

Cognex Annual Report 2004
Your quick and easy guide to the world's #1 machine vision company

Machine Vision

~~is not~~
FOR

DUMMIES

**A Reference
for the
Intelligent!**

*Use your brain! Read up
on Cognex's new products,
2004 financial results,
and more!*



Dr. Robert J. Shillman

*Chairman and CEO, Cognex Corporation
and best-selling author of Bob's Notes*

Think this is real? Don't be a DUMMY! It's only a parody.
This has no connection to the Dummies Guides or IDG Books Worldwide, Inc.

Machine Vision
is not
FOR
DUMMIES

by **Dr. Robert J. Shillman**



Cognex Publications

United States ♦ Canada ♦ Europe ♦ Asia



BESTSELLING BOOK

Reference for the Intelligent!

Do you ever find yourself wondering how every cookie in the bag has just the right number of chocolate chips, or how they manufacture computer chips with parts too small for a human to see? If so, then you are not alone...you are one of the legions of intelligent people yearning for more information on machine vision.

Machine Vision *is not* For Dummies answers all the hard-to-explain questions about machine vision. It also tackles the ins and outs of Cognex, the world's leading machine vision company. There are even cartoons and humorous icons to dispel fears and build confidence. It's the perfect machine vision survival guide!

***"This is a great self-help guide!
It made machine vision as simple as
rocket science!"***

— Werner Von Braun
Berlin, Germany

***"I read the entire book twice; I laughed
'til I peed in my pants. But, I still don't
know how to use DOS."***

— Michael Dell
Austin, Texas

***"In today's instant messaging world,
annual reports are an outdated govern-
mental requirement. But, Cognex breaks
new ground with their Machine Vision is
not For Dummies report. It is both inform-
ative and a pleasure to read."***

— William H. Donaldson
Chairman
Securities and Exchange Commission
Washington, DC

***"I liked the MD&A section the best; it
was clear and informative. Imagine, a
company that can report strong earn-
ings without cooking the books!"***

— Andrew Fastow
Former Chief Financial Officer
Enron

***"Good, but not quite as funny as
Bob's Notes."***

— Etta Shillman (Bob's mom)
Needham, MA

***"If I had put together a campaign that
was as clear and as entertaining as
Machine Vision is not For Dummies, I'd
be President today!"***

— John F. Kerry
Boston, MA

"I loved the cartoons!"

— George W. Bush
Washington, DC

"Very, very funny. See you in court!"

— William J. Pesce, President and CEO
John Wiley & Sons, Inc.
Publishers of the "For Dummies" series



Cognex Publications

About the Company

Cognex Corporation is the world's leading supplier of machine vision systems, or computers that can "see." Cognex machine vision systems are used in factories around the world to help automate the manufacture of all kinds of products....from semiconductor chips to potato chips. Since its founding in 1981, Cognex has:

- ✓ Generated over \$1.7 billion in revenue
- ✓ Shipped more than 225,000 vision systems
- ✓ Received 202 patents, with more than 80 additional patents pending

Cognex has 660 employees based in 70 offices throughout the United States, Japan, Europe, and Southeast Asia. The company's corporate headquarters is located in Natick, Massachusetts.

Dedication

This book is dedicated to the thousands of customers who have helped make Cognex the #1 vision company in the world...and to all of the Cognoids around the world who work hard each day to satisfy those customers.

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Cartoons at a Glance

Sight Gags

By Dee Vellop



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Sight Gags

By Zeke N. Destroy



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Sight Gags

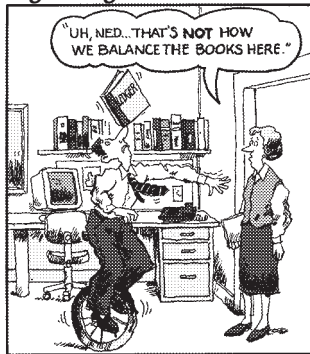
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Sight Gags

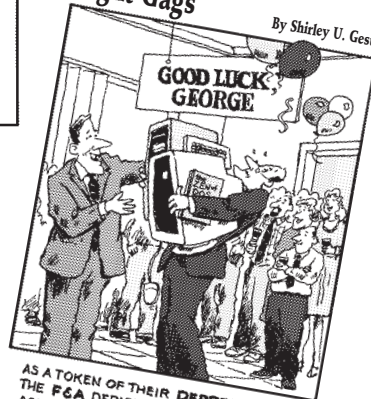
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Introduction

Sight Gags

By Zeke N. Destroy



MELINDA LEARNS THE ROPES.

Sight Gags

By Dee Vellop



Introduction

Welcome to *Machine Vision is not For Dummies*. This user-friendly guide will explain...in plain English that even a dummy can understand...the positive results that Cognex achieved in 2004, and why smart manufacturers around the world are using their brains and choosing Cognex machine vision to automate myriad tasks on their production lines.

Why Machine Vision is not For Dummies

Imagine if there was a remarkable tool that every manufacturer could use to ensure error-free production and increase manufacturing efficiency by automating tasks that used to be done manually. And, what if that tool was more accurate, much faster *and* less expensive than doing it by hand? Well, that tool exists *today*, and it's called a **machine vision system**. And, the best machine vision systems...the ones selected by more manufacturers worldwide...are made by Cognex, the world's leading supplier of these very special computers that can "see."

A machine vision system is an opto-electronic device. ("Opto-electronic"...now there's a \$20 adjective that you won't find in any of the other "Dummies" books!) Every machine vision system is made up of both optical components, such as a lens and an image sensor, and electronic components, including computer chips. Essentially, a machine vision system is a digital camera combined with computer hardware and artificial intelligence software. When they were first invented in the late 1970s/early 1980s, vision systems were about as big as a suitcase (think going to Miami with the entire family for a month) and weighed even more. But due to advances in the semiconductor industry, today's vision systems can fit in your hand. "OK...I get the picture, but what does it do?" you ask. Well, a machine vision system captures an image of an item moving by on a production line (that's the easy part) and instantly makes a decision about what it sees (that's the hard part). It then communicates that information to production equipment, which takes an appropriate action.

You want to automatically place labels on medicine bottles at the rate of 10 per second? And, you want to make sure that they are the correct labels, that they're not crooked or torn, and that the printing is clear? Machine vision can do that! You want to measure automotive pistons and ensure that each one goes into the correct cylinder in the correct engine block? Machine vision can do that! You want to assemble light bulbs and ensure

that each and every bulb filament is properly inserted? Machine vision can do that! (See? More proof that only the brightest bulbs use machine vision!)

And, not only does a vision system inspect every product to ensure that no incorrectly manufactured product gets out of the factory to you, the consumer, but it also helps to ensure that every product that is made is a good one. You see, the vision system monitors 100% of the products 100% of the time, and it constantly communicates its analysis to the factory control system. So, even slight variations in production...the ones that still yield acceptable products...are immediately identified and corrected *before* the variations get to the unacceptable or scrap level. When used in this way, machine vision is more than a quality control device that separates bad items from good ones; it becomes an integral part of the process control system and helps to ensure that no bad product is ever made!

The bottom line is that companies that use machine vision produce higher quality products at lower cost. Hey, how do you think you bought that high-quality DVD player for \$50 last month? It's because of automation, and machine vision is a key enabler of automation.

Cognex machine vision is a WIN-WIN-WIN-WIN. Manufacturers win because their production costs are substantially reduced. The environment wins because scrap is dramatically reduced. Cognex wins because it sells a lot of machine vision systems. And, consumers around the world win because they get to buy high-quality products at very low prices. Oh, I should also mention that Cognex shareholders win too, because they have a stake in a great company that has great growth prospects and that also pays dividends!

Who Needs Machine Vision?

Who doesn't need machine vision, is more like it. Virtually every manufacturer that makes products in an automated process...*any* products, from potato chips to computer chips...can achieve better quality and lower cost by using machine vision.

In the semiconductor and electronics industries, machine vision is used in dozens of different applications, from controlling the growth of silicon ingots used to make semiconductor wafers (ingot pulling), to guiding the placement of the packaged devices onto printed circuit boards (PC board assembly). It is virtually impossible today to manufacture computer chips, or anything that contains computer chips, without using machine vision. And, Cognex machine vision is the choice of the leading automation equipment manufacturers in both the semiconductor and electronic industries. Hey, they're no dummies!

But it's not only manufacturers of high-precision, high-value-added products like computer chips or jet engine components that need machine vision. Manufacturers in a wide variety of industries use machine vision to ensure quality, to guide automated assembly, and to collect data about items that they make. For example, producers of paper and steel...materials that are made in a continuous fashion...also use machine vision in their factories. In these applications, machine vision is used to inspect both the front and back surfaces of the materials being produced. Machine vision helps these manufacturers identify defects such as edge tears in a web of paper that could cause the sheet to break, and potentially shut down the production line for a day! And, machine vision can detect cosmetic defects in materials as they are being produced, such as scratches in metal that could result in hundreds of rejected doors or trunks or roofs at an auto assembly plant.

Even manufacturers of very inexpensive items...such as disposable razors, pens and diapers...need machine vision too. Why? Because those products are made at very high speeds, so if the production equipment gets "out of kilter," thousands of defective items could be made before anyone noticed! Hey, who wants to buy a juice box without a hole to put the straw in, and what kid would want a pack of Gummy *Deers*?

Foolish Assumptions

Machine vision has come a long way over the past 20 years. However, there may still be people who have some old-fashioned ideas about this important technology. That's why we'd like to set the record straight on the following foolish assumptions:

1. *All machine vision is alike.* No way. With more than 200 machine vision patents, the largest team of machine vision experts anywhere in the world (including 32 Ph.D.s) and the most application experience, Cognex is able to offer the most robust and comprehensive family of vision products. We also have the largest worldwide network of sales and support personnel to serve customers wherever they happen to be located.

2. *Manufacturers can continue to produce high-quality items at low cost without machine vision.* LOL! Only a total dummy would believe that! Truth is, machine vision provides manufacturers with a distinct competitive advantage, enabling them to meet the challenges of today's production environment where quality goals are more stringent, production throughputs are increasing, and the demand for productivity improvements is continuous.

3. It takes a Ph.D. to install and operate a machine vision system.

Far from it! That might have been true in the past, but no more! In fact, Cognex's newest machine vision sensor, Checker, is so simple to use that just about any factory technician or electrician can get it up and running in less than an hour.

4. Machine vision is prohibitively expensive. When compared with the alternatives of (a) using hordes of human inspectors to try to inspect 100% of products made or (b) not controlling quality and suffering the consequences, then machine vision is a bargain! Where else can you get such a quick payback on your investment? You do the math, dummy!

How to Use This Book

Every book in the “Dummies” series has this section; but, since this book is not for dummies, you shouldn't need it. But just in case, here are some simple ways to use this book:

- ✓ If you can't reach the table, try putting this on your chair and then sitting on it.
- ✓ If your papers are flying around on your desk, either shut the window or put this book on top of them.
- ✓ Afraid that your coffee cup will leave a stain on your wooden desk? Try putting the cup on this book instead.

Now, if you want to *read* this book, start by opening the front cover (that's the one with the cartoon of me on it). You can do this with either your left or right hand. Hint: To turn the inside pages, it may be necessary to wet your fingertips, as the pages may be too dry to grip otherwise. Finally, when reading, be sure to go from left to right, and from top to bottom—failure to follow one or both of these rules will result in a very distorted view of Cognex in 2004. And, as a company that specializes in vision, we'd like you to have a perfect picture of us!

Icons Used in this Book

To make this book easier to use, we've included icons in the margins to help you quickly select the parts that you're really interested in (or, avoid those that bore you silly).



If you see this money tree icon, it means that this is an area that Cognex thinks will grow quite quickly in the near future.



If you skip all other icons, pay attention to this one. Why? Because it means that all of those lonely hours our engineers have spent at their cubicles fiddling with complicated equations, while chowing down Chinese food, have finally paid off with an exciting new Cognex product.



When you see this icon, it means we're celebrating an achievement that we're particularly proud of at Cognex.



This icon alerts you to an especially notable comment from Cognex Chairman and CEO, Dr. Bob Shillman.



A warning icon indicates something you should NEVER try to do with our competitors' vision systems!



This popcorn icon highlights aspects of Cognex's unique "work hard, play hard" culture that sets us apart from other companies.



Cognex specializes in listening to its customers and providing them with the products and services they need. This icon alerts you to cases where we've been particularly successful!



Let's face it...a company that produces an annual report like this has a unique way of doing just about everything. This icon points them out.



It's true! You don't have to be a computer geek to use Cognex machine vision!



You don't get to be the world's #1 machine vision company by sitting on your hands...you have to use them.



After working hard, we encourage our employees to play hard in our company game room, complete with foosball, pinball and ping-pong; play ultimate Frisbee on the company's playing field; and enjoy after-work social events.

Where to Go from Here

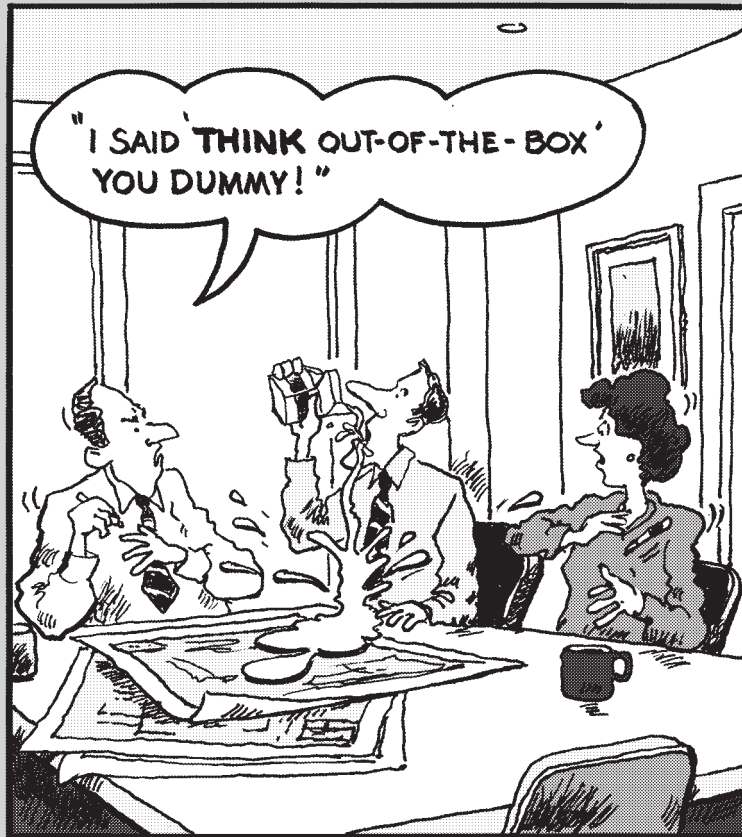
Now that you know why machine vision is not for dummies, read on and learn about the smart steps we took to keep Cognex at the head of its class in 2004.

Part I

Smart Things We Did in 2004

Sight Gags

By Freida Roam



Sight Gags

By Al Garithm



FRANK'S PRESENTATION ON PROFITABILITY
TAKES A SUDDEN TURN FOR THE BETTER.

Part I

Smart Things We Did in 2004

In this Chapter

- ▶ Find out how Cognex met the needs of its three major customer groups in 2004
 - ▶ See what Cognex is doing to reach even more customers in 2005
 - ▶ Learn why using machine vision from Cognex is a no-brainer!
-

There were two significant developments that positively affected our financial results in 2004. The first was the strong rebound, in the first half of the year, by our customers who manufacture capital equipment for the semiconductor and electronics industries. The second very positive item was that, even with that strong rebound, more than 50% of our total annual revenue came from customers outside of the semiconductor and electronics capital equipment sector. This is the first time that that has ever happened during a semi/electronic recovery period, and it is proof that our diversification strategy of selling machine vision products into the factory-floor market is succeeding.

Results—What Everybody is Looking For

Enough introductory chatter...let's look at the results in more detail.



In 2004, Cognex reported revenue of \$202 million, an increase of 35% over our results for 2003. And, we were also highly profitable, with earnings increasing by an astounding 137% over our 2003 results. Net income as a percentage of revenue for 2004 was 19%, which easily beat the 11% ratio that we reported for 2003. And, we reported earnings per share of \$0.80, more than double the \$0.36 per share reported for 2003. The significant increase in our profitability for the year is due to both our revenue growth and to the careful cost containment measures that we put in place in 2004. We were vigilant about controlling headcount and other spending. We limited our investments to those areas where we could see a measurable return, such as in sales and marketing to accelerate the expansion of our

business on the factory floor.¹ And, the results show that our strategy worked just fine! Overall, it was a stellar year for Cognex.

As you may know, one of Cognex's core values is sharing... "When Cognex wins, we all win!" And who better to share our success with than our shareholders! So, we decided to reward our shareholders with a cash dividend in each quarter of 2004. In fact, because of the strength of both our business and our balance sheet, the company's Board of Directors voted to increase the size of that quarterly dividend by 33% in August, 2004...from \$0.06 per share to \$0.08 per share. Increasing revenues, increasing profits and increasing dividends...it doesn't get much better!

Following our Customers' Orders

At the end of 2004, Cognex had over 3,600 active customers. These customers are in many different businesses and use our vision systems to solve a wide variety of automation problems. In order to analyze our business so that we can run it most effectively, we put each of our customers into one of the following three distinct categories:



- ✓ Manufacturers of products made in a continuous fashion (such as paper, steel, aluminum and plastics)
- ✓ Manufacturers of capital equipment for the semiconductor and electronics industries (these customers are termed "Semiconductor and Electronics OEMs," in which OEM stands for "Original Equipment Manufacturer")
- ✓ Manufacturers of discrete items (such as razors, pens, automotive components, consumer packaged products and pharmaceutical products)

Manufacturers of Products Made in a Continuous Fashion

Manufacturers that make products in a continuous fashion (often referred to as "on a web")...such as paper, steel, aluminum and certain plastics...purchase products from our Surface Inspection Systems Division (SISD), which is headquartered in Alameda, California. These customers need very sophisticated machine vision to automatically detect and classify minute defects...as small as a few tenths of a millimeter...on the surface of

¹But, since we now live in an environment where everyone demands "full disclosure," I have to report to you that we did spend a bit of money on some other things, like updating the cafeteria in our Natick headquarters, and throwing a few modest parties for our employees. (No, the company didn't pay a cent to throw a birthday party for my wife in Sardinia...or for that matter, anywhere!)

materials being manufactured at very high production speeds on very wide webs. Cognex's web inspection systems can detect these minute flaws on surfaces as wide as 30 feet, moving at speeds of up to 65 miles per hour!



2004 was a slow year for the surface inspection industry in general, with no growth in the number of systems sold industry-wide over the previous year. Nevertheless, because of Cognex's superior products, sales channels and technical support, our Surface Inspection Systems Division increased its market share, and set a new bookings record in 2004. And, during the year we closed a number of large new customers in both the metals and paper industries, some of whom had previously done business exclusively with our competitors. YES!! Based on both revenue from end users and on the number of systems sold, we believe that Cognex became the world's largest supplier of surface inspection systems in 2004. This is a significant improvement from the number three position and 25% market share that we reported just a few years ago.

Manufacturers of Capital Equipment for the Semiconductor and Electronics Industries

These manufacturers purchase our vision systems and integrate them into equipment that they manufacture and then sell to customers who produce computer chips (we call these customers Semiconductor OEMs) or to customers who assemble printed circuit boards (we call these customers Electronics OEMs). Combined, these two types of OEMs have historically been the largest category of users of Cognex's machine vision systems. However, because the demand for this type of manufacturing equipment is highly cyclical...with slow periods followed by periods of growth...a large portion of our revenue has also followed their ups and downs. The good news is that 2004 was an "up" cycle, and our revenue from these customers came in significantly higher than in any of the previous three years...increasing 64% over their 2003 purchasing levels. However, unlike prior upturns when those customers represented two-thirds or more of our total revenue, in 2004 they accounted for only 42% of our revenue due to our continuing success in increasing sales of our vision systems to non-OEM customers. Ah, the times they are a-changin'...for the better!

Manufacturers of Discrete Items

The third and most diverse customer category is one that we call "discrete manufacturing." This group consists of a wide array of manufacturers who are using machine vision to solve automation problems in industries that produce and/or package products such as the following:

- ✓ disposable consumer goods (diapers, pens, pencils, razors, lighters)
- ✓ food and beverages (cookies, snacks, boxed lunches, juice boxes, bottled water, soda, beer)
- ✓ pharmaceuticals (tablets, capsules)
- ✓ medical devices (artificial joints and heart valves, surgical instruments, syringes, catheters, contact lenses)
- ✓ automotive components (brake pads, electronic controls, radio faceplates, gears, pistons)
- ✓ consumer electronics (cell phones, displays, keyboards)



I am pleased to say that our business from this customer category grew quite nicely throughout the year...increasing by 29% over 2003. This growth was due, in large part, to our aggressive pursuit of customers in industries such as automotive manufacturing, where machine vision is becoming an increasingly essential part of the manufacturing process. As an example, in 2004, because of our targeted efforts, Cognex achieved “preferred supplier status” at Ford Motor Company, making us one of a select group of suppliers...and the only machine vision company...to meet Ford’s stringent requirements. Ford awards preferred status for exceptional product reliability and maintainability, and we believe that having achieved this status, we are likely to get the lion’s share of machine vision business at Ford in the coming years.

In the past, virtually all of our customers in this discrete manufacturing segment were high-tech companies that produced computer-related and other electronics products such as keyboards, laser and ink-jet printers, displays and PC subassemblies. However, in 2004 we were pleased to see an increasing number of orders outside of high-tech from companies that manufacture and package a wide range of products, from cans of soup to packs of chewing gum. In the past, this type of customer has purchased machine vision in small quantities, but in 2004 we’ve received several orders worth \$500,000 to \$1 million each! We expect that this trend will not only continue, but that it will likely accelerate in the future when more and more manufacturers discover the significant benefits of lower production costs, higher product quality and higher levels of consumer satisfaction...all of which are made possible by machine vision systems.

New Developments

Cognex is never satisfied with the status quo...even though our status quo is usually very good by anyone's standards. In our drive for continuous improvement, we made a number of changes in 2004 to strengthen our organization to meet the demands of anticipated future growth.



He's a Jim-Dandy!

First, in August, at my recommendation, the Board of Directors promoted Jim Hoffmaster to President of Cognex Corporation. Jim joined Cognex as our Chief Operating Officer in June of 2001, and over the past four years he has done a great job making the many complex, and sometimes tough, decisions that were needed to carry us through some rocky economic periods, and position us for the growth that we are now enjoying. Jim is certainly no dummy; he has mastered the complexities of our business, and, in addition, he has proven himself to be a personable and energetic leader who is well respected in our company.

Giving Jim full responsibility for running the day-to-day operations of the company (which, in fact, he had been doing for the previous year, without the official title) is enabling me to now focus my energy on what I do best...discovering new markets and applications for machine vision, and then challenging our top developers to quickly create products to fill those needs.

New Teams on the Block



In 2004, we formed two new product teams within our Modular Vision Systems Division to focus engineering and marketing resources on application areas where machine vision is currently in the early stages of adoption, but which we believe have strong growth potential in the near future.

ID Products Group

The first new product team, the ID Products Group, designs and develops vision systems that can quickly and reliably read codes...such as serial numbers, bar codes and two-dimensional codes (often referred to as 2D codes)...that have been stamped, scribed, etched or printed directly on the surfaces of manufactured items ranging from medical devices to aircraft components. Unlike a label that is affixed to the surface of an item, and which may fall off over time or interfere with the functioning of the item, direct part marks endure for the life of the part and cannot interfere with the part's functionality. (Hey, only a real dummy would put a sticky label

on an artificial valve that's going into someone's heart, or on a component going inside a hot jet engine!)

Direct part marking, often called "industrial ID," is an increasingly critical tool for reducing manufacturing errors in industries such as automotive, aerospace and medical device manufacturing. In fact, the Department of Defense has mandated that its suppliers use industrial ID to ensure that the appropriate manufacturing processes are performed in the correct sequence on every part. In addition, direct part marking can be used to create a history of the part, from the beginning of its life to the end, which can be used both in supply chain management and in the repair process.



During 2004, Cognex introduced three new industrial ID readers for this fast-growing market: the DataMan 6400 and DataMan 6500 hand-held readers, and the In-Sight 5110 fixed-mount reader. Each of these readers runs IDMax software—a breakthrough software package for reading the Data Matrix code. Incorporating Cognex's patented PatMax technology, IDMax can meet the challenges of reading Data Matrix codes marked directly on even the toughest surfaces, such as glass and metal.



Expert Sensors Group

Our second new product team is called the Expert Sensors Group. The focus of this group is simple...and we mean that literally! Their mission is to design very simple-to-use, low-cost vision sensors for specific automation problems. In 2003, Cognex introduced the first member of its expert sensors family, the CPS 1000, or Cognex People Sensor. And in 2004 we followed that success with a new product that is sure to be a winner: Checker 101, our first expert sensor for solving assembly verification problems in general manufacturing.

In a magazine interview back in 1989, I said, "In the near future, I believe that every manufactured item that we buy...from the simplest to the most complex, from disposable pens to computers...will be manufactured without human intervention. And, the only way that can happen is if someone...hopefully someone at Cognex...designs a vision system that is about as inexpensive and easy to use as a photo sensor. Like a photo sensor, it will quickly determine that something is in its field of view, but, in addition, it will also identify the item, report the dimensions of the item, and automatically determine if the item was made correctly. Such a system would be a breakthrough in manufacturing." And then I said, "But unfortunately, we don't yet know how to build it!"



Little did I know then that it would take 15 more years for my “vision” to be realized! In November of 2004, the era of ultra-simple, low-cost, high-volume vision sensors began with the birth of Checker 101 at Cognex. And, in that same year, *Fortune* magazine recognized me along with my two co-founders, Bill Silver and Marilyn Matz, as “Heroes of Manufacturing!”

Checker is a unique device; unlike multi-purpose vision systems that can be programmed to perform a wide variety of tasks, each model in the Checker family will do only one thing, but it will do it extraordinarily fast and well.

And, what, you might ask, does Checker 101 do? Don’t be a dummy...with a name like that, what do you think it does? It checks things!! Checker 101 is designed to check for the presence or absence of product features during the manufacturing process. Are the cap and label both on the bottle? Are all of the lugs on the truck wheel? Are all of the tablets in the blister pack? Are all of the buttons present on the cell phone dial pad?

Checker 101 provides companies with a very cost-effective way to check 100% of their products at every stage of the assembly process. Human inspection is just too slow, costly and unreliable, and statistical sampling can often miss errors that will end up in the consumer’s wastebasket...followed by a nasty letter in the Vice President of Manufacturing’s in-basket.

And, because of its capability, ease of use and low price, factory engineers, technicians and electricians will all find Checker a must-have for solving many manufacturing problems that they previously solved...or tried to solve...with photoelectric sensors. And we expect that our saying, “Check it with Checker” will soon become a common expression in factories around the world.

Cognex Varsity Teams Have a Winning Year

In addition to our new ID Products and Expert Sensor product teams, our three other product teams, PC Vision Products, In-Sight Products and our Surface Inspection Systems Division, all had significant achievements in 2004.

PC Vision Products Group

Our PC Vision Products Group develops machine vision solutions that run on the customers’ own PCs. The product that we deliver typically consists of a hardware board (it plugs directly into the customer’s PC and acts as the interface between a camera and the PC) and Cognex machine vision software that analyzes the images from the camera. This group had a great year due to strong demand from customers in the semiconductor and elec

tronics industries. But it's not just those old standbys that made the year so remarkable. Truth is, many other manufacturers are also using our PC Vision systems in order to take advantage of their very high speed and programmability for applications such as inspecting cell phones, guiding robots, and assembling automobiles.

One of the largest applications for PC Vision over the last year has been in the packaging industry where our products are used to locate and verify important product codes printed on everything from pharmaceuticals to lipstick. To address these needs, the PC Vision Products Group developed software called ProofRead to provide manufacturers with the ability to verify 100% of their products...even on production lines moving at warp speed. In fact, one food processing customer is already using this product to achieve 100% verification on cans moving by at the rate of 1400 per minute...that's more than 20 each second!! Talk about "uncanny" technology!



In-Sight Products Group

In 2000, Cognex introduced the In-Sight family of vision sensors. These award-winning general purpose vision sensors are designed to be programmed by the customer to perform any combination of a wide variety of vision tasks, including determining the position of parts, measuring critical dimensions of parts, verifying proper assembly of parts and identifying parts...either by their unique shape or by reading serial numbers. In the four short years since its introduction, In-Sight has become the market leader and has set bookings and revenue records each year.



And, I'm pleased to report that in 2004 In-Sight once again exceeded our expectations, ending the year with bookings of \$63 million and revenue of \$56 million, an increase of approximately 40% over 2003. This growth is attributable to both increasing business from manufacturers of discrete products in a wide array of industries, as well as to strong sales of our In-Sight Wafer ID product, which enjoyed a tremendous year due to the pick-up in the semiconductor industry.

Surface Inspection Systems Division

Two years ago, our Surface Inspection Systems Division (SISD) reported record revenue that was largely due to our success in increasing sales of our SmartView surface inspection system to the paper industry. In 2004, we continued to build on that success while also increasing sales to the metals industry. The 150 SmartView systems sold last year included significant purchases from some of the world's leading steel manufacturers, as well as our first SISD sale in mainland China to Wuhan Steel. And just before the close of 2004, SISD marked a new milestone: the sale of its 500th SmartView system since the product was introduced in 2000.



Available at a Distributor Near You

Until recently, our products were available only from our own dedicated sales force who called on customers worldwide. But, in 2004, we decided to expand our distribution method because a) we were missing sales opportunities since we didn't have enough "feet on the street" to call on the countless number of factories around the world, and b) our newer products are both lower in cost and easier to use, which means that they can be sold very efficiently through third-party channels.



So, in addition to adding 37 new sales engineers to our worldwide sales force, we also built a special team, the Channel Distribution Team, and we gave them the responsibility for selecting, signing, training and monitoring distributors for our lower cost In-Sight and Checker products. And, their efforts have already earned dividends! In 2004 they signed more than 30 new distributors in the United States, and we fully expect that these distributors will introduce Cognex vision to an ever-widening audience of customers, including some that have never even thought about using machine vision in the past.

Why Using Machine Vision is a No-Brainer



Over the last 20 years, machine vision has moved from the realm of very interesting and potentially useful technology into products that are a "must have" for manufacturers in a wide range of industries. From potato chips to computer chips...to the champagne we drink to toast important successes at Cognex...an increasing number of products today are made with the aid of machine vision. And, here are some of the reasons why:

Zero Defects is a MUST HAVE

In every industry errors cost money, but in some industries getting it right can mean the difference between life and death. For example, machine vision is a must have in applications such as:

- ✓ medical device manufacturing (e.g. verifying the presence of electronic components in heart pacemakers)
- ✓ pharmaceutical packaging (e.g. ensuring that packages contain the correct medicines and printed inserts, and that the packages have the correct labels)
- ✓ automotive applications (ensuring proper assembly of air bag release modules)

When no level of error is acceptable, machine vision is the answer; it enables manufacturers to inspect 100% of their product with 100% reliability, 100% of the time.

Higher Quality is Better! Faster is Better! Less Expensive is Better!

Every successful company strives to manufacture products to serve the largest possible market. In today's global economy, that means manufacturing things in very high volume. And, that means manufacturing things automatically at very high production speeds. At speeds of 5 items per second...which is common in today's modern factories...a manufacturing line will make 300 items in one minute. That's 18,000 in one hour, about 150,000 in an 8-hour shift, and more than 400,000 in three shifts! And, because manufacturers have to compete for their customers, they need to have the lowest possible manufacturing cost and the highest possible product quality.

Well, you'd have to be a total dummy to think that you could find enough people to inspect 400,000 items per day; and, even if you could find them, their cost alone could put you out of business. You can't control quality with human inspectors...you can't forego inspection...and you can't rely on statistical sampling. The only answer is machine vision!! Got it?

Uncle Sam Says You Have To

Manufacturers in industries such as aerospace engineering and pharmaceutical production and packaging face demanding traceability requirements in order to ensure consumer safety. Machine vision helps ensure that manufacturers meet government regulations 100% of the time for applications such as:

- ✓ verifying that date and lot codes have been printed on medication packages
- ✓ ensuring that safety seals on bottles are present and intact
- ✓ reading identification codes on aircraft engine parts and tracking their history through the production process

Do You Want to be the Person Inspecting Hand Grenades?

"Safety first." It's a message posted on the walls of warehouses and production plants everywhere...with good reason. And, in some hazardous environments, safety first is more than just a saying. Here are some examples where our machine vision systems have been used to get the job done right, without risking life and limb:

- ✓ inspecting hand grenades
- ✓ detecting cracks in nuclear reactors





More Good Reasons to Use Machine Vision!

Manufacturers around the world are discovering new ways to use Cognex machine vision. Here are a few of the more unusual ways that our vision products are being used today. (Believe me, they're all true...we couldn't possibly have made these up!)

The Ten Strangest Uses of Cognex Machine Vision Systems in 2004

1. Sorting books by their covers (see, you CAN tell a book by its cover...at least Cognex can!)
2. Inspecting toilet paper
3. Inspecting the reeds used in woodwind instruments
4. Grading potatoes
5. Inspecting beer kegs for leaks
6. Detecting holes in pizza crusts
7. Measuring the amount of fat on a slice of ham
8. Guiding the insertion of corks into champagne bottles
9. Measuring the growth of bacteria in Petri dishes
10. Checking the sex of chickens...before they are born!

Dumb Things We Didn't Do in 2004

We started this section by telling you about the smart things that we did in 2004. But doing smart things isn't enough to make a company successful. It's also important to not do any dumb things. Here is the list of dumb things that we didn't do in 2004:

We didn't.....

- ✓ use our large cash position to acquire companies in businesses or markets that we know nothing about
- ✓ buy back \$50,000,000 of our stock at \$100 per share
- ✓ increase headcount in most departments, even though revenue increased substantially
- ✓ host a \$2 million birthday party in Sardinia for my wife and 250 of our closest friends
- ✓ inflate, in any way, our revenues or our earnings
- ✓ sell Cognex stock (or ImClone stock, or any other stock) based on insider information
- ✓ give our executives enormous salary increases

- ✓ purchase a company plane for personal use (hey, we don't even have company cars!)
- ✓ spend (waste) a lot of money to produce and distribute tens of thousands of annual reports...with lots of color photos on expensive glossy paper...that no one reads because they can get the same information, sooner, on the Internet!

Looking Smart for 2005



As we enter 2005, we're optimistic. The new products that we designed in 2004 are already gaining traction, and we're also seeing some very positive results from our new distribution channel. But, most of all, we're optimistic about the future because we have a very smart, experienced, committed and motivated group of people that work as a team to ensure that Cognex continues to be the world's leading machine vision company.

At Cognex, we seek out employees who are highly intelligent, who are energetic, and who approach each day's work with excitement and a can-do attitude. And, we've created for them a work environment where they are challenged to excel, where they are urged to be creative and where their achievements are rewarded and celebrated.

As we enter our 25th year in business, I am proud that my two co-founders and I are still working hard each day at Cognex to ensure the continued success of our company. And I am truly pleased that the leaders of our five product teams are long-time Cognex veterans, most with the company 10 years or more. These are individuals who have helped build Cognex and who have unparalleled experience working to shape our technology into products that solve real-world problems for our customers around the world. These dedicated Cognoids now have the opportunity to lead their own entrepreneurial groups and to explore new paths where machine vision has never gone before.



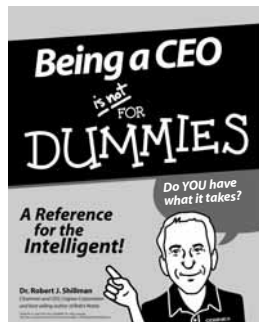
Though each of them has a unique personality, we all share a common history, and we all believe in Cognex's core values. We will continue to strive for excellence in all that we do...and we'll have fun while we do it!

Sincerely,

A handwritten signature in cursive script that reads "Dr. J. Shillman".

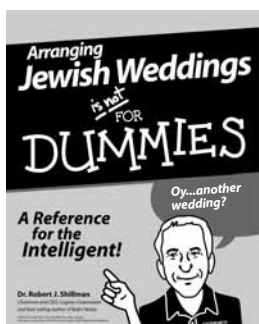
Dr. Robert J. Shillman
Chairman and CEO
Cognex Corporation

Other Books in the “Not For Dummies” Series



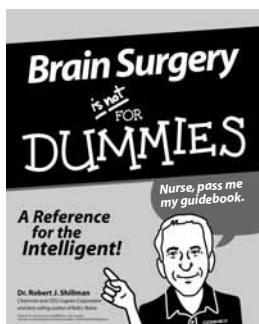
Being a CEO is not For Dummies

Yes, everyone wants to be the boss, but, frankly speaking, it's not for everyone. Clearly, dummies should not apply for this, the most important position at every public company. This fast-moving text provides easy-to-follow guidelines on how to balance the often conflicting demands of your company's four groups of stakeholders: customers, employees, vendors and shareholders. Customers demand lower prices, employees demand higher wages, vendors demand higher prices...but shareholders demand higher profits. Sounds like an impossible problem, but this classic text in the Not for Dummies series makes it seem simple!



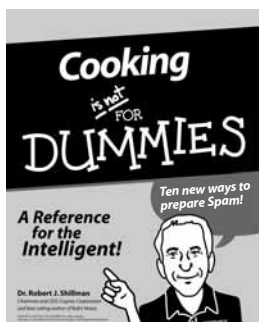
Arranging Jewish Weddings is not For Dummies

Covers such important topics as how not to invite that embarrassing cousin from Arkansas; who should sit next to whom; getting airline miles by paying vendors with your credit card; and reducing expenses by cooking some of the entrees yourself. In most cases, everyone has a great time at this milestone event...except the parents. But, if you follow the simple step-by-step guidelines in this just-released text, you'll have such a good time that you'll wish that you had four more daughters to marry off!



Brain Surgery is not For Dummies

So your mother wants you to be a brain surgeon? No problem. Just bone up on the basics prior to scrubbing up. This quick study guide is complete with detailed cartoons (in color) to guide you through every possible procedure ranging from the simplest (drilling holes to relieve intracranial pressure) to the most complex (removal of a parasitic head). A great guide for anyone with normal intellect who likes to fix things with their hands. But, if you happen to have rocks in your head, holes in your head, or if you have a swelled head, this text isn't for you.



Cooking is not For Dummies

This guide, co-authored with domestic diva Martha Stewart, will ensure that you can tackle the most difficult meal preparation without getting into hot water. There are also useful hints about how not to go from the frying pan into the fire. The 2005 edition contains a brand new section on preparing attractive and tasty meals that can be cooked on a hotplate and then enjoyed by everyone...even without knives. If you're planning a vacation at the big house and want to win over the other guests, then this guide is a must-read.



See how Cognex more than
doubled its profits
in 2004

Your one-stop guide to **Cognex machine vision**

Chances are if you're reading this annual report, you are already at the head of your class. You know that machine vision is not for dummies, rather it's for smart manufacturers who are committed to providing their customers with error-free products...and controlling their production costs. And, this friendly guide will help you understand why these manufacturers turn to **Cognex**, the industry leader, for their machine vision. Packed with news from the 2004 fiscal year, plus a valuable assortment of other tips and notes, it's guaranteed to help improve your vision of **Cognex's** performance in 2004.

The Not-For-Dummies Way

- *Explanations that assume your I.Q. is higher than your age*
- *Language that features words with more than two syllables*
- *Extensive company financials with multiple columns of numbers*
- *A dash of humor and fun*

\$24.99 US
€18.78 EU
¥2,607.39 JP
36,358 Iraqi Dinar
Free to Cognex Shareholders

Machine Vision

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Discover:

*The many uses for
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and products*

*Cognex's unique
work culture*

*Future opportunities
for Cognex and
machine vision*

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