandising Technologies segments and, to a lesser extent, our Fluid Handling segment. As a

result, we are subject to various statutes and regulations that apply to companies doing business with the government. The laws and regulations governing government contracts differ from those governing private contracts. For example, some government contracts require disclosure of cost and pricing data and impose certain sourcing conditions that are not applicable to private contracts. Our failure to comply with these laws could result in suspension of these contracts, criminal or civil sanctions, administrative penalties and fines or suspension or debarment from government contracting or subcontracting for a period of time. For a further discussion of risks related to compliance with government contracting requirements; please refer to Item 1A. “Risk Factors.”

Environmental Compliance and Climate Change

We are regulated by federal, state and international environmental laws governing our use, transport and disposal of substances and control of emissions. Our manufacturing facilities generally do not produce significant volumes or quantities of byproducts that would be considered hazardous waste or otherwise harmful to the environment if not properly handled or maintained. Accordingly, continued compliance with these existing laws has not had a material impact on our capital expenditures or earnings.

However, we occasionally engage in environmental remediation activities as required by federal and state laws. In addition, we may be exposed to other environmental costs including participation in the characterization and remediation of federal Superfund sites, or analogous state sites. When it is reasonably probable we will pay remediation costs at a site, and those costs can be reasonably estimated, we accrue a liability for such future costs with a related charge against our earnings. For further discussion of environmental related risks; please refer to Item 1A. “Risk Factors.” For further discussion of our environmental matters; please refer to Part II, Item 8 under Note 12, “Commitments and Contingencies,” in the Notes to Consolidated Financial Statements.

Available Information

We file annual, quarterly and current reports and amendments to these reports, proxy statements and other information with the U.S. Securities and Exchange Commission (“SEC”). The SEC maintains an Internet site that contains reports, proxy and information statements and other information regarding issuers, like us, that file electronically with the SEC. The address of the SEC’s website is www.sec.gov.

We also make our filings available free of charge through our Internet website, as soon as reasonably practicable after filing such material electronically with, or furnishing such material, to the SEC. Also posted on our website are our Corporate Governance Guidelines, Standards for Director Independence, Crane Co. Code of Ethics and the charters and a brief description of each of the Audit Committee, the Management Organization and Compensation Committee and the Nominating and Governance Committee. These items are available in the “Investors – Corporate Governance” section of our website at www.craneco.com. The content of our website is not part of this report.

Executive Officers of the Registrant

Name	Position	Business Experience During Past Five Years	Age	Executive Officer Since
Max H. Mitchell	President and Chief Executive Officer	Chief Executive Officer since 2014. President since 2013. Chief Operating Officer from 2011 through 2013.	56	2004
Christina Cristiano	Vice President, Controller and Principal Accounting Officer	Vice President, Controller and Principal Accounting Officer since May 2019. Vice President, Controller Global Accounting and Statutory Reporting of Thomson Reuters from 2011 to May 2019.	47	2019
Anthony M. D'Iorio	Vice President, General Counsel and Secretary	Vice President, General Counsel and Secretary since February 2018. Deputy General Counsel from 2014 through February 2018. Assistant General Counsel from 2005 through 2014.	56	2018
Bradley L. Ellis	Senior Vice President	Senior Vice President since December 2014. Group President, Merchandising Systems from 2003 through 2014.	51	1997 - 2003 2007 - present
Kurt Gallo	Senior Vice President	Senior Vice President, Payment & Merchandising Technologies since April 2019. President, Crane Payment Solutions since 2012 and its successor, Crane Payment Innovation since 2014.	55	2019
James A. Lavish	Vice President, People & Performance	Vice President, People and Performance since February 2020. Vice President, CBS, People & Performance from January 2016 through January 2020. Vice President, Crane Business System from 2013 through January 2016. President, Crane Pumps & Systems from 2008 to 2013.	53	2016
Richard A. Maue	Senior Vice President and Chief Financial Officer	Senior Vice President since January 2019. Chief Financial Officer since 2013. Principal Accounting Officer from 2007 through May 2019. Vice President - Finance from 2013 through January 2019.	49	2007
Kristian R. Salovaara	Vice President of Business Development and Strategy	Vice President of Business Development and Strategy since 2014. Vice President, Business Development from 2011 to 2014.	59	2011
Edward S. Switter	Vice President, Treasurer and Tax	Vice President, Treasurer and Tax since September 2016. Vice President, Tax from 2011 through September 2016.	45	2011

Item 1A. Risk Factors

The following is a description of what we consider the key challenges and risks confronting our business. This discussion should be considered in conjunction with the discussion under the caption “Forward-Looking Information” preceding Part I, the information set forth under Item 1, “Business” and with the discussion of the business included in Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” These risks comprise the material risks of which we are aware. If any of the events or developments described below or elsewhere in this Annual Report on Form 10-K, or in any documents that we subsequently file publicly were to occur, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Risks Relating to Our Business

We are subject to numerous lawsuits for asbestos-related personal injury, and costs associated with these lawsuits may adversely affect our financial condition, results of operations and cash flows.

We are subject to numerous lawsuits for asbestos-related personal injury. Estimation of our ultimate exposure for asbestos-related claims is subject to significant uncertainties, as there are multiple variables that can affect the timing, severity and quantity of claims. Our estimate of the future expense of these claims is derived from assumptions with respect to future claims, settlement and defense costs which are based on experience during the last few years and which may not prove reliable as predictors. A significant upward or downward trend in the number of claims filed, depending on the nature of the alleged injury, the jurisdiction where filed and the quality of the product identification, or a significant upward or downward trend in the costs of defending claims, could change the estimated liability, as would substantial adverse verdicts at trial or on appeal. A legislative solution or a structured settlement transaction could also change the estimated liability. These uncertainties may result in our incurring future charges or increases to income to adjust the carrying value of recorded liabilities and assets, particularly if the number of claims and settlements and defense costs escalates or if legislation or another alternative solution is implemented; however, we are currently unable to predict such future events. The resolution of these claims may take many years, and the effect our financial condition, results of operations and cash flows in any given period from a revision to these estimates could be material.

As of December 31, 2019, we were one of a number of defendants in cases involving 29,056 pending claims filed in various state and federal courts that allege injury or death as a result of exposure to asbestos. See Part II, Item 8 under Note 12, “Commitments and Contingencies,” in the Notes to Consolidated Financial Statements for additional information on:

- Our pending claims;
- Our historical settlement and defense costs for asbestos claims;
- The liability we have recorded in our financial statements for pending and reasonably anticipated asbestos claims through 2059;
- The asset we have recorded in our financial statements related to our estimated insurance coverage for asbestos claims; and
- Uncertainties related to our net asbestos liability.

In the fourth quarter of 2019, we updated the estimate of our asbestos liability and recorded a pre-tax charge of \$229 million (\$181 million after tax). Our updated liability estimate is for pending and reasonably anticipated asbestos claims through the generally accepted end point of such claims in 2059. Due to uncertainties in the tort system, as well as uncertainties inherent in the estimation process, future reviews may result in adjustments to our total asbestos-related liability. The aggregate liability was \$712 million as of December 31, 2019.

Macroeconomic fluctuations may harm our business, results of operations and stock price.

Our business, financial condition, operating results and cash flows may be adversely affected by changes in global economic conditions and geopolitical risks, including credit market conditions, trade policies, levels of consumer and business confidence, commodity prices, exchange rates, levels of government spending and deficits, political conditions, and other challenges that could affect the global economy. These economic and geopolitical conditions could affect businesses such as ours in a number of ways. Such conditions could have an adverse impact on our flexibility to react to changing economic and business conditions and on our ability to fund our operations or refinance maturing debt balances at economically favorable interest rates. In addition, restrictions on credit availability could adversely affect the ability of our customers to obtain financing for significant purchases and could result in decreases in or cancellation of orders for our products and services as well as impact the ability of our customers to make payments. Similarly, credit restrictions may adversely affect our supplier base and increase the potential for one or more of our suppliers to experience financial distress or bankruptcy. See “Specific Risks Related to Our Business Segments.”

Demand for our products is variable and subject to factors beyond our control, which could result in unanticipated events significantly impacting our results of operations.

A substantial portion of our sales is concentrated in industries that are cyclical in nature or subject to market conditions which may cause customer demand for our products to be volatile. Reductions in demand by these industries would reduce the sales and profitability of the affected business segments.

- Our Fluid Handling segment is dependent on global economic conditions, customer capital spending and commodity prices. Deterioration in any of these economic factors could result in sales and profits falling below our current outlook.
- Our Payment & Merchandising Technologies segment could be affected by sustained weakness in certain geographic markets or certain end markets such as gaming, retail or banking, as well as low employment levels, office occupancy rates and factors affecting vending operator profitability such as higher fuel, food and equipment financing costs; results could also be impacted by unforeseen advances in payment processing technologies. In addition, our results in this segment are subject to significant variability due to the timing and size of contract awards by central banks for banknote production and actual order rates, particularly with the U.S. government.
- In our Aerospace & Electronics segment, a significant decline in demand for air travel, or a decline in airline profitability generally, could result in reduced orders for aircraft and could also cause airlines to reduce their purchases of repair parts from our businesses. In addition, our Aerospace & Electronics segment could also be impacted to the extent that our major aircraft manufacturing customers encounter problems which impact their production rates and, correspondingly, reduce purchases of our products (for example, the grounding of the 737 MAX and associated suspension of 737 MAX production announced by Boeing in December 2019 is expected to reduce our sales and operating profit in 2020; our current outlook assumes that production will resume at a limited rate during the year which, as of the date of this report, remains uncertain), or if pricing pressure from aircraft customers caused the manufacturers to press their suppliers to lower prices and/or extend payment terms; in addition, demand for military and defense products is dependent upon government spending in certain areas which can vary year to year.
- In our Engineered Materials segment, sales and profits could be affected by declines in demand for RVs, building materials or truck trailers; results could also be impacted by unforeseen changes in capacity or price increases related to certain raw materials, in particular, resin.

Failure to maintain the security of our information systems and technology networks, including personally identifiable and other information, non-compliance with our contractual or other legal obligations regarding such information, or a violation of our privacy and security policies with respect to such information, could adversely affect us.

We are dependent on information technology networks and systems, including the Internet, to process, transmit and store electronic information, and, in the normal course of our business, we collect and retain certain types of personally identifiable and other information pertaining to our customers, stockholders and employees. The legal, regulatory and contractual environment surrounding information security and privacy is constantly evolving and companies that collect and retain such information are under increasing attack by cyber-criminals around the world. A theft, loss, fraudulent use or misuse of customer, stockholder, employee or our proprietary data by cybercrime or otherwise, non-compliance with our contractual or other legal obligations regarding such data or a violation of our privacy and security policies with respect to such data could adversely impact our reputation and could result in costs, fines, litigation or regulatory action against us. Security breaches can create system disruptions and shutdowns that could result in disruptions to our operations. We cannot be certain that advances in criminal capabilities, new vulnerabilities or other developments will not compromise or breach the security solutions protecting our information technology, networks and systems.

Our operations expose us to the risk of environmental liabilities, costs, litigation and violations that could adversely affect our financial condition, results of operations, cash flows and reputation.

Our operations are subject to environmental laws and regulations in the jurisdictions in which they operate, which impose limitations on the discharge of pollutants into the ground, air and water and establish standards for the generation, treatment, use, storage and disposal of solid and hazardous wastes. We must also comply with various health and safety regulations in the U.S. and abroad in connection with our operations. Failure to comply with any of these laws could result in civil and criminal liability, monetary and non-monetary penalties and damage to our reputation. In addition, we cannot provide assurance that our costs related to remedial efforts or alleged environmental damage associated with past or current waste disposal practices or other hazardous materials handling practices will not exceed our estimates or adversely affect our financial condition, results of operations and cash flows. For example, during the fourth quarter of 2019, we received conceptual agreement from the Environmental Protection Agency on an alternative remediation strategy which is expected to further reduce the contaminant

plume. Accordingly, we recorded a pre-tax charge of \$18.9 million, net of reimbursements, to extend our forecast period through 2027 and reflect our revised workplan. The total estimated gross liability was \$46.9 million as of December 31, 2019.

Our businesses are subject to extensive governmental regulation; failure to comply with those regulations could adversely affect our financial condition, results of operations, cash flows and reputation.

We are required to comply with various import and export control laws, which may affect our transactions with certain customers, particularly in our Aerospace & Electronics, Fluid Handling and Payment & Merchandising Technology segments, as discussed more fully under “Specific Risks Relating to Our Business Segments.” In certain circumstances, export control and economic sanctions regulations may prohibit the export of certain products, services and technologies, and in other circumstances we may be required to obtain an export license before exporting the controlled item. A failure to comply with these requirements might result in suspension of these contracts and suspension or debarment from government contracting or subcontracting. In addition, we are subject to the Foreign Corrupt Practices Act, which prohibits U.S. companies and their intermediaries from making improper payments to foreign officials for the purpose of obtaining or retaining business, or securing any improper advantage. We are also subject to the anti-bribery laws of other jurisdictions. Failure to comply with any of these regulations could result in civil and criminal liability, monetary and non-monetary penalties, fines, disruptions to our business, limitations on our ability to export products and services, and damage to our reputation.

We conduct a substantial portion of our business outside the U.S. and face risks inherent in non-domestic operations.

Net sales and assets related to our operations outside the U.S. were 36% and 44% of our consolidated amounts, respectively, in 2019. We expect that non-U.S. sales will continue to account for a significant portion of our revenues for the foreseeable future. These operations and transactions are subject to the risks associated with conducting business internationally, including, but not limited to:

- changes in the U.S. government's approach to trade policy, including in some cases renegotiating and terminating certain existing bilateral or multi-lateral trade agreements. The U.S. government has also initiated tariffs on certain foreign goods from a variety of countries and regions, most notably China, and has raised the possibility of imposing significant, additional tariff increases or expanding the tariffs to capture other types of goods in other countries. In response, many of these foreign governments have imposed retaliatory tariffs on goods that their countries import from the U.S. Changes in U.S. trade policy have and may continue to result in one or more foreign governments adopting responsive trade policies that make it more difficult or costly for us to do business in or import our products from those countries. The adoption and expansion of trade restrictions, the occurrence of a trade war, or other governmental action related to tariffs or trade agreements or policies has the potential to adversely impact demand for our products, our costs, our customers, our suppliers, and the U.S. economy, which in turn could have a material adverse effect on our business, financial condition, results of operations and cash flows;
- the risks of fluctuations in foreign currency exchange rates, primarily the euro, the British pound, the Canadian dollar and the Japanese yen, could adversely affect our reported results, primarily in our Fluid Handling and Payment & Merchandising Technologies segments, as amounts earned in other countries are translated into U.S. dollars for reporting purposes; and
- economic and political instability in the countries and regions in which we operate. This includes, for example, the uncertainty surrounding the potential effect of the departure of the UK from the European Union (commonly referred to as Brexit) on our business operations and financial results. The effects of Brexit will depend on agreements, if any, the UK makes to retain access to markets in the European Union either during a transitional period or more permanently. The political and economic instability created by Brexit has caused and may continue to cause volatility in global stock markets, currency exchange rate fluctuations and global economic uncertainty, which could adversely affect customer demand, our relationships with customers and suppliers, our business and financial statements.

Our business could be harmed if we are unable to protect our intellectual property.

We rely on a combination of trade secrets, patents, trademarks, copyrights and confidentiality procedures to protect our products and technology. Existing trade secret, patent, trademark and copyright laws offer only limited protection. Our patents could be invalidated or circumvented. In addition, others may develop substantially equivalent, or superseding proprietary technology, or competitors may offer equivalent non-infringing products in competition with our products, thereby substantially reducing the value of our proprietary rights. The laws of some foreign countries in which our products are or may be manufactured or sold may not protect our products or intellectual property rights to the same extent as do the laws of the U.S. We cannot assure that the steps we take to protect our intellectual property will be adequate to prevent misappropriation of our technology. Our inability to protect our intellectual property could have an adverse effect on our financial condition, results of operations and cash flows.

We may be unable to identify or to complete acquisitions, or to successfully integrate the businesses we acquire.

We have evaluated, and expect to continue to evaluate, a wide array of potential acquisition transactions. Our acquisition program attempts to address the potential risks inherent in assessing the value, strengths, weaknesses, contingent or other liabilities, systems of internal control and potential profitability of acquisition candidates, as well as other challenges such as retaining the employees and integrating the operations of the businesses we acquire. Integrating acquired operations, such as our 2019 acquisition of Cummins-Allison or 2020 acquisition of I&S, involves significant risks and uncertainties, including:

- Maintenance of uniform standards, controls, policies and procedures;
- Unplanned expenses associated with the integration efforts;
- Inability to achieve planned facility repositioning savings or related efficiencies from recent and ongoing investments, such as those related to the transition of Crane Currency's print operations from Sweden to Malta; and
- Unidentified issues not discovered in the due diligence process, including legal contingencies.

There can be no assurance that suitable acquisition opportunities will be available in the future, that we will continue to acquire businesses or that any business acquired will be integrated successfully or prove profitable, which could adversely impact our growth rate. Our ability to achieve our growth goals depends in part upon our ability to identify and successfully acquire and integrate companies and businesses at appropriate prices and realize anticipated cost savings.

Our future results of operations and financial condition could be adversely impacted by intangible asset impairment charges.

As of December 31, 2019, we had goodwill and other intangible assets, net of accumulated amortization, of \$1,977.5 million, which represented approximately 45% of our total assets. Our goodwill is subject to an impairment test on an annual basis and is also tested whenever events and circumstances indicate that goodwill may be impaired. Any excess goodwill resulting from the impairment test must be written off in the period of determination. Intangible assets (other than goodwill) are generally amortized over the useful life of such assets. In addition, from time to time, we may acquire or make an investment in a business that will require us to record goodwill based on the purchase price and the value of the acquired assets. We may subsequently experience unforeseen issues with such business that adversely affect the anticipated returns of the business or value of the intangible assets and trigger an evaluation of the recoverability of the recorded goodwill and intangible assets for such business. Future determinations of significant write-offs of goodwill or intangible assets as a result of an impairment test or any accelerated amortization of other intangible assets could have an adverse effect on our financial condition and results of operations.

Our ability to source parts and raw materials from our suppliers could be disrupted or delayed in our supply chain which could adversely affect our results of operations.

Our operations require significant amounts of necessary parts and raw materials. We deploy a continuous, company-wide process to source our parts and raw materials from fewer suppliers, and to obtain parts from suppliers in low-cost countries where possible. If we are unable to source these parts or raw materials, our operations may be disrupted, or we could experience a delay or halt in certain of our manufacturing operations. We believe that our supply management and production practices are based on an appropriate balancing of the foreseeable risks and the costs of alternative practices. Nonetheless, reduced availability or interruption in supplies, whether resulting from more stringent regulatory requirements; supplier financial condition; increases in duties and tariff costs; disruptions in transportation; an outbreak of a severe public health pandemic, such as the recent coronavirus outbreak in China; severe weather; the occurrence or threat of wars or other conflicts, could have an adverse effect on our financial condition, results of operations and cash flows.

The prices of our raw materials could fluctuate dramatically, which may adversely affect our profitability.

The costs of certain raw materials that are critical to our profitability can be volatile which can have a significant impact on our profitability. The costs in our business segments are affected by fluctuations in the price of metals such as steel and copper as well as other raw materials such as resin, cotton, and flax. While we have taken actions aimed at securing an adequate supply of raw materials at prices which are favorable to us, if the prices of critical raw materials increase, our operating costs could be adversely affected.

We are dependent on key personnel, and we may not be able to retain our key personnel or hire and retain additional personnel needed for us to sustain and grow our business as planned.

Certain of our business segments and corporate offices are dependent upon highly qualified personnel, and we generally are dependent upon the continued efforts of key management employees. While we believe we have a robust intellectual capital process, we may have difficulty retaining such personnel or locating and hiring additional qualified personnel. The loss of the services of any of our key personnel or our failure to attract and retain other qualified and experienced personnel on acceptable

terms could impair our ability to successfully sustain and grow our business, which could have an adverse effect on our results of operations.

We may be unable to improve productivity, reduce costs and align manufacturing capacity with customer demand.

We are committed to continuous productivity improvement, and we continue to evaluate opportunities to reduce costs, simplify or improve global processes, and increase the reliability of order fulfillment and satisfaction of customer needs. In order to operate more efficiently and control costs, from time to time we execute restructuring activities, which include workforce reductions and facility consolidations. For example, we recorded pre-tax restructuring charges of \$17.5 million and \$7.2 million in 2019 and 2018, respectively, associated with broad-based repositioning actions designed to improve profitability. Together with additional costs of approximately \$10 million, we expect to achieve \$53 million and \$63 million in annualized savings by 2020 and 2021, respectively. While these are proactive actions to increase our productivity and operating effectiveness, our failure to respond to potential declines in global demand for our products and services and properly align our cost base could have an adverse effect on our financial condition, results of operations and cash flows.

We could face potential product liability or warranty claims, we may not accurately estimate costs related to such claims, and we may not have sufficient insurance coverage available to cover such claims.

Our products are used in a wide variety of commercial applications and certain residential applications. We face an inherent business risk of exposure to product liability or other claims in the event our products are alleged to be defective or that the use of our products is alleged to have resulted in harm to others or to property. We may in the future incur liability if product liability lawsuits against us are successful. Moreover, any such lawsuits, whether or not successful, could result in adverse publicity to us, which could cause our sales to decline.

In addition, consistent with industry practice, we provide warranties on many of our products and we may experience costs of warranty or breach of contract claims if our products have defects in manufacture or design or they do not meet contractual specifications. We estimate our future warranty costs based on historical trends and product sales, but we may fail to accurately estimate those costs and thereby fail to establish adequate warranty reserves for them.

We maintain insurance coverage to protect us against product liability claims, but that coverage may not be adequate to cover all claims that may arise or we may not be able to maintain adequate insurance coverage in the future at an acceptable cost. Any liabilities not covered by insurance or that exceed our established reserves could have an adverse effect on our financial condition, results of operations and cash flows.

We may be unable to successfully develop and introduce new products, which would limit our ability to grow and maintain our competitive position and adversely affect our financial condition, results of operations and cash flow.

Our growth depends, in part, on continued sales of existing products, as well as the successful development and introduction of new products or technologies, which face the uncertainty of customer acceptance and reaction from competitors. Any delay in the development or launch of a new product could result in our not being the first to market, which could compromise our competitive position. Further, the development and introduction of new products may require us to make investments in specialized personnel and capital equipment, increase marketing efforts and reallocate resources away from other uses. We also may need to modify our systems and strategy in light of new products that we develop. If we are unable to develop and introduce new products in a cost-effective manner or otherwise manage effectively the operations related to new products, our financial condition, results of operations and cash flows could be adversely impacted.

We face significant competition which may adversely impact our financial condition, results of operations, and cash flows in the future.

While we are a principal competitor in most of our markets, all of our markets are highly competitive. The competitors in many of our business segments can be expected in the future to improve technologies, reduce costs and develop and introduce new products. The ability of our business segments to achieve similar advances will be important to our competitive positions. Competitive pressures, including those discussed above, could cause one or more of our business segments to lose market share or could result in significant price erosion, either of which could have an adverse effect on our financial condition, results of operations and cash flows.

Net periodic pension (benefit) cost and pension contributions associated with our retirement benefit plans may fluctuate significantly depending upon changes in actuarial assumptions and future market performance of plan assets.

Total net periodic pension benefit and pension contributions were \$0.6 million and \$4.2 million, respectively in 2019. The costs of our defined benefit pension plans are dependent upon various factors, including rates of return on investment assets, discount rates for future payment obligations, and expected mortality, among other things. In addition, funding requirements for benefit obligations of our pension plans are subject to legislative and other government regulatory actions. Variances in related estimates could have an adverse effect on our financial condition, results of operations and cash flows.

Additional tax expense or exposures could affect our financial condition, results of operations and cash flows.

We are subject to income taxes in the U.S. and various international jurisdictions. Our financial condition, results of operations and cash flow could be affected by changes to any or all of the following: tax laws, regulations, accounting principles and judicial rulings, the geographic mix of our earnings, the valuation of our deferred tax assets and liabilities, and the results of audits and examinations of previously filed tax returns.

If our internal controls are found to be ineffective, our financial results or our stock price may be adversely affected.

We believe that we currently have adequate internal control procedures in place for future periods, including processes related to newly acquired businesses; however, increased risk of internal control breakdowns generally exists in any business environment that is decentralized such as ours. In addition, if our internal control over financial reporting is found to be ineffective, investors may lose confidence in the reliability of our financial statements, which may adversely affect our stock price.

Specific Risks Relating to Our Reportable Segments

Fluid Handling

Our Fluid Handling segment competes in markets that are fragmented and highly competitive. The business competes against large, well established global companies, as well as smaller regional and local companies. We compete based on our products' quality, reliability and safety, our brand reputation, value-added technical expertise and customer support and consistent on-time delivery. However, pricing can be highly competitive, particularly in regions and end markets with weakening levels of demand, or in markets where our value proposition - quality, reliability, and safety - is not valued as highly. Additionally, our results in this segment could be adversely impacted if our recently acquired I&S business is not integrated successfully.

Demand for our Fluid Handling products is heavily dependent on our customers' level of new capital investment and planned maintenance expenditures. Customer spending typically depends on general economic conditions, availability of credit, and expectations of future demand. Slowing global economic growth, volatility in commodity prices, including continued weakness in oil prices could all contribute to lower levels of customer spending, and project delays or cancellations.

A portion of this segment's business is subject to government contracting rules and regulations. Failure to comply with these requirements could result in suspension or debarment from government contracting or subcontracting, civil and criminal liability, monetary and non-monetary penalties, disruptions to our business, limitations on our ability to export products and services, or damage to our reputation. At our foreign operations, results could also be adversely impacted by a weakening of local currencies against the U.S. dollar; our Fluid Handling business has the greatest exposure to the euro, British pound, and Canadian dollar, although there is lesser exposure to several other currencies.

Payment & Merchandising Technologies

Our Payment & Merchandising Technologies segment sales are dependent on capital spending in a variety of end markets and across numerous geographies. The level of capital expenditures by our customers depends on general economic conditions, availability of credit, and expectations of future demand. In addition, our results in this segment are subject to significant variability due to the timing and size of contract awards by central banks for banknote production and actual order rates, particularly with the U.S. government. Our results in this segment could also be adversely impacted if our recently acquired Cummins-Allison business is not integrated successfully, including achieving expected synergies.

This business regularly develops and markets new products. Delays in the product development process, or the inability of new products to meet targeted performance measures, could hurt future sales. This business is also directly and indirectly exposed to changes in government regulations; for example, changes in gaming regulations could influence the spending patterns of our casino operator customers, or changes in anti-money laundering regulations could result in additional technical requirements for our products. We are also subject to investigation and audit for compliance with the requirements governing government contracts, including requirements related to procurement integrity, manufacturing practices and quality procedures, export control, employment practices, the accuracy of records and the recording of costs and information security requirements. A failure to comply with these requirements could result in suspension of these contracts, and suspension or debarment from government contracting or subcontracting. Failure to comply with any of these regulations could result in civil and criminal liability, monetary and non-monetary penalties, fines, disruptions to our business, limitations on our ability to export products and services, and damage to our reputation.

At our foreign operations, results could also be adversely impacted by a weakening of local currencies against the U.S. dollar; this business has the greatest exposure to the euro, British pound, the Japanese yen, the Mexican peso, and the Canadian dollar, although there is lesser exposure to several other currencies. In addition, our facility in Mexico operates under the Mexican

Maquiladora program. This program provides for reduced tariffs and eased import regulations; we could be adversely affected by changes in such program, or by our failure to comply with its requirements.

Aerospace & Electronics

Our Aerospace & Electronics segment sales are primarily affected by conditions in the commercial aerospace industry which is cyclical in nature, and by changes in defense spending by the U.S. government.

Commercial aircraft are procured primarily by airlines, and airline capital spending can be affected by a number of factors including credit availability, current and expected fuel prices, and current and forecast air traffic demand levels. Air traffic levels are affected by a different array of factors including general economic conditions and global corporate travel spending, although other non-economic events can also adversely impact airline traffic, including terrorism or pandemic health concerns, such as the coronavirus. Our commercial business is also affected by the market for business jets where demand is typically tied to corporate profitability levels, and the freight markets which are most heavily influenced by general economic conditions. Demand for our commercial aftermarket business is closely tied to total aircraft flight hours. Any decrease in demand for new aircraft or equipment, or use of existing aircraft and equipment, would likely result in decreased sales of our products and services. In addition, our commercial business could also be impacted to the extent that our major aircraft manufacturing customers encounter problems which impact their production rates and, correspondingly, reduce purchases of our products (for example, the grounding of the 737 MAX and associated suspension of 737 MAX production announced by Boeing in December 2019 is expected to reduce our sales and operating profit in 2020; our current outlook assumes that production will resume at a limited rate during the year which, as of the date of this report, remains uncertain), or if pricing pressure from aircraft customers caused the manufacturers to press their suppliers to lower prices and/or extend payment terms.

The defense portion of the segment's business is dependent primarily on U.S. government spending, and to a lesser extent, foreign government spending, on the specific military platforms and programs where our business participates. Any reduction in appropriations for these platforms or programs could impact the performance of our business. Our sales to defense customers are also affected by the level of activity in military flight operations.

We are required to comply with various export control laws, which may affect our transactions with certain customers. In certain circumstances, export control and economic sanctions regulations may prohibit the export of certain products, services and technologies, and in other circumstances we may be required to obtain an export license before exporting the controlled item. We are also subject to investigation and audit for compliance with the requirements governing government contracts, including requirements related to procurement integrity, manufacturing practices and quality procedures, export control, employment practices, the accuracy of records and the recording of costs and information security requirements. A failure to comply with these requirements could result in suspension of these contracts, and suspension or debarment from government contracting or subcontracting. Failure to comply with any of these regulations could result in civil and criminal liability, monetary and non-monetary penalties, fines, disruptions to our business, limitations on our ability to export products and services, and damage to our reputation.

Due to the lengthy research and development cycle involved in bringing commercial and military products to market, we cannot accurately predict the demand levels that will exist once a given new product is ready for market. In addition, if we are unable to develop and introduce new products in a cost-effective manner or otherwise effectively manage the introduction of new products and/or programs, our results of operations and financial condition could be adversely impacted. Demand for our products could also be adversely impacted by industry consolidation that could result in greater acceptance of competitors' products.

Engineered Materials

Our Engineered Materials segment manufactures and sells FRP panels and coils, primarily for use in the manufacturing of RVs, trucks, and trailers, with additional applications in commercial and industrial building construction. Demand in these end markets is dependent on general economic conditions, credit availability, and consumer and corporate spending levels. A decline in demand in any of these end markets, including a significant change in RV industry capacity, including, the recent overproduction by RV OEMs that occurred mostly in 2017 which has unfavorably impacted our results of operations and cash flows in 2018 and 2019; a loss of market share; or customer pricing pressure would result in lower sales and profits for this business. Profitability could also be adversely affected by an increase in the price of resin or fiberglass if we are unable to pass the incremental costs on to our customers. Additional risks include the loss of a principal supplier, and potential loss of market share to competing materials, such as wood or aluminum.

Item 1B. Unresolved Staff Comments

None

Item 2. Properties

The following is a summary of our principal facilities as of December 31, 2019:

Facilities - Owned												
Location	Fluid Handling		Payment & Merchandising Technologies		Aerospace & Electronics		Engineered Materials		Corporate		Total	
	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)
<u>Manufacturing:</u>												
United States	7	798,509	8	1,351,894	6	724,240	4	644,333	—	—	25	3,518,976
Canada	—	—	—	—	—	—	—	—	—	—	—	—
Europe	6	921,233	4	828,766	—	—	—	—	—	—	10	1,749,999
Other international	4	415,689	2	294,666	—	—	—	—	—	—	6	710,355
	17	2,135,431	14	2,475,326	6	724,240	4	644,333	—	—	41	5,979,330
<u>Non-Manufacturing:</u>												
United States	2	98,510	7	286,973	—	—	—	—	—	—	9	385,483
Canada	7	154,674	—	—	—	—	—	—	—	—	7	154,674
Europe	2	73,780	1	11,000	—	—	—	—	—	—	3	84,780
Other international	—	—	—	—	—	—	—	—	—	—	—	—
	11	326,964	8	297,973	—	—	—	—	—	—	19	624,937

Facilities - Leased												
Location	Fluid Handling		Payment & Merchandising Technologies		Aerospace & Electronics		Engineered Materials		Corporate		Total	
	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)	Number	Area (sq. ft.)
<u>Manufacturing</u>												
United States	2	97,220	1	141,049	—	—	—	—	—	—	3	238,269
Canada	1	20,572	—	—	—	—	—	—	—	—	1	20,572
Europe	3	517,890	1	20,053	—	—	—	—	—	—	4	537,943
Other international	2	410,615	—	—	1	63,653	—	—	—	—	3	474,268
	8	1,046,297	2	161,102	1	63,653	—	—	—	—	11	1,271,052
<u>Non-Manufacturing</u>												
United States	4	76,555	56	464,684	3	12,718	3	78,950	3	39,875	69	672,782
Canada	22	472,846	3	5,323	—	—	—	—	—	—	25	478,169
Europe	7	50,335	8	319,613	2	21,218	—	—	—	—	17	391,166
Other international	20	159,599	4	17,627	—	—	—	—	—	—	24	177,226
	53	759,335	71	807,247	5	33,936	3	78,950	3	39,875	135	1,719,343

In our opinion, these properties have been well maintained, are in good operating condition and contain all necessary equipment and facilities for their intended purposes.

Item 3. Legal Proceedings.

Discussion of legal matters is incorporated by reference to Part II, Item 8 under Note 12, “Commitments and Contingencies,” in the Notes to Consolidated Financial Statements.

Item 4. Mine Safety Disclosures.

Not applicable.

Part II

Item 5. Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

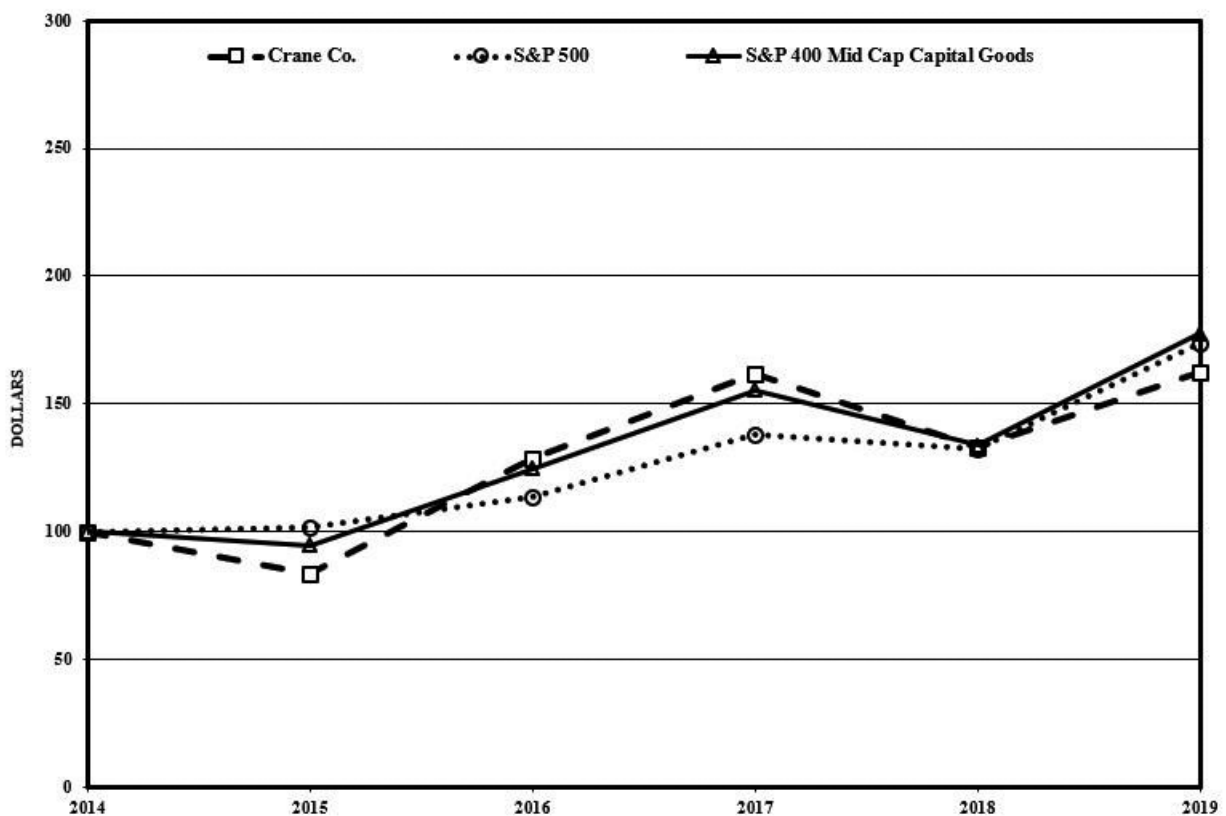
Market Information

Crane Co. common stock is traded on the New York Stock Exchange ("NYSE") under the symbol "CR". As of December 31, 2019, there were 1,839 holders of record of Crane Co. common stock.

Stock Performance Graph

The following chart compares the total stockholder returns (stock price increase plus reinvested dividends) on our common stock from December 31, 2014 through December 31, 2019 with the total stockholder returns for the S&P 500 Index and the S&P MidCap Capital Goods Index. The graph assumes that the value of the investment in the common stock and each index was \$100 on December 31, 2014 and that all dividends were reinvested.

COMPARISON OF FIVE YEAR CUMULATIVE TOTAL RETURN
Among Crane Co., S&P 500, and S&P 400 Mid Cap Capital Goods
Fiscal Year Ending December 31,



		2014	2015	2016	2017	2018	2019
Crane Co	(\$)	100	83	128	162	133	162
S&P 500	(\$)	100	101	113	138	132	174
S&P 400 Mid Cap Capital Goods	(\$)	100	94	125	155	134	177

Purchases of Equity Securities

The following table summarizes our share repurchases during the three months ended December 31, 2019:

	Total number of shares purchased	Average price paid per share	Total number of shares purchased as part of publicly announced plans or programs	Maximum number (or approximate dollar value) of shares that may yet be purchased under the plans or programs
October 1-31	—	\$ —	—	—
November 1-30	987,630	80.93	—	—
December 1-31	—	—	—	—
Total October 1 — December 31, 2019	987,630	\$ 80.93	—	—

The table above only includes the open-market repurchases of our common stock during the three months ended December 31, 2019. We routinely receive shares of our common stock as payment for stock option exercises and the withholding taxes due on stock option exercises and the vesting of restricted share units from stock-based compensation program participants.

Equity Compensation Plans

For information regarding equity compensation plans, see Item 12 of this annual report on Form 10-K.

Item 6. Selected Financial Data

FIVE YEAR SUMMARY OF SELECTED FINANCIAL DATA

	For the year ended December 31,				
(in millions, except per share data)	2019	2018	2017	2016	2015
Net sales	\$ 3,283.1	\$ 3,345.5	\$ 2,786.0	\$ 2,748.0	\$ 2,740.5
Operating profit ^(a)	210.4	441.3	388.4	186.7	356.3
Interest expense	(46.8)	(50.9)	(36.1)	(36.5)	(37.6)
Income before taxes ^(b)	170.7	411.4	367.5	164.1	336.5
Provision for income taxes ^(c)	37.1	75.9	195.0	40.3	106.5
Net income before allocation to noncontrolling interests ^(c)	133.6	335.5	172.5	123.8	230.0
Net income attributable to common shareholders ^(c)	\$ 133.3	\$ 335.6	\$ 171.8	\$ 122.8	\$ 228.9
Basic earnings per share ^(c)	\$ 2.23	\$ 5.63	\$ 2.89	\$ 2.10	\$ 3.94
Diluted earnings per share ^(c)	\$ 2.20	\$ 5.50	\$ 2.84	\$ 2.07	\$ 3.89
Cash dividends per common share	\$ 1.56	\$ 1.40	\$ 1.32	\$ 1.32	\$ 1.32
Total assets	\$ 4,423.7	\$ 4,042.7	\$ 3,593.5	\$ 3,428.0	\$ 3,336.9
Total debt	\$ 991.4	\$ 949.2	\$ 743.5	\$ 745.3	\$ 744.6
Accrued pension and postretirement benefits	\$ 298.4	\$ 244.0	\$ 240.5	\$ 249.1	\$ 235.4
Long-term asbestos liability	\$ 646.6	\$ 451.3	\$ 520.3	\$ 624.9	\$ 470.5
Long-term insurance receivable — asbestos	\$ 83.6	\$ 75.0	\$ 90.1	\$ 125.2	\$ 108.7

(a) Includes i) an asbestos provision, net of insurance recoveries of \$229.0 million in 2019 and \$192.4 million in 2016; ii) an environmental liability provision, net of reimbursements of \$18.9 million in 2019; iii) restructuring charges of \$17.5 million in 2019, \$7.2 million in 2018 and \$13.0 million in 2017; iv) acquisition-related and integration charges of \$5.2 million in 2019, \$19.8 million in 2018 and \$7.8 million in 2017; and v) a legal settlement charge of \$5.0 million in 2016.

(b) Includes the items cited in note (a) as well as i) a realized gain on marketable securities of \$1.1 million in 2019; ii) a non-cash pension cost adjustment of \$8.3 million in 2019; and iii) a loss of \$1.2 million related to the deconsolidation of a joint venture in 2019 and a gain of \$1.0 million related to the deconsolidation of a joint venture in 2017

(c) Includes the tax effect of items cited in note (a) and (b) as well as the impact of the Tax Cuts and Jobs Act of \$87 million in 2017.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read together with our consolidated financial statements and related notes included under Item 8 of this Annual Report on Form 10-K.

We are a diversified manufacturer of highly engineered industrial products. Our business consists of four segments: Fluid Handling, Payment & Merchandising Technologies, Aerospace & Electronics and Engineered Materials. Our primary end markets include process industries (chemical production, oil & gas, power, and general industrial), non-residential and municipal construction, payment automation solutions, banknote design and production, aerospace, defense and space, along with a wide range of general industrial and certain consumer related end markets.

Our strategy is to grow earnings and cash flow by focusing on the manufacturing of highly engineered industrial products for specific markets where our scale is a relative advantage, and where we can compete based on our proprietary and differentiated technology, our deep vertical expertise, and our responsiveness to unique and diverse customer needs. We continuously evaluate our portfolio, pursue acquisitions that complement our existing businesses and are accretive to our growth profile, selectively divest businesses where appropriate, and pursue internal mergers to improve efficiency. We strive to foster a performance-based culture focused on productivity and continuous improvement, to attract and retain a committed management team whose interests are directly aligned with those of our shareholders, and to maintain a focused, efficient corporate structure.

We will continue to execute this strategy while remaining committed to the values of our founder, R.T. Crane, who resolved to conduct business "in the strictest honesty and fairness; to avoid all deception and trickery; to deal fairly with both customers and competitors; to be liberal and just toward employees; and to put my whole mind upon the business."

Due to rounding, numbers presented throughout this report may not add up precisely to totals we provide and percentages may not precisely reflect the absolute figures.

This section of this Form 10-K generally discusses 2019 and 2018 items and year-to-year comparisons between 2019 and 2018. Discussions of 2017 items and year-to-year comparisons between 2018 and 2017 that are not included in this Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of our Annual Report on Form 10-K for the year ended December 31, 2018.

Results of Operations — For the Years Ended December 31, 2019, 2018 and 2017

(in millions, except %)	For the year ended December 31,			2019 vs 2018 Favorable / (Unfavorable) Change		2018 vs 2017 Favorable / (Unfavorable) Change	
	2019	2018	2017	\$	%	\$	%
Net sales:							
Fluid Handling	\$ 1,117.4	\$ 1,101.8	\$ 1,042.5	\$ 15.6	1.4 %	\$ 59.3	5.7 %
Payment & Merchandising Technologies	1,158.3	1,257.0	776.7	(98.7)	(7.9)%	480.3	61.8 %
Aerospace & Electronics	798.8	743.5	691.4	55.3	7.4 %	52.1	7.5 %
Engineered Materials	208.6	243.2	275.4	(34.6)	(14.2)%	(32.2)	(11.7)%
Total net sales	\$ 3,283.1	\$ 3,345.5	\$ 2,786.0	\$ (62.4)	(1.9)%	\$ 559.5	20.1 %
Sales growth:							
Core business				\$ (13.1)	(0.4)%	\$ 76.7	2.8 %
Foreign exchange				(52.8)	(1.6)%	11.9	0.4 %
Acquisitions/dispositions				3.5	0.1 %	470.9	16.9 %
Total sales growth				\$ (62.4)	(1.9)%	\$ 559.5	20.1 %
Operating profit (loss):							
Fluid Handling	\$ 131.7	\$ 118.8	\$ 101.7	\$ 12.9	10.9 %	\$ 17.1	16.8 %
Payment & Merchandising Technologies	177.3	186.0	145.9	(8.7)	(4.7)%	40.1	27.5 %
Aerospace & Electronics	189.4	164.2	160.3	25.2	15.3 %	3.9	2.4 %
Engineered Materials	26.8	37.8	49.4	(11.0)	(29.1)%	(11.6)	(23.5)%
Corporate expense	(66.9)	(65.5)	(68.9)	(1.4)	(2.1)%	3.4	4.9 %
Corporate - Asbestos provision, net	(229.0)	—	—	(229.0)	NM	—	NM
Corporate - Environmental provision, net	(18.9)	—	—	(18.9)	NM	—	NM
Total operating profit	\$ 210.4	\$ 441.3	\$ 388.4	\$ (230.9)	(52.3)%	\$ 52.9	13.6 %
Operating margin:							
Fluid Handling	11.8%	10.8%	9.8%				
Payment & Merchandising Technologies	15.3%	14.8%	18.8%				
Aerospace & Electronics	23.7%	22.1%	23.2%				
Engineered Materials	12.9%	15.5%	17.9%				
Total operating margin	6.4%	13.2%	13.9%				
Acquisition-related and integration charges ^(a)							
Acquisition-related and integration charges ^(a)	\$ 5.2	\$ 19.8	\$ 7.8				
Restructuring and related charges ^(a)							
Restructuring and related charges ^(a)	\$ 29.1	\$ 14.7	\$ 13.0				

(a) Acquisition-related and integration charges and restructuring and related charges are included in operating profit and operating margin.

Items Affecting Comparability of Reported Results

The comparability of our results from operations for the years ended December 31, 2019 and 2018 is affected by the following significant items:

Asbestos Provision, net

In 2019, we recorded a pre-tax provision, net of insurance recoveries of \$229.0 million associated with updating our estimated asbestos liability through the generally accepted end point in 2059. Please refer to Part II, Item 8 under Note 12, "Commitments and Contingencies" in the Notes to Consolidated Financial Statements for further discussion.

Environmental Provision, net

In 2019, we recorded a pre-tax provision, net of reimbursements of \$18.9 million to extend accrued costs through 2027 at the former manufacturing site in Goodyear, Arizona (the "Goodyear Site"). Please refer to Note 12, "Commitments and Contingencies" in the Notes to Consolidated Financial Statements for further discussion.

Restructuring and Related Charges

In 2019, we recorded total pre-tax restructuring and related charges of \$29.1 million; \$9.9 million is related to the new repositioning actions initiated in December 2019 in our Fluid Handling segment, \$5.9 million is related to the acquisition of Crane Currency, and \$13.3 million is related to the 2017 repositioning actions. In 2018, we recorded total pre-tax restructuring and related charges of \$14.7 million; \$1.6 was related to the acquisition of Crane Currency and \$13.1 million was related to the 2017 repositioning actions. We expect recurring pre-tax savings subsequent to initiating all actions to approximate \$53 million and \$63 million in 2020 and 2021, respectively. Please refer to the individual segment discussion and analysis that follows, as well as Part II, Item 8 under Note 15, "Restructuring" in the Notes to Consolidated Financial Statements for further discussion.

Acquisition-Related and Integration Charges

During 2019 and 2018, we recorded pre-tax acquisition-related and integration charges of \$5.2 million and \$19.8 million, respectively. Please refer to Part II, Item 8 under Note 2, "Acquisitions and Divestitures" in the Notes to Consolidated Financial Statements for further discussion.

Acquisition-Related Inventory Step-Up and Backlog Amortization

In 2018, we recorded pre-tax acquisition-related inventory step-up and backlog amortization of \$9.1 million, primarily associated with the acquisition of Crane Currency. Please refer to Part II, Item 8 under Note 2, "Acquisitions and Divestitures" in the Notes to Consolidated Financial Statements for further discussion related to our acquisitions.

OVERALL

Sales decreased by \$62.4 million, or 1.9%, to \$3,283.1 million in 2019. Net sales related to operations outside the United States for the years ended December 31, 2019 and 2018 was 36% and 37% of total net sales, respectively. The year-over-year change in sales included:

- unfavorable foreign currency translation of \$52.8 million, or 1.6%;
- a decrease in core sales of \$13.1 million, or 0.4%; and
- an increase in sales related to acquisitions, net, of \$3.5 million, or 0.1%.

Operating profit decreased by \$230.9 million, or 52.3%, to \$210.4 million in 2019. The decrease in operating profit reflected the \$229.0 million asbestos provision, net and the \$18.9 million environmental provision, net, both recorded in 2019, together with lower operating profit in our Engineered Materials and Payment & Merchandising Technologies segments. The decrease in operating profit was partially offset by higher operating profit in our Aerospace & Electronics and Fluid Handling segments. Operating profit in 2019 also included restructuring and related charges of \$29.1 million and acquisition-related and integration charges of \$5.2 million. Operating profit in 2018 included 1) acquisition-related and integration charges of \$19.8 million in connection with the acquisition of Crane Currency; 2) acquisition-related inventory and backlog amortization of \$9.1 million, primarily associated with the acquisition of Crane Currency; and 3) restructuring and related charges of \$14.7 million.

Comprehensive income

(in millions) For the year ended December 31,	2019	2018	2017
Net income before allocation to noncontrolling interests	\$ 133.6	\$ 335.5	\$ 172.5
Other comprehensive (loss) income, net of tax			
Currency translation adjustment	11.5	(41.6)	86.9
Changes in pension and postretirement plan assets and benefit obligation, net of tax	(47.7)	(26.2)	9.2
Other comprehensive (loss) income, net of tax	(36.2)	(67.8)	96.1
Comprehensive income before allocation to noncontrolling interests	97.4	267.7	268.6
Less: Noncontrolling interests in comprehensive (loss) income	(0.1)	(0.3)	0.7
Comprehensive income attributable to common shareholders	\$ 97.5	\$ 268.0	\$ 267.9

For the year ended December 31, 2019, comprehensive income before allocations to noncontrolling interests was \$97.4 million compared to \$267.7 million in 2018. The \$170.3 million decrease was primarily driven by lower net income before allocation to noncontrolling interests of \$201.9 million and, to a lesser extent, a \$21.5 million decrease due to changes in pension and postretirement plan assets and benefit obligations. These decreases were partially offset by a \$53.1 million favorable impact of foreign currency translation adjustments year-over-year including fluctuations in the British pound, Canadian dollar, euro and Japanese yen.

FLUID HANDLING

(in millions, except %) For the year ended December 31,	2019	2018	2017
Net sales by product line:			
Process Valves and Related Products	\$ 685.1	\$ 685.4	\$ 640.1
Commercial Valves	332.1	325.4	310.1
Pumps and Systems	100.2	91.0	92.3
Total net sales	\$ 1,117.4	\$ 1,101.8	\$ 1,042.5
Operating profit	\$ 131.7	\$ 118.8	\$ 101.7
Acquisition-related and integration charges ^(a)	\$ 0.6	\$ —	\$ 2.9
Restructuring and related charges ^(a)	\$ 19.2	\$ 10.0	\$ 10.6
Assets	\$ 941.6	\$ 878.2	\$ 941.6
Operating margin	11.8%	10.8%	9.8%

(a) Acquisition-related and integration charges and restructuring and related charges are included in operating profit and operating margin.

Fluid Handling sales increased by \$15.6 million, or 1.4%, to \$1,117.4 million, driven by a core sales increase of \$42.5 million, or 3.9%, partially offset by unfavorable foreign currency translation of \$26.4 million, or 2.4%, and loss of sales related to a divestiture of \$0.5 million, or 0.1%.

- Sales of Process Valves and Related Products decreased by \$0.3 million to \$685.1 million in 2019. The decrease reflected unfavorable foreign currency translation of \$14.8 million, or 2.2%, primarily due to the euro weakening against the U.S. dollar largely offset by higher core sales \$14.5 million, or 2.2%. The core sales increase primarily reflected higher sales to the chemical market, partially offset by lower sales to the power end market.
- Sales of Commercial Valves increased by \$6.7 million, or 2.1%, to \$332.1 million in 2019 primarily driven by a core sales increase of \$18.6 million, or 5.6%, partially offset by unfavorable foreign currency translation of \$11.4 million, or 3.5%, as the British pound and Canadian dollar weakened against the U.S. dollar, and the unfavorable impact from a divestiture of \$0.5 million. The core sales increase primarily reflected higher sales to the Canadian and United Kingdom non-residential construction markets.
- Sales of Pumps and Systems increased by \$9.2 million, or 10.1%, to \$100.2 million in 2019. The increase primarily reflected higher sales to military customers.

Fluid Handling operating profit increased by \$12.9 million, or 10.9%, to \$131.7 million in 2019. The increase primarily reflected productivity savings and repositioning benefits, partially offset by \$9.2 million of higher restructuring and related charges and unfavorable sales mix.

PAYMENT & MERCHANDISING TECHNOLOGIES

(in millions, except %) For the year ended December 31,	2019	2018	2017
Net sales by product line:			
Payment Acceptance and Dispensing Products	\$ 608.6	\$ 594.2	\$ 575.9
Banknotes and Security Products	352.8	458.2	—
Merchandising Equipment	196.9	204.6	200.8
Total net sales	\$ 1,158.3	\$ 1,257.0	\$ 776.7
Operating profit	\$ 177.3	\$ 186.0	\$ 145.9
Acquisition-related and integration charges ^(a)	\$ 2.4	\$ 19.8	\$ 0.7
Restructuring and related charges ^(a)	\$ 7.6	\$ 3.7	\$ 12.2
Assets	\$ 2,303.4	\$ 2,074.4	\$ 1,215.7
Operating margin	15.3%	14.8%	18.8%

(a) Acquisition-related and integration charges and restructuring and related charges are included in operating profit and operating margin.

Payment & Merchandising Technologies sales decreased by \$98.7 million, or 7.9%, to \$1,158.3 million in 2019, reflecting a decrease in core sales of \$77.0 million, or 6.1%, and unfavorable foreign currency translation of \$25.7 million, or 2.0%, partially offset by an increase in sales related to acquisitions, net of \$4.0 million, or 0.3%.

- Sales of Payment Acceptance and Dispensing Products increased \$14.4 million, or 2.4%, to \$608.6 million in 2019. The increase reflected higher core sales of \$28.8 million, or 4.9%, partially offset by unfavorable foreign currency translation of \$10.4 million, or 1.8%, as the British pound weakened against the U.S. dollar and a loss of sales related to a small divestiture of \$4.0 million, or 0.7%. The core sales increase primarily reflected higher sales to the retail vertical market.
- Sales of Banknotes and Security Products decreased \$105.4 million, or 23.0%, to \$352.8 million in 2019. The decrease reflected lower core sales of \$99.9 million, or 21.8%, and unfavorable foreign currency translation of \$13.5 million, or 2.9%, as the euro weakened against the U.S. dollar, partially offset by a benefit of \$8.0 million, or 1.7%, due to the acquisition of Crane Currency on January 10, 2018. The core sales decline primarily reflected the absence of sales to Venezuela and to a lesser extent lower sales to the U.S. Government, partially offset by higher sales to other international customers.
- Sales of Merchandising Equipment decreased \$7.7 million, or 3.8%, to \$196.9 million in 2019. The decrease reflected a core sales decline of \$5.9 million, or 2.9%, and unfavorable foreign currency of \$1.8 million, or 0.9%. The core sales decrease primarily reflected lower sales of vending equipment to the U.S. market.

Payment & Merchandising Technologies operating profit decreased by \$8.7 million, or 4.7%, to \$177.3 million in 2019. The decrease was driven by the impact from lower sales volume, unfavorable sales mix and a \$3.9 million increase in restructuring and related charges, partially offset by productivity savings, repositioning benefits, \$17.4 million of lower acquisition-related and integration charges and the absence of \$8.7 million of inventory step-up and backlog amortization recorded in 2018 associated with the Crane Currency acquisition.

AEROSPACE & ELECTRONICS

(in millions, except %) For the year ended December 31,	2019	2018	2017
Net sales by product line:			
Commercial Original Equipment	\$ 357.2	\$ 343.4	\$ 346.1
Military Original Equipment	217.2	195.7	159.0
Commercial Aftermarket	161.4	150.5	134.0
Military Aftermarket	63.0	53.9	52.3
Total net sales	\$ 798.8	\$ 743.5	\$ 691.4
Operating profit	\$ 189.4	\$ 164.2	\$ 160.3
Restructuring and related charges (gains), net ^(a)	\$ 2.3	\$ 1.0	\$ (9.8)
Assets	\$ 638.1	\$ 603.9	\$ 573.0
Operating margin	23.7%	22.1%	23.2%

(a) Restructuring and related charges (gains), net are included in operating profit and operating margin.

Aerospace & Electronics sales increased \$55.3 million, or 7.4%, to \$798.8 million in 2019. The commercial market and military market accounted for 65% and 35%, respectively, of total segment sales in 2019. Sales to OEM and aftermarket customers in 2019 were 72% and 28% of total sales, respectively.

- Sales of Commercial Original Equipment increased by \$13.8 million, or 4.0%, to \$357.2 million in 2019, primarily reflected higher commercial aircraft build rates.
- Sales of Military Original Equipment increased by \$21.5 million, or 11.0%, to \$217.2 million in 2019, primarily reflecting higher sales related to a few large military aircraft and communications platforms.
- Sales of Commercial Aftermarket increased by \$10.9 million, or 7.2%, to \$161.4 million in 2019, primarily reflecting higher sales of commercial spares.
- Sales of Military Aftermarket increased by \$9.1 million, or 16.9%, to \$63.0 million in 2019, primarily reflecting higher sales of military spares.

Aerospace & Electronics operating profit increased by \$25.2 million, or 15.3%, to \$189.4 million in 2019, primarily as a result of the impact from higher sales volumes, productivity savings and favorable sales mix, partially offset by higher material costs and \$1.3 million of higher restructuring and related charges.

ENGINEERED MATERIALS

(in millions, except %) For the year ended December 31,	2019	2018	2017
Net sales by product line:			
FRP- Recreational Vehicles	\$ 84.5	\$ 119.0	\$ 150.5
FRP- Building Products	91.9	92.2	95.2
FRP- Transportation	32.2	32.0	29.7
Total net sales	\$ 208.6	\$ 243.2	\$ 275.4
Operating profit	\$ 26.8	\$ 37.8	\$ 49.4
Assets	\$ 219.6	\$ 222.1	\$ 220.8
Operating margin	12.9%	15.5%	17.9%

Engineered Materials sales decreased by \$34.6 million, or 14.2%, to \$208.6 million in 2019.

- Sales of FRP panels to RV manufacturers decreased by \$34.5 million, or 29.0%, to \$84.5 million in 2019, reflecting lower RV industry production rates.
- Sales of FRP to building products customers decreased \$0.3 million, or 0.3%, to \$91.9 million in 2019.
- Sales of FRP to transportation customers increased \$0.2 million, or 0.6%, to \$32.2 million in 2019.

Engineered Materials operating profit decreased by \$11.0 million, or 29.1%, to \$26.8 million in 2019, primarily reflecting the impact from the lower RV sales volumes, partially offset by productivity savings and higher pricing.

CORPORATE

(in millions) For the year ended December 31,	2019	2018	2017
Corporate expense	\$ (66.9)	\$ (65.5)	\$ (68.9)
Corporate — Asbestos provision, net	(229.0)	—	—
Corporate — Environmental provision, net	(18.9)	—	—
Total Corporate expense	\$ (314.8)	\$ (65.5)	\$ (68.9)
Acquisition-related and integration charges ^(a)	\$ 2.2	\$ —	\$ 4.2

(a) Acquisition-related and integration charges are included in Corporate expense

Total Corporate expense was higher by \$249.3 million in 2019 due to a pre-tax asbestos provision, net of insurance recoveries of \$229.0 million and a pre-tax environmental provision, net of reimbursements of \$18.9 million. See Note 12, "Commitments and Contingencies" in the Notes to Consolidated Financial Statements for further discussion related to the asbestos and environmental provisions.

INTEREST AND MISCELLANEOUS INCOME, NET

(in millions) For the year ended December 31,	2019	2018	2017
Interest income	\$ 2.7	\$ 2.3	\$ 2.5
Interest expense	\$ (46.8)	\$ (50.9)	\$ (36.1)
Miscellaneous income, net	\$ 4.4	\$ 18.7	\$ 12.7

Miscellaneous income, net decreased \$14.3 million, or 76.5%, primarily reflecting a lower net periodic pension benefit, partially offset by a realized gain recognized on marketable securities. The lower pension net periodic benefit primarily reflected a non-service pension cost adjustment related to a reduction in expected pension returns.

INCOME TAX

(in millions, except %) For the year ended December 31,	2019	2018	2017
Income before tax — U.S.	\$ 64.0	\$ 296.4	\$ 270.1
Income before tax — non-U.S.	106.7	115.0	97.4
Income before tax — worldwide	\$ 170.7	\$ 411.4	\$ 367.5
Provision for income taxes	\$ 37.1	\$ 75.9	\$ 195.0
Effective tax rate	21.7%	18.4%	53.1%

Our effective tax rate is affected by a number of items, both recurring and discrete, including the amount of income we earn in different jurisdictions and their respective statutory tax rates, acquisitions and dispositions, changes in the valuation of our deferred tax assets and liabilities, changes in tax laws, regulations and accounting principles, the continued availability of statutory tax credits and deductions, and examinations initiated by tax authorities around the world. See "Application of Critical Accounting Policies" included later in this Item 7 for additional information about our provision for income taxes. A reconciliation of the statutory U.S. federal tax rate to our effective tax rate is set forth in Part II, Item 8 under Note 9, "Income Taxes" in the Notes to Consolidated Financial Statements.

LIQUIDITY AND CAPITAL RESOURCES

(in millions) For the year ended December 31,	2019	2018	2017
Net cash provided by (used in):			
Operating activities	\$ 393.9	\$ 413.8	\$ 317.5
Investing activities	(221.0)	(752.3)	(86.7)
Financing activities	(124.6)	(7.9)	(80.8)
Effect of exchange rates on cash and cash equivalents	2.2	(16.4)	46.5
Increase (decrease) in cash and cash equivalents	\$ 50.5	\$ (362.8)	\$ 196.5

Our operating philosophy is to deploy cash provided from operating activities, when appropriate, to provide value to shareholders by reinvesting in existing businesses, by making acquisitions that will strengthen and complement our portfolio, by divesting businesses that are no longer strategic and by paying dividends and/or repurchasing shares.

Our current cash balance, together with cash we expect to generate from future operations along with our commercial paper program or borrowings available under our revolving credit facility, is expected to be sufficient to finance our short- and long-term capital requirements, as well as to fund payments associated with our asbestos and environmental liabilities and expected pension contributions. In addition, we believe our investment grade credit ratings afford us adequate access to public and private debt markets.

Operating Activities

Cash provided by operating activities, a key source of our liquidity, was \$393.9 million in 2019, compared to \$413.8 million in 2018. The decrease in cash provided by operating activities was primarily driven by higher working capital requirements, principally due to significant cash receipts from Venezuela in 2018 that did not repeat in 2019, and partially offset by a decrease in pension and postretirement contributions and net asbestos-related payments. Net asbestos-related payments in 2019 and 2018 were \$41.5 million and \$63.9 million, respectively. In 2020, we expect to make payments related to asbestos settlement and defense costs, net of related insurance recoveries, of approximately \$50 million.

Investing Activities

Cash flows relating to investing activities consist primarily of cash used for acquisitions, capital expenditures and cash provided by divestitures of businesses or assets. Cash used for investing activities was \$221.0 million in 2019, compared to \$752.3 million in 2018. The decrease in cash used for investing activities was driven by lower net cash paid in 2019 of \$491.8 million for acquisitions and, to a lesser extent, lower capital expenditures. In 2019, we paid \$156.2 million, net of cash acquired, for the acquisition of Cummins-Allison; this compares to cash paid of \$648.0 million in 2018 for the Crane Currency acquisition. Capital expenditures are made primarily for increasing capacity, replacing equipment, supporting new product development and improving information systems. We expect capital expenditures of approximately \$75 million in 2020.

Financing Activities

Financing cash flows consist primarily of dividend payments to shareholders, share repurchases, repayments of indebtedness, proceeds from the issuance of commercial paper and proceeds from the issuance of common stock. Cash used for financing activities was \$124.6 million in 2019, compared to \$7.9 million in 2018. The increase in cash used was driven by \$69.4 million of lower debt and commercial paper proceeds, net of repayments, \$29.8 million of higher cash used for the repurchase of shares and \$9.7 million of higher dividend payments. In 2019, we issued \$150 million of commercial paper to fund the acquisition of Cummins-Allison and paid the outstanding amount of \$103.4 million due under the syndicated loan facility and the building loan facility which we assumed in 2018 as part of the Crane Currency acquisition.

Financing Arrangements

Total debt was \$991.4 million and \$949.2 million as of December 31, 2019 and 2018, respectively. Our indebtedness as of December 31, 2019 was as follows:

- \$149.4 million of commercial paper;
- \$298.9 million of 4.45% notes due 2023;
- \$198.3 million of 6.55% notes due 2036; and
- \$346.1 million of 4.20% notes due 2048.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

As of December 31, 2019, our total debt to total capitalization ratio was 40.2%, computed as follows:

(in millions)	
Commercial paper	\$ 149.4
Long-term debt	842.0
Total indebtedness	\$ 991.4
Total shareholders' equity	1,473.7
Capitalization	\$ 2,465.1
Total indebtedness to capitalization	40.2%

See Part II, Item 8 under Note 13, "Financing," in the Notes to Consolidated Financial Statements for details regarding our financing arrangements.

Credit Ratings

As of December 31, 2019, our senior unsecured debt was rated BBB by S&P Global Ratings with a Stable outlook and Baa2 with a Stable outlook by Moody's Investors Service. We believe that these ratings afford us adequate access to the public and private debt markets.

Contractual Obligations

Under various agreements, we are obligated to make future cash payments in fixed amounts. These include payments under our long-term debt agreements and rent payments required under operating lease agreements. The following table summarizes our fixed cash obligations as of December 31, 2019:

(in millions)	Payment due by Period				
	Total	2020	2021 -2022	2023 -2024	2025 and after
Debt ^(a)	\$ 999.4	\$ 149.4	\$ —	\$ 300.0	\$ 550.0
Fixed interest payments	688.6	41.2	82.3	68.4	496.7
Operating lease payments	151.7	27.7	41.8	27.7	54.5
Purchase obligations	123.1	85.8	36.8	0.5	—
Pension and postretirement benefits ^(b)	572.2	51.9	106.8	112.3	301.2
Other long-term liabilities reflected on Consolidated Balance Sheets ^(c)	—	—	—	—	—
Total	\$ 2,535.0	\$ 356.0	\$ 267.7	\$ 508.9	\$ 1,402.4

(a) Debt includes commercial paper and scheduled principal payments.

(b) Pension benefits are funded by the respective pension trusts. The postretirement benefit component of the obligation is approximately \$2.3 million per year for which there is no trust and will be directly funded by us. Pension benefits are included through 2029.

(c) As the timing of future cash outflows is uncertain, the following long-term liabilities (and related balances) are excluded from the above table: Long-term asbestos liability (\$646.6 million), long-term environmental liability (\$36.0 million) and gross unrecognized tax benefits (\$39.8 million) and related gross interest and penalties (\$8.0 million).

Capital Structure

The following table sets forth our capitalization:

(in millions, except %) December 31,	2019	2018
Commercial paper and current maturities of long-term debt	\$ 149.4	\$ 6.9
Long-term debt	842.0	942.3
Total debt	991.4	949.2
Less cash and cash equivalents	393.9	343.4
Net debt *	597.5	605.8
Equity	1,476.3	1,527.1
Net capitalization*	\$ 2,073.8	\$ 2,132.9
Net debt to equity*	40.5%	39.7%
Net debt to net capitalization*	28.8%	28.4%

* Net debt, a non-GAAP measure, represents total debt less cash and cash equivalents. Net debt is comprised of components disclosed above which are presented on our Consolidated Balance Sheets. We report our financial results in accordance with U.S. generally accepted accounting principles (U.S. GAAP). However, management believes that certain non-GAAP financial measures, which include the presentation of net debt, provide useful information about our ability to satisfy our debt obligation with currently available funds. Management also uses these non-GAAP financial measures in making financial, operating, planning and compensation decisions and in evaluating our performance.

Non-GAAP financial measures, which may be inconsistent with similarly captioned measures presented by other companies, should be viewed in the context of the definitions of the elements of such measures we provide and in addition to, and not as a substitute for, our reported results prepared and presented in accordance with U.S. GAAP.

In 2019, equity decreased \$50.8 million as a result of cash dividends of \$93.2 million, share repurchases of \$79.9 million, and changes in pension and post retirement plan assets and benefit obligations, net of tax of \$47.7 million. These decreases were partially offset by net income before allocations to noncontrolling interests of \$133.6 million, and the impact of equity based awards and related settlement activities of \$25.4 million and currency translation adjustment of \$11.5 million.

Off Balance Sheet Arrangements

We do not have any majority-owned subsidiaries that are not included in the consolidated financial statements, nor do we have any interests in or relationships with any special purpose off balance sheet financing entities.

OUTLOOK

Overall

Our sales depend heavily on industries that are cyclical in nature or are subject to market conditions which may cause customer demand for our products to be volatile and unpredictable. Demand in these industries is affected by fluctuations in domestic and international economic conditions, as well as currency fluctuations, commodity costs, and a variety of other factors.

For 2020, we expect a total year-over-year sales increase of approximately 7%, driven by acquisition benefits of approximately 8%, partially offset by a slight core sales decline and unfavorable foreign exchange. We expect an improvement in operating profit, driven primarily by the asbestos and environmental provisions recorded in 2019 that will not repeat in 2020.

Fluid Handling

In 2020, we expect Fluid Handling sales to increase in the mid single-digit range compared to 2019, driven by a mid single-digit contribution from the I&S acquisition, partially offset by slightly unfavorable foreign currency translation, with core sales approximately flat.

We expect Process Valves and Related Products sales to increase in the high single-digit range compared to 2019, driven by low double digit growth from acquisitions, partially offset by unfavorable foreign exchange and a slight core sales decline.

Excluding foreign exchange, we expect order rates in 2020 to be similar to order rates in 2019, reflecting low growth end market activity. We expect Commercial Valves sales to increase slightly compared to 2019, driven by low single-digit core growth, largely offset by unfavorable foreign exchange. We expect Pumps and Systems sales to increase in the low single-digit range compared to 2019, driven by growth in the U.S. municipal and non-residential construction markets.

For the segment, we expect an improvement in operating profit and operating margin compared to 2019, driven by lower restructuring and related costs, strong productivity and restructuring savings.

Payment & Merchandising Technologies

In 2020, we expect Payment & Merchandising Technologies sales to increase in the mid-teens range compared to 2019, driven primarily by benefits from the Cummins-Allison acquisition and a low single-digit increase in core sales, partially offset by a small impact from unfavorable foreign exchange.

At Crane Payment Innovations, we expect core sales growth in the low- to mid-single digit range, driven primarily by growth in the retail vertical market. At Crane Currency, we expect core sales to increase slightly compared to 2019. At Crane Merchandising Systems, we expect a mid-single digit decline in core sales.

We expect the segment's operating profit to increase compared to 2019, driven by productivity and repositioning savings. We expect operating margins to be comparable to 2019.

Aerospace & Electronics

In 2020, we expect Aerospace & Electronics core sales to decline in the low to mid single-digit range compared to 2019. We expect a decline in our commercial OEM business driven by the temporary impact of Boeing halting production of the 737 MAX for a portion of 2020, although we expect that commercial market conditions will remain generally positive. We expect a modest decline in our commercial aftermarket business following two years of very strong growth. We expect mid-single digit growth in our defense OEM and aftermarket businesses given continued government investment in military readiness. We expect segment operating profit and operating margin to decrease compared to 2019 driven primarily by the impact of the lower volumes, partially offset by improved productivity and lower restructuring and related costs.

Engineered Materials

In 2020, we expect the Engineered Materials segment sales to decline slightly compared to 2019, primarily related to lower recreational vehicle industry build rates. Segment operating profit and operating margin are expected to increase slightly compared to 2019 driven by strong productivity, partially offset by the impact of the lower volumes.

APPLICATION OF CRITICAL ACCOUNTING POLICIES

Our consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States. Our significant accounting policies are more fully described in Part II, Item 8 under Note 1, "Nature of Operations and Significant Accounting Policies" in the Notes to Consolidated Financial Statements. Certain accounting policies require us to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expense during the reporting period. On an ongoing basis, we evaluate our estimates and assumptions, and the effects of revisions are reflected in the financial statements in the period in which they are determined to be necessary. The accounting policies described below are those that most frequently require us to make estimates and judgments and, therefore, are critical to understanding our results of operations. We have discussed the development and selection of these accounting estimates and the related disclosures with the Audit Committee of our Board of Directors.

Revenue Recognition. In accordance with Accounting Standards Codification ("ASC") Topic 606 "Revenue from Contracts with Customers," we recognize revenue when control of the promised goods or services in a contract transfers to the customer, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. We account for a contract when both parties have approved and committed to the terms, each party's rights and payment obligations under the contract are identifiable, the contract has commercial substance, and it is probable that we will collect substantially all of the consideration.

We primarily generate revenue through the manufacture and sale of engineered industrial products. Each product within a contract generally represents a separate performance obligation, as we do not provide a significant service of integrating or installing the products, the products do not customize each other, and the products can function independently of each other. Control of products generally transfers to the customer at a point in time, as the customer does not control the products as they are manufactured. We exercise judgment and consider the timing of right to payment, transfer of risk and rewards, transfer of title, transfer of physical possession, and customer acceptance when determining when control transfers to the customer. As a result, revenue from the sale of products is generally recognized at a point in time - either upon shipment or delivery - based on the specific shipping terms in the contract.

When products are customized or products are sold directly to the U.S. government or indirectly to the U.S. government through subcontracts, revenue is recognized over time because control is transferred continuously to customers, as the contract progresses. We exercise judgment to determine whether the products have an alternative use to us. When an alternative use does not exist for these products and we are entitled to payment for performance completed to date which includes a reasonable profit margin, revenue is recognized over time. When a contract with the U.S. government or subcontract for the U.S. government contains clauses indicating that the U.S. government owns any work-in-progress as the contracted product is being built, revenue is recognized over time. The measure of progress applied by us is the cost-to-cost method as this provides the most faithful depiction of the pattern of transfer of control. Under this method, we measure progress by comparing costs incurred to date to the total estimated costs to provide the performance obligation. This method effectively reflects our progress toward completion, as this methodology includes any work-in-process amounts as part of the measure of progress. Costs incurred represent work performed, which corresponds with, and thereby depicts, the transfer of control to the customer. Total revenue recognized and cost estimates are updated on a monthly basis.

Income Taxes. We account for income taxes in accordance with ASC Topic 740 "Income Taxes" ("ASC 740"), which requires an asset and liability approach for the financial accounting and reporting of income taxes. Under this method, deferred income taxes are recognized for the expected future tax consequences of differences between the tax bases of assets and liabilities and their reported amounts in the financial statements. These balances are measured using the enacted tax rates expected to apply in the year(s) in which these temporary differences are expected to reverse. The effect of a change in tax rates on deferred income taxes is recognized in income in the period when the change is enacted.

Based on consideration of all available evidence regarding their utilization, we record net deferred tax assets to the extent that it is more likely than not that they will be realized. Where, based on the weight of all available evidence, it is more likely than not that some amount of a deferred tax asset will not be realized, we establish a valuation allowance for the amount that, in our judgment, is sufficient to reduce the deferred tax asset to an amount that is more likely than not to be realized. The evidence we consider in reaching such conclusions includes, but is not limited to; (1) future reversals of existing taxable temporary differences, (2) future taxable income exclusive of reversing taxable temporary differences, (3) taxable income in prior carryback year(s) if carryback is permitted under the tax law, (4) cumulative losses in recent years, (5) a history of tax losses or credit carryforwards expiring unused, (6) a carryback or carryforward period that is so brief it limits realization of tax benefits, and (7) a strong earnings history exclusive of the loss that created the carryforward and support showing that the loss is an aberration rather than a continuing condition.

We account for unrecognized tax benefits in accordance with ASC 740, which prescribes a minimum probability threshold that a tax position must meet before a financial statement benefit is recognized. The minimum threshold is defined as a tax

position that is more likely than not to be sustained upon examination by the applicable taxing authority, including resolution of any related appeals or litigation, based solely on the technical merits of the position. The tax benefit recognized is the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement.

We recognize interest and penalties related to unrecognized tax benefits within the income tax expense line of the Consolidated Statement of Operations, while accrued interest and penalties are included within the related tax liability line of the Consolidated Balance Sheets.

Goodwill and Other Intangible Assets. As of December 31, 2019, we had \$1,472.4 million of goodwill. Our business acquisitions typically result in the generation of goodwill and other intangible assets. We follow the provisions under ASC Topic 350, "Intangibles – Goodwill and Other" as it relates to the accounting for goodwill in our consolidated financial statements. These provisions require that we, on at least an annual basis, evaluate the fair value of the reporting units to which goodwill is assigned and attributed and compare that fair value to the carrying value of the reporting unit to determine if impairment exists. Impairment testing takes place more often than annually if events or circumstances indicate a change in the impairment status. A reporting unit is an operating segment unless discrete financial information is prepared and reviewed by segment management for businesses one level below that operating segment (a "component"), in which case the component would be the reporting unit. As of December 31, 2019, we had eight reporting units.

When performing our annual impairment assessment, we compare the fair value of each of our reporting units to their respective carrying value. Goodwill is considered to be potentially impaired when the net book value of a reporting unit exceeds its estimated fair value. Fair values are established primarily by discounting estimated future cash flows at an estimated cost of capital which varies for each reporting unit and which, as of our most recent annual impairment assessment, ranged between 9.5% and 12.5% (a weighted average of 10.6%), reflecting the respective inherent business risk of each of the reporting units tested. This methodology for valuing our reporting units (commonly referred to as the Income Method) has not changed from the prior year. The determination of discounted cash flows is based on the businesses' strategic plans and long-range planning forecasts, which change from year to year. The revenue growth rates included in the forecasts represent our best estimates based on current and forecasted market conditions, and the profit margin assumptions are projected by each reporting unit based on the current cost structure and anticipated net cost increases/reductions. There are inherent uncertainties related to these assumptions, including changes in market conditions, and management's judgment in applying them to the analysis of goodwill impairment. In addition to the foregoing, for each reporting unit, market multiples are used to corroborate our discounted cash flow results where fair value is estimated based on earnings before income taxes, depreciation, and amortization ("EBITDA") and revenue multiples determined by available public information of comparable businesses. While we believe we have made reasonable estimates and assumptions to calculate the fair value of our reporting units, it is possible a material change could occur. If actual results are not consistent with management's estimates and assumptions, goodwill and other intangible assets may be overstated and a charge would need to be taken against net earnings. Furthermore, in order to evaluate the sensitivity of the fair value calculations on the goodwill impairment test, we applied a hypothetical, reasonably possible 10% decrease to the fair values of each reporting unit. The effects of this hypothetical 10% decrease would still result in a fair value calculation exceeding our carrying value for each of our reporting units. No impairment charges have been required during 2019, 2018 or 2017.

As of December 31, 2019, we had \$505.1 million of net intangible assets, of which \$69.9 million were intangibles with indefinite useful lives, consisting of trade names. Intangibles with indefinite useful lives are tested annually for impairment, or when events or changes in circumstances indicate the potential for impairment. If the carrying amount of an indefinite lived intangible asset exceeds its fair value, the intangible asset is written down to its fair value. Fair value is calculated using relief of royalty method. We amortize the cost of definite-lived intangibles over their estimated useful lives.

In addition to annual testing for impairment of indefinite-lived intangible assets, we review all of our definite-lived intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Examples of events or changes in circumstances could include, but are not limited to, a prolonged economic downturn, current period operating or cash flow losses combined with a history of losses or a forecast of continuing losses associated with the use of an asset or asset group, or a current expectation that an asset or asset group will be sold or disposed of before the end of its previously estimated useful life. Recoverability is based upon projections of anticipated future undiscounted cash flows associated with the use and eventual disposal of the definite-lived intangible asset (or asset group), as well as specific appraisal in certain instances. Reviews occur at the lowest level for which identifiable cash flows are largely independent of cash flows associated with other long-lived assets or asset groups and include estimated future revenues, gross profit margins, operating profit margins and capital expenditures which are based on the businesses' strategic plans and long-range planning forecasts, which change from year to year. The revenue growth rates included in the forecasts represent our best estimates based on current and forecasted market conditions, and the profit margin assumptions are based on the current cost structure and anticipated net cost increases/reductions. There are inherent uncertainties related to these assumptions, including changes in market conditions, and management's judgment in applying them to the analysis. If the future undiscounted cash

flows are less than the carrying value, then the definite-lived intangible asset is considered impaired and a charge would be taken against net earnings based on the amount by which the carrying amount exceeds the estimated fair value. Judgments which impact these assessments relate to the expected useful lives of definite-lived assets and our ability to realize any undiscounted cash flows in excess of the carrying amounts of such assets, and are affected primarily by changes in the expected use of the assets, changes in technology or development of alternative assets, changes in economic conditions, changes in operating performance and changes in expected future cash flows. Since judgment is involved in determining the recoverable amount of definite-lived intangible assets, there is risk that the carrying value of our definite-lived intangible assets may require adjustment in future periods. Historical results to date have generally approximated expected cash flows for the identifiable cash flow generating level. We believe there have been no events or circumstances which would more likely than not reduce the fair value of our indefinite-lived or definite-lived intangible assets below their carrying value.

Asbestos Liability and Related Insurance Coverage and Receivable. We retained an independent actuarial firm to assist management in estimating our asbestos liability in the tort system. The actuarial consultants review information provided by us concerning claims filed, settled and dismissed, amounts paid in settlements and relevant claim information such as the nature of the asbestos-related disease asserted by the claimant, the jurisdiction where filed and the time lag from filing to disposition of the claim. The methodology used by the actuarial consultants to project future asbestos costs is based on our recent historical experience for claims filed, settled and dismissed during a base reference period. Our experience is then compared to estimates of the number of individuals likely to develop asbestos-related diseases determined based on widely used previously conducted epidemiological studies augmented with current data inputs. Those studies were undertaken in connection with national analyses of the population of workers believed to have been exposed to asbestos. Using that information, the actuarial consultants estimate the number of future claims that would be filed against us and estimates the aggregate settlement or indemnity costs that would be incurred to resolve both pending and future claims based upon the average settlement costs by disease during the reference period. This methodology has been accepted by numerous courts. After discussions with us, the actuarial consultants augment our liability estimate for the costs of defending asbestos claims in the tort system using a forecast from us which is based upon discussions with our defense counsel. Based on this information, the actuarial consultants compile an estimate of our asbestos liability for pending and future claims using a range of reference periods based on claim experience and covering claims expected to be filed through the indicated forecast period. The most significant factors affecting the liability estimate are (1) the number of new mesothelioma claims filed against us, (2) the average settlement costs for mesothelioma claims, (3) the percentage of mesothelioma claims dismissed against us and (4) the aggregate defense costs incurred by us. These factors are interdependent, and no one factor predominates in determining the liability estimate. These factors have both positive and negative effects on the dynamics of asbestos litigation in the tort system and the related best estimate of our asbestos liability, and these effects do not move in a linear fashion but rather change over multi-year periods. Accordingly, we continue to monitor these trend factors over time and periodically assesses whether an alternative forecast period is appropriate.

With the assistance of our actuarial consultants, effective as of December 31, 2019, we updated our estimate of the asbestos liability, including the costs of settlement or indemnity payments and defense costs relating to currently pending claims and future claims projected to be filed against us through 2059. Our estimate of the asbestos liability for pending and future claims through 2059 is based on the projected future asbestos costs resulting from our experience using a range of reference periods for claims filed, settled and dismissed. Based on this estimate, we recorded an additional liability of \$255 million (an aggregate asbestos liability of \$712 million) as of December 31, 2019. Estimation of our exposure for asbestos-related claims is subject to significant uncertainties, as there are multiple variables that can affect the timing, severity and quantity of claims and the manner of their resolution.

In conjunction with developing the aggregate liability estimate referenced above, we also developed an estimate of probable insurance recoveries for our asbestos liabilities. As of December 31, 2019, we had an aggregate asbestos insurance receivable of \$98 million. In developing this estimate, we considered our coverage-in-place and other settlement agreements, as well as a number of additional factors. These additional factors include the financial viability of the insurance companies, the method by which losses will be allocated to the various insurance policies and the years covered by those policies, how settlement and defense costs will be covered by the insurance policies and interpretation of the effect on coverage of various policy terms and limits and their interrelationships.

Environmental. For environmental matters, we record a liability for estimated remediation costs when it is probable that we will be responsible for such costs and they can be reasonably estimated. Generally, third party specialists assist in the estimation of remediation costs. The environmental remediation liability as of December 31, 2019 is substantially all for the former manufacturing site in Goodyear, Arizona (the "Goodyear Site"). Estimates of our environmental liabilities at the Goodyear Site are based on currently available facts, present laws and regulations and current technology available for remediation, and are recorded on an undiscounted basis. These estimates consider our prior experience in the Goodyear Site investigation and remediation, as well as available data from, and in consultation with, our environmental specialists. Estimates at the Goodyear Site are subject to significant uncertainties caused primarily by the dynamic nature of the Goodyear Site conditions, the range of remediation alternatives available, together with the corresponding estimates of cleanup methodology and costs, as well as ongoing, required regulatory approvals, primarily from the EPA. During the fourth quarter of 2019, we received conceptual agreement from the EPA on an alternative remediation strategy which is expected to further reduce the contaminant plume. Accordingly, we recorded a pre-tax charge of \$18.9 million, net of reimbursements, to extend our forecast period through 2027 and reflect our revised workplan. The total estimated gross liability was \$46.9 million as of December 31, 2019.

On July 31, 2006, we entered into a consent decree with the U.S. Department of Justice on behalf of the Department of Defense and the Department of Energy pursuant to which, among other things, the U.S. Government reimburses us for 21% of qualifying costs of investigation and remediation activities at the Goodyear Site. We have recorded a receivable of \$9.7 million for the expected reimbursements from the U.S. Government in respect of the aggregate liability as of December 31, 2019.

Pension Plans. In the United States, we sponsor a defined benefit pension plan that covers approximately 18% of all U.S. employees. Effective January 1, 2013, pension eligible non-union employees no longer earn future benefits in the domestic defined benefit pension plan. The benefits are based on years of service and compensation on a final average pay basis, except for certain hourly employees where benefits are fixed per year of service. Charges to expense are based upon costs computed by an independent actuary. Contributions are intended to provide for future benefits earned to date. As of December 31, 2018, the Crane Currency pension plan was merged into our U.S. defined benefit pension plan. Benefit accruals for the Crane Currency employees ended July 1, 2018. Additionally, a number of our non-U.S. subsidiaries sponsor defined benefit pension plans that cover approximately 8% of all non-U.S. employees. The benefits are typically based upon years of service and compensation. These plans are funded by company contributions to a trust fund, which is held for the sole benefit of plan participants and beneficiaries.

The expected return on plan assets component of net periodic benefit cost is determined by applying the assumed expected return on plan assets to the fair value of plan assets. For one of the U.K. pension plans, a market-related value of assets is used in lieu of the fair value of plan assets for this purpose. The net actuarial loss (gain) is amortized to the extent that it exceeds 10% of the greater of the fair value of plan assets and the projected benefit obligation. The amortization period is the average life expectancy of plan participants for most plans. The amortization period for plans with a significant number of active participants accruing benefits is the average future working lifetime of plan participants. The prior service cost (credit) is amortized over the average future working lifetime of plan participants whose prior service benefits were changed.

The net periodic pension benefit was \$0.6 million, \$15.3 million and \$8.2 million in 2019, 2018 and 2017, respectively. The net periodic pension benefit was \$14.7 million lower in 2019 compared to 2018, driven by lower expected return on plan assets for both U.S. and non U.S. plans. Employer cash contributions were \$4.2 million, \$57.5 million (includes a \$28 million discretionary contribution) and \$12.7 million in 2019, 2018 and 2017, respectively.

Holding all other factors constant, a decrease in the expected long-term rate of return on plan assets by 0.25 percentage points would have increased 2019 pension expense by \$1.0 million for U.S. pension plans and \$1.2 million for non-U.S. pension plans. Also, holding all other factors constant, a decrease in the discount rate used to determine net periodic pension cost by 0.25 percentage points would have increased 2019 pension expense by \$0.1 million for U.S. pension plans and \$0.8 million for non-U.S. pension plans.

The weighted average assumptions used to determine benefit obligations and net periodic benefit cost are as follows:

For the year ended December 31,	Pension Benefits		
	2019	2018	2017
Benefit Obligations			
U.S. Plans:			
Discount rate	3.34%	4.36%	3.75%
Rate of compensation increase	N/A	N/A	N/A
Non-U.S. Plans:			
Discount rate	1.70%	2.42%	2.15%
Rate of compensation increase	2.89%	3.06%	2.80%
Net Periodic Benefit Cost			
U.S. Plans:			
Discount rate	4.36%	3.75%	4.29%
Expected rate of return on plan assets	7.25%	7.75%	7.75%
Rate of compensation increase	N/A	N/A	N/A
Non-U.S. Plans:			
Discount rate	2.42%	2.15%	2.29%
Expected rate of return on plan assets	5.34%	6.49%	6.45%
Rate of compensation increase	3.06%	2.80%	2.85%

The long-term expected rate of return on plan assets assumptions were determined with input from independent investment consultants and plan actuaries, utilizing asset pricing models and considering historic returns. The discount rates we used for valuing pension liabilities are based on a review of high quality corporate bond yields with maturities approximating the remaining life of the projected benefit obligation.

Recent Accounting Pronouncements

Information regarding new accounting pronouncements is included in Part II, Item 8 under Note 1 to the Consolidated Financial Statements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Our cash flows and earnings are subject to fluctuations from changes in interest rates and foreign currency exchange rates. We manage our exposures to these market risks through internally established policies and procedures and, when deemed appropriate, through the use of interest-rate swap agreements and forward exchange contracts. We do not enter into derivatives or other financial instruments for trading or speculative purposes.

Total debt outstanding was \$991.4 million as of December 31, 2019, which was at fixed rates of interest ranging from 2.05% to 6.55%.

The following is an analysis of the potential changes in interest rates and currency exchange rates based upon sensitivity analysis that models effects of shifts in rates. These are not forecasts.

- Our year-end portfolio is comprised of fixed-rate debt; therefore, the effect of a market change in interest rates would not be significant.
- Based on a sensitivity analysis as of December 31, 2019, a 10% change in the foreign currency exchange rates for the year ended December 31, 2019 would have impacted our net earnings by approximately \$7.6 million, due primarily to the British pound and Canadian dollar. This calculation assumes that all currencies change in the same direction and proportion relative to the U.S. dollar and there are no indirect effects, such as changes in non-U.S. dollar sales volumes or prices.

Item 8. Financial Statements and Supplementary Data

MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

The accompanying consolidated financial statements of Crane Co. and subsidiaries have been prepared by management in conformity with accounting principles generally accepted in the United States of America and, in the judgment of management, present fairly and consistently the Company's financial position and results of operations and cash flows. These statements by necessity include amounts that are based on management's best estimates and judgments and give due consideration to materiality.

Management is responsible for establishing and maintaining adequate internal control over financial reporting. The Company's internal control system was designed to provide reasonable assurance to the Company's management and board of directors regarding the preparation and fair presentation of published financial statements.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019. In making its assessment, management has utilized the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in its Internal Control—Integrated Framework, released in 2013. Based on our assessment we believe that, as of December 31, 2019, the Company's internal control over financial reporting is effective based on those criteria.

Deloitte & Touche LLP, the independent registered public accounting firm that also audited the Company's consolidated financial statements included in this Annual Report on Form 10-K, audited the internal control over financial reporting as of December 31, 2019, and issued their related attestation report which is included herein.

/s/ Max H. Mitchell

Max H. Mitchell
President and Chief Executive Officer
(Principal Executive Officer)

/s/ Richard A. Maue

Richard A. Maue
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

The Section 302 certifications of the Company's Chief Executive Officer and its Principal Financial Officer have been filed as Exhibit 31 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Crane Co.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Crane Co. and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), cash flows, and changes in equity, for each of the three years in the period ended December 31, 2019, and the related notes and the schedules listed in the Index at Item 8 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 24, 2020, expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current-period audit of the financial statements that was communicated or required to be communicated to the audit committee and that (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Asbestos Liability - Refer to Note 12, Commitments and Contingencies, to the financial statements

Critical Audit Matter Description

The Company is a defendant in cases filed in numerous state and federal courts alleging injury or death of exposure to asbestos. The Company records an estimated liability related to the resolution cost of pending and future claims projected to be filed against the Company for which management believes are probable of occurring and reasonably estimable. The model utilized by the Company to estimate its asbestos liability has several factors that involve the application of significant judgement and estimates with a significant measurement of uncertainty. The most significant factors affecting the asbestos liability are (1) the number of new mesothelioma claims filed against the Company, (2) the average settlement costs for mesothelioma claims, (3) the percentage of mesothelioma claims dismissed against the Company and (4) the aggregate defense costs incurred by the Company. These factors are interdependent, and no one factor predominates in determining the liability estimate. Changes in these estimates and assumptions could have a significant impact on the asbestos liability. The current and non-current liability as of December 31, 2019 was \$65 million and \$646.6 million, respectively.

Given the subjectivity of estimating the asbestos liability, future claims, and underlying assumptions utilized by management, auditing management's judgments regarding the significant factors listed above involved especially subjective auditor judgment, including the need to involve our actuarial specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures performed on the recorded asbestos liability included the following, among others:

- We tested the design and effectiveness of controls over the asbestos liability, including those over the projection of settlement value of current and future claims.
- We obtained the System and Organization Control Report (SOC) 1 reports for the outside service providers to evaluate the processes and controls relevant to the Company's asbestos claims administration.
- With the assistance of our internal actuarial specialists, we:
 - Evaluated the reasonableness of the underlying methodology for estimating the liability.
 - Tested the completeness and accuracy of underlying source data that served as the basis for the actuarial analysis and estimates to the underlying source database, including historical claims, to test that the inputs to the actuarial estimate were reasonable.
 - Compared management's prior-year assumptions of expected development and ultimate loss to actual incurred during the current year to identify potential bias in the determination of the liability.
 - Developed a range of independent estimates based on loss information and historical and industry claim development factors and compared our estimates to the Company's estimates.
- We considered the impact of changes in the regulatory and litigation environments on management's assumptions by performing corroborating inquiries with the Company's internal and external legal counsel.
- We evaluated management's ability to accurately estimate the future liability by comparing actual results to management's historical estimates.
- We assessed the reasonableness of the forecast period used by the Company to estimate the liability.

/s/ Deloitte & Touche LLP

Stamford, CT

February 24, 2020

We have served as the Company's auditor since 1979.

CONSOLIDATED STATEMENTS OF OPERATIONS

	For the year ended December 31,		
(in millions, except per share data)	2019	2018	2017
Net sales	\$ 3,283.1	\$ 3,345.5	\$ 2,786.0
Operating costs and expenses:			
Cost of sales	2,104.1	2,156.2	1,770.9
Selling, general and administrative	698.0	721.0	605.9
Asbestos provision, net	229.0	—	—
Environmental provision, net	18.9	—	—
Restructuring charges	17.5	7.2	13.0
Acquisition-related and integration charges	5.2	19.8	7.8
Operating profit	210.4	441.3	388.4
Other income (expense):			
Interest income	2.7	2.3	2.5
Interest expense	(46.8)	(50.9)	(36.1)
Miscellaneous income, net	4.4	18.7	12.7
	(39.7)	(29.9)	(20.9)
Income before income taxes	170.7	411.4	367.5
Provision for income taxes	37.1	75.9	195.0
Net income before allocation to noncontrolling interests	133.6	335.5	172.5
Less: Noncontrolling interest in subsidiaries' earnings (loss)	0.3	(0.1)	0.7
Net income attributable to common shareholders	\$ 133.3	\$ 335.6	\$ 171.8
Basic earnings per share	\$ 2.23	\$ 5.63	\$ 2.89
Weighted average basic shares outstanding	59.8	59.6	59.4
Diluted earnings per share	\$ 2.20	\$ 5.50	\$ 2.84
Weighted average diluted shares outstanding	60.6	61.0	60.4

See Notes to Consolidated Financial Statements

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	For the year ended December 31,		
(in millions)	2019	2018	2017
Net income before allocation to noncontrolling interests	\$ 133.6	\$ 335.5	\$ 172.5
Other comprehensive (loss) income, net of tax			
Currency translation adjustment	11.5	(41.6)	86.9
Changes in pension and postretirement plan assets and benefit obligation, net of tax	(47.7)	(26.2)	9.2
Other comprehensive (loss) income, net of tax	(36.2)	(67.8)	96.1
Comprehensive income before allocation to noncontrolling interests	97.4	267.7	268.6
Less: Noncontrolling interests in comprehensive (loss) income	(0.1)	(0.3)	0.7
Comprehensive income attributable to common shareholders	\$ 97.5	\$ 268.0	\$ 267.9

CONSOLIDATED BALANCE SHEETS

	Balance as of December 31,	
(in millions, except shares and per share data)	2019	2018
Assets		
Current assets:		
Cash and cash equivalents	\$ 393.9	\$ 343.4
Current insurance receivable - asbestos	14.1	16.0
Accounts receivable, net	555.1	515.8
Inventories	457.3	411.5
Other current assets	79.5	76.2
Total current assets	1,499.9	1,362.9
Property, plant and equipment, net	616.3	599.1
Insurance receivable - asbestos	83.6	75.0
Long-term deferred tax assets	35.1	18.8
Intangible assets, net	505.1	481.8
Goodwill	1,472.4	1,403.7
Other assets	211.3	101.4
Total assets	\$ 4,423.7	\$ 4,042.7
Liabilities and equity		
Current liabilities:		
Commercial paper and current maturities of long-term debt	\$ 149.4	\$ 6.9
Accounts payable	311.1	329.2
Current asbestos liability	65.0	66.0
Accrued liabilities	378.2	337.1
U.S. and foreign taxes on income	13.0	1.0
Total current liabilities	916.7	740.2
Long-term debt	842.0	942.3
Accrued pension and postretirement benefits	298.4	244.0
Long-term deferred tax liability	55.8	53.2
Long-term asbestos liability	646.6	451.3
Other liabilities	187.9	84.6
Commitments and contingencies (Note 12)		
Equity:		
Preferred shares, par value \$.01; 5,000,000 shares authorized	—	—
Common shares, par value \$1.00; 200,000,000 shares authorized; 72,426,139 shares issued; 59,002,205 shares outstanding (59,508,401 in 2018)	72.4	72.4
Capital surplus	315.6	303.5
Retained earnings	2,112.2	2,072.1
Accumulated other comprehensive loss	(483.7)	(447.6)
Treasury stock; 13,423,934 treasury shares (12,917,713 in 2018)	(542.8)	(476.2)
Total shareholders' equity	1,473.7	1,524.2
Noncontrolling interest	2.6	2.9
Total equity	1,476.3	1,527.1
Total liabilities and equity	\$ 4,423.7	\$ 4,042.7

See Notes to Consolidated Financial Statements

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in millions)	For year ended December 31,		
	2019	2018	2017
Operating activities:			
Net income attributable to common shareholders	\$ 133.3	\$ 335.6	\$ 171.8
Noncontrolling interest in subsidiaries' earnings (loss)	0.3	(0.1)	0.7
Net income before allocations to noncontrolling interests	133.6	335.5	172.5
Asbestos provision, net	229.0	—	—
Environmental provision, net	18.9	—	—
Loss (gain) on deconsolidation of joint venture	1.2	1.7	(1.0)
Realized gain on marketable securities	(1.1)	—	—
Gain on sale of property related to facility consolidation	—	—	(11.1)
Depreciation and amortization	113.5	120.0	72.7
Stock-based compensation expense	22.3	21.6	21.8
Defined benefit plans and postretirement credit	(0.7)	(15.0)	(8.5)
Deferred income taxes	(25.1)	47.7	102.3
Cash (used for) provided by operating working capital	(40.0)	16.3	54.0
Defined benefit plans and postretirement contributions	(8.7)	(59.8)	(13.2)
Environmental payments, net of reimbursements	(8.2)	(6.3)	(6.3)
Payments for asbestos-related fees and costs, net of insurance recoveries	(41.5)	(63.9)	(62.5)
Other	0.7	16.0	(3.2)
Total provided by operating activities	393.9	413.8	317.5
Investing activities:			
Capital expenditures	\$ (68.8)	\$ (108.8)	\$ (49.0)
Proceeds from disposition of capital assets	3.1	1.9	22.3
Payments for acquisitions, net of cash acquired	(156.2)	(648.0)	(54.8)
Impact of deconsolidation of joint venture	(0.2)	2.6	(5.2)
Purchase of marketable securities	(8.8)	—	—
Proceeds from sale of marketable securities	9.9	—	—
Total used for investing activities	(221.0)	(752.3)	(86.7)
Financing activities:			
Dividends paid	\$ (93.2)	\$ (83.5)	\$ (78.4)
Reacquisition of shares on open market	(79.9)	(50.1)	(25.0)
Stock options exercised, net of shares reacquired	2.9	16.1	25.2
Debt issuance costs	—	(5.4)	(2.6)
Repayment of long-term debt	(99.4)	(452.2)	—
Repayment of short-term debt	(7.4)	(100.0)	—
Proceeds from issuance of long-term debt	3.0	567.2	—
Proceeds from issuance of short-term debt	—	100.0	—
Net proceeds from issuance of commercial paper with maturities of 90 days or less	124.4	—	—
Proceeds from issuance of commercial paper with maturities greater than 90 days	25.0	—	—
Total used for financing activities	(124.6)	(7.9)	(80.8)
Effect of exchange rates on cash and cash equivalents	2.2	(16.4)	46.5
Increase (decrease) in cash and cash equivalents	50.5	(362.8)	196.5
Cash and cash equivalents at beginning of period	343.4	706.2	509.7
Cash and cash equivalents at end of period	\$ 393.9	\$ 343.4	\$ 706.2
Detail of cash (used for) provided by operating working capital:			
Accounts receivable	\$ 3.8	\$ 4.8	\$ (10.1)
Inventories	(8.3)	(38.8)	6.4
Other current assets	(1.3)	(11.4)	0.8
Accounts payable	(23.4)	37.0	17.5
Accrued liabilities	(35.2)	40.9	30.8
U.S. and foreign taxes on income	24.4	(16.2)	8.6
Total	\$ (40.0)	\$ 16.3	\$ 54.0
Supplemental disclosure of cash flow information:			
Interest paid	\$ 47.4	\$ 47.5	\$ 36.0
Income taxes paid	\$ 37.9	\$ 58.4	\$ 84.1

See Notes to Consolidated Financial Statements

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

(in millions, except share data)	Common Shares Issued at Par Value	Capital Surplus	Retained Earnings	Accumulated Other Comprehensive Loss	Treasury Stock	Total Shareholders' Equity	Noncontrolling Interest	Total Equity
BALANCE DECEMBER 31, 2016	72.4	\$ 276.9	\$ 1,719.9	\$ (476.1)	\$ (459.3)	\$ 1,133.8	\$ 11.9	\$ 1,145.7
Net income	—	—	171.8	—	—	171.8	0.7	172.5
Cash dividends (\$1.32 per share)	—	—	(78.4)	—	—	(78.4)	—	(78.4)
Reacquisition on open market of 331,632 shares	—	—	—	—	(25.0)	(25.0)	—	(25.0)
Exercise of stock options, net of shares reacquired of 620,927	—	—	—	—	30.6	30.6	—	30.6
Stock-based compensation	—	21.8	—	—	—	21.8	—	21.8
Impact from settlement of share-based awards, net of shares acquired	—	(7.0)	—	—	1.6	(5.4)	—	(5.4)
Deconsolidation of a joint venture	—	—	—	—	—	—	(9.4)	(9.4)
Changes in pension and postretirement plan assets and benefit obligation, net of tax	—	—	—	9.2	—	9.2	—	9.2
Currency translation adjustment	—	—	—	86.8	—	86.8	0.1	86.9
BALANCE DECEMBER 31, 2017	72.4	\$ 291.7	\$ 1,813.3	\$ (380.1)	\$ (452.1)	\$ 1,345.2	\$ 3.3	\$ 1,348.5
Net income	—	—	335.6	—	—	335.6	(0.1)	335.5
Cash dividends (\$1.40 per share)	—	—	(83.5)	—	—	(83.5)	—	(83.5)
Reacquisition on open market of 582,066 shares	—	—	—	—	(50.1)	(50.1)	—	(50.1)
Cumulative effect of adoption of ASC 606	—	—	6.7	—	—	6.7	—	6.7
Exercise of stock options, net of shares reacquired of 449,948	—	—	—	—	24.0	24.0	—	24.0
Stock-based compensation	—	21.6	—	—	—	21.6	—	21.6
Impact from settlement of share-based awards, net of shares acquired	—	(9.8)	—	—	2.0	(7.8)	—	(7.8)
Changes in pension and postretirement plan assets and benefit obligation, net of tax	—	—	—	(26.2)	—	(26.2)	—	(26.2)
Currency translation adjustment	—	—	—	(41.3)	—	(41.3)	(0.3)	(41.6)
BALANCE DECEMBER 31, 2018	72.4	\$ 303.5	\$ 2,072.1	\$ (447.6)	\$ (476.2)	\$ 1,524.2	\$ 2.9	\$ 1,527.1
Net income	—	—	133.3	—	—	133.3	0.3	133.6
Cash dividends (\$1.56 per share)	—	—	(93.2)	—	—	(93.2)	—	(93.2)
Reacquisition on open market of 987,630 shares	—	—	—	—	(79.9)	(79.9)	—	(79.9)
Exercise of stock options, net of shares reacquired of 218,540	—	—	—	—	11.5	11.5	—	11.5
Stock-based compensation	—	22.3	—	—	—	22.3	—	22.3
Impact from settlement of share-based awards, net of shares acquired	—	(10.2)	—	—	1.8	(8.4)	—	(8.4)
Deconsolidation of a joint venture	—	—	—	—	—	—	(0.5)	(0.5)
Changes in pension and postretirement plan assets and benefit obligation, net of tax	—	—	—	(47.7)	—	(47.7)	—	(47.7)
Currency translation adjustment	—	—	—	11.6	—	11.6	(0.1)	11.5
BALANCE DECEMBER 31, 2019	72.4	\$ 315.6	\$ 2,112.2	\$ (483.7)	\$ (542.8)	\$ 1,473.7	\$ 2.6	\$ 1,476.3

See Notes to Consolidated Financial Statements

Note 1 – Nature of Operations and Significant Accounting Policies*Nature of Operations*

We are a diversified manufacturer of highly engineered industrial products comprised of four reporting segments: Fluid Handling, Payment & Merchandising Technologies, Aerospace & Electronics and Engineered Materials. Our primary end markets include process industries (chemical production, oil & gas, power, and general industrial), non-residential and municipal construction, payment automation solutions, banknote design and production, aerospace, defense and space, along with a wide range of general industrial and certain consumer related end markets.

See Note 3, “Segment Information” for the relative size of these segments in relation to the total company (both net sales and total assets).

Due to rounding, numbers presented throughout this report may not add up precisely to totals we provide, and percentages may not precisely reflect the absolute figures.

Significant Accounting Policies

Accounting Principles. Our consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”). The consolidated financial statements include the accounts of Crane Co. and our subsidiaries. All intercompany balances and transactions have been eliminated upon consolidation. As used in these notes, the terms “we,” “us,” “our,” “Crane” and the “Company” mean Crane Co. and our subsidiaries unless the context specifically states or implies otherwise.

Basis of presentation. Certain amounts in the prior years’ consolidated financial statements have been reclassified to conform to the current year presentation.

Use of Estimates. These accounting principles require management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expense during the reporting period. Actual results may differ from those estimated. Estimates and assumptions are reviewed periodically, and the effects of revisions are reflected in the financial statements in the period in which they are determined to be necessary. Estimates are used when accounting for such items as asset valuations, allowance for doubtful accounts, depreciation and amortization, impairment assessments, reserve for excess and obsolete inventory, reserve for warranty provision, restructuring provisions, employee benefits, taxes, asbestos liability and related insurance receivable, environmental liability and contingencies.

Currency Translation. Assets and liabilities of subsidiaries that prepare financial statements in currencies other than the U.S. dollar are translated at the rate of exchange in effect on the balance sheet date; results of operations are translated at the monthly average rates of exchange prevailing during the year. The related translation adjustments are included in accumulated other comprehensive income (loss) in a separate component of equity.

Revenue Recognition. In accordance with Accounting Standards Codification (“ASC”) Topic 606 “Revenue from Contracts with Customers,” we recognize revenue when control of the promised goods or services in a contract transfers to the customer, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. We account for a contract when both parties have approved and committed to the terms, each party’s rights and payment obligations under the contract are identifiable, the contract has commercial substance, and it is probable that we will collect substantially all of the consideration. When shipping and handling activities are performed after the customer obtains control of product, we elect to account for shipping and handling as activities to fulfill the promise to transfer the product. In determining the transaction price of a contract, we exercise judgment to determine the total transaction price when it includes estimates of variable consideration, such as rebates and milestone payments. We generally estimate variable consideration using the expected value method and consider all available information (historical, current, and forecasted) in estimating these amounts. Variable consideration is only included in the transaction price to the extent that it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. We elect to exclude from the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by us from a customer.

We primarily generate revenue through the manufacture and sale of engineered industrial products. Each product within a contract generally represents a separate performance obligation, as we do not provide a significant service of integrating or installing the products, the products do not customize each other, and the products can function independently of each other. Control of products generally transfers to the customer at a point in time, as the customer does not control the products as they

are manufactured. We exercise judgment and consider the timing of right to payment, transfer of risk and rewards, transfer of title, transfer of physical possession, and customer acceptance when determining when control transfers to the customer. As a result, revenue from the sale of products is generally recognized at a point in time - either upon shipment or delivery - based on the specific shipping terms in the contract.

When products are customized or products are sold directly to the U.S. government or indirectly to the U.S. government through subcontracts, revenue is recognized over time because control is transferred continuously to customers, as the contract progresses. We exercise judgment to determine whether the products have an alternative use to us. When an alternative use does not exist for these products and we are entitled to payment for performance completed to date which includes a reasonable profit margin, revenue is recognized over time. When a contract with the U.S. government or subcontract for the U.S. government contains clauses indicating that the U.S. government owns any work-in-progress as the contracted product is being built, revenue is recognized over time. The measure of progress applied by us is the cost-to-cost method as this provides the most faithful depiction of the pattern of transfer of control. Under this method, we measure progress by comparing costs incurred to date to the total estimated costs to provide the performance obligation. This method effectively reflects our progress toward completion, as this methodology includes any work-in-process amounts as part of the measure of progress. Costs incurred represent work performed, which corresponds with, and thereby depicts, the transfer of control to the customer. Total revenue recognized and cost estimates are updated on a monthly basis.

When there are multiple performance obligations in a single contract, the total transaction price is allocated to each performance obligation based on their relative standalone selling prices. We maximize the use of observable data inputs and consider all information (including market conditions, segment-specific factors, and information about the customer or class of customer) that is reasonably available. The standalone selling price for our products and services is generally determined using an observable list price, which differs by class of customer.

Revenue recognized from performance obligations satisfied in previous periods (for example, due to changes in the transaction price or estimates), was not material in any period.

Payment for products is due within a limited time period after shipment or delivery, and we do not offer extended payment terms. Payment is typically due within 30-90 calendar days of the respective invoice dates. Customers generally do not make large upfront payments. Any advanced payments received do not provide us with a significant benefit of financing, as the payments are meant to secure materials used to fulfill the contract, as opposed to providing us with a significant financing benefit.

When an unconditional right to consideration exists, we record these amounts as receivables. When amounts are dependent on factors other than the passage of time in order for payment from a customer to become due, we record a contract asset. Contract assets represent unbilled amounts that typically arise from contracts for customized products or contracts for products sold directly to the U.S. government or indirectly to the U.S. government through subcontracts, where revenue recognized using the cost-to-cost method exceeds the amount billed to the customer. Contract assets are assessed for impairment and recorded at their net realizable value. Contract liabilities represent advance payments from customers. Revenue related to contract liabilities is recognized when control is transferred to the customer.

We pay sales commissions related to certain contracts, which qualify as incremental costs of obtaining a contract. However, the sales commissions generally relate to contracts for products or services satisfied at a point in time or over a period of time less than one year. As a result, we apply the practical expedient that allows an entity to recognize incremental costs of obtaining a contract as an expense when incurred if the amortization period of the asset that would have been recognized is one year or less.

See Note 4, "Revenue" for further details.

Cost of Goods Sold. Cost of goods sold includes the costs of inventory sold and the related purchase and distribution costs. In addition to material, labor and direct overhead and inventoried cost, cost of goods sold include allocations of other expenses that are part of the production process, such as inbound freight charges, purchasing and receiving costs, inspection costs, warehousing costs, amortization of production related intangible assets and depreciation expense. We also include costs directly associated with products sold, such as warranty provisions.

Selling, General and Administrative Expenses. Selling, general and administrative expenses are charged to income as incurred. Such expenses include the costs of promoting and selling products and include such items as compensation, advertising, sales commissions and travel. Also included are costs related to compensation for other operating activities such as executive office administrative and engineering functions, as well as general operating expenses such as office supplies, non-income taxes, insurance and office equipment rentals.

Income Taxes. We account for income taxes in accordance with ASC Topic 740 "Income Taxes" ("ASC 740") which requires an asset and liability approach for the financial accounting and reporting of income taxes. Under this method, deferred income taxes are recognized for the expected future tax consequences of differences between the tax bases of assets and liabilities and

their reported amounts in the financial statements. These balances are measured using the enacted tax rates expected to apply in the year(s) in which these temporary differences are expected to reverse. The effect of a change in tax rates on deferred income taxes is recognized in income in the period when the change is enacted.

Based on consideration of all available evidence regarding their utilization, we record net deferred tax assets to the extent that it is more likely than not that they will be realized. Where, based on the weight of all available evidence, it is more likely than not that some amount of a deferred tax asset will not be realized, we establish a valuation allowance for the amount that, in management's judgment, is sufficient to reduce the deferred tax asset to an amount that is more likely than not to be realized. The evidence we consider in reaching such conclusions includes, but is not limited to, (1) future reversals of existing taxable temporary differences, (2) future taxable income exclusive of reversing taxable temporary differences, (3) taxable income in prior carryback year(s) if carryback is permitted under the tax law, (4) cumulative losses in recent years, (5) a history of tax losses or credit carryforwards expiring unused, (6) a carryback or carryforward period that is so brief it limits realization of tax benefits, and (7) a strong earnings history exclusive of the loss that created the carryforward and support showing that the loss is an aberration rather than a continuing condition.

We account for unrecognized tax benefits in accordance with ASC 740, which prescribes a minimum probability threshold that a tax position must meet before a financial statement benefit is recognized. The minimum threshold is defined as a tax position that is more likely than not to be sustained upon examination by the applicable taxing authority, including resolution of any related appeals or litigation, based solely on the technical merits of the position. The tax benefit recognized is the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement.

We recognize interest and penalties related to unrecognized tax benefits within the income tax expense line of our Consolidated Statement of Operations, while accrued interest and penalties are included within the related tax liability line of our Consolidated Balance Sheets.

Earnings Per Share. Our basic earnings per share calculations are based on the weighted average number of common shares outstanding during the year. Potentially dilutive securities include outstanding stock options, restricted share units, deferred stock units and performance-based restricted share units. The dilutive effect of potentially dilutive securities is reflected in diluted earnings per common share by application of the treasury method. Diluted earnings per share gives effect to all potential dilutive common shares outstanding during the year.

(in millions, except per share data) For the year ended December 31,	2019	2018	2017
Net income attributable to common shareholders	\$ 133.3	\$ 335.6	\$ 171.8
Weighted average basic shares outstanding	59.8	59.6	59.4
Effect of dilutive stock options	0.8	1.4	1.0
Weighted average diluted shares outstanding	60.6	61.0	60.4
Basic earnings per share	\$ 2.23	\$ 5.63	\$ 2.89
Diluted earnings per share	\$ 2.20	\$ 5.50	\$ 2.84

The computation of diluted earnings per share excludes the effect of the potential exercise of stock options when the average market price of the common stock is lower than the exercise price of the related stock options. During 2019, 2018 and 2017, the number of stock options excluded from the computation was 1.2 million, 0.4 million and 0.4 million, respectively.

Cash and Cash Equivalents. Cash and cash equivalents include highly liquid investments with original maturities of three months or less that are readily convertible to cash and are not subject to significant risk from fluctuations in interest rates. As a result, the carrying amount of cash and cash equivalents approximates fair value.

Accounts Receivable, Net. Accounts receivable are carried at net realizable value. The allowance for doubtful accounts was \$7.2 million and \$7.6 million as of December 31, 2019 and 2018, respectively. The allowance for doubtful accounts activity was not material to our financial results for the years ended December 31, 2019, 2018 and 2017. Concentrations of credit risk with respect to accounts receivable are limited due to the large number of customers and relatively small account balances within the majority of our customer base and their dispersion across different businesses. We periodically evaluate the financial strength of our customers and believe that our credit risk exposure is limited.

Inventories. Inventories consist of the following:

(in millions) December 31,	2019	2018
Finished goods	\$ 130.6	\$ 116.2
Finished parts and subassemblies	66.1	45.9
Work in process	47.7	55.4
Raw materials	212.9	194.0
Total inventories	\$ 457.3	\$ 411.5

Inventories include the costs of material, labor and overhead and are stated at the lower of cost or net realizable value. Domestic inventories are stated at either the lower of cost or net realizable value using the last-in, first-out (“LIFO”) method or the lower of cost or net realizable value using the first-in, first-out (“FIFO”) method. Inventories held in foreign locations are primarily stated at the lower of cost or market using the FIFO method. The LIFO method is not being used at our foreign locations as such a method is not allowable for tax purposes. Changes in the levels of LIFO inventories have increased cost of sales by \$6.7 million, reduced cost of sales by \$2.5 million and increased cost of sales by \$0.4 million for the years ended December 31, 2019, 2018 and 2017, respectively. The portion of inventories costed using the LIFO method was 27.7% and 28.2% of consolidated inventories as of December 31, 2019 and 2018, respectively. If inventories that were valued using the LIFO method had been valued under the FIFO method, they would have been higher by \$17.1 million and \$9.9 million as of December 31, 2019 and 2018, respectively. The reserve for excess and obsolete inventory was \$85.9 million and \$67.1 million as of December 31, 2019 and 2018, respectively.

Valuation of Long-Lived Assets. We review our long-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Examples of events or changes in circumstances could include, but are not limited to, a prolonged economic downturn, current period operating or cash flow losses combined with a history of losses or a forecast of continuing losses associated with the use of an asset or asset group, or a current expectation that an asset or asset group will be sold or disposed of before the end of its previously estimated useful life. Recoverability is based upon projections of anticipated future undiscounted cash flows associated with the use and eventual disposal of the long-lived asset (or asset group), as well as specific appraisal in certain instances. Reviews occur at the lowest level for which identifiable cash flows are largely independent of cash flows associated with other long-lived assets or asset groups. If the future undiscounted cash flows are less than the carrying value, then the long-lived asset is considered impaired and a loss is recognized based on the amount by which the carrying amount exceeds the estimated fair value. Judgments which impact these assessments relate to the expected useful lives of long-lived assets and our ability to realize any undiscounted cash flows in excess of the carrying amounts of such assets, and are affected primarily by changes in the expected use of the assets, changes in technology or development of alternative assets, changes in economic conditions, changes in operating performance and changes in expected future cash flows. Since judgment is involved in determining the recoverable amount of long-lived assets, there is risk that the carrying value of our long-lived assets may require adjustment in future periods.

Property, Plant and Equipment, net. Property, plant and equipment, net consists of the following:

(in millions) December 31,	2019	2018
Land	\$ 84.4	\$ 77.5
Buildings and improvements	282.6	259.6
Machinery and equipment	889.9	848.5
Gross property, plant and equipment	1,256.9	1,185.6
Less: accumulated depreciation	640.6	586.5
Property, plant and equipment, net	\$ 616.3	\$ 599.1

Property, plant and equipment is stated at cost and depreciation is calculated by the straight-line method over the estimated useful lives of the respective assets, which range from 10 to 25 years for buildings and improvements and three to 10 years for machinery and equipment. Depreciation expense was \$71.6 million, \$72.7 million and \$41.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

The increase in Property, plant and equipment, net was driven by the acquisition of Cummins-Allison.

Goodwill and Other Intangible Assets. Our business acquisitions have typically resulted in the recognition of goodwill and other intangible assets. We follow the provisions under ASC Topic 350, "Intangibles – Goodwill and Other" ("ASC 350") as it relates to the accounting for goodwill in the Consolidated Financial Statements. These provisions require that we, on at least an annual basis, evaluate the fair value of the reporting units to which goodwill is assigned and attributed and compare that fair value to the carrying value of the reporting unit to determine if an impairment has occurred. We perform our annual impairment testing during the fourth quarter. Impairment testing takes place more often than annually if events or circumstances indicate a change in status that would indicate a potential impairment. We believe that there have been no events or circumstances which would more likely than not reduce the fair value for our reporting units below our carrying value. A reporting unit is an operating segment unless discrete financial information is prepared and reviewed by segment management for businesses one level below that operating segment (a "component"), in which case the component would be the reporting unit. As of December 31, 2019, we had eight reporting units.

When performing our annual impairment assessment, we compare the fair value of each of our reporting units to our respective carrying value. Goodwill is considered to be potentially impaired when the net book value of the reporting unit exceeds its estimated fair value. Fair values are established primarily by discounting estimated future cash flows at an estimated cost of capital which varies for each reporting unit and which, as of our most recent annual impairment assessment, ranged between 9.5% and 12.5% (a weighted average of 10.6%), reflecting the respective inherent business risk of each of the reporting units tested. This methodology for valuing our reporting units (commonly referred to as the Income Method) has not changed since the adoption of the provisions under ASC 350. The determination of discounted cash flows is based on the businesses' strategic plans and long-range planning forecasts, which change from year to year. The revenue growth rates included in the forecasts represent best estimates based on current and forecasted market conditions. Profit margin assumptions are projected by each reporting unit based on the current cost structure and anticipated net cost increases/reductions. There are inherent uncertainties related to these assumptions, including changes in market conditions, and management judgment is necessary in applying them to the analysis of goodwill impairment. In addition to the foregoing, for each reporting unit, market multiples are used to corroborate discounted cash flow results where fair value is estimated based on earnings multiples determined by available public information of comparable businesses. While we believe we have made reasonable estimates and assumptions to calculate the fair value of our reporting units, it is possible a material change could occur. If actual results are not consistent with management's estimates and assumptions, goodwill and other intangible assets may then be determined to be overstated and a charge would need to be taken against net earnings. No impairment charges have been required during 2019, 2018 or 2017.

Changes to goodwill are as follows:

(in millions)	Fluid Handling	Payment & Merchandising Technologies	Aerospace & Electronics	Engineered Materials	Total
Balance as of December 31, 2017	\$ 245.4	\$ 587.7	\$ 202.4	\$ 171.4	\$ 1,206.9
Additions	—	208.4	—	—	208.4
Currency translation	(4.6)	(6.9)	—	(0.1)	(11.6)
Balance as of December 31, 2018	\$ 240.8	\$ 789.2	\$ 202.4	\$ 171.3	\$ 1,403.7
Additions	—	63.4	—	—	63.4
Currency translation	0.1	5.2	—	—	5.3
Balance as of December 31, 2019	\$ 240.9	\$ 857.8	\$ 202.4	\$ 171.3	\$ 1,472.4

For the year ended December 31, 2019, additions to goodwill represent the preliminary purchase price allocation related to the December 2019 acquisition of Cummins-Allison and the finalization of the purchase price allocation of the January 2018 acquisition of Crane Currency. For the year ended December 31, 2018, additions to goodwill represent the purchase price allocation related to Crane Currency. See discussion in Note 2, "Acquisitions and Divestitures" for further details.

As of December 31, 2019, we had \$505.1 million of net intangible assets, of which \$69.9 million were intangibles with indefinite useful lives, consisting of trade names. As of December 31, 2018, we had \$481.8 million of net intangible assets, of which \$69.9 million were intangibles with indefinite useful lives, consisting of trade names. Intangibles with indefinite useful lives are tested annually for impairment, or when events or changes in circumstances indicate the potential for impairment. If the carrying amount of an indefinite lived intangible asset exceeds its fair value, the intangible asset is written down to its fair value. Fair value is calculated using relief from royalty method. We amortize the cost of definite-lived intangibles over their estimated useful lives.

In addition to annual testing for impairment of indefinite-lived intangible assets, we review all of our definite-lived intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Examples of events or changes in circumstances could include, but are not limited to, a prolonged economic downturn, current period operating or cash flow losses combined with a history of losses or a forecast of continuing losses associated with the use of an asset or asset group, or a current expectation that an asset or asset group will be sold or disposed of before the end of its previously estimated useful life. Recoverability is based upon projections of anticipated future undiscounted cash flows associated with the use and eventual disposal of the definite-lived intangible asset (or asset group), as well as specific appraisal in certain instances. Reviews occur at the lowest level for which identifiable cash flows are largely independent of cash flows associated with other long-lived assets or asset groups and include estimated future revenues, gross profit margins, operating profit margins and capital expenditures which are based on the businesses' strategic plans and long-range planning forecasts, which change from year to year. The revenue growth rates included in the forecasts represent our best estimates based on current and forecasted market conditions, and the profit margin assumptions are based on the current cost structure and anticipated net cost increases or reductions. There are inherent uncertainties related to these assumptions, including changes in market conditions, and management's judgment in applying them to the analysis. If the future undiscounted cash flows are less than the carrying value, then the definite-lived intangible asset is considered impaired and a charge would be taken against net earnings based on the amount by which the carrying amount exceeds the estimated fair value. Judgments that we make which impact these assessments relate to the expected useful lives of definite-lived assets and its ability to realize any undiscounted cash flows in excess of the carrying amounts of such assets, and are affected primarily by changes in the expected use of the assets, changes in technology or development of alternative assets, changes in economic conditions, changes in operating performance and changes in expected future cash flows. Since judgment is involved in determining the recoverable amount of definite-lived intangible assets, there is risk that the carrying value of our definite-lived intangible assets may require adjustment in future periods. Historical results to date have generally approximated expected cash flows for the identifiable cash flow generating level. We believe there have been no events or circumstances which would more likely than not reduce the fair value of our indefinite-lived or definite-lived intangible assets below their carrying value.

Changes to intangible assets are as follows:

(in millions) December 31,	2019	2018	2017
Balance at beginning of period, net of accumulated amortization	\$ 481.8	\$ 276.8	\$ 282.2
Additions	66.0	252.8	18.2
Amortization expense	(40.0)	(44.5)	(30.9)
Currency translation and other	(2.7)	(3.3)	7.3
Balance at end of period, net of accumulated amortization	\$ 505.1	\$ 481.8	\$ 276.8

For the year ended December 31, 2019, additions to intangible assets represent the preliminary purchase price allocation related to the December 2019 acquisition of Cummins-Allison. For the year ended December 31, 2018, additions to intangible assets represent the purchase price allocation related to the January 2018 acquisition of Crane Currency. For the year ended December 31, 2017, additions to intangible assets represent the purchase price allocation related to the April 2017 acquisition of Westlock and the June 2017 acquisition of Microtronic. See discussion in Note 2, "Acquisitions and Divestitures" for further details.

A summary of intangible assets follows:

(in millions)	Weighted Average Amortization Period of Finite Lived Assets (in years)	December 31, 2019			December 31, 2018		
		Gross Asset	Accumulated Amortization	Net	Gross Asset	Accumulated Amortization	Net
Intellectual property rights	16.6	\$ 134.2	\$ 56.8	\$ 77.4	\$ 130.7	\$ 55.6	\$ 75.1
Customer relationships and backlog	18.4	603.1	241.3	361.8	546.8	210.7	336.1
Drawings	37.9	11.1	10.5	0.6	11.1	10.5	0.6
Other	11.5	141.6	76.3	65.3	135.0	65.0	70.0
Total	17.9	\$ 890.0	\$ 384.9	\$ 505.1	\$ 823.6	\$ 341.8	\$ 481.8

Future amortization expense associated with intangibles is expected to be:

Year	(in millions)
2020	\$ 40.9
2021	38.4
2022	38.1
2023	38.1
2024 and after	279.7

Accumulated Other Comprehensive Income (Loss)

The tables below provide the accumulated balances for each classification of accumulated other comprehensive income (loss), as reflected on the Consolidated Balance Sheets.

(in millions)	Defined Benefit Pension and Other Postretirement Items*	Currency Translation Adjustment	Total
Balance as of December 31, 2017	\$ (292.1)	\$ (88.0)	\$ (380.1)
Other comprehensive loss before reclassifications	(45.8)	(41.3)	(87.1)
Amounts reclassified from accumulated other comprehensive loss	19.6	—	19.6
Net period other comprehensive loss	(26.2)	(41.3)	(67.5)
Balance as of December 31, 2018	\$ (318.3)	\$ (129.3)	\$ (447.6)
Other comprehensive (loss) income before reclassifications	(73.9)	11.6	(62.3)
Amounts reclassified from accumulated other comprehensive loss	26.2	—	26.2
Net period other comprehensive (loss) income	(47.7)	11.6	(36.1)
Balance as of December 31, 2019	\$ (366.0)	\$ (117.7)	\$ (483.7)

* Net of tax benefit of \$135.4, \$122.2 and \$115.8 for 2019, 2018, and 2017, respectively.

The table below illustrates the amounts reclassified out of each component of accumulated other comprehensive income (loss) for the years ended December 31, 2019 and 2018. Amortization of pension and postretirement components have been recorded within “Miscellaneous income, net” on the Consolidated Statements of Operations.

	Amount Reclassified from Accumulated Other Comprehensive Loss	
(in millions) December 31,	2019	2018
Amortization of pension items:		
Prior service costs	\$ (0.3)	\$ (0.5)
Net loss	15.3	14.2
Amortization of postretirement items:		
Prior service costs	(1.1)	(1.0)
Net gain	(0.3)	(0.2)
Total before tax	\$ 13.6	\$ 12.5
Tax impact	(12.6)	(7.1)
Total reclassifications for the period	\$ 26.2	\$ 19.6

Recent Accounting Pronouncements - Not Yet Adopted as of December 31, 2019

Simplifying the Accounting for Income Taxes

In December 2019, the Financial Accounting Standards Board (“FASB”) issued amended guidance to simplify the accounting for income taxes. The guidance is effective for fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. Early adoption is permitted. Certain amendments should be applied prospectively, while other amendments should be applied retrospectively to all periods presented. We are currently evaluating the timing and impact of the amended guidance on our consolidated financial statements.

Disclosure Requirements for Defined Benefit Plans

In August 2018, the FASB issued amended guidance to add, remove, and clarify disclosure requirements related to defined benefit pension and other postretirement plans. The amended guidance removes the requirements to disclose: amounts in accumulated other comprehensive income (loss) expected to be recognized as components of net periodic benefit cost over the next fiscal year; the amount and timing of plan assets expected to be returned to the entity; and the effects of a one-percentage point change in assumed health care cost trend rates. The amended guidance requires disclosure of an explanation of the reasons for significant gains and losses related to changes in the benefit obligation for the period. This guidance is effective for fiscal years ending after December 15, 2020, with early adoption permitted. The amended guidance is required to be applied on a retrospective basis to all periods presented. We are currently evaluating this guidance to determine the impact on our disclosures upon adoption in 2020.

Measurement of Credit Losses on Financial Instruments

In June 2016, the FASB issued amended guidance that changes the impairment model for most financial assets and certain other instruments. For trade receivables, contract assets and other receivables, held-to-maturity debt securities, loans and other instruments, entities will be required to use a new forward-looking “expected loss” model that will replace today’s “incurred loss” model and generally will result in the earlier recognition of allowances for losses. For available-for-sale debt securities with unrealized losses, entities will measure credit losses in a manner similar to current practice, except that the losses will be recognized as an allowance. This amended guidance is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Entities will apply the standard’s provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first effective reporting period. We do not expect that the amended guidance will have a material effect on our consolidated financial statements and related disclosures when we adopt this standard effective January 1, 2020.

Recent Accounting Pronouncements - AdoptedCodification Updates to SEC Sections

In July 2019, we adopted the FASB issued guidance related to codification updates to SEC sections. The amended guidance clarifies or improves the disclosure and presentation requirements of a variety of codification topics by aligning them with the SEC's regulations, thereby eliminating redundancies and making the codification easier to apply. While most of the amendments in this update eliminate outdated or duplicative disclosure requirements, the final rule amends the interim financial statement requirements to include a reconciliation of changes in stockholders' equity in the notes to the financial statements or as a separate statement for each period for which an income statement is required to be filed.

Leases

In February 2016, the FASB issued amended guidance on accounting for leases. The amended guidance requires the recognition of a right-of-use asset and a lease liability for all leases by lessees and amends disclosure requirements associated with leasing arrangements.

On January 1, 2019, we adopted ASC 842, "Leases" ("the new standard" or "ASC 842") using the modified retrospective method. Under this method, we elected to apply the new standard as of the application date. Results for reporting periods beginning after January 1, 2019 are presented under ASC 842, while prior period amounts continue to be reported under ASC 840, "Leases" ("ASC 840"). We elected to adopt certain of the optional practical expedients, including the package of practical expedients, which, among other things, gives us the option to not reassess: (1) whether expired or existing contracts are or contain leases; (2) the lease classification for expired or existing leases; and (3) initial direct costs for existing leases. We also elected the practical expedient to not separate lease and non-lease components, which allows us to account for lease and non-lease components as a single lease component. We did not elect the (1) hindsight practical expedient in our determination of the lease term for our existing leases and (2) the short-term practical expedient to exclude short-term leases from our right-of-use assets and lease liabilities. We implemented a new system, processes, and controls to enable the preparation of financial information upon adoption.

The adoption of the new standard primarily impacted our accounting for operating leases which resulted in the recognition of right-of-use assets and corresponding lease liabilities. The accounting for finance leases did not substantially change under the new standard, and we do not have significant finance leases. Upon adoption, we established a right-of-use asset of \$109.1 million (included in Other assets) and a lease liability of \$110.4 million (included in Accrued liabilities and Other liabilities) at January 1, 2019. Our prospective adoption of this new standard did not result in a cumulative-effect adjustment to retained earnings. The new standard did not impact our consolidated statements of operations or consolidated statements of cash flows.

Note 2 – Acquisitions and Divestitures

Acquisitions are accounted for in accordance with ASC Topic 805, "Business Combinations" ("ASC 805"). Accordingly, we make an initial allocation of the purchase price at the date of acquisition based upon our understanding of the fair value of the acquired assets and assumed liabilities. We obtain this information during due diligence and through other sources. In the months after closing, as we obtain additional information about these assets and liabilities, including through tangible and intangible asset appraisals, we are able to refine estimates of fair value and more accurately allocate the purchase price. Only items identified as of the acquisition date are considered for subsequent adjustment to the purchase price allocation. We will make appropriate adjustments to the purchase price allocation prior to completion of the measurement period, as required.

In order to allocate the consideration transferred for our acquisitions, the fair values of all identifiable assets and liabilities must be established. For accounting and financial reporting purposes, fair value is defined under ASC Topic 820, "Fair Value Measurement and Disclosure" as the price that would be received upon sale of an asset or the amount paid to transfer a liability in an orderly transaction between market participants at the measurement date. Market participants are assumed to be buyers and sellers in the principal (most advantageous) market for the asset or liability. Additionally, fair value measurements for an asset assume the highest and best use of that asset by market participants. Use of different estimates and judgments could yield different results.

Cummins-Allison Acquisition

On December 31, 2019 we completed the acquisition of Cummins-Allison Corp. ("Cummins-Allison"). The base purchase price of the acquisition was \$160 million on a cash-free, debt-free basis, subject to a later adjustment reflecting Cummins-Allison's net working capital, cash, and Cummins-Allison's transaction expenses. The amount paid, net of cash acquired, was \$156.2 million. We issued \$150 million of commercial paper and used cash on hand to fund the acquisition.

Cummins-Allison is a leading provider of high speed, cash and coin counting and sorting machines and retail cash office solutions which are primarily used in back-office applications. Cummins-Allison also has a nationwide service network to support these hardware sales. The amount allocated to goodwill reflects the expected synergies related to material costs, supply chain manufacturing productivity and research and development. Goodwill from this acquisition is not deductible for tax purposes.

Allocation of Consideration Transferred to Net Assets Acquired

The following amounts represent the preliminary determination of the fair value of identifiable assets acquired and liabilities assumed from our acquisition of Cummins-Allison. The final determination of the fair value of certain assets and liabilities will be completed within the one year measurement period as required by ASC 805. The size and breadth of the Cummins-Allison acquisition will necessitate the use of this measurement period to adequately analyze and assess a number of the factors used in establishing the asset and liability fair values as of the acquisition date, including the significant contractual and operational factors underlying the customer relationship intangible asset and the assumptions underpinning the related tax impacts of any changes made. Any potential adjustments made could be material in relation to the preliminary values presented below:

Net assets acquired (in millions)	
Total current assets	\$ 89.3
Property, plant and equipment	26.6
Other assets	9.1
Intangible assets	66.0
Goodwill	54.7
Total assets acquired	\$ 245.7
Total current liabilities	\$ 67.1
Other liabilities	22.4
Total assumed liabilities	\$ 89.5
Net assets acquired	\$ 156.2

The amounts allocated to acquired intangible assets, and their associated weighted-average useful lives which were determined based on the period in which the assets are expected to contribute directly or indirectly to our future cash flows, consist of the following:

Intangible Assets (dollars in millions)	Intangible Fair Value	Weighted Average Life
Trademarks/trade names	\$ 3.0	7
Customer relationships	54.5	18
Product technology	8.5	10
Total acquired intangible assets	\$ 66.0	

The fair values of the trademark and trade name intangible assets were determined by using an “income approach,” specifically the relief-from-royalty approach, which is a commonly accepted valuation approach. This approach is based on the assumption that in lieu of ownership, a firm would be willing to pay a royalty in order to exploit the related benefits of this asset.

Therefore, a portion of Cummins-Allison’s earnings, equal to the after-tax royalty that would have been paid for the use of the asset, can be attributed to the firm’s ownership. The trade name Cummins Allison is being amortized on a straight-line basis (which approximates the economic pattern of benefits) over the estimated economic life of seven years.

The fair values of the customer relationships intangible assets were determined by using an “income approach” which is a commonly accepted valuation approach. Under this approach, the net earnings attributable to the asset or liability being measured are isolated using the discounted projected net cash flows. These projected cash flows are isolated from the projected cash flows of the combined asset group over the remaining economic life of the intangible asset or liability being measured. Both the amount and the duration of the cash flows are considered from a market participant perspective. Our estimates of market participant net cash flows considered historical and projected pricing, operational performance including market participant synergies, aftermarket retention, product life cycles, material and labor pricing, and other relevant customer, contractual and market factors. Where appropriate, the net cash flows were adjusted to reflect the potential attrition of existing customers in the future, as existing customers are a “wasting” asset and are expected to decline over time. The attrition-adjusted future cash flows are then discounted to present value using an appropriate discount rate. The customer relationship is being

amortized on a straight-line basis (which approximates the economic pattern of benefits) over the estimated economic life of 18 years.

The fair values of the product technology intangible assets were also determined by the relief-from-royalty approach. Similarly, this approach is based on the assumption that in lieu of ownership, a firm would be willing to pay a royalty in order to exploit the related benefits of the technology. Therefore, a portion of Cummins-Allison's earnings, equal to the after-tax royalty that would have been paid for the use of the technology, can be attributed to the firm's ownership of the technology. The technology assets are being amortized on a straight-line basis (which approximates the economic pattern of benefits) over the estimated economic life of 10 years.

Supplemental Pro Forma Data

The following unaudited pro forma combined information assumes that the acquisition was completed on January 1, 2018. The unaudited pro forma consolidated net sales for 2018 and 2019 would have been \$3,531.1 million and \$3,475.2 million, respectively. The unaudited pro forma consolidated net sales are provided for illustrative purposes only and are not indicative of our actual consolidated results of operations or consolidated financial position. Consolidated pro forma net income attributable to common shareholders has not been presented since the impact is not material to our financial results.

Crane Currency Acquisition

On January 10, 2018, we completed the acquisition of Crane & Co., Inc. ("Crane Currency"). The base purchase price of the acquisition was \$800 million on a cash-free, debt-free basis, subject to a later adjustment reflecting Crane Currency's net working capital, cash, the assumption of certain debt-like items, and Crane Currency's transaction expenses. The amount paid, net of cash acquired, was \$672.3 million. In July 2018, we received \$24.3 million related to the final working capital adjustment of the Crane Currency acquisition, resulting in net cash paid of \$648.0 million. To finance the acquisition, we issued commercial paper under our commercial paper program and utilized proceeds from term loans that we issued at the closing of the acquisition, as well as available cash on hand. At the closing, the transitory subsidiary of Crane Co. merged with and into Crane Currency, with Crane Currency surviving as a wholly owned subsidiary of Crane Co.

Crane Currency is a supplier of banknotes and highly engineered banknote security features which complement the existing portfolio of currency and payment products within the Payment & Merchandising Technologies segment. As such, Crane Currency has been integrated into the Payment & Merchandising Technologies segment. The amount allocated to goodwill reflects the benefits we expect to realize from the acquisition, as the acquisition is expected to strengthen and broaden our product offering within the currency and payment markets. Goodwill from this acquisition is not deductible for tax purposes.

Allocation of Consideration Transferred to Net Assets Acquired

The following amounts represent the determination of the fair value of identifiable assets acquired and liabilities assumed from our acquisition of Crane Currency. The fair value of certain assets and liabilities has been completed as required by ASC 805.

Net assets acquired (<i>in millions</i>)	
Total current assets	\$ 199.6
Property, plant and equipment	298.0
Other assets	5.3
Intangible assets	252.8
Goodwill	217.1
Total assets acquired	\$ 972.8
Total current liabilities	\$ 107.2
Long-term debt	97.3
Other liabilities	120.3
Total assumed liabilities	\$ 324.8
Net assets acquired	\$ 648.0

The amounts allocated to acquired intangible assets, and their associated weighted-average useful lives which were determined based on the period in which the assets are expected to contribute directly or indirectly to our future cash flows, consist of the following:

Intangible Assets (dollars in millions)	Intangible Fair Value	Weighted Average Life
Trademarks/trade names	\$ 42.0	indefinite
Customer relationships	135.8	23.1
Product technology	74.0	8.4
Backlog	1.0	1.0
Total acquired intangible assets	\$ 252.8	

The fair values of the trademark and trade name intangible assets were determined by using an “income approach,” specifically the relief-from-royalty approach, which is a commonly accepted valuation approach. This approach is based on the assumption that in lieu of ownership, a firm would be willing to pay a royalty in order to exploit the related benefits of this asset. Therefore, a portion of Crane Currency’s earnings, equal to the after-tax royalty that would have been paid for the use of the asset, can be attributed to the firm’s ownership. The trademark and trade names, Crane Currency and Crane are assigned an indefinite life and therefore will not be amortized.

The fair values of the customer relationships and backlog intangible assets were determined by using an “income approach” which is a commonly accepted valuation approach. Under this approach, the net earnings attributable to the asset or liability being measured are isolated using the discounted projected net cash flows. These projected cash flows are isolated from the projected cash flows of the combined asset group over the remaining economic life of the intangible asset or liability being measured. Both the amount and the duration of the cash flows are considered from a market participant perspective. Our estimates of market participant net cash flows considered historical and projected pricing, operational performance including market participant synergies, aftermarket retention, product life cycles, material and labor pricing, and other relevant customer, contractual and market factors. Where appropriate, the net cash flows were adjusted to reflect the potential attrition of existing customers in the future, as existing customers are a “wasting” asset and are expected to decline over time. The attrition-adjusted future cash flows are then discounted to present value using an appropriate discount rate. The customer relationship is being amortized on a straight-line basis (which approximates the economic pattern of benefits) over the estimated economic life of 18 to 24 years.

The fair values of the product technology intangible assets were also determined by the relief-from-royalty approach. Similarly, this approach is based on the assumption that in lieu of ownership, a firm would be willing to pay a royalty in order to exploit the related benefits of the technology. Therefore, a portion of Crane Currency’s earnings, equal to the after-tax royalty that would have been paid for the use of the technology, can be attributed to the firm’s ownership of the technology. The technology assets are being amortized on a straight-line basis (which approximates the economic pattern of benefits) over the estimated economic life of 7 to 11 years.

Supplemental Pro Forma Data

Crane Currency’s results of operations have been included in our financial statements for the period subsequent to the completion of the acquisition on January 10, 2018. The pro forma impact for the stub period (January 1, 2018 through January 9, 2018) is not material. Crane Currency contributed sales of \$458.2 million resulting in an operating profit of approximately \$33.8 million for the period from the completion of the acquisition through December 31, 2018. The following unaudited pro forma combined information assumes that the acquisition was completed on January 1, 2017. The unaudited pro forma consolidated results of operations are provided for illustrative purposes only and are not indicative of our actual consolidated results of operations or consolidated financial position. The unaudited pro forma results of operations do not reflect any operating efficiencies or cost savings which resulted from the acquisition of Crane Currency or may be realized in the future.

(in millions, except per share data)	December 31, 2017
Net sales	\$ 3,310.1
Net income attributable to common shareholders	\$ 155.3
Basic earnings per share	\$ 2.61
Diluted earnings per share	\$ 2.57

The unaudited supplemental pro forma data above includes adjustments for inventory step up, depreciation and amortization related to acquired property, plant and equipment and intangible assets and interest expense related to financing directly associated with the acquisition.

Westlock Acquisition

In April 2017, we acquired all of the outstanding stock of Westlock Controls (“Westlock”) from Emerson Electric Co. for cash consideration of \$40 million. Westlock is a global leader in the manufacturing and sale of switchboxes, position transmitters and other solutions for networking, monitoring and controlling process valves, a new product space which is closely adjacent to our existing operations in our Fluid Handling segment. With primary operations located in Saddle Brook, New Jersey, Westlock had 2016 sales of approximately \$32 million. Allocation of the purchase price resulted in recording goodwill of \$22.6 million. This acquisition has been integrated into our Fluid Handling segment, and the pro forma impact is not material.

Microtronic Acquisition

In June 2017, we acquired all of the outstanding stock of Microtronic AG (“Microtronic”) for cash consideration of approximately \$18 million. With operations in Oensingen, Switzerland, Microtronic develops and manufactures closed electronic payment systems, primarily for the European vending market, strengthening our portfolio of cashless solutions. Allocation of the purchase price resulted in recording goodwill of \$8.9 million. This acquisition has been integrated into our Payment & Merchandising Technologies segment, and the pro forma impact is not material.

Acquisition-Related Costs

Acquisition-related costs are being expensed as incurred. For the years ended December 31, 2019, 2018 and 2017, we recorded \$5.2 million, \$19.8 million and \$7.8 million, respectively, of integration and transaction costs in our Consolidated Statements of Operations. For the year ended December 31, 2018, we also recorded \$9.1 million of inventory step-up and backlog amortization within “Cost of sales” in our Consolidated Statements of Operations.

Divestitures

In December 2017, we sold a portion of an investment in a joint venture (our ownership interest was 70%) within our Fluid Handling segment for \$14.1 million. The sale resulted in the deconsolidation of such business and a gain in the amount of \$1.0 million (\$0.7 million after-tax) in 2017, of which \$0.9 million was attributable to the remeasurement of the remaining investment. The total gain is included in “Miscellaneous income, net” within the Consolidated Statements of Operations. The fair value of the remaining investment in the joint venture of \$2.3 million was established by discounting estimated future cash flows at an estimated cost of capital of 10% reflecting the respective inherent business risk of the joint venture arrangement, commonly referred to as the income method. As of December 31, 2019, 2018 and 2017, our ownership interest in this joint venture was 4.9%.

Note 3 – Segment Information

In accordance with ASC Topic 280, “Segment Reporting,” for purposes of segment performance measurement, we do not allocate to the business segments items that are of a non-operating nature, including charges which occur from time to time related to our asbestos liability and our legacy environmental liabilities, as such items are not related to current business activities; or corporate organizational and functional expenses of a governance nature. “Corporate expenses-before asbestos and environmental charges” consist of corporate office expenses including, compensation, benefits, occupancy, depreciation, and other administrative costs. Assets of the business segments exclude general corporate assets, which principally consist of cash and cash equivalents, deferred tax assets, insurance receivables, certain property, plant and equipment, and certain other assets.

The accounting policies of the segments are the same as those described in the summary of significant accounting policies. We account for intersegment sales and transfers as if the sales or transfers were to third parties at current market prices.

Our segments are reported on the same basis used internally for evaluating performance and for allocating resources. We have four reporting segments: Fluid Handling, Payment & Merchandising Technologies, Aerospace & Electronics and Engineered Materials.

A brief description of each of our segments are as follows:

Fluid Handling

The Fluid Handling segment is a provider of highly engineered fluid handling equipment for critical performance applications that require high reliability. The segment is comprised of Process Valves and Related Products, Commercial Valves, and Pumps and Systems. Process Valves and Related Products include on/off valves and related products for critical and demanding applications in the chemical, oil & gas, power, and general industrial end markets globally. Commercial Valves includes the manufacturing and distribution of valves and related products for the non-residential construction, general industrial, and to a lesser extent, municipal markets. Pumps and Systems include pumps and related products primarily for water and wastewater applications in the industrial, municipal, commercial and military markets.

Payment & Merchandising Technologies

The Payment & Merchandising Technologies segment consists of Crane Payment Innovations ("CPI"), Crane Merchandising Systems ("CMS") and Crane Currency. CPI provides high technology payment acceptance and dispensing products to original equipment manufacturers, including coin accepters and dispensers, coin hoppers, coin recyclers, bill validators and bill recyclers. Crane Currency is a supplier of banknotes and highly engineered banknote security feature. CMS provides merchandising equipment, including include food, snack and beverage vending machines and vending machine software and online solutions. The recent acquisition of Cummins-Allison will be integrated into our CPI business.

Aerospace & Electronics

Aerospace & Electronics segment supplies critical components and systems, including original equipment and aftermarket parts, primarily for the commercial aerospace and military aerospace and defense markets.

Engineered Materials

Engineered Materials segment manufactures fiberglass-reinforced plastic ("FRP") panels and coils, primarily for use in the manufacturing of recreational vehicles ("RVs"), truck bodies and trailers (Transportation), with additional applications in commercial and industrial buildings (Building Products).

For the year ended December 31, 2019, operating profit includes an asbestos provision, an environmental provision, acquisition-related and integration charges and restructuring charges. For the year ended December 31, 2018, operating profit includes acquisition-related and integration charges, acquisition-related inventory and backlog amortization and restructuring charges. For the year ended December 31, 2017, operating profit includes acquisition-related and integration charges and restructuring charges. See Note 2, “Acquisitions and Divestitures” for discussion on the acquisition-related costs. See Note 15, “Restructuring” for discussion of the restructuring charges. See Note 12, “Commitments and Contingencies” for discussion of the asbestos and environmental provisions.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Financial information by reportable segment is set forth below:

(in millions) December 31,	2019	2018	2017
Fluid Handling			
Net sales	\$ 1,117.4	\$ 1,101.8	\$ 1,042.5
Operating profit	131.7	118.8	101.7
Assets	941.6	878.2	941.6
Goodwill	240.9	240.8	245.4
Capital expenditures	23.4	19.9	14.7
Depreciation and amortization	14.2	15.2	16.2
Payment & Merchandising Technologies			
Net sales	\$ 1,158.3	\$ 1,257.0	\$ 776.7
Operating profit	177.3	186.0	145.9
Assets	2,303.4	2,074.4	1,215.7
Goodwill	857.8	789.2	587.7
Capital expenditures	20.6	57.5	14.2
Depreciation and amortization	77.1	82.4	34.2
Aerospace & Electronics			
Net sales	\$ 798.8	\$ 743.5	\$ 691.4
Operating profit	189.4	164.2	160.3
Assets	638.1	603.9	573.0
Goodwill	202.4	202.4	202.4
Capital expenditures	20.0	20.6	16.7
Depreciation and amortization	13.5	13.0	14.0
Engineered Materials			
Net sales	\$ 208.6	\$ 243.2	\$ 275.4
Operating profit	26.8	37.8	49.4
Assets	219.6	222.1	220.8
Goodwill	171.3	171.3	171.4
Capital expenditures	4.4	10.3	3.1
Depreciation and amortization	5.6	6.4	6.7
TOTAL NET SALES	\$ 3,283.1	\$ 3,345.5	\$ 2,786.0
Operating profit (loss)			
Reporting segments	\$ 525.2	\$ 506.8	\$ 457.3
Corporate expense — before asbestos and environmental provisions	(66.9)	(65.5)	(68.9)
Corporate expense — asbestos provision, net	(229.0)	—	—
Corporate expense — environmental provision, net	(18.9)	—	—
TOTAL OPERATING PROFIT	\$ 210.4	\$ 441.3	\$ 388.4
Interest income	2.7	2.3	2.5
Interest expense	(46.8)	(50.9)	(36.1)
Miscellaneous income, net	4.4	18.7	12.7
INCOME BEFORE INCOME TAXES	\$ 170.7	\$ 411.4	\$ 367.5
Assets			
Reporting segments	\$ 4,102.7	\$ 3,778.6	\$ 2,951.1
Corporate	321.0	264.1	642.4
TOTAL ASSETS	\$ 4,423.7	\$ 4,042.7	\$ 3,593.5
TOTAL GOODWILL (Reporting segments)	\$ 1,472.4	\$ 1,403.7	\$ 1,206.9
Capital expenditures			
Reporting segments	\$ 68.4	\$ 108.3	\$ 48.7
Corporate	0.4	0.5	0.3
TOTAL CAPITAL EXPENDITURES	\$ 68.8	\$ 108.8	\$ 49.0
Depreciation and amortization			
Reporting segments	\$ 110.4	\$ 117.0	\$ 71.1
Corporate	3.1	3.0	1.6
TOTAL DEPRECIATION AND AMORTIZATION	\$ 113.5	\$ 120.0	\$ 72.7

Information by geographic region:

(in millions) December 31,	2019	2018	2017
Net sales ^(a)			
United States	\$ 2,111.3	\$ 2,107.2	\$ 1,767.3
Canada	176.8	172.3	169.0
United Kingdom	393.6	397.5	388.2
Continental Europe	410.1	484.2	268.6
Other international	191.3	184.3	192.9
TOTAL NET SALES	\$ 3,283.1	\$ 3,345.5	\$ 2,786.0
Assets ^(a)			
United States	\$ 2,139.7	\$ 1,866.5	\$ 1,645.3
Canada	211.8	206.2	170.0
Europe	963.6	897.7	702.9
Other international	787.6	808.2	432.9
Corporate	321.0	264.1	642.4
TOTAL ASSETS	\$ 4,423.7	\$ 4,042.7	\$ 3,593.5
Tangible Assets ^(a)			
United States	\$ 635.9	\$ 442.3	\$ 645.8
Canada	159.3	156.3	115.8
Europe	698.7	646.8	436.6
Other international	631.3	648.2	269.2
Corporate	321.0	264.1	642.4
TOTAL TANGIBLE ASSETS	\$ 2,446.2	\$ 2,157.7	\$ 2,109.8

(a) Net sales and assets by geographic region are based on the location of the business unit.

Note 4 - Revenue*Disaggregation of Revenues*

The following table presents net sales disaggregated by product line for each segment:

(in millions) December 31,	2019	2018	2017
Fluid Handling			
Process Valves and Related Products	\$ 685.1	\$ 685.4	\$ 640.1
Commercial Valves	332.1	325.4	310.1
Pumps and Systems	100.2	91.0	92.3
Total Fluid Handling	\$ 1,117.4	\$ 1,101.8	\$ 1,042.5
Payment & Merchandising Technologies			
Payment Acceptance and Dispensing Products	\$ 608.6	\$ 594.2	\$ 575.9
Banknotes and Security Products	352.8	458.2	—
Merchandising Equipment	196.9	204.6	200.8
Total Payment & Merchandising Technologies	\$ 1,158.3	\$ 1,257.0	\$ 776.7
Aerospace & Electronics			
Commercial Original Equipment	\$ 357.2	\$ 343.4	\$ 346.1
Military Original Equipment	217.2	195.7	159.0
Commercial Aftermarket Products	161.4	150.5	134.0
Military Aftermarket Products	63.0	53.9	52.3
Total Aerospace & Electronics	\$ 798.8	\$ 743.5	\$ 691.4
Engineered Materials			
FRP - Recreational Vehicles	\$ 84.5	\$ 119.0	\$ 150.5
FRP - Building Products	91.9	92.2	95.2
FRP - Transportation	32.2	32.0	29.7
Total Engineered Materials	\$ 208.6	\$ 243.2	\$ 275.4
Total Net Sales	\$ 3,283.1	\$ 3,345.5	\$ 2,786.0

Remaining Performance Obligations

The transaction price allocated to remaining performance obligations represents the transaction price of firm orders which have not yet been fulfilled, which we also refer to as total backlog. As of December 31, 2019, backlog was \$1,155.2 million. We expect to recognize approximately 80% of our remaining performance obligations as revenue in 2020, an additional 11% by 2021 and the balance thereafter.

Contract Assets and Contract Liabilities

Contract assets represent unbilled amounts that typically arise from contracts for customized products or contracts for products sold directly to the U.S. government or indirectly to the U.S. government through subcontracts, where revenue recognized using the cost-to-cost method exceeds the amount billed to the customer. Contract assets are assessed for impairment and recorded at their net realizable value. Contract liabilities represent advance payments from customers. Revenue related to contract liabilities is recognized when control is transferred to the customer. We report contract assets, which are included within “Other current assets” in our Consolidated Balance Sheets, and contract liabilities, which are included within “Accrued liabilities” on our Consolidated Balance Sheets, on a contract-by-contract net basis at the end of each reporting period. Net contract assets and contract liabilities consisted of the following:

(in millions) December 31,	2019	2018
Contract assets	\$ 55.8	\$ 54.9
Contract liabilities	\$ 88.4	\$ 50.8

Contract liabilities increased \$37.6 million primarily due to the acquisition of Cummins-Allison. During 2019, we recognized revenue of \$44.8 million related to contract liabilities as of December 31, 2018.

Note 5 – Research and Development

Research and development costs are expensed when incurred. These costs were \$47.5 million, \$58.4 million and \$58.5 million in 2019, 2018 and 2017, respectively.

Note 6 – Pension and Postretirement Benefits*Pension Plan*

In the United States, we sponsor a defined benefit pension plan that covers approximately 18% of all U.S. employees. Effective January 1, 2013, pension eligible non-union employees no longer earn future benefits in the domestic defined benefit pension plan. The benefits are based on years of service and compensation on a final average pay basis, except for certain hourly employees where benefits are fixed per year of service. Charges to expense are based upon costs computed by an independent actuary. Contributions are intended to provide for future benefits earned to date. As of December 31, 2018, the Crane Currency pension plan was merged into our U.S. defined benefit pension plan. Benefit accruals for the Crane Currency employees ended July 1, 2018. Additionally, a number of our non-U.S. subsidiaries sponsor defined benefit pension plans that cover approximately 8% of all non-U.S. employees. The benefits are typically based upon years of service and compensation. These plans are funded by company contributions to a trust fund, which is held for the sole benefit of plan participants and beneficiaries.

Postretirement Plans

Postretirement health care and life insurance benefits are provided for certain employees hired before January 1, 1990, who meet minimum age and service requirements. As a result of the acquisition of Crane Currency, we also have postretirement medical and Medicare supplement that cover substantially all former full-time U.S. employees of Crane Currency.

A summary of the projected benefit obligations, fair value of plan assets and funded status is as follows:

(in millions) December 31,	Pension Benefits		Postretirement Benefits	
	2019	2018	2019	2018
Change in benefit obligation:				
Benefit obligation at beginning of year	\$ 1,031.0	\$ 1,074.7	\$ 29.0	\$ 7.9
Service cost	5.4	5.9	0.3	0.3
Interest cost	32.7	30.1	1.1	1.1
Plan participants' contributions	0.5	0.6	0.1	0.3
Amendments	0.5	4.4	—	(7.3)
Actuarial loss (gain)	131.3	(59.5)	1.8	(3.0)
Settlements	(0.7)	(1.9)	—	—
Benefits paid	(47.7)	(48.1)	(2.4)	(2.6)
Foreign currency exchange and other	16.4	(23.3)	(0.9)	—
Acquisitions/curtailments/divestitures	—	48.4	—	32.3
Administrative expenses paid	(0.7)	(0.3)	—	—
Benefit obligation at end of year	\$ 1,168.7	\$ 1,031.0	\$ 29.0	\$ 29.0
Change in plan assets:				
Fair value of plan assets at beginning of year	\$ 877.2	\$ 908.1	\$ —	\$ —
Actual return on plan assets	113.8	(47.6)	—	—
Foreign currency exchange and other	19.6	(25.4)	—	—
Employer contributions	4.2	57.5	2.3	1.4
Administrative expenses paid	(1.1)	(0.7)	—	—
Acquisitions	—	34.9	—	—
Plan participants' contributions	0.5	0.6	0.1	0.3
Settlements/divestitures	(0.7)	(2.1)	—	—
Benefits paid	(47.7)	(48.1)	(2.4)	(1.7)
Fair value of plan assets at end of year	\$ 965.8	\$ 877.2	\$ —	\$ —
Funded status	\$ (202.9)	\$ (153.8)	\$ (29.0)	\$ (29.0)

Amounts recognized on our Consolidated Balance Sheets consist of:

(in millions) December 31,	Pension Benefits		Postretirement Benefits	
	2019	2018	2019	2018
Other assets	\$ 64.8	\$ 60.7	\$ —	\$ —
Current liabilities	(1.4)	(1.3)	(2.2)	(2.6)
Accrued pension and postretirement benefits	(266.3)	(213.2)	(26.8)	(26.4)
Funded status	\$ (202.9)	\$ (153.8)	\$ (29.0)	\$ (29.0)

Amounts recognized in accumulated other comprehensive loss consist of:

(in millions) December 31,	Pension Benefits		Postretirement Benefits	
	2019	2018	2019	2018
Net actuarial loss (gain)	\$ 466.1	\$ 404.8	\$ (2.9)	\$ (4.2)
Prior service credit	(4.5)	(5.5)	(5.2)	(6.3)
Total recognized in accumulated other comprehensive loss	\$ 461.6	\$ 399.3	\$ (8.1)	\$ (10.5)

The projected benefit obligation, accumulated benefit obligation and fair value of plan assets for the U.S. and Non-U.S. plans, are as follows:

(in millions) December 31,	Pension Obligations/Assets					
	U.S.		Non-U.S.		Total	
	2019	2018	2019	2018	2019	2018
Projected benefit obligation	\$ 650.2	\$ 580.6	\$ 518.5	\$ 450.4	\$ 1,168.7	\$ 1,031.0
Accumulated benefit obligation	650.2	580.6	508.8	441.7	1,159.0	1,022.3
Fair value of plan assets	451.5	417.5	514.3	459.7	965.8	877.2

Information for pension plans with an accumulated benefit obligation in excess of plan assets is as follows:

(in millions) December 31,	2019	2018
Projected benefit obligation	\$ 950.1	\$ 695.2
Accumulated benefit obligation	940.6	687.1
Fair value of plan assets	682.4	480.7

Components of net periodic (benefit) cost are as follows:

(in millions) For the year ended December 31,	Pension Benefits			Postretirement Benefits		
	2019	2018	2017	2019	2018	2017
Net Periodic (Benefit) Cost:						
Service cost	\$ 5.4	\$ 5.9	\$ 5.4	\$ 0.3	\$ 0.3	\$ —
Interest cost	32.7	30.1	29.5	1.1	1.1	0.2
Expected return on plan assets	(53.7)	(65.6)	(57.0)	—	—	—
Amortization of prior service cost	(0.3)	(0.5)	(0.6)	(1.1)	(1.0)	(0.2)
Amortization of net loss (gain)	15.3	14.2	14.3	(0.3)	(0.2)	(0.3)
Recognized curtailment loss	—	0.3	(0.3)	—	—	—
Settlement costs	—	0.3	0.5	—	—	—
Net periodic (benefit) cost	\$ (0.6)	\$ (15.3)	\$ (8.2)	\$ —	\$ 0.2	\$ (0.3)

The estimated net loss and prior service cost for the defined benefit pension plans that will be amortized from accumulated other comprehensive loss into net periodic (benefit) cost over the next fiscal year are \$19.2 million and \$0.3 million, respectively. The estimated net loss and prior service cost for the postretirement plans that will be amortized from accumulated other comprehensive loss into net periodic (benefit) cost over the next fiscal year are \$0.0 million and \$1.1 million, respectively.

The weighted average assumptions used to determine benefit obligations are as follows:

For the year ended December 31,	Pension Benefits			Postretirement Benefits		
	2019	2018	2017	2019	2018	2017
U.S. Plans:						
Discount rate	3.34%	4.36%	3.75%	3.20%	4.30%	3.90%
Rate of compensation increase	N/A	N/A	N/A	N/A	N/A	N/A
Non-U.S. Plans:						
Discount rate	1.70%	2.42%	2.15%	N/A	3.30%	3.30%
Rate of compensation increase	2.89%	3.06%	2.80%	N/A	N/A	N/A

The weighted-average assumptions used to determine net periodic benefit cost are as follows:

For the year ended December 31,	Pension Benefits			Postretirement Benefits		
	2019	2018	2017	2019	2018	2017
U.S. Plans:						
Discount rate	4.36%	3.75%	4.29%	4.10%	3.50%	3.30%
Expected rate of return on plan assets	7.25%	7.75%	7.75%	N/A	N/A	N/A
Rate of compensation increase	N/A	N/A	N/A	N/A	N/A	N/A
Non-U.S. Plans:						
Discount rate	2.42%	2.15%	2.29%	N/A	N/A	N/A
Expected rate of return on plan assets	5.34%	6.49%	6.45%	N/A	N/A	N/A
Rate of compensation increase	3.06%	2.80%	2.85%	N/A	N/A	N/A

The long-term expected rate of return on plan assets assumptions were determined with input from independent investment consultants and plan actuaries, utilizing asset pricing models and considering historical returns. The discount rates used by us for valuing pension liabilities are based on a review of high quality corporate bond yields with maturities approximating the remaining life of the projected benefit obligations.

In the U.S. plan, the 7.25% expected rate of return on assets assumption for 2019 reflected a long-term target comprised of an asset allocation range of 35%-75% equity securities, 15%-35% fixed income securities, 10%-35% alternative assets and 0%-10% cash and cash equivalents. As of December 31, 2019, the actual asset allocation for the U.S. plan was 62% equity securities, 17% fixed income securities, 20% alternative assets and 1% cash and cash equivalents.

For the non-U.S. plans, the 5.34% expected rate of return on assets assumption for 2019 reflected a weighted average of the long-term asset allocation targets for our various non-U.S. plans. As of December 31, 2019, the actual weighted average asset allocation for the non-U.S. plans was 26% equity securities, 34% fixed income securities, 38% alternative assets/other and 2% cash and cash equivalents.

The assumed health care cost trend rates are as follows:

December 31,	2019	2018
Health care cost trend rate assumed for next year	6.75%	7.00%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	4.50%	4.50%
Year that the rate reaches the ultimate trend rate	2029	2029

Assumed health care cost trend rates have a significant effect on the amounts reported for our health care plans.

A one-percentage-point change in assumed health care cost trend rates would have the following effects:

(in millions)	One Percentage Point Increase		One Percentage Point (Decrease)	
Effect on total of service and interest cost components	\$	—	\$	—
Effect on postretirement benefit obligation	\$	0.6	\$	(0.5)

Plan Assets

Our pension plan target allocations and weighted-average asset allocations by asset category are as follows:

Asset Category December 31,	Target Allocation	Actual Allocation	
		2019	2018
Equity securities	15%-75%	43%	39%
Fixed income securities	15%-75%	26%	24%
Alternative assets/Other	0%-45%	29%	32%
Cash and money market	0%-10%	2%	5%

Independent investment consultants are retained to assist in executing the plans' investment strategies. A number of factors are evaluated in determining if an investment strategy will be implemented in our pension trusts. These factors include, but are not limited to, investment style, investment risk, investment manager performance and costs. We periodically review investment managers and their performance in relation to our plans' investment objectives.

The primary investment objective of our various pension trusts is to maximize the value of plan assets, focusing on capital preservation, current income and long-term growth of capital and income. The plans' assets are typically invested in a broad range of equity securities, fixed income securities, alternative assets and cash instruments.

Equity securities include investments in large, mid, and small-capitalization companies located in both developed countries and emerging markets around the world. Fixed income securities include government bonds of various countries, corporate bonds that are primarily investment-grade, and mortgage-backed securities. Alternative assets include investments in real estate and hedge funds employing a wide variety of strategies. Equity securities include Crane Co. common stock, which represents 5% of plan assets as of December 31, 2019 and 2018.

The fair value of our pension plan assets as of December 31, 2019, by asset category, are as follows:

(in millions)	Active Markets for Identical Assets Level 1	Other Observable Inputs Level 2	Unobservable Inputs Level 3	Net Asset Value ("NAV") Practical Expedient*	Total Fair Value
Cash Equivalents and Money Markets	\$ 14.7	\$ —	\$ —	\$ —	\$ 14.7
Common Stocks					
Actively Managed U.S. Equities	130.6	—	—	—	130.6
Fixed Income Bonds and Notes	—	0.1	—	—	0.1
Commingled and Mutual Funds					
U.S. Equity Funds	77.9	—	—	—	77.9
Non-U.S. Equity Funds	44.8	—	—	158.6	203.4
U.S. Fixed Income, Government and Corporate	75.7	—	—	—	75.7
Registered Investment Company	30.2	—	—	—	30.2
Collective Trust	—	—	22.6	21.2	43.8
Non-U.S. Fixed Income, Government and Corporate	—	—	—	176.1	176.1
International Balanced Funds	—	—	—	1.8	1.8
Alternative Investments					
Insurance / Annuity Contract(s)	—	15.1	—	—	15.1
Hedge Funds and LDI	—	—	—	147.3	147.3
International Property Funds	—	—	—	49.1	49.1
Total Fair Value	\$ 373.9	\$ 15.2	\$ 22.6	\$ 554.1	\$ 965.8

* Investments are measured at fair value using the net asset value per share practical expedient, and therefore, are not classified in the fair value hierarchy.

In 2019, the pension plan's asset classified as Level 3 constitutes an insurance contract valued annually on an actuarial basis.

The fair value of our pension plan assets as of December 31, 2018, by asset category, are as follows:

(in millions)	Active Markets for Identical Assets Level 1	Other Observable Inputs Level 2	Unobservable Inputs Level 3	Net Asset Value ("NAV") Practical Expedient*	Total Fair Value
Cash Equivalents and Money Markets	\$ 72.0	\$ —	\$ —	\$ —	\$ 72.0
Common Stocks					
Actively Managed U.S. Equities	110.7	—	—	—	110.7
Fixed Income Bonds and Notes	—	0.1	—	—	0.1
Commingled and Mutual Funds					
U.S. Equity Funds	49.4	—	—	—	49.4
Non-U.S. Equity Funds	14.4	—	—	140.8	155.2
U.S. Fixed Income, Government and Corporate	59.5	—	—	—	59.5
Registered Investment Company	16.8	—	—	—	16.8
Collective Trust	—	—	20.8	19.0	39.8
Non-U.S. Fixed Income, Government and Corporate	—	—	—	155.5	155.5
International Balanced Funds	—	—	—	1.5	1.5
Alternative Investments					
Insurance / Annuity Contract(s)	—	13.4	—	—	13.4
Hedge Funds and LDI	—	—	—	157.0	157.0
International Property Funds	—	—	—	46.3	46.3
Total Fair Value	\$ 322.8	\$ 13.5	\$ 20.8	\$ 520.1	\$ 877.2

The table above has been revised to correct our previously reported classification of \$165.2 million of investments in commingled and mutual funds from NAV to Level 1 and \$9.3 million of investments in annuity contracts from NAV to Level 2 as of December 31, 2018.

* Investments are measured at fair value using the net asset value per share practical expedient, and therefore, are not classified in the fair value hierarchy.

In 2018, the pension plan's asset classified as Level 3 constitutes an insurance contract valued annually on an actuarial basis.

The following table sets forth a summary of pension plan assets valued using NAV or its equivalent as of December 31, 2019 and December 31, 2018:

	Redemption Frequency	Unfunded Commitment	Other Redemption Restrictions	Redemption Notice Period
Non-U.S. Equity Funds ^(a)	Immediate	None	None	None
Non-U.S. Fixed Income, Government and Corporate ^(b)	Immediate	None	None	None
International Balanced Funds ^(c)	Immediate	None	None	None
Collective Trust Fund ^(d)	Immediate	None	None	None
Hedge Funds ^(e)	Quarterly	None	None	65 days written
Hedge Funds ^(e)	Quarterly	None	None	30 days written
Hedge Funds ^(e)	Quarterly	None	None	60 days written
International Property Funds ^(f)	Immediate	None	None	None
Hedge Funds and LDI ^(g)	Immediate	None	None	None

(a) These funds invest in corporate equity securities outside the United States.

(b) These funds invest in corporate and government fixed income securities outside the United States.

(c) These funds invest in a blend of equities, fixed income, cash and property outside the United States.

(d) These funds are managed in a collective trust under Australia's Superannuation plan structure

(e) These funds are direct investment alternative investments/hedge funds that deploy a multi-strategy approach to investing (e.g. long/short/event-driven, credit).

(f) These funds invest in real property outside the United States.

(g) These funds invest in strategies that seek to add diversification to a portfolio with uncorrelated risk profiles or are designed to track the duration of all or part of the underlying liability.

Cash Flows

We expect, based on current actuarial calculations, to contribute cash of approximately \$21.4 million to our defined benefit pension plans during 2020. Cash contributions in subsequent years will depend on a number of factors including the investment performance of plan assets.

Estimated Future Benefit Payments

The following benefit payments, which reflect expected future service, as appropriate, are expected to be paid:

Estimated future payments (in millions)	Pension Benefits	Postretirement Benefits
2020	\$ 49.6	\$ 2.3
2021	50.2	2.3
2022	52.0	2.3
2023	53.7	2.2
2024	54.3	2.1
2025 to 2029	291.7	9.5
Total payments	\$ 551.5	\$ 20.7

Supplemental Executive Retirement Plan

We also have a non-qualified Supplemental Executive Retirement Plan ("SERP"). The SERP, which is not funded, is intended to provide retirement benefits for certain executive officers who were formerly employees of Crane Currency. Benefit amounts are based upon years of service and compensation of the participating employees. We recorded a pre-tax settlement gain related to the SERP of \$0.1 million in 2019. Accrued SERP benefits were \$3.4 million as of December 31, 2019. Employer contributions made to the SERP were \$2.2 million in 2019.

Defined Contribution Plans

We sponsor savings and investment plans that are available to our eligible employees including employees of our subsidiaries. We made contributions to the plans of \$11.0 million, \$9.9 million and \$8.5 million in 2019, 2018 and 2017, respectively.

In addition to participant deferral contributions and company matching contributions on those deferrals, we provide a 3% non-matching contribution to eligible participants. We made non-matching contributions to these plans of \$13.4 million, \$12.5 million and \$11.0 million in 2019, 2018 and 2017, respectively.

Note 7 - Leases

Arrangements that explicitly or implicitly relate to property, plant and equipment are assessed at inception to determine if the arrangement is or contains a lease. Generally, we enter into operating leases as the lessee and recognize right-of-use assets and lease liabilities based on the present value of future lease payments over the lease term.

We lease certain vehicles, equipment, manufacturing facilities, and non-manufacturing facilities. We have leases with both lease components and non-lease components, such as common area maintenance, utilities, or other repairs and maintenance. For all asset classes, we applied the practical expedient to account for each separate lease component and its associated non-lease component(s) as a single lease component.

We identify variable lease payments, such as maintenance payments based on actual activities performed or costs incurred, at lease commencement by assessing the nature of the payment provisions, including whether the payments are subject to a minimum.

Certain leases include options to renew for an additional term or company-controlled options to terminate. We generally determine it is not reasonably certain to assume the exercise of renewal options because there is no economic incentive to renew. As termination options often include penalties, we generally determine it is reasonably certain that termination options will not be exercised because there is an economic incentive not to terminate. Therefore, these options generally do not impact the lease term or the determination or classification of the right-of-use asset and lease liability.

In the third quarter of 2017, we entered into a seven-year lease for a used airplane which includes a maximum residual value guarantee of \$11.1 million if the fair value of the airplane is less than \$14.4 million at the end of the lease term. We do not believe it is probable that any amount will be owed under this guarantee. Therefore, no amount related to the residual value guarantee is included in the lease payments used to measure the right-of-use asset and lease liability. We have not entered into any other leases where a residual value guarantee is provided to the lessor.

Rental expense was \$34.8 million, \$33.8 million and \$26.6 million for 2019, 2018 and 2017, respectively.

We do not enter into arrangements where restrictions or covenants are imposed by the lessor that, for example, relate to incurring additional financial obligations. Furthermore, we also have not entered into any significant sublease arrangements.

We use our collateralized incremental borrowing rate based on the information available at commencement date to determine the present value of future payments and the appropriate lease classification. The rate implicit in the lease is generally unknown, as we generally operate in the capacity of the lessee.

Our Consolidated Balance Sheet includes the following related to leases:

<i>(in millions)</i>	Classification	December 31, 2019
Assets		
Operating right-of-use assets	Other assets	\$ 112.6
Liabilities		
Current lease liabilities	Accrued liabilities	\$ 24.0
Long-term lease liabilities	Other liabilities	91.5
Total lease liabilities		<u>\$ 115.5</u>

The components of lease cost were as follows:

<i>(in millions) December 31,</i>	2019
Operating lease cost	\$ 32.6
Variable lease cost	\$ 2.2

The weighted average remaining lease terms and discount rates for our operating leases were as follows as of December 31, 2019:

Weighted-average remaining lease term - operating leases	9.7
Weighted-average discount rate - operating leases	3.9%

Supplemental cash flow information related to our operating leases was as follows for period ended December 31, 2019:

<i>(in millions)</i>	
Cash paid for amounts included in measurement of operating lease liabilities - operating cash flows	\$ 24.3
Right-of-use assets obtained in exchange for new operating lease liabilities	\$ 21.0

Future minimum operating lease payments were as follows:

<i>(in millions)</i>	December 31, 2019
2020	\$ 27.7
2021	23.2
2022	18.6
2023	15.4
2024	12.3
Thereafter	54.5
Total future minimum operating lease payments	\$ 151.7
Imputed interest	36.2
Present value of lease liabilities reported	<u>\$ 115.5</u>

Future minimum operating lease payments for leases with initial or remaining terms of one year or more consisted of the following as of December 31, 2018 under ASC 840, the predecessor to ASC 842.

<i>(in millions)</i>	December 31, 2018
2019	\$ 23.4
2020	19.6
2021	17.0
2022	14.2
2023	12.4
Thereafter	60.7
Total minimum lease payments	<u>\$ 147.3</u>

Note 8 – Stock-Based Compensation Plans

At December 31, 2019, we had stock-based compensation awards outstanding under the following shareholder-approved plans: the 2013 Stock Incentive Plan (the "2013 Plan") and 2018 Stock Incentive Plan (the "2018 Plan"), applicable to employees and non-employee directors.

The 2013 Plan was approved by the Board of Directors and stockholders at the annual meeting in 2013. The 2013 Plan originally authorized the issuance of up to 9,500,000 shares of stock pursuant to awards under the plan. In 2018, in view of the limited number of shares remaining available under the 2013 Plan, the Board of Directors and stockholders approved the adoption of the 2018 Plan which authorized the issuance of up to 6,500,000 shares of Crane Co. stock. No further awards will be made under the 2013 Plan.

The stock incentive plans are used to provide long-term incentive compensation through stock options, restricted share units, performance-based restricted share units and deferred stock units.

Stock Options

Options are granted under the Stock Incentive Plan to officers and other key employees and directors at an exercise price equal to the closing price on the date of grant. Unless otherwise determined by the Compensation Committee which administers the plan, options become exercisable at a rate of 25% after the first year, 50% after the second year, 75% after the third year and 100% after the fourth year from the date of grant. Options granted to officers and employees from 2004 to 2013 expire six years after the date of grant. All options granted to directors and options granted to officers and employees after 2014 expire 10 years after the date of grant.

We determine the fair value of each grant using the Black-Scholes option pricing model. The weighted-average assumptions for grants made during the years ended December 31, 2019, 2018 and 2017 are as follows:

	2019	2018	2017
Dividend yield	2.20%	1.74%	2.27%
Volatility	25.17%	23.25%	23.32%
Risk-free interest rate	2.64%	2.45%	1.94%
Expected lives in years	4.2	4.2	4.2

Expected dividend yield is based on our dividend rate. Expected stock volatility was determined based upon the historical volatility for the four year period preceding the date of grant. The risk-free interest rate was based on the yield curve in effect at the time the options were granted, using U.S. constant maturities over the expected life of the option. The expected lives of the awards represents the period of time that options granted are expected to be outstanding.

Activity in our stock option plans for the year ended December 31, 2019 were as follows:

Option Activity	Number of Shares (in 000's)	Weighted Average Exercise Price	Weighted Average Remaining Life (Years)
Options outstanding as of January 1, 2019	2,410	\$ 62.84	
Granted	500	79.14	
Exercised	(217)	52.58	
Canceled	(111)	76.91	
Options outstanding as of December 31, 2019	2,582	\$ 66.26	6.62
Options exercisable as of December 31, 2019	1,417	\$ 59.06	5.65

Included in our share-based compensation was expense recognized for our stock option awards of \$6.0 million, \$5.9 million and \$6.2 million in 2019, 2018 and 2017, respectively. The weighted-average fair value of options granted during 2019, 2018 and 2017 was \$15.79, \$17.79 and \$12.98, respectively. The total fair value of shares vested during 2019, 2018 and 2017 was \$6.3 million, \$6.5 million and \$6.3 million, respectively. The total intrinsic value of options exercised during 2019, 2018 and 2017 was \$6.8 million, \$17.6 million and \$16.9 million, respectively. The total cash received from these option exercises during 2019, 2018 and 2017 was \$11.4 million, \$24.2 million and \$31.2 million, respectively. The tax benefit realized for the tax deductions from option exercises and vesting of restricted share units was \$3.8 million and \$5.4 million as of December 31, 2019 and December 31, 2018, respectively. The aggregate intrinsic value of exercisable options was \$39.4 million, \$16.7 million and \$29.9 million as of December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, there was \$10.3 million of total future compensation cost related to unvested share-based awards to be recognized over a weighted-average period of 1.84 years.

Restricted Share Units and Performance-Based Restricted Share Units

Restricted share units vest at a rate of 25% after the first year, 50% after the second year, 75% after the third year and 100% after the fourth year from the date of grant and are subject to forfeiture restrictions which lapse over time. The vesting of performance-based restricted share units is determined in three years based on relative total shareholder return for Crane Co. compared to the S&P Midcap 400 Capital Goods Group, with payout potential ranging from 0% to 200% but capped at 100% if our three year total shareholder return is negative.

Included in our share-based compensation was expense recognized for our restricted share unit and performance-based restricted share unit awards of \$16.3 million, \$15.7 million and \$13.9 million in 2019, 2018 and 2017, respectively. As of December 31, 2019, there was \$23.6 million of total future compensation cost related to restricted share unit and performance-based restricted share unit awards, to be recognized over a weighted-average period of 1.84 years.

Changes in our restricted share units for the year ended December 31, 2019 were as follows:

Restricted Share Unit Activity	Restricted Share Units (in 000's)	Weighted Average Grant-Date Fair Value
Restricted share units as of January 1, 2019	503	\$ 77.58
Restricted share units granted	178	80.27
Restricted share units vested	(162)	67.11
Restricted share units forfeited	(45)	77.62
Performance-based restricted share units granted	82	79.14
Performance-based restricted share units vested	(61)	80.00
Performance-based restricted share units forfeited	(15)	88.79
Restricted share units as of December 31, 2019	480	\$ 83.23

Note 9 – Income Taxes*Provision for Income Taxes*

Our income before taxes is as follows:

(in millions) For year ended December 31,	2019	2018	2017
U.S. operations	\$ 64.0	\$ 296.4	\$ 270.1
Non-U.S. operations	106.7	115.0	97.4
Total	\$ 170.7	\$ 411.4	\$ 367.5

Our provision (benefit) for income taxes consists of:

(in millions) For the year ended December 31,	2019	2018	2017
Current:			
U.S. federal tax	\$ 31.0	\$ 9.3	\$ 58.4
U.S. state and local tax	2.2	4.9	5.0
Non-U.S. tax	29.0	14.0	29.3
Total current	62.2	28.2	92.7
Deferred:			
U.S. federal tax	(26.4)	35.7	99.2
U.S. state and local tax	3.0	2.0	0.1
Non-U.S. tax	(1.7)	10.0	3.0
Total deferred	(25.1)	47.7	102.3
Total provision for income taxes *	\$ 37.1	\$ 75.9	\$ 195.0

* Included in the above amounts are excess tax benefits from share-based compensation of \$3.8 million, \$5.4 million and \$4.3 million in 2019, 2018 and 2017, respectively, which were reflected as reductions in our provision for income taxes in 2019, 2018 and 2017.

A reconciliation of the statutory U.S. federal tax rate to our effective tax rate is as follows:

For the year ended December 31,	2019	2018	2017
Statutory U.S. federal tax rate	21.0 %	21.0 %	35.0 %
Increase (reduction) from:			
Income taxed at non-U.S. rates	2.6 %	(0.2)%	(0.5)%
Non-U.S. income inclusion, net of tax credits	3.4 %	(0.1)%	(1.6)%
State and local taxes, net of federal benefit	2.5 %	1.4 %	1.0 %
U.S. research and development tax credit	(1.7)%	(0.7)%	(1.0)%
U.S. domestic manufacturing deduction	— %	(0.3)%	(1.6)%
Effect of the enactment of the Tax Cuts and Jobs Act of 2017	— %	(0.8)%	23.8 %
U.S. deduction for foreign - derived intangible income	(5.1)%	(1.1)%	— %
Other	(1.0)%	(0.8)%	(2.0)%
Effective tax rate	21.7 %	18.4 %	53.1 %

As of December 31, 2019, we have made the following determinations with regards to our non-U.S. earnings:

(in millions)	Permanently reinvested	Not permanently reinvested
Amount of earnings	\$ 265.6	\$ 1,238.8
Associated tax	NA *	\$ 8.7

* Determination of U.S. income taxes and non-U.S. withholding taxes due upon repatriation of this \$266 million of earnings is not practicable because the amount of such taxes depends upon circumstances existing in numerous taxing jurisdictions at the time the remittance occurs.

Tax Related to Comprehensive Income

During 2019, 2018 and 2017, tax (benefit) provision of \$(12.6) million, \$(7.1) million and \$3.5 million, respectively, related to changes in pension and post-retirement plan assets and benefit obligations, were recorded to accumulated other comprehensive loss.

Deferred Taxes and Valuation Allowances

The components of deferred tax assets and liabilities included in our Consolidated Balance Sheets are as follows:

(in millions) December 31,	2019	2018
Deferred tax assets:		
Asbestos-related liabilities	\$ 158.4	\$ 110.0
Tax loss and credit carryforwards	120.7	124.8
Pension and post-retirement benefits	56.9	50.2
Inventories	26.0	20.8
Other	46.6	35.8
Total	\$ 408.6	\$ 341.6
Less: valuation allowance	150.0	124.3
Total deferred tax assets, net of valuation allowance	\$ 258.6	\$ 217.3
Deferred tax liabilities:		
Basis difference in fixed assets	\$ (58.7)	\$ (53.7)
Basis difference in intangible assets	(195.4)	(176.0)
Other	(25.2)	(22.0)
Total deferred tax liabilities	\$ (279.3)	\$ (251.7)
Net deferred tax asset (liability)	\$ (20.7)	\$ (34.4)
Balance sheet classification:		
Long-term deferred tax assets	35.1	18.8
Long-term deferred tax liability	(55.8)	(53.2)
Net deferred tax asset (liability)	\$ (20.7)	\$ (34.4)

As of December 31, 2019, we had U.S. federal, U.S. state and non-U.S. tax loss and credit carryforwards that will expire, if unused, as follows:

(in millions) Year of expiration	U.S. Federal Tax Credits	U.S. Federal Tax Losses	U.S. State Tax Credits	U.S. State Tax Losses	Non- U.S. Tax Losses	Total
2020-2024	\$ 2.9	\$ —	\$ 2.8	\$ 71.7	\$ 34.9	
After 2024	2.7	0.8	2.7	810.8	4.9	
Indefinite	—	—	22.1	3.6	201.3	
Total tax carryforwards	\$ 5.6	\$ 0.8	\$ 27.6	\$ 886.1	\$ 241.1	
Deferred tax asset on tax carryforwards	\$ 5.6	\$ 0.2	\$ 21.8	\$ 45.5	\$ 47.6	\$ 120.7
Valuation allowance on tax carryforwards	(5.5)	(0.2)	(20.1)	(43.9)	(45.5)	(115.2)
Net deferred tax asset on tax carryforwards	\$ 0.1	\$ —	\$ 1.7	\$ 1.6	\$ 2.1	\$ 5.5

As of December 31, 2019, and 2018, we determined that it was more likely than not that \$115.2 million and \$101.2 million, respectively, of our deferred tax assets related to tax loss and credit carryforwards will not be realized. As a result, we recorded a valuation allowance against these deferred tax assets. We also determined that it is more likely than not that a portion of the benefit related to U.S. state and non-U.S. deferred tax assets other than tax loss and credit carryforwards will not be realized. Accordingly, as of December 31, 2019 and 2018, a valuation allowance of \$34.8 million and \$23.1 million, respectively, was established against these U.S. state and non-U.S. deferred tax assets. Our total valuation allowance as of December 31, 2019 and 2018 was \$150.0 million and \$124.3 million, respectively.

Unrecognized Tax Benefits

A reconciliation of the beginning and ending amount of our gross unrecognized tax benefits, excluding interest and penalties, is as follows:

(in millions)	2019	2018	2017
Balance of liability as of January 1,	\$ 42.0	\$ 46.4	\$ 46.5
Increase as a result of tax positions taken during a prior year	1.1	4.6	2.5
Decrease as a result of tax positions taken during a prior year	(0.5)	(1.5)	(1.5)
Increase as a result of tax positions taken during the current year	3.2	3.1	5.2
Decrease as a result of settlements with taxing authorities	—	(1.1)	(0.3)
Reduction as a result of a lapse of the statute of limitations	(6.0)	(9.5)	(6.0)
Balance of liability as of December 31,	\$ 39.8	\$ 42.0	\$ 46.4

As of December 31, 2019, 2018 and 2017, the amount of our unrecognized tax benefits that, if recognized, would affect our effective tax rate were \$43.8 million, \$43.1 million and \$49.2 million, respectively. The difference between these amounts and those reflected in the table above relates to (1) offsetting tax effects from other tax jurisdictions, and (2) interest expense, net of deferred taxes.

We recognize interest and penalties related to unrecognized tax benefits as a component of our income tax expense. During the years ended December 31, 2019, 2018 and 2017, we recognized interest and penalty expense of \$0.8 million, \$0.7 million and \$0.3 million, respectively, in our Consolidated Statements of Operations. As of December 31, 2019 and 2018, we had accrued \$8.0 million and \$7.2 million, respectively, of interest and penalties related to unrecognized tax benefits on our Consolidated Balance Sheets.

During the next twelve months, it is reasonably possible that our unrecognized tax benefits could change by \$11.3 million due to settlements of income tax examinations, the expiration of statutes of limitations or other resolution of uncertainties. However, if the ultimate resolution of income tax examinations results in amounts that differ from this estimate, we will record additional income tax expense or benefit in the period in which such matters are effectively settled.

Income Tax Examinations

Our income tax returns are subject to examination by the U.S. federal, U.S. state and local, and non-U.S. tax authorities. Years open to examination are as follows:

Jurisdiction	Year
U.S. federal	2016 - 2018
U.S. state and local	2012 - 2018
Non-U.S.	2013 - 2018

Currently, we and our subsidiaries are under examination in various jurisdictions, including Germany (2013 through 2015) and Canada (2013 through 2015).

Note 10 – Accrued Liabilities

Accrued liabilities consist of:

(in millions) December 31,	2019	2018
Employee related expenses	\$ 120.6	\$ 124.7
Warranty	11.0	18.2
Current lease liabilities	24.0	—
Contract liabilities	88.4	50.8
Other	134.2	143.4
Total	\$ 378.2	\$ 337.1

We accrue warranty liabilities when it is probable that a liability has been incurred and the amount of the loss can be reasonably estimated. Warranty provision is included in "Cost of sales" in our Consolidated Statements of Operations.

A summary of the warranty liabilities is as follows:

(in millions) December 31,	2019	2018
Balance at beginning of period	\$ 18.2	\$ 14.6
Expense	8.9	14.6
Changes due to acquisitions/divestitures	—	1.1
Payments / deductions	(16.0)	(12.0)
Currency translation	(0.1)	(0.1)
Balance at end of period	\$ 11.0	\$ 18.2

Note 11 – Other Liabilities

(in millions) December 31,	2019	2018
Environmental	\$ 36.0	\$ 22.3
Long-term lease liabilities	91.5	—
Other	60.4	62.3
	\$ 187.9	\$ 84.6

Note 12 - Commitments and Contingencies

Asbestos Liability

Information Regarding Claims and Costs in the Tort System

As of December 31, 2019, we were a defendant in cases filed in numerous state and federal courts alleging injury or death as a result of exposure to asbestos. Activity related to asbestos claims during the periods indicated was as follows:

For the year ended December 31,	2019	2018	2017
Beginning claims	29,089	32,234	36,052
New claims	2,848	2,434	2,819
Settlements	(983)	(1,011)	(1,038)
Dismissals	(1,898)	(4,568)	(5,599)
Ending claims	29,056	29,089	32,234

Of the 29,056 pending claims as of December 31, 2019, approximately 18,000 claims were pending in New York, approximately 100 claims were pending in Texas, approximately 300 claims were pending in Mississippi, and approximately 200 claims were pending in Ohio, all jurisdictions in which legislation or judicial orders restrict the types of claims that can proceed to trial on the merits.

We have tried several cases resulting in defense verdicts by the jury or directed verdicts for the defense by the court. We further have pursued appeals of certain adverse jury verdicts that have resulted in reversals in favor of the defense. We have also tried several other cases resulting in plaintiff verdicts which we paid or settled after unsuccessful appeals, the most recent of which are described below.

On March 23, 2010, a Philadelphia, Pennsylvania, state court jury found us responsible for a 1/11th share of a \$14.5 million verdict in the *James Nelson* claim. On February 23, 2011, the court entered judgment on the verdict in the amount of \$4.0 million, jointly, against us and two other defendants, with additional interest in the amount of \$0.01 million being assessed against us, only. All defendants, including us, and the plaintiffs took timely appeals of certain aspects of those judgments. On September 5, 2013, a panel of the Pennsylvania Superior Court, in a 2-1 decision, vacated the *Nelson* verdict against all defendants, reversing and remanding for a new trial. Plaintiffs requested a rehearing in the Superior Court and by order dated November 18, 2013, the Superior Court vacated the panel opinion, and granted en banc reargument. On December 23, 2014, the Superior Court issued a second opinion reversing the jury verdict. Plaintiffs sought leave to appeal to the Pennsylvania Supreme Court, which defendants opposed. By order dated June 21, 2017, the Supreme Court of Pennsylvania denied plaintiffs' petition for leave to appeal. The case was set for a new trial in April 2018. We settled the matter. The settlement was reflected in the second quarter 2018 indemnity amount.

On February 25, 2013, a Philadelphia, Pennsylvania, state court jury found us responsible for a 1/10th share of a \$2.5 million verdict in the *Thomas Amato* claim and a 1/5th share of a \$2.3 million verdict in the *Frank Vinciguerra* claim, which were consolidated for trial. We filed post-trial motions requesting judgments in our favor notwithstanding the jury's verdicts or new

trials, and also requesting that settlement offsets be applied to reduce the judgment in accordance with Pennsylvania law. These motions were denied. We appealed, and on April 17, 2015, a panel of the Superior Court of Pennsylvania affirmed the trial court's ruling. The Supreme Court of Pennsylvania accepted our petition for review and heard oral arguments on September 13, 2016. On November 22, 2016, the Court dismissed our appeal as improvidently granted. We paid the *Vinciguerra* judgment in the amount of \$0.6 million in the fourth quarter 2016. We paid the *Amato* judgment, with interest, in the amount of \$0.3 million in the second quarter of 2017.

On March 1, 2013, a New York City state court jury entered a \$35 million verdict against us in the *Ivo Peraica* claim. We filed post-trial motions seeking to overturn the verdict, to grant a new trial, or to reduce the damages, which we argue was excessive under New York appellate case law governing awards for non-economic losses and further were subject to settlement offsets. After the trial court remitted the verdict to \$18 million, but otherwise denied our post-trial motion, judgment was entered against us in the amount of \$10.6 million (including interest). We appealed. We took a separate appeal of the trial court's denial of our summary judgment motion. The Court consolidated the appeals, which were heard in the fourth quarter of 2014. In July 2016, we supplemented our briefing based on the New York Court of Appeals *Dummitt/Suttner* decision. On October 6, 2016, a panel of the Appellate Division, First Department, affirmed the rulings of the trial court on liability issues but further reduced the damages award to \$4.25 million, which after settlement offsets was calculated to be \$1.94 million. Plaintiff had the option of accepting the reduced amount or having a new trial on damages. We filed a motion with the Appellate Division requesting a rehearing on liability issues. The motion was denied. The New York Court of Appeals also denied review. We paid the *Peraica* judgment in the amount of \$2.7 million in the first quarter of 2017.

On September 17, 2013, a Fort Lauderdale, Florida state court jury in the *Richard DeLisle* claim found us responsible for 16% of an \$8 million verdict. The trial court denied all parties' post-trial motions, and entered judgment against us in the amount of \$1.3 million. We appealed and oral argument on the appeal took place on February 16, 2016. On September 14, 2016, a panel of the Florida Court of Appeals reversed and entered judgment in favor of us. Plaintiff filed with the Court of Appeals a motion for rehearing and/or certification of an appeal to the Florida Supreme Court, which the Court denied on November 9, 2016. Plaintiffs subsequently requested review by the Supreme Court of Florida. Plaintiffs' motion was granted on July 11, 2017. Oral argument took place on March 6, 2018. On October 15, 2018, the Supreme Court of Florida reversed and remanded with instructions to reinstate the trial court's judgment. We paid the judgment on December 28, 2018. That payment is reflected in the fourth quarter 2018 indemnity amount.

On June 16, 2014, a New York City state court jury entered a \$15 million verdict against us in the *Ivan Sweberg* claim and a \$10 million verdict against us in the *Selwyn Hackshaw* claim. The two claims were consolidated for trial. We filed post-trial motions seeking to overturn the verdicts, to grant new trials, or to reduce the damages, which were denied, except that the Court reduced the *Sweberg* award to \$10 million, and reduced the *Hackshaw* award to \$6 million. Judgments were entered in the amount of \$5.3 million in *Sweberg* and \$3.1 million in *Hackshaw*. We appealed. Oral argument on *Sweberg* took place on February 16, 2016, and oral argument on *Hackshaw* took place on March 9, 2016. On October 6, 2016, two panels of the Appellate Division, First Department, affirmed the rulings of the trial court on liability issues but further reduced the *Sweberg* damages award to \$9.5 million and further reduced the *Hackshaw* damages award to \$3 million, which after settlement offsets are calculated to be \$4.73 million in *Sweberg* and \$0 in *Hackshaw*. Plaintiffs were given the option of accepting the reduced awards or having new trials on damages. Plaintiffs subsequently brought an appeal in *Hackshaw* before the New York Court of Appeals, which the Court denied. We filed a motion with the Appellate Division requesting a rehearing on liability issues in *Sweberg*. That motion was denied. The New York Court of Appeals also denied review. We paid in the first quarter of 2017 the *Sweberg* plaintiffs \$5.7 million, which was the amount owed under this judgment. No damages were owed in *Hackshaw*.

On July 2, 2015, a St. Louis, Missouri state court jury in the *James Poage* claim entered a \$1.5 million verdict for compensatory damages against us. The jury also awarded exemplary damages against us in the amount of \$10 million. We filed a motion seeking to reduce the verdict to account for the verdict set-offs. That motion was denied, and judgment was entered against us in the amount of \$10.8 million. We initiated an appeal. Oral argument was held on December 13, 2016. In an opinion dated May 2, 2017, a Missouri Court of Appeals panel affirmed the judgment in all respects. The Court of Appeals denied our motion to transfer the case to the Supreme Court of Missouri. We sought leave to appeal before the Supreme Court of Missouri, which denied that request. The Supreme Court of the United States denied further review on March 26, 2018. We settled the matter. The settlement was reflected in the second quarter 2018 indemnity amount.

On February 9, 2016, a Philadelphia, Pennsylvania, federal court jury found us responsible for a 30% share of a \$1.085 million verdict in the *Valent Rabovsky* claim. The court ordered briefing on the amount of the judgment. We argued, among other things, that settlement offsets reduce the award to plaintiff under Pennsylvania law. A further hearing was held April 26, 2016, after which the court denied our request and entered judgment in the amount of \$0.4 million. We filed post-trial motions, which were denied in two decisions issued on August 26, 2016 and September 28, 2016. We pursued an appeal to the Third Circuit Court of Appeals, which was argued on June 12, 2017. On September 27, 2017, the Court entered an order asking the Supreme

Court of Pennsylvania to decide one of the issues raised in our appeal. The Supreme Court of Pennsylvania accepted the request, and we settled the matter. The settlement was reflected in the fourth quarter 2017 indemnity amount.

On April 22, 2016, a Phoenix, Arizona federal court jury found us responsible for a 20% share of a \$9 million verdict in the *George Coubourn* claim, and further awarded exemplary damages against us in the amount of \$5 million. The jury also awarded compensatory and exemplary damages against the other defendant present at trial. The court entered judgment against us in the amount of \$6.8 million. We filed post-trial motions, which were denied on September 20, 2016. We pursued an appeal to the Ninth Circuit Court of Appeals which affirmed the judgment on March 29, 2018. We settled the matter. The settlement was reflected in the second quarter 2018 indemnity amount.

On June 30, 2017, a New York City state court jury entered a \$20 million verdict against us in the *Geoffrey Anisansel* claim. We settled the matter in August 2017. The settlement was reflected in the third quarter 2017 indemnity amount.

Such judgment amounts were not included in our incurred costs until all available appeals are exhausted and the final payment amount is determined.

The gross settlement and defense costs incurred (before insurance recoveries and tax effects) by us for the years ended December 31, 2019, 2018 and 2017 totaled \$66.2 million, \$88.8 million and \$88.3 million, respectively. In contrast to the recognition of settlement and defense costs, which reflect the current level of activity in the tort system, cash payments and receipts generally lag the tort system activity by several months or more, and may show some fluctuation from period to period. Cash payments of settlement amounts are not made until all releases and other required documentation are received by us, and reimbursements of both settlement amounts and defense costs by insurers may be uneven due to insurer payment practices, transitions from one insurance layer to the next excess layer and the payment terms of certain reimbursement agreements. Our total pre-tax payments for settlement and defense costs, net of funds received from insurers, for the years ended December 31, 2019, 2018 and 2017 totaled \$41.5 million, \$63.9 million and \$62.5 million, respectively. Detailed below are the comparable amounts for the periods indicated.

(in millions)				
For the year ended December 31,	2019	2018	2017	
Settlement / indemnity costs incurred *	\$ 45.5	\$ 63.0	\$ 51.8	
Defense costs incurred *	20.7	25.8	36.5	
Total costs incurred	\$ 66.2	\$ 88.8	\$ 88.3	
Settlement / indemnity payments	\$ 38.9	\$ 61.5	\$ 51.7	
Defense payments	21.4	26.5	38.9	
Insurance receipts	(18.8)	(24.1)	(28.1)	
Pre-tax cash payments	\$ 41.5	\$ 63.9	\$ 62.5	

* Before insurance recoveries and tax effects.

The amounts shown for settlement and defense costs incurred, and cash payments, are not necessarily indicative of future period amounts, which may be higher or lower than those reported.

Cumulatively through December 31, 2019, we have resolved (by settlement or dismissal) approximately 139,000 claims. The related settlement cost incurred by us and our insurance carriers is approximately \$640 million, for an average settlement cost per resolved claim of approximately \$4,600. The average settlement cost per claim resolved during the years ended December 31, 2019, 2018 and 2017 was \$15,800, \$11,300, and \$7,800, respectively. Because claims are sometimes dismissed in large groups, the average cost per resolved claim, as well as the number of open claims, can fluctuate significantly from period to period. In addition to large group dismissals, the nature of the disease and corresponding settlement amounts for each claim resolved will also drive changes from period to period in the average settlement cost per claim. Accordingly, the average cost per resolved claim is not considered in our periodic review of our estimated asbestos liability. For a discussion regarding the four most significant factors affecting the liability estimate, see “Effects on the Consolidated Financial Statements.”

Effects on the Consolidated Financial Statements

We have retained an independent actuarial firm to assist management in estimating our asbestos liability in the tort system. The actuarial consultants review information provided by us concerning claims filed, settled and dismissed, amounts paid in settlements and relevant claim information such as the nature of the asbestos-related disease asserted by the claimant, the jurisdiction where filed and the time lag from filing to disposition of the claim. The methodology used by the actuarial

consultants to project future asbestos costs is based on our recent historical experience for claims filed, settled and dismissed during a base reference period. Our experience is then compared to estimates of the number of individuals likely to develop asbestos-related diseases determined based on widely used previously conducted epidemiological studies augmented with current data inputs. Those studies were undertaken in connection with national analyses of the population of workers believed to have been exposed to asbestos. Using that information, the actuarial consultants estimate the number of future claims that would be filed against us and estimates the aggregate settlement or indemnity costs that would be incurred to resolve both pending and future claims based upon the average settlement costs by disease during the reference period. This methodology has been accepted by numerous courts. After discussions with us, the actuarial consultants augment our liability estimate for the costs of defending asbestos claims in the tort system using a forecast from us which is based upon discussions with our defense counsel. Based on this information, the actuarial consultants compile an estimate of our asbestos liability for pending and future claims using a range of reference periods based on claim experience and covering claims expected to be filed through the indicated forecast period. The most significant factors affecting the liability estimate are (1) the number of new mesothelioma claims filed against us, (2) the average settlement costs for mesothelioma claims, (3) the percentage of mesothelioma claims dismissed against us and (4) the aggregate defense costs incurred by us. These factors are interdependent, and no one factor predominates in determining the liability estimate.

In our view, the forecast period used to provide the best estimate for asbestos claims and related liabilities and costs is a judgment based upon a number of trend factors, including the number and type of claims being filed each year; the jurisdictions where such claims are filed, and the effect of any legislation or judicial orders in such jurisdictions restricting the types of claims that can proceed to trial on the merits; and the likelihood of any comprehensive asbestos legislation at the federal level. In addition, the dynamics of asbestos litigation in the tort system have been significantly affected by the substantial number of companies that have filed for bankruptcy protection, thereby staying any asbestos claims against them until the conclusion of such proceedings, and the establishment of a number of post-bankruptcy trusts for asbestos claimants, which have been estimated to provide \$36 billion for payments to current and future claimants. These trend factors have both positive and negative effects on the dynamics of asbestos litigation in the tort system and the related best estimate of our asbestos liability, and these effects do not move in a linear fashion but rather change over multi-year periods. Accordingly, management continues to monitor these trend factors over time and periodically assesses whether an alternative forecast period is appropriate.

Each quarter, the actuarial consultants compile an update based upon our experience in claims filed, settled and dismissed as well as average settlement costs by disease category (mesothelioma, lung cancer, other cancer, and non-malignant conditions including asbestosis). In addition to this claims experience, we also consider additional quantitative and qualitative factors such as the nature of the aging of pending claims, significant appellate rulings and legislative developments, and their respective effects on expected future settlement values. As part of this process, we also consider trends in the tort system such as those enumerated above. Management considers all these factors in conjunction with the liability estimate of the actuarial consultants and determines whether a change in the estimate is warranted.

Liability Estimate. In June 2016, the New York State Court of Appeals issued its opinion in *Dummitt v. Crane Co.*, affirming a 2012 verdict for \$4.9 million against us. In that opinion, the court ruled that in certain circumstances we are legally responsible for asbestos-containing materials made and sold by third parties that others attached post-sale to our equipment. This decision provided clarity regarding the nature of claims that may proceed to trial in New York and greater predictability regarding future claim activity. We also reflected the impact of the *Dummitt* decision on our expected settlement values. Accordingly, on December 31, 2016 we updated and extended our asbestos liability estimate through 2059, the generally accepted end point.

Following our experience in the tort system post the *Dummitt* decision, we entered into several, increasingly similar, group settlements with various plaintiff firms, the most recent of which was in the fourth quarter of 2019. We expect this new trend of these types of group settlements to continue, and accordingly, effective as of December 31, 2019, we updated our estimate of the asbestos liability, including revised costs of settlement or indemnity payments and defense costs relating to currently pending claims and future claims projected to be filed against us through the same expected end point of 2059. Our estimate of the asbestos liability for pending and future claims through 2059 is based on the projected future asbestos costs resulting from our experience using a range of reference periods for claims filed, settled and dismissed. Based on this estimate, we recorded an additional liability of \$255 million as of December 31, 2019.

An aggregate liability of \$712 million is recorded as of December 31, 2019 to cover the estimated cost of asbestos claims now pending or subsequently asserted through 2059, of which approximately 85% is attributable to settlement and defense costs for future claims projected to be filed through 2059. The liability is reduced when cash payments are made in respect of settled claims and defense costs. It is not possible to forecast when cash payments related to the asbestos liability will be fully expended; however, it is expected such cash payments will continue for a number of years past 2059, due to the significant proportion of future claims included in the estimated asbestos liability and the lag time between the date a claim is filed and when it is resolved. None of these estimated costs have been discounted to present value due to the inability to reliably forecast the timing of payments. The current portion of the total estimated liability at December 31, 2019 is \$65 million and represents

our best estimate of total asbestos costs expected to be paid during the twelve-month period. Such amount is based upon the actuarial model together with our prior year payment experience for both settlement and defense costs.

Insurance Coverage and Receivables. Prior to 2005, a significant portion of our settlement and defense costs were paid by our primary insurers. With the exhaustion of that primary coverage, we began negotiations with our excess insurers to reimburse us for a portion of our settlement and/or defense costs as incurred. To date, we have entered into agreements providing for such reimbursements, known as “coverage-in-place,” with eleven of our excess insurer groups. Under such coverage-in-place agreements, an insurer’s policies remain in force and the insurer undertakes to provide coverage for our present and future asbestos claims on specified terms and conditions that address, among other things, the share of asbestos claims costs to be paid by the insurer, payment terms, claims handling procedures and the expiration of the insurer’s obligations. Similarly, under a variant of coverage-in-place, we have entered into an agreement with a group of insurers confirming the aggregate amount of available coverage under the subject policies and setting forth a schedule for future reimbursement payments to us based on aggregate indemnity and defense payments made. In addition, with ten of our excess insurer groups, we entered into agreements settling all asbestos and other coverage obligations for an agreed sum, totaling \$82.5 million in aggregate. Reimbursements from insurers for past and ongoing settlement and defense costs allocable to their policies have been made in accordance with these coverage-in-place and other agreements. All these agreements include provisions for mutual releases, indemnification of the insurer and, for coverage-in-place, claims handling procedures. With the agreements referenced above, we have concluded settlements with all but two of our solvent excess insurers with policies expected to respond to the aggregate costs included in the liability estimate. The first such insurer, which issued a single applicable policy, has been paying for many years the shares of defense and indemnity costs we have allocated to it, subject to a reservation of rights. The second insurer issued a single applicable policy in a layer of coverage that we do not anticipate reaching until many years from now, and, prior to the policy being reached, we anticipate opening a dialogue with that insurer about the execution of a suitable agreement. There are no pending legal proceedings between us and any insurer contesting our asbestos claims under our insurance policies.

In conjunction with developing the aggregate updated liability estimate referenced above, we also developed an updated estimate of probable insurance recoveries for our asbestos liabilities. In developing this estimate, we considered our coverage-in-place and other settlement agreements described above, as well as several additional factors. These additional factors include the financial viability of the insurance companies, the method by which losses will be allocated to the various insurance policies and the years covered by those policies, how settlement and defense costs will be covered by the insurance policies and interpretation of the effect on coverage of various policy terms and limits. In addition, the timing and amount of reimbursements will vary because our insurance coverage for asbestos claims involves multiple insurers, with different policy terms and certain gaps in coverage. In addition to consulting with legal counsel on these insurance matters, we retained insurance consultants to assist management in the estimation of probable insurance recoveries based upon the aggregate liability estimate described above and assuming the continued viability of all solvent insurance carriers. Based upon the analysis of policy terms and other factors noted above by our legal counsel, and incorporating risk mitigation judgments by us where policy terms or other factors were not certain, our insurance consultants compiled a model indicating how our historical insurance policies would respond to varying levels of asbestos settlement and defense costs and the allocation of such costs between such insurers and us. Using the estimated liability as of December 31, 2019 (for claims filed or expected to be filed through 2059), the insurance consultant’s model forecasted that approximately 14% of the liability would be reimbursed by our insurers. While there are overall limits on the aggregate amount of insurance available to us with respect to asbestos claims, certain limits were not reached by the total estimated liability currently recorded by us, and such overall limits did not influence our determination of the asset amount to record. We allocate to ourselves the amount of the asbestos liability (for claims filed or expected to be filed through 2059) that is in excess of available insurance coverage allocated to such years. An asset of \$98 million was recorded as of December 31, 2019 representing the probable insurance reimbursement for claims expected through 2059. The asset is reduced as reimbursements and other payments from insurers are received.

We review the estimated reimbursement rate with our insurance consultants on a periodic basis in order to confirm overall consistency with our established reserves. The reviews encompass consideration of the performance of the insurers under coverage-in-place agreements and the effect of any additional lump-sum payments under other insurer agreements. Actual insurance reimbursements vary from period to period, and will decline over time, for the reasons cited above.

Uncertainties. Estimation of our ultimate exposure for asbestos-related claims is subject to significant uncertainties, as there are multiple variables that can affect the timing, severity and quantity of claims and the manner of their resolution. We caution that our estimated liability is based on assumptions with respect to future claims, settlement and defense costs based on past experience that may not prove reliable as predictors; the assumptions are interdependent and no single factor predominates in determining the liability estimate. A significant upward or downward trend in the number of claims filed, depending on the nature of the alleged injury, the jurisdiction where filed and the quality of the product identification, or a significant upward or downward trend in the costs of defending claims, could change the estimated liability, as would substantial adverse verdicts at

trial that withstand appeal. A legislative solution, structured settlement transaction, or significant change in relevant case law could also change the estimated liability.

The same factors that affect developing estimates of probable settlement and defense costs for asbestos-related liabilities also affect estimates of the probable insurance reimbursements, as do a number of additional factors. These additional factors include the financial viability of the insurance companies, the method by which losses will be allocated to the various insurance policies and the years covered by those policies, how settlement and defense costs will be covered by the insurance policies and interpretation of the effect on coverage of various policy terms and limits and their interrelationships. In addition, due to the uncertainties inherent in litigation matters, no assurances can be given regarding the outcome of any litigation, if necessary, to enforce our rights under our insurance policies or settlement agreements.

Many uncertainties exist surrounding asbestos litigation, and we will continue to evaluate our estimated asbestos-related liability and corresponding estimated insurance reimbursement as well as the underlying assumptions and process used to derive these amounts. These uncertainties may result in our incurring future charges or increases to income to adjust the carrying value of recorded liabilities and assets, particularly if the number of claims and settlement and defense costs change significantly, or if there are significant developments in the trend of case law or court procedures, or if legislation or another alternative solution is implemented. Although the resolution of these claims will likely take many years, the effect on the results of operations, financial position and cash flow in any given period from a revision to these estimates could be material.

Other Contingencies

Environmental Matters

For environmental matters, we record a liability for estimated remediation costs when it is probable that we will be responsible for such costs and they can be reasonably estimated. Generally, third party specialists assist in the estimation of remediation costs. The environmental remediation liability as of December 31, 2019 is substantially related to the former manufacturing site in Goodyear, Arizona (the "Goodyear Site") discussed below.

Goodyear Site

The Goodyear Site was operated by Unidynamics/Phoenix, Inc. ("UPI"), which became an indirect subsidiary in 1985 when we acquired UPI's parent company, Unidynamics Corporation. UPI manufactured explosive and pyrotechnic compounds, including components for critical military programs, for the U.S. government at the Goodyear Site from 1962 to 1993, under contracts with the Department of Defense and other government agencies and certain of their prime contractors. In 1990, the U.S. Environmental Protection Agency ("EPA") issued administrative orders requiring UPI to design and carry out certain remedial actions, which UPI has done. Groundwater extraction and treatment systems have been in operation at the Goodyear Site since 1994. On July 26, 2006, we entered into a consent decree with the EPA with respect to the Goodyear Site providing for, among other things, a work plan for further investigation and remediation activities (inclusive of a supplemental remediation investigation and feasibility study). During the third quarter of 2014, the EPA issued a Record of Decision ("ROD") amendment permitting, among other things, additional source area remediation resulting in us recording a charge of \$49.0 million, extending the accrued costs through 2022. Following the 2014 ROD amendment, we continued our remediation activities and explored an alternative strategy to accelerate remediation of the site. During the fourth quarter of 2019, we received conceptual agreement from the EPA on our alternative remediation strategy which is expected to further reduce the contaminant plume. Accordingly, we recorded a pre-tax charge of \$18.9 million, net of reimbursements, to extend our forecast period through 2027 and reflect our revised workplan. The total estimated gross liability was \$46.9 million as of December 31, 2019, and as described below, a portion is reimbursable by the U.S. Government. The current portion of the total estimated liability was \$10.9 million as of December 31, 2019 and represents our best estimate, in consultation with our technical advisors, of total remediation costs expected to be paid during the twelve-month period. It is not possible at this point to reasonably estimate the amount of any obligation in excess of our current accruals through the 2027 forecast period because of the aforementioned uncertainties, in particular, the continued significant changes in the Goodyear Site conditions and additional expectations of remediation activities experienced in recent years.

On July 31, 2006, we entered into a consent decree with the U.S. Department of Justice on behalf of the Department of Defense and the Department of Energy pursuant to which, among other things, the U.S. Government reimburses us for 21% of qualifying costs of investigation and remediation activities at the Goodyear Site. As of December 31, 2019, we have recorded a receivable of \$9.7 million for the expected reimbursements from the U.S. Government in respect of the aggregate liability as at that date. The receivable is reduced as reimbursements and other payments from the U.S. Government are received.

Other Environmental Matters

We have been identified as a potentially responsible party (“PRP”) with respect to environmental contamination at the Crab Orchard National Wildlife Refuge Superfund Site (the “Crab Orchard Site”). The Crab Orchard Site is located near Marion, Illinois, and consists of approximately 55,000 acres. Beginning in 1941, the United States used the Crab Orchard Site for the production of ordnance and other related products for use in World War II. In 1947, about half of the Crab Orchard Site was leased to a variety of industrial tenants whose activities (which continue to this day) included manufacturing ordnance and explosives. A predecessor of us formerly leased portions of the Crab Orchard Site and conducted manufacturing operations at the Crab Orchard Site from 1952 until 1964. General Dynamics Ordnance and Tactical Systems, Inc. (“GD-OTS”) is in the process of conducting a remedial investigation and feasibility study for a portion of the Crab Orchard Site (referred to as the “AUS-OU”), which includes an area where we maintained operations, pursuant to an Administrative Order on Consent. A remedial investigation report was approved in February 2015, and work on the feasibility study is underway. It is unclear when the final feasibility study will be completed, or when a final Record of Decision may be issued.

GD-OTS has asked us to participate in a voluntary, multi-party mediation exercise with respect to response costs it has incurred or will incur with respect to the AUS-OU. We and other PRPs executed a non-binding mediation agreement on March 16, 2015, and the U.S. government executed the mediation agreement on August 6, 2015. The first phase of the mediation, involving certain former munitions or ordnance storage areas, began in November 2017, but did not result in a multi-party settlement agreement. Subsequently, we entered into discussions directly with GD-OTS and reached an agreement-in-principle with GD-OTS to contribute toward GD-OTS’s past RI-FS costs associated with the first-phase areas for a non-material amount. We have also agreed to pay a modest percentage of future RI-FS costs and the United States’ claimed past response costs relative to the first-phase areas, a sum that we expect in the aggregate to be immaterial. We understand that GD-OTS has also reached an agreement-in-principle with the U.S. Government and certain other PRPs related to the first-phase areas of concern, and that GD-OTS is negotiating with other PRPs. Negotiations are underway with respect to resolution of the remaining areas of the site, including those portions of the Crab Orchard Site where our predecessor conducted manufacturing and research activities. We at present cannot predict whether these further negotiations will result in an agreement, or when any determination of the ultimate allocable shares of the various PRPs, including the U.S. Government, is likely to be completed. It is not possible at this time to reasonably estimate the total amount of any obligation for remediation of the Crab Orchard Site as a whole because the allocation among PRPs, selection of remediation alternatives, and concurrence of regulatory authorities have not yet advanced to the stage where a reasonable estimate can be made. We notified our insurers of this potential liability and have obtained defense and indemnity coverage, subject to reservations of rights, under certain of our insurance policies.

Other Proceedings

We regularly review the status of lawsuits, claims and proceedings that have been or may be asserted against us relating to the conduct of our business, including those pertaining to product liability, patent infringement, commercial, employment, employee benefits, environmental and stockholder matters. We record a provision for a liability for such matters when it is considered probable that a liability has been incurred and the amount of the loss can be reasonably estimated. These provisions, if any, are reviewed quarterly and adjusted as additional information becomes available. If either or both of the criteria are not met, we assess whether there is at least a reasonable possibility that a loss, or additional losses, may have been incurred. If there is a reasonable possibility that a loss or additional loss may have been incurred for such matters, we disclose the estimate of the amount of loss or range of loss, disclose that the amount is immaterial, or disclose that an estimate of loss cannot be made, as applicable. We believe that as of December 31, 2019, there was no reasonable possibility that a material loss, or any additional material losses, may have been incurred for such matters, and that adequate provision has been made in our financial statements for the potential impact of all such matters.

Note 13 – Financing

Our debt as of December 31, 2019 and 2018 consisted of the following:

(in millions) December 31,	2019	2018
Commercial paper	\$ 149.4	\$ —
4.45% notes due December 2023	298.9	298.6
6.55% notes due November 2036	198.3	198.2
4.20% notes due March 2048	346.1	345.9
Syndicated loan facility	—	81.4
Building loan facility	—	26.7
Other deferred financing costs associated with credit facilities	(1.3)	(1.6)
Total long-term debt	\$ 842.0	\$ 949.2
Current maturities of long-term debt	—	(6.9)
Long-term debt, less current maturities	\$ 842.0	\$ 942.3
Debt discounts and debt issuance costs totaled \$6.7 as of each of December 31, 2019 and 2018, and have been netted against the aggregate principal amounts of the related debt in the components of the debt table above.		

Commercial paper program - On March 2, 2015, we entered into a commercial paper program (the “CP Program”) from which we may issue short-term, unsecured commercial paper notes (the “Notes”) pursuant to the exemption from registration contained in Section 4(a)(2) of the Securities Act of 1933, as amended. Amounts available under the CP Program may be borrowed, repaid and re-borrowed from time to time, with the aggregate principal amount of the Notes outstanding under the CP Program at any time not to exceed \$500 million. The Notes have maturities of up to 397 days from date of issue. The Notes rank at least *pari passu* with all of our other unsecured and unsubordinated indebtedness. On October 23, 2018, we increased the size of our commercial paper program to permit the issuance of commercial paper notes in an aggregate principal amount not to exceed \$550 million at any time outstanding. In December 2019, we issued \$150 million under the CP Program to fund the acquisition of Cummins-Allison, and as of December 31, 2019, there was \$149.4 million of outstanding borrowings. In January 2018, we issued \$340 million under the CP Program to fund the acquisition of Crane Currency, and as of December 31, 2018, there were no borrowings outstanding.

4.45% notes due December 2023 - In December 2013, we issued 10 year notes having an aggregate principal amount of \$300 million. The notes are unsecured, senior obligations that mature on December 15, 2023 and bear interest at 4.45% per annum, payable semi-annually on June 15 and December 15 of each year. The notes have no sinking fund requirement, but may be redeemed, in whole or part, at our option. These notes do not contain any material debt covenants or cross default provisions. If there is a change in control of the Company, and if as a consequence, the notes are rated below investment grade by both Moody’s Investors Service and Standard & Poor’s, then holders of the notes may require us to repurchase them, in whole or in part, for 101% of the principal amount plus accrued and unpaid interest. Debt issuance costs are deferred and included in long-term debt and are amortized as a component of interest expense over the term of the notes. Including debt issuance cost amortization, these notes have an effective annualized interest rate of 4.56%. The notes were issued under an indenture dated as of December 13, 2013. The indentures contain certain restrictions, including a limitation that restricts our ability and the ability of certain of our subsidiaries to create or incur secured indebtedness, enter into certain sale and leaseback transactions, and consolidate, merge or transfer all or substantially all of our assets and the assets of our subsidiaries.

6.55% notes due November 2036 - In November 2006, we issued 30 year notes having an aggregate principal amount of \$200 million. The notes are unsecured, senior obligations of us that mature on November 15, 2036 and bear interest at 6.55% per annum, payable semi-annually on May 15 and November 15 of each year. The notes have no sinking fund requirement, but may be redeemed, in whole or in part, at the option of us. These notes do not contain any material debt covenants or cross default provisions. If there is a change in control of the Company, and if as a consequence, the notes are rated below investment grade by both Moody’s Investors Service and Standard & Poor’s, then holders of the notes may require us to repurchase them, in whole or in part, for 101% of the principal amount plus accrued and unpaid interest. Debt issuance costs are deferred and included in long-term debt and are amortized as a component of interest expense over the term of the notes. Including debt issuance cost amortization, these notes have an effective annualized interest rate of 6.67%. The notes were issued under an indenture dated as of April 1, 1991. The indentures contain certain restrictions, including a limitation that restricts our ability and the ability of certain of our subsidiaries to create or incur secured indebtedness, enter into certain sale and leaseback transactions, and consolidate, merge or transfer all or substantially all of our assets and the assets of our subsidiaries.

4.20% notes due March 2048 - On February 5, 2018, we completed a public offering of \$350 million aggregate principal amount of 4.20% Senior Notes due 2048 (the "2048 Notes"). The 2048 Notes bear interest at a rate of 4.20% per annum and mature on March 15, 2048. Interest on the 2048 Notes is payable on March 15 and September 15 of each year, commencing on September 15, 2018. These notes do not contain any material debt covenants or cross default provisions. If there is a change in control of the Company, and if as a consequence, the notes are rated below investment grade by both Moody's Investors Service and Standard & Poor's, then holders of the notes may require us to repurchase them, in whole or in part, for 101% of the principal amount plus accrued and unpaid interest. Debt issuance costs are deferred and included in long-term debt and are amortized as a component of interest expense over the term of the notes. Including debt issuance cost amortization, these notes have an effective annualized interest rate of 4.29%. The notes were issued under an indenture dated as of February 5, 2018. The indentures contain certain restrictions, including a limitation that restricts our ability and the ability of certain of our subsidiaries to create or incur secured indebtedness, enter into certain sale and leaseback transactions, and consolidate, merge or transfer all or substantially all of our assets and the assets of our subsidiaries.

Syndicated Loan and Building Loan Facilities - As part of the acquisition of Crane Currency, we assumed €59 million of borrowings under a €72 million Syndicated Loan Facility Agreement (the "Syndicated Loan Facility") with the borrower being Crane Currency Malta. The proceeds from the Syndicated Loan Facility may be used to purchase equipment for a printing facility in Malta. The Syndicated Loan Facility requires monthly principal payments, after the facilities are fully drawn, of €0.3 million from October 2018 through March 2032 for Facility 1 and €0.1 million from June 2019 through January 2033 for Facility 2. Interest is based on EURIBOR, plus a margin of 3.5% and is payable on a monthly basis. The Syndicated Loan Facility contains customary affirmative and negative covenants, including limitations on the subsidiary with respect to indebtedness, liens, mergers, consolidations, liquidations and dissolutions, sales of all or substantially all assets, transactions with affiliates and payment of dividends. Crane Currency Malta must also maintain a debt service cover ratio ranging from 1.2 to 1.5 over specified periods and a debt-to-equity ratio ranging from 2.5 to 1.5 over specified periods. The Syndicated Loan Facility provides for customary events of default. We also assumed €22.4 million of borrowings under a €27.0 million Building Loan Facility Agreement (the "Building Loan Facility"). The proceeds from the Building Loan Facility may be used to finance construction of the printing facility in Malta. The Building Loan Facility requires quarterly principal payments of €0.4 million from March 2018 through March 2037. Interest is 1.5% and is payable on a quarterly basis. The Building Loan Facility provides for customary events of default. In November 2019, we paid the outstanding amounts of €92.1 million (\$103.4 million) due under the Syndicated Loan Facility and Building Loan Facility. As of December 31, 2018, there was €71.1 million outstanding borrowings under the Syndicated Loan Facility and €23.3 million of outstanding borrowings under the Building Loan Facility.

Other - As of December 31, 2019, we had open standby letters of credit of \$48.1 million issued pursuant to a \$162.2 million uncommitted Letter of Credit Reimbursement Agreement, and certain other credit lines. As of December 31, 2018, we had open standby letters of credit of \$57.9 million issued pursuant to a \$165.5 million uncommitted Letter of Credit Reimbursement Agreement, and certain other credit lines.

Revolving Credit Facility - In December 2017, we entered into a \$550 million five year Revolving Credit Agreement (the "2017 Facility"), which replaced an existing \$500 million revolving credit facility. The 2017 Facility allows us to borrow, repay, or to the extent permitted by the agreement, prepay and re-borrow funds at any time prior to the stated maturity date. The loan proceeds may be used for general corporate purposes including financing for acquisitions. Interest is based on, at our option, (1) a base rate, plus a margin ranging from 0.0% to 0.50% depending upon the ratings by S&P and Moody's of our senior unsecured long-term debt (the "Index Debt Rating"), or (2) an adjusted LIBOR for an interest period to be selected by us, plus a margin ranging from 0.805% to 1.50% depending upon the Index Debt Rating. The 2017 Facility contains customary affirmative and negative covenants for credit facilities of this type, including limitations on us and our subsidiaries with respect to indebtedness, liens, mergers, consolidations, liquidations and dissolutions, sales of all or substantially all assets, transactions with affiliates and hedging arrangements. We must also maintain a debt to capitalization ratio not to exceed 0.65 to 1.00 at all times. The 2017 Facility also provides for customary events of default, including failure to pay principal, interest or fees when due, failure to comply with covenants, any representation or warranty made by us or any of our material subsidiaries being false in any material respect, default under certain other material indebtedness, certain insolvency or receivership events affecting us and our material subsidiaries, certain ERISA events, material judgments and a change in control of the Company. As of December 31, 2019 and 2018, there were no outstanding borrowings under the 2017 Facility.

As of December 31, 2019, our total debt to total capitalization ratio was 40.2%, computed as follows:

(in millions)	
Commercial paper	\$ 149.4
Long-term debt	842.0
Total indebtedness	991.4
Total shareholders' equity	1,473.7
Capitalization	\$ 2,465.1
Total indebtedness to capitalization	40.2%

Note 14 - Fair Value Measurements

Accounting standards define fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Fair value measurements are to be considered from the perspective of a market participant that holds the asset or owes the liability. The standards also establish a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value.

The standards describe three levels of inputs that may be used to measure fair value:

Level 1: Quoted prices in active markets for identical or similar assets and liabilities.

Level 2: Quoted prices for identical or similar assets and liabilities in markets that are not active or observable inputs other than quoted prices in active markets for identical or similar assets and liabilities. Level 2 assets and liabilities include over-the-counter derivatives, principally forward foreign exchange contracts, whose value is determined using pricing models with inputs that are generally based on published foreign exchange rates and exchange traded prices, adjusted for other specific inputs that are primarily observable in the market or can be derived principally from or corroborated by observable market data.

Level 3: Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Valuation Technique

The carrying value of our financial assets and liabilities, including cash and cash equivalents, accounts receivable, commercial paper and accounts payable approximate fair value, without being discounted, due to the short periods during which these amounts are outstanding.

We are exposed to certain risks related to our ongoing business operations, including market risks related to fluctuation in currency exchange. We use foreign exchange contracts to manage the risk of certain cross-currency business relationships to minimize the impact of currency exchange fluctuations on our earnings and cash flows. We do not hold or issue derivative financial instruments for trading or speculative purposes. Foreign exchange contracts not designated as hedging instruments had a notional value of \$56.6 million and \$2.1 million as of December 31, 2019 and 2018, respectively. Our derivative assets and liabilities include foreign exchange contract derivatives that are measured at fair value using internal models based on observable market inputs such as forward rates and interest rates. Based on these inputs, the derivatives are classified within Level 2 of the valuation hierarchy. Such derivative receivable amounts are recorded within "Other current assets" on our Consolidated Balance Sheets and were \$0.1 million and less than \$0.1 million as of the years ended December 31, 2019 and 2018, respectively. Such derivative liability amounts are recorded within "Accrued liabilities" on our Consolidated Balance Sheets and were less than \$0.1 million as of each of December 31, 2019 and 2018.

The available-for-sale securities, which are included in "Other assets" on our Consolidated Balance Sheets, consist of two rabbi trusts that hold marketable securities for the benefit of participants in the SERP. Available-for-sale securities are measured at fair value using quoted market prices in an active market, and are therefore classified within Level 1 of the valuation hierarchy. The fair value of available-for-sale securities was \$1.4 million and \$3.4 million as of December 31, 2019 and 2018, respectively.

Long-term debt rates currently available to us for debt with similar terms and remaining maturities are used to estimate the fair value for debt issues that are not quoted on an exchange. The estimated fair value of long-term debt is measured using Level 2 inputs and was \$922.3 million and \$977.6 million as of December 31, 2019 and 2018, respectively.

Note 15 – Restructuring Charges

In 2019, we recorded restructuring charges of \$17.5 million related to the repositioning actions described below.

(in millions)	2019
2019 repositioning	\$ 9.9
Acquisition-related restructuring	5.3
2017 repositioning	2.3
Total restructuring	\$ 17.5

2019 Repositioning

In the fourth quarter of 2019, we initiated actions to consolidate two manufacturing operations within our Fluid Handling segment. These actions include workforce reductions of approximately 180 employees, or less than 1% of our global workforce.

Restructuring charges included \$9.9 million of severance costs related to such actions, all of which are cash costs. We expect to incur additional restructuring and related charges of \$4.8 million in 2020 and \$4.2 million in 2021 to complete these actions.

Acquisition-Related Restructuring

In 2018, we initiated actions within our Payment & Merchandising Technologies segment related to the closure of Crane Currency's printing operations in Sweden, which have been transitioned to a new print facility in Malta. These actions include workforce reductions of approximately 170 employees, or less than 2% of our global workforce.

Restructuring charges included severance and other costs related to such actions, all of which are cash costs. The following table summarizes the restructuring charges in 2019 and cumulatively through December 31, 2019:

(in millions)	Severance		Other		Total	
	2019	Cumulative	2019	Cumulative	2019	Cumulative
Payment & Merchandising Technologies	\$ 1.7	\$ 3.3	\$ 3.6	\$ 3.6	\$ 5.3	\$ 6.9

In 2019, we also recorded \$0.6 million of additional costs associated with facility move costs. There is no remaining liability associated with these actions as of December 31, 2019, and we do not expect to incur additional restructuring charges related to these actions.

2017 Repositioning

During the fourth quarter of 2017, we initiated broad-based repositioning actions designed to improve profitability. These actions include headcount reductions of approximately 300 employees, or about 3% of our global workforce, and select facility consolidations in North America and Europe.

Restructuring charges included severance and other costs related to the consolidation of certain manufacturing operations, all of which are cash costs. The following table summarizes the restructuring charges by business segment in 2019 and cumulatively through December 31, 2019:

(in millions)	Severance		Other		Total	
	2019	Cumulative	2019	Cumulative	2019	Cumulative
Fluid Handling	\$ 0.6	\$ 17.3	\$ —	\$ —	\$ 0.6	\$ 17.3
Payment & Merchandising Technologies	0.3	12.6	1.8	2.2	2.1	14.8
Aerospace & Electronics	—	1.3	(0.4)	(1.4)	(0.4)	(0.1)
	\$ 0.9	\$ 31.2	\$ 1.4	\$ 0.8	\$ 2.3	\$ 32.0

We also recorded \$11.0 million and \$7.5 million of additional costs associated with facility consolidations in 2019 and 2018, respectively, related to the 2017 repositioning actions. To complete these actions, we expect to incur an additional \$0.9 million of facility consolidation related charges in 2020 in our Fluid Handling segment.

The following table summarizes the accrual balances related to these restructuring charges as of December 31, 2019:

(in millions)	Balance at December 31, 2018	Expense (Gain)*	Utilization	Balance at December 31, 2019
<u>Fluid Handling</u>				
Severance	\$ 12.9	\$ 0.6	\$ (3.2)	\$ 10.3
Other	—	—	—	—
Total Fluid Handling	\$ 12.9	\$ 0.6	\$ (3.2)	\$ 10.3
<u>Payment & Merchandising Technologies</u>				
Severance	\$ 9.4	\$ 0.3	\$ (8.1)	\$ 1.6
Other	—	1.8	(1.8)	—
Total Payment & Merchandising Technologies	\$ 9.4	\$ 2.1	\$ (9.9)	\$ 1.6
<u>Aerospace & Electronics</u>				
Severance	\$ 0.9	\$ —	\$ (0.3)	\$ 0.6
Other	—	(0.4)	0.6	0.2
Total Aerospace & Electronics	\$ 0.9	\$ (0.4)	\$ 0.3	\$ 0.8
Total Restructuring	\$ 23.2	\$ 2.3	\$ (12.8)	\$ 12.7

* Reflected in the Consolidated Statements of Operations as “Restructuring charges”

The following table summarizes the accrual balances related to these restructuring charges as of December 31, 2018:

(in millions)	Balance at December 31, 2017	Expense (Gain)*	Utilization	Balance at December 31, 2018
<u>Fluid Handling</u>				
Severance	\$ 10.6	\$ 6.1	\$ (3.8)	\$ 12.9
Other	—	—	—	—
Total Fluid Handling	\$ 10.6	\$ 6.1	\$ (3.8)	\$ 12.9
<u>Payment & Merchandising Technologies</u>				
Severance	\$ 12.2	\$ 0.1	\$ (2.9)	\$ 9.4
Other	—	0.4	(0.4)	—
Total Payment & Merchandising Technologies	\$ 12.2	\$ 0.5	\$ (3.3)	\$ 9.4
<u>Aerospace & Electronics</u>				
Severance	\$ 1.3	\$ —	\$ (0.4)	\$ 0.9
Other	—	(1.0)	1.0	—
Total Aerospace & Electronics	\$ 1.3	\$ (1.0)	\$ 0.6	\$ 0.9
Total Restructuring	\$ 24.1	\$ 5.6	\$ (6.5)	\$ 23.2

* Reflected in the Consolidated Statements of Operations as “Restructuring charges”

Note 16 – Quarterly Results (Unaudited)

(in millions, except per share data) For year ended December 31,	First	Second	Third	Fourth	Year
2019					
Net sales	\$ 831.7	\$ 841.6	\$ 772.3	\$ 837.5	\$ 3,283.1
Cost of sales	526.6	535.0	494.4	548.1	2,104.1
Gross profit	305.1	306.6	277.9	289.4	1,179.0
Operating profit (loss) (a)	113.7	122.8	109.3	(135.4)	210.4
Net income (loss) attributable to common shareholders (b)	82.4	91.0	72.5	(112.6)	133.3
Basic earnings (loss) per share	\$ 1.38	\$ 1.52	\$ 1.21	\$ (1.89)	\$ 2.23
Diluted earnings (loss) per share	\$ 1.36	\$ 1.50	\$ 1.19	\$ (1.89)	\$ 2.20
2018					
Net sales	\$ 799.1	\$ 851.0	\$ 855.8	\$ 839.6	\$ 3,345.5
Cost of sales	521.2	545.6	544.8	544.6	2,156.2
Gross profit	277.9	305.4	311.0	295.0	1,189.3
Operating profit (c)	94.3	113.0	123.9	110.1	441.3
Net income attributable to common shareholders (d)	68.7	80.7	97.0	89.2	335.6
Basic earnings per share	\$ 1.15	\$ 1.35	\$ 1.62	\$ 1.51	\$ 5.63
Diluted earnings per share	\$ 1.13	\$ 1.32	\$ 1.59	\$ 1.46	\$ 5.50

- (a) Operating profit in 2019 includes i) an asbestos provision, net of \$229.0 million in the fourth quarter ii) an environmental provision, net of \$18.9 million in the fourth quarter; iii) acquisition-related and integration charges of \$1.1 million, \$2.4 million, \$0.2 million and \$1.5 million in the first, second, third and fourth quarters, respectively; and iv) restructuring charges of \$2.9 million, \$1.6 million, \$1.6 million and \$11.4 million in the first, second, third and fourth quarters, respectively.
- (b) Includes the impact of item (a) cited above.
- (c) Operating profit in 2018 includes i) acquisition-related and integration charges of \$5.2 million, \$4.1 million, \$2.1 million and \$8.4 million in the first, second, third and fourth quarters, respectively; ii) acquisition-related inventory and backlog amortization of \$6.6 million, \$1.9 million, \$0.3 million and \$0.3 million in the first, second, third and fourth quarters, respectively; and iii) restructuring charges (gains) of \$0.8 million, \$(0.6) million, \$5.2 million and \$1.8 million in the first, second, third and fourth quarters, respectively.
- (d) Includes the impact of item (c) cited above.

Note 17 – Subsequent Events

On January 31, 2020, we completed the acquisition of CIRCOR International, Inc.'s Instrumentation & Sampling Business ("I&S") for \$172 million on a cash-free and debt-free basis, subject to a later adjustment reflecting I&S' net working capital, cash, the assumption of certain debt-like items, and I&S' transaction expenses. We issued \$100 million of commercial paper, utilized \$67 million from our revolving credit facility and used cash on hand to fund the acquisition. I&S designs, engineers and manufactures a broad range of critical fluid control instrumentation and sampling solutions used in severe service environments which complements our existing portfolio of chemical, refining, petrochemical and upstream oil and gas applications within the Fluid Handling segment. Acquisition-related costs are being expensed as incurred. For the year ended December 31, 2019, we recorded \$0.6 million of transaction costs.

Due to the closing of this acquisition subsequent to the period end, we are currently determining the fair value of assets acquired and liabilities assumed necessary to develop the purchase price allocation. Therefore, disclosure of the purchase price allocation to the tangible and intangible assets acquired and liabilities assumed and supplemental pro forma information is not practicable. The pro forma financial information of the combined financial results will be included in our Form 10-Q for the fiscal quarter ended March 31, 2020.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures. The Company's Chief Executive Officer and Principal Financial Officer evaluated the effectiveness of the design and operation of the Company's disclosure controls and procedures as of the end of the year covered by this annual report. The Company's disclosure controls and procedures are designed to ensure that information required to be disclosed by the Company in the reports that are filed or submitted under the Securities Exchange Act of 1934 is recorded, processed, summarized, and reported within the time periods specified in the SEC rules and forms and the information is accumulated and communicated to the Company's Chief Executive Officer and Principal Financial Officer to allow timely decisions regarding required disclosure. Based on this evaluation, the Company's Chief Executive Officer and Principal Financial Officer have concluded that these controls are effective as of the end of the year covered by this annual report.

Change in Internal Controls over Financial Reporting. During the fourth quarter ended December 31, 2019, there have been no changes in the Company's internal control over financial reporting, identified in connection with our evaluation thereof, that have materially affected, or are reasonably likely to materially affect, its internal control over financial reporting.

Design and Evaluation of Internal Control over Financial Reporting. Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we included a report of our management's assessment of the design and effectiveness of our internal controls as part of this Annual Report on Form 10-K for the year ended December 31, 2019. Our independent registered public accounting firm also attested to, and reported on, our management's assessment of the effectiveness of internal control over financial reporting. Our management's report and our independent registered public accounting firm's attestation report are set forth in Part II, Item 8 of this Annual Report on Form 10-K under the captions entitled "Management's Responsibility for Financial Reporting" and "Report of Independent Registered Public Accounting Firm."

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Crane Co.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Crane Co. and subsidiaries (the “Company”) as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2019, of the Company and our report dated February 24, 2020, expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying “Managements Responsibility for Financial Reporting” appearing in Item 8. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company’s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Deloitte & Touche LLP

Stamford, CT

February 24, 2020

Item 9B. Other Information

None

Part III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by Item 10 is incorporated by reference to the definitive proxy statement with respect to the 2020 Annual Meeting of Shareholders which the Company expects to file with the Commission pursuant to Regulation 14A on or about March 15, 2020 except that such information with respect to Executive Officers of the Registrant is included, pursuant to Instruction 3, paragraph (b) of Item 401 of Regulation S-K, under Part I. The Company's Corporate Governance Guidelines, the charters of its Management Organization and Compensation Committee, its Nominating and Governance Committee and its Audit Committee and its Code of Ethics are available at www.craneco.com/governance. The information on our website is not part of this report.

Item 11. Executive Compensation

The information required by Item 11 is incorporated by reference to the definitive proxy statement with respect to the 2020 Annual Meeting of Shareholders which the Company expects to file with the Commission pursuant to Regulation 14A on or about March 15, 2020.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Except the information required by Section 201(d) of Regulation S-K which is set forth below, the information required by Item 12 is incorporated by reference to the definitive proxy statement with respect to the 2020 Annual Meeting of Shareholders which the Company expects to file with the Commission pursuant to Regulation 14A on or about March 15, 2020.

As of December 31, 2019:	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted average exercise price of outstanding options	Number of securities remaining available for future issuance under equity compensation plans
	(a)	(b)	(c)
Equity compensation plans approved by security holders:			
2013 Stock Incentive Plan (and predecessor plans)	—	—	—
2018 Stock Incentive Plan	3,193,545 ¹	\$ 66.26	5,520,499
Equity compensation plans not approved by security holders	—	—	—
Total	3,193,545	\$ —	5,520,499

¹ Includes 216,667 restricted share units ("RSUs"), 131,331 deferred stock units ("DSUs") and 263,404 performance-based restricted share units ("PRSUs"), assuming the maximum potential payout percentage. Actual numbers of shares may vary, depending on actual performance. If the PRSUs included in this total vest at the target performance level as opposed to the maximum level, the aggregate awards outstanding would be 3,061,843. Column (b) does not take RSUs, PRSUs or DSUs into account because they do not have an exercise price.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by Item 13 is incorporated by reference to the definitive proxy statement with respect to the 2020 Annual Meeting of Shareholders which the Company expects to file with the Commission pursuant to Regulation 14A on or about March 15, 2020.

Item 14. Principal Accounting Fees and Services

The information required by Item 14 is incorporated by reference to the definitive proxy statement with respect to the 2020 Annual Meeting of Shareholders which the Company expects to file with the Commission pursuant to Regulation 14A on or about March 15, 2020.

Item 15. Exhibits and Financial Statement Schedules

(a) Consolidated Financial Statements:

	<u>Page Number</u>
Report of Independent Registered Public Accounting Firm	Page 36
Consolidated Statements of Operations	Page 38
Consolidated Statements of Comprehensive Income (Loss)	Page 39
Consolidated Balance Sheets	Page 40
Consolidated Statements of Cash Flows	Page 41
Consolidated Statements of Changes in Equity	Page 42
Notes to Consolidated Financial Statements	Page 43

(b) Exhibits

Exhibit No.	Description
Exhibit 4.1	Description of Registrant's Securities Registered Pursuant to Section 12 of the Exchange Act.
Exhibit 21	Subsidiaries of the Registrant.
Exhibit 23.1	Consent of Independent Registered Public Accounting Firm.
Exhibit 31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or 15d-14(a).
Exhibit 31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a).
Exhibit 32.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(b) or 15d-14(b).
Exhibit 32.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(b) or 15d-14(b).
Exhibit 101.INS	XBRL Instance Document
Exhibit 101.SCH	XBRL Taxonomy Extension Schema Document
Exhibit 101.CAL	XBRL Taxonomy Calculation Linkbase Document
Exhibit 101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
Exhibit 101.LAB	XBRL Taxonomy Label Linkbase Document
Exhibit 101.PRE	XBRL Taxonomy Presentation Linkbase Document
Exhibit 104	Cover Page Interactive Data File (formatted in Inline XBRL and contained in Exhibit 101)

Exhibits to Form 10-K — Documents incorporated by reference:

- (2) Instruments Defining the Rights of Security Holders:
 - 2.1 Agreement and Plan of Merger, dated as of December 5, 2017, by and among the Company, FC Development Corp., Crane & Co., Inc and, solely in its capacity as the Company Equityholder Representative, Shareholder Representative Services LLC (incorporated by reference to Exhibit 2.1 to Form 8-K filed on December 5, 2017).
- (3) Certificate of Incorporation and Bylaws:
 - (3)(a) The Company's Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on April 25, 2017).
 - 3 (b) By-laws of the Company, as amended through April 24, 2017 (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed on April 25, 2017).
- (4) Instruments Defining the Rights of Security Holders:
 - (4)(a) Indenture dated as of April 1, 1991 between the Registrant and the Bank of New York (incorporated by reference to Exhibit 4.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2005).
 - (4)(b)(1) Indenture, dated as of December 13, 2013, between the Company and The Bank of New York Mellon, as trustee (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on December 13, 2013).
 - (4)(b)(2) Form of Note for 4.450% Notes due 2023 (incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on December 13, 2013).
 - (4)(c)(1) Indenture, dated as of February 5, 2018, between the Company and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on February 5, 2018).
 - (4)(c)(2) Form of Note for 4.200% Senior Notes due 2048 (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on February 5, 2018).
- (10) Material Contracts:

- 10(a) Second Restated Credit Agreement dated as of May 18, 2012 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 21, 2012).
- 10(b) Amendment No. 1 to Second Restated Credit Agreement, dated as of March 22, 2013 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on March 27, 2013).
- 10(c) Amendment No. 2 to Second Restated Credit Agreement, dated as of May 27, 2015 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 28, 2015).
- 10(d) Form of Commercial Paper dealer Agreement executed between Crane Co, as issuer and the Dealer party there to (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on March 3, 2015).
- 10(e) \$550 million 5-Year Revolving Credit Agreement, dated as of December 20, 2017 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 21, 2017).
- 10(f) \$150 million 364-day Credit Agreement, dated as of December 20, 2017 (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on December 21, 2017).
- 10(g) \$200 million 3-Year Term Loan Credit Agreement, dated as of December 20, 2017 (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on December 21, 2017).
- (iii) Compensatory Plans
 - (a) The Crane Co. 2004 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2004).
 - (b) 2007 Stock Incentive Plan (incorporated by reference to Appendix A to the Company's Proxy Statement filed on March 9, 2007).
 - (c) The Crane Co. 2009 Stock Incentive Plan (incorporated by reference to Appendix A to the Company's Proxy Statement filed on March 6, 2009).
 - (d) The 2011 Annual Incentive Plan (incorporated by reference to Appendix A to the Company's Proxy Statement filed on March 9, 2011).
 - (e) The Crane Co. 2013 Stock Incentive Plan (incorporated by reference to Appendix A to the Company's Proxy Statement filed on March 11, 2013).
 - (e) The Crane Co. 2018 Stock Incentive Plan (incorporated by reference to Appendix A to the Company's Proxy Statement filed on March 15, 2018).
 - (f) The Crane Co. 2000 Non-Employee Director Stock Compensation Plan (incorporated by reference to Exhibit 10(a) to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2000).
 - (g) 2007 Non-Employee Director Compensation Plan (incorporated by reference to Appendix B to the Company's Proxy Statement filed on March 9, 2007).
 - (h) The Crane Co. 2009 Non-Employee Director Compensation Plan (incorporated by reference to Appendix B to the Company's Proxy Statement filed on March 6, 2009).
 - (i) The Crane Co. Benefit Equalization Plan, effective February 25, 2008 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2008).
 - (j) The Crane Co. Benefit Equalization Plan as amended effective January 1, 2013 (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed December 11, 2013).
 - (k) Form of Employment/Severance Agreement between the Company and certain executive officers, which provides for the continuation of certain employee benefits upon a change in control (incorporated by reference to Exhibit 10.2 to the Company's Annual Report on Form 10-K for the year ended December 31, 2010). Agreements in this form have been entered into with all executive officers.
 - (l) Form of Indemnification Agreement (incorporated by reference to Exhibit 10 (iii) (l) to the Company's Annual Report on Form 10-K). Agreements in this form have been entered into with each director and executive officer of the Company.
 - (m) Agreement between the Company and Robert S. Evans dated January 24, 2011 (incorporated by reference to Exhibit 10.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2010).
 - (n) Time Sharing Agreement dated as of December 7, 2009, between the Company and R.S. Evans (incorporated by reference to Exhibit 10.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2009).
 - (o) Time-sharing Agreement dated January 31, 2014 between the Company and Max H. Mitchell (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on January 31, 2014).
 - (p) Amendment, dated August 31, 2017, to Time Sharing Agreement with R. S. Evans (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017).
 - (q) Amendment, dated August 31, 2017, to Time Sharing Agreement with M. Mitchell (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017).

Item 16. Form 10-K Summary

Not applicable.

Part IV
Signatures

Pursuant to the requirements of Section 13 or 15 (d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

CRANE CO.
(Registrant)

By /s/ MAX H. MITCHELL

Max H. Mitchell
President and Chief Executive Officer
Date 2/24/2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Officers

/s/ MAX H. MITCHELL

Max H. Mitchell
President, Chief Executive Officer
and Director

Date 2/24/2020

/s/ RICHARD A. MAUE

Richard A. Maue
Senior Vice President
Chief Financial Officer
(Principal Financial Officer)

Date 2/24/2020

/s/ CHRISTINA CRISTIANO

Christina Cristiano
Vice President, Controller
Chief Accounting Officer
(Principal Accounting Officer)

Date 2/24/2020

Directors

/s/ R.S. EVANS

R.S. Evans, Chairman of the Board

Date 2/24/2020

/s/ MARTIN R. BENANTE

Martin R. Benante

Date 2/24/2020

/s/ DONALD G. COOK

Donald G. Cook

Date 2/24/2020

/s/ MICHAEL DINKINS

Michael Dinkins

Date 2/24/2020

/s/ RONALD C. LINDSAY

Ronald C. Lindsay

Date 2/24/2020

/s/ ELLEN MCCLAIN

Ellen McClain

Date 2/24/2020

/s/ CHARLES G. MCCLURE, JR.

Charles G. McClure, Jr.

Date 2/24/2020

/s/ JENNIFER M. POLLINO

Jennifer M. Pollino

Date 2/24/2020

/s/ JAMES L.L. TULLIS

James L.L. Tullis

Date 2/24/2020

SHAREHOLDER INFORMATION

CRANE CO. INTERNET SITE

Copies of Crane Co.'s report on Form 10-K for 2019 as filed with the Securities and Exchange Commission as well as other financial reports and news from Crane Co. may be read and downloaded at www.craneco.com.

ANNUAL MEETING

The Crane Co. annual meeting of shareholders will be held at 10:00 a.m. on April 27, 2020, at 100 First Stamford Place, Ground Floor Conference Room, Stamford, CT 06902.

STOCK LISTING

Crane Co. common stock is traded on the New York Stock Exchange under the symbol CR.

AUDITORS

Deloitte & Touche LLP
695 East Main Street
Stamford, CT 06901

EQUAL EMPLOYMENT OPPORTUNITY POLICY

Crane Co. is an equal opportunity employer. It is the policy of the Company to recruit, hire, promote and transfer to all job classifications without regard to race, color, religion, national origin or ancestry, age, sex, pregnancy, marital status, sexual orientation or gender identity, physical or mental disability, military status, veteran status, or any other characteristics protected by law in all aspects of the employment process and relationship.

ENVIRONMENT, HEALTH AND SAFETY POLICY

Crane Co. is committed to protecting the environment by taking responsibility to prevent serious or irreversible environmental degradation through efficient operations and activities. Crane Co. recognizes environmental management among its highest priorities throughout the Company, and has established policies and programs that are integral and essential elements of the business plan of each of the business units.

STOCK TRANSFER AGENT AND REGISTRAR

For customer service, changes of address, transfer of stock certificates, and general correspondence:

Computershare Trust Company, N.A.

P.O. Box 505000
Louisville, KY 40233-5000
+1 (781) 575-2725
Toll free: +1 (877) 373-6374
<http://www.computershare.com/investor>

Private Couriers/Registered Mail:

Computershare Trust Company, N.A.

462 South 4th Street
Suite 1600
Louisville, KY 40202

BOND TRUSTEE AND PAYING AGENT

U.S. Bank Global Corporate Trust

Toll free: +1 (800) 934-6802
225 Asylum Street, 23rd Floor
Hartford, CT 06103
www.usbank.com

DIVIDEND REINVESTMENT AND STOCK PURCHASE PLAN

Crane Co. has authorized Computershare Trust Company, N.A. to offer the Computershare Investment Plan, a dividend reinvestment and stock purchase plan for Crane Co. shareholders. The plan brochure provides a detailed explanation and is available by calling +1 (781) 575-2725 or +1 (877) 373-6374 (toll free), online at <http://www.computershare.com> or by writing to:

Computershare CIP

c/o Computershare Trust Company, N.A.
P.O. Box 505000
Louisville, KY 40233-5000

CRANE CO.
EXECUTIVE OFFICES
100 FIRST STAMFORD PLACE
STAMFORD, CT 06902
203.363.7300
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