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SPECIAL SECTION
WEARABLES



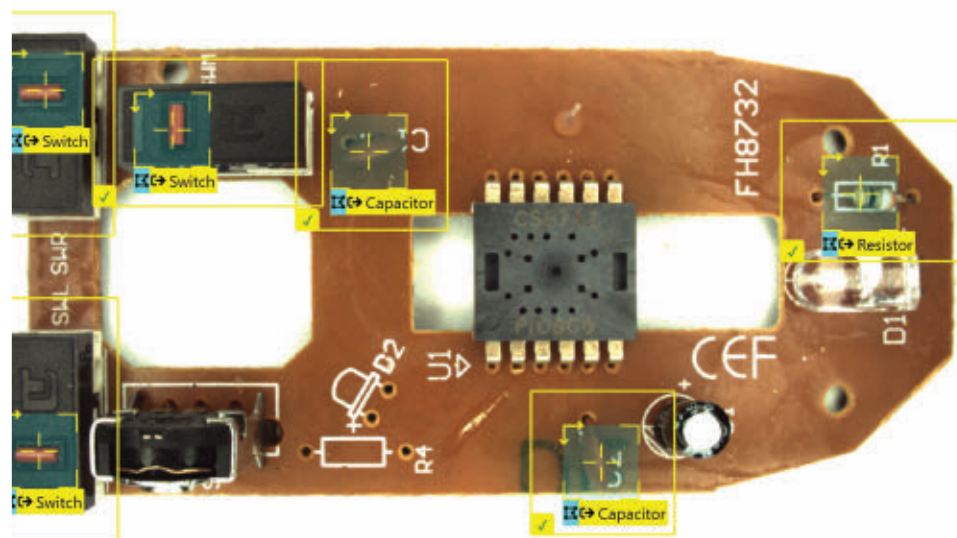
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DEEP LEARNING

Spreads Automated Inspection to Assemblies, Packaging, and Kitting

Together, these technologies promise a new future in manufacturing in which human error and costly assembly line mistakes are things of the past.

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The Future of Powertrain

The same size as an internal combustion engine, FPT Industrial's self-learning, modular Cursor X is a new concept in power sourcing designed for a new era of energy demands.

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Create a Digital Enterprise

Siemens' Xcelerator offers an integrated portfolio of software, services, and application development to help companies of all sizes master their digital transformations.

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AMR for Heavy Transport

The LD-250 sturdy autonomous mobile robot from Omron Automation Americas handles both bulky and heavy materials with payloads of up to 250kg.

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Reduce Design Cycle Times

Improving productivity by up to 80% compared to classic topology optimization, MSC Apex Generative Design produces part designs ready for additive manufacturing within hours, not days.

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Bulk Electrical Hook-up / Building Wire

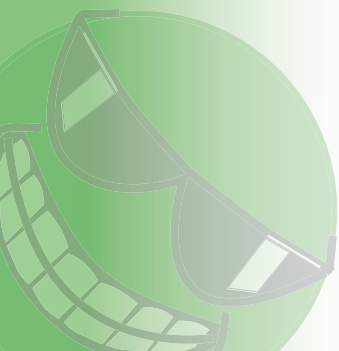
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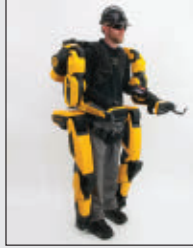
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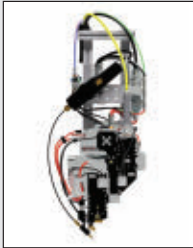
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PRODUCT SPOTLIGHTS



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Leuze Electronic's IPS 400i optical positioning sensor provides precise control of double-depth positioning processes for high-bay storage devices.



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SURGE, Milwaukee Tool's latest hydraulic driver, delivers 2X less noise and vibration and maintains a peak torque longer.



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The Conveyorized Curing System from David Weisman, LLC dries and cures liquid and powder coatings for a wide range of applications.



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The Centrisys Sludge Thickener is specifically engineered to achieve high-performance thickening of biosolids.

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Zonar

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Work Zone Cam, LLC

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Datalogic

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IDEC Corporation

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Mobile Data Collection in the Field

Leica Zeno Mobile, an Android app, keeps things simple while offering users a host of professional data capture functions to increase productivity in the field. When paired with the Leica GG04 plus smart antenna, Zeno Mobile captures points, line, and polygon data down to 1 cm accuracy in even the most demanding GNSS environments.

Leica Geosystems AG

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Water-Repellent Paper Valve Bag
SPLASHBAG, a water-repellent industrial paper valve bag for dry, powdery materials can resist direct rain for up to six hours and moisture ingress for up to five days. The bag's endurance helps customers who are working with cement bags to save time and money on their construction sites because they experience fewer broken bags, lower clean-up costs, and fewer trips from the warehouse to the site. For extra moisture protection, the bags can be manufactured with an optional inner plastic film, which can be easily removed from the paper after use for recycling purposes. Available in 55 and 77 lb. sizes, the SPLASHBAG can be filled and de-aerated just as quickly as standard industrial sacks.
Mondi

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Electric Cushion Forklift
 Featuring a 4,500 to 6,500 lb. capacity, the FBC23N forklift offers exceptional run times and an easy-to-service design. The two-stage hydraulic system determines the optimum motor speed, resulting in reduced energy consumption and longer run times.
Mitsubishi Caterpillar Forklift America, Inc.

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Weld Like a Champion
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The Lincoln Electric Company

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Bolt-Busting Lubricant



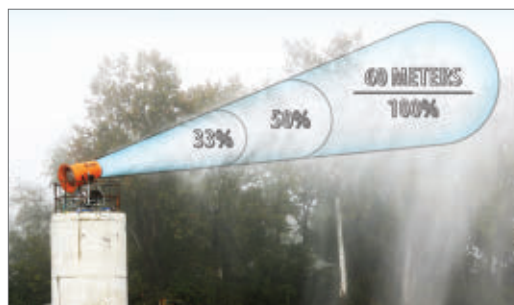
Barracuda Triple Action Lubricant penetrates, cleans, and protects metal. With a unique chemistry, it works quickly, attracting it to metal to help break loose corroded bolts, nuts, screws, pipe joints, and other industrial parts. The product is also a superb protectant, removing water with a moisture-displacement property that wicks it away from metal surfaces while providing a thin, imperceptible protective film.
JTM Products, Inc.

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Bigger, Brighter Video Probes
 Meeting a diversity of plant-wide needs, BHGE XL Detect and XL Detect+ VideoProbes feature powerful light output and large, bright screens. Optional features include Menu Directed Inspection 1.1 and wireless data transmission.
General Electric

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VFD Dust Suppression
 BossTek Variable Frequency Drive (VFD) system allows users to adjust air flow to suit a broader range of applications and working environments. The VFD control is available via a simple dial or remote control on three of the company's Dust-Boss models: the DB-30, DB-45, and DB-60.
BossTek

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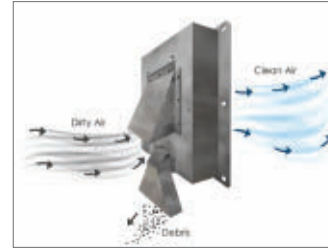
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Frac Interference Exchange (FracX), a data-sharing service, facilitates collaboration between producers in order to avoid negative interactions between closely spaced wells. Oil & gas producers can rapidly identify the acreage where frac hits may occur and take action, including temporarily shutting-in producing wells.

PDS Energy

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Air-Cleaning Blowers (ACBs) clean and blow air without any filter media and filter out +98% of the mass of particles down to 10 microns, even under severe conditions. Without filter elements, ACBs eliminate the clogging that varies air flows, air pressure, and energy consumption as well as all the maintenance that filter elements require.

Air Cleaning Blowers, LLC

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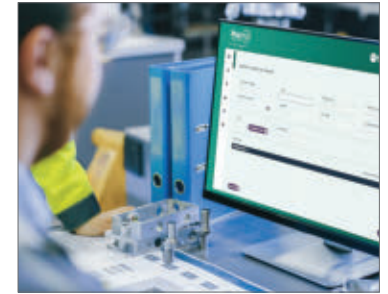


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prevents production delays
ProLinc, an advanced product security and traceability solution, leverages data collected via advanced sensing modules to gain a holistic view of system productivity and conditions. It empowers manufacturers to prevent production delays, detect anomalies, identify quality pitfalls, and pinpoint opportunities for greater optimization and efficiency.

Ashton Potter

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with capacities up to 528 gal./min.
 Featuring a small footprint, the **VOM-AT UBF** is a vacuum band filter that handles a wide variety of sludge materials. It operates with oil as well as water-miscible coolants. It is currently available in three sizes with filtration capacities up to 528 gal./min.

VOMAT

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Guide to Metal Stampings

Designer's Guide to Precision Metal Stampings is a quick-reference, must-have for the OEM design engineer that covers considerations around flat blanking, piercing, metal forming, or deep draws.

Boker's, Inc.

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Vertical Rise Lifts

This brochure details Mohawk's Vertical Lifts, which range in capacity from 33,000 to 99,000 lb. and are ideal for long runway lengths.

Mohawk Lifts

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2020 List of Overrun Optics

The 2020 Stock Parts List features a wide range of optics that meet strict OEM specifications and include hard-to-find optics in various shapes and sizes.

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Industrial Flow Meters

Use this flow meter directory to find the right solution for your particular gas, liquid, or steam flow application.

Sierra Instruments, Inc.

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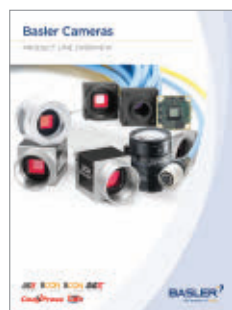


Modular Signal Switching

Pickering Interfaces offers the largest range of switching and simulation products in the industry for PXI, PCI, LXI, and USB applications.

Pickering Interfaces

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Basler Camera Product Line

The product portfolio encompasses area scan and line scan cameras in compact housing dimensions, camera modules in board level variants for embedded vision solutions, and 3D cameras.

Basler AG

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Intelligent Drivesystems

Read about how NORD's intelligent drive solutions are used by the poultry industry.

NORD DRIVESYSTEMS

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Overhung Load Adaptors

This catalog details all the different OHLA Overhung Load Adaptors and helps users choose which one is right for their application.

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Is 5G Worth THE HYPE?

As 5G hits its stride, the technology offers manufacturers an array of potential benefits.

By Peter Fretty



Moving beyond all the marketing hype, 5G connectivity is finally starting to arrive in strategic locations across the country.

And according to a recent report by the Brookings Institute, the importance of 5G is undeniable. “It is the most significant network overall in history because the alchemy of digital technology allows the transformation of what was always done in hardware to become functions accomplished in software. Then, with such a virtualized network, the power of the lingua franca of Internet Protocol takes over to eliminate the need for specific technology protocols for specific functions,” writes report author Tom Wheeler.

But what does that mean for today’s manufacturers?

Unlike past wireless evolutions, the move from 4G to 5G has the potential to offer significant benefits to manufacturers. The most notable benefit? Fueling the smart factory. “The biggest change is the number of devices that can be connected increases by 100 times and latency decreases to one-tenth of what it was. That’s why 5G is known as the enabler of the Internet of Things (IoT),” says WIA President and CEO Jonathan Adelstein.

BUILDING THE BUSINESS CASE

The biggest stumbling block for the widespread deployment is the lack of a business case for the consumer markets. From a consumer standpoint, faster download speeds are the main benefit. And with current network capacity, consumers already have speeds fast enough to handle most (if not all) their needs. The wireless industry needs to invest massive amounts of capital to upgrade these networks without a clear consumer return. As such, empowering IoT is potentially the biggest new market, essentially enabling smarter, connected factories.

SECURITY CONCERNS

Obviously, like any true evolution, new hardware requirements exist from a provider standpoint. However, 5G is, by far, the most software-based evolution to date, which results in the ability to develop new applications and new ways of using the network over-time through software upgrades. According to the Brookings report, the entire 5G ecosystem needs a security strategy. “The supply chain that makes up 5G runs the gamut from radio net-

works, to the integrated chipsets in that network, and the devices that will use the network (not just phones, but also billions of IoT devices). Each of these devices then have their own component parts supply chain that introduces risk. And, of course, the services that ride the new network are themselves vulnerable.”

SIEMENS AND QUALCOMM TECHNOLOGIES IMPLEMENT FIRST PRIVATE 5G STANDALONE (SA) NETWORK

Siemens and Qualcomm Technologies, Inc. have implemented the first private 5G standalone (SA) network in a real industrial environment using the 3.7-3.8 GHz band. Both companies have joined forces in this project: Siemens is providing the actual industrial test conditions and end devices such as Simatic control systems and IO devices and Qualcomm Technologies is supplying the 5G test network and the relevant test equipment. The 5G network was installed in Siemens’ Automotive Showroom and Test Center in Nuremberg. Automated guided vehicles are (AGV) displayed here which are primarily used in the automotive industry. New manufacturing options and methods are also developed, tested and presented before they are put into action on customer sites.

CORNING EMBRACES 5G AT HICKORY, NC FIBER OPTICS FACILITY

Verizon has installed 5G Ultra Wideband service in Corning’s fiber optic cable manufacturing facility in Hickory, NC. Corning is turning to 5G to improve manufacturing process

by enhancing capabilities like machine learning, augmented reality, and virtual reality (AR/VR). Engineers from Verizon and Corning will explore how the factory of the future can use 5G to dramatically speed data collection, allow machines to communicate with each other in near real time, and wirelessly track and inspect inventory using 5G-connected cameras. They’ll also test how 5G can improve the function of autonomous guided vehicles (AGVs) by helping them move more efficiently around the factory floor.

NEWPORT NEWS SHIPBUILDING FIRST SHIPYARD TO LEVERAGE 5G

Verizon’s 5G Ultra Wideband service is now live at Newport News Shipbuilding (NNS), a division of Huntington Ingalls Industries (HII) in Newport News, VA. “Adding this capability to our infrastructure will allow our workforce to have the right information, at the right time, and at the right location to perform their jobs,” said Bharat Amin, executive vice president and CIO of Huntington Ingalls. The shipyard deployment is part of Verizon’s initiative to help manufacturers explore how 5G can transform the way they do business. 5G’s high bandwidth and low latency will help NNS increase automation and the ability to take advantage of technologies like advanced robotics, real-time analytics, and 3D holographic design. The 5G deployment is expected to be able to support up to 1M connected devices per square kilometer and its increased throughput and low latency will enable things like autonomous robotics and enhance machine learning and AR/VR solutions to improve the overall speed and quality needed to deliver the nation’s warships. 5G could enable the company to connect hundreds of IoT sensors to provide real-time status of processing, machines, alarms, etc. to helping them make better decisions in near real-time. “5G will be a game changer when our engineers can put on a pair of AR goggles connected to 5G and map out 3D drawings or video chat directly with the those employees working inside a ship in real-time,” said Brian Fields, vice president of Business Transformation and CIO at Newport News Shipbuilding. “Using 5G to connect our shipyard ecosystem and improving the productivity of our employees who are designing and building the nation’s warships will truly be transformational.”

For more, visit: [NewEquipment.com/21122016](https://www.newequipment.com/21122016)

Digitizing Frontline Communications: Faurecia's IIoT Hurdle

"We did not have an easy way to search for common ideas or communicate ideas between facilities."

By Matt Myrand



Technological advances are transforming every aspect of our lives, from virtual personal assistants to autonomous vehicle features. These advancements are moving even more quickly in manufacturing environments, where technologies such as automated guided vehicles and augmented reality play significant roles in our production process.

It's no exaggeration to say the automotive industry is experiencing more disruption now than it has in its entire history. New entrants such as Tesla and China-based Byton are challenging long-established program management processes, and mobility-as-a-service companies such as Uber and Lyft threaten the traditional vehicle ownership model. The next generation of consumers is accustomed to a digital lifestyle with smartphones, social media and connected devices, and the automotive industry needs to keep up with these digital changes.

At Faurecia, we embarked on our own digital transformation journey to implement the latest Industry 4.0 solutions. As the world's sixth-largest automotive parts supplier, we manufacture interiors, seating, electronics, and clean mobility technologies and must adapt to changing industry advancements to ensure our long-term growth.

As part of this journey, we have successfully digitized many of our KPIs and procedures, but one area remained in an analog world: frontline employee communications.

This gap sent us looking for a digital solution to connect frontline employees and provide a streamlined platform for sharing ideas. We needed it to complement our preexisting tools while adding to our digital transformation roadmap.

Since our factories are standardized around the world, exchanging and leveraging improvement ideas should be straightforward. However, our current idea exchange still relied on handwritten submissions and minimal digital involvement. We did not have an easy way to search for common ideas or communicate ideas between facilities, leaving many solutions and potential cost savings unrealized.

We ultimately settled on a solution called Rever. In March, we started a proof of concept phase with the software at our Saline, Michigan, facility, and have recently expanded it to our Blue Springs, Missouri facility. In our Saline facility,

approximately 100 employees utilize the app, which includes a mix of salaried workforce, Production, Control and Logistics, and other frontline positions. In the six months since we launched, 75 ideas have been submitted and 28 ideas implemented, resulting in \$61,000 worth of cost savings such as streamlining production lines and recycling materials opposed to purchasing brand new.

Additionally, Rever can facilitate internal competitions to motivate users to submit ideas and provides options for employee recognition, such as star ratings and positive comment functionality, which helps increase engagement between frontline employees and managers.

We are still early in the proof-of-concept phase, but so far, the results are encouraging and highlight the importance of a connected workforce. As a global company, it is important ideas are communicated quickly and readily

implemented to support our program launches around the world.

As an example: The Ford Focus launched in three countries: France, Thailand and the United States. Our facilities in these regions each faced similar challenges, meaning a common tool for exchanging ideas would benefit our global teams.

Implementing a digital tool in a manufacturing environment is challenging and there are inevitable growing pains. Per our health and safety regulations, press operators, who do deal with customers on occasion and need to stay up to date on company news and operations, are not allowed to use their phones on the plant floor, meaning they can only access the app during break times or after work. Additionally, in facilities with an older workforce, employees may not have smartphones to download the app.

Neither challenge is insurmountable, but both are worth considering as you explore digital communications solutions. One solution we implemented was the installation of community tablets in break areas. This encourages access to the app in a safe area and provides employees without a smartphone an opportunity to utilize the tool.

Our digital transformation journey is far from complete, and we must remain open to new technologies. Despite all the advancements, human data remains just as important as process data. Leveraging best practices and diverse ideas from our 120,000-plus global workforce is essential, which is why Faurecia is passionate about digital employee engagement.

Technological advancements will never slow down, but it is important industries do not lose site of the human connection. Human-generated ideas and best practices remain our best source of innovation and the best way to realize these ideas is through a connected workforce.

MATT MYRAND is director of advanced manufacturing and supply chain, North America, for global automotive supplier Faurecia.

For more, visit: NewEquipment.com/21122018

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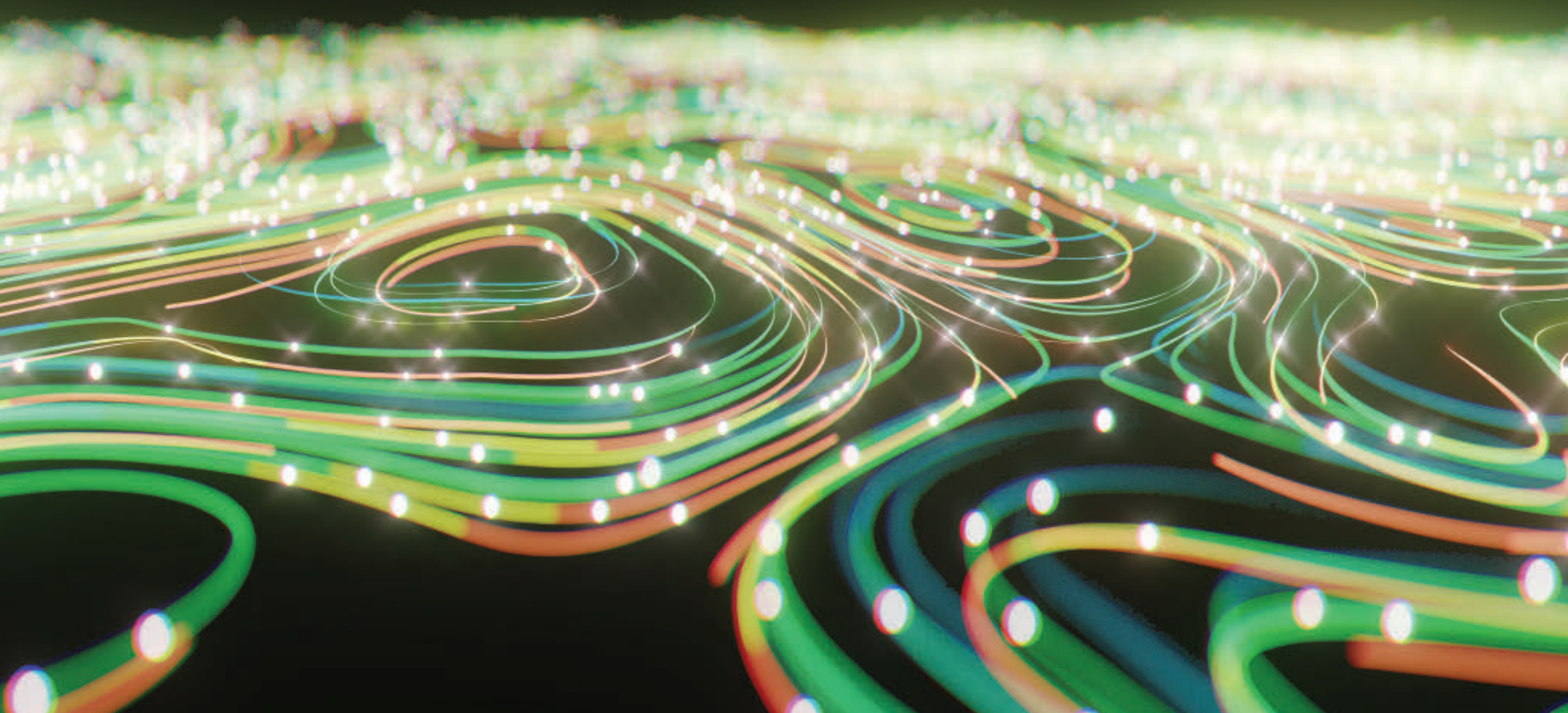


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DEEP LEARNING

Spreads Automated Inspection to Assemblies, Packaging, and Kitting



By John Petry

Machine vision has been instrumental to automating quality assurance thanks to its ability to locate, identify, and inspect products through computational image analysis.

Conventional computational image analysis has its limits, however, which has traditionally limited application of machine vision to component inspections. When the component is part of a larger assembly, a complex package, or a kit—such as an automotive assembly, circuit board, or surgical kit—then random product placement, variations in lighting, and other factors can overwhelm the computations of conventional machine vision systems. Consequently, final inspection of assemblies, packages, and kits has largely remained a manual operation.

While human inspectors excel at validating complex assemblies, their abilities are subject to fatigue. Studies show most operators can only focus on a single task for 15 to 20 minutes at a time. Qualified inspectors are also becoming

increasingly harder to find. In 2018 more than 63% of manufacturers said they were having difficulty staffing their assembly lines, according to *Assembly Magazine's* 2018 State of the Profession report. That's 16 percentage points higher than the previous year's figure. It's also worth noting that inspectors tasked with quality assurance often rise from the ranks of the best assemblers.

While labor shortfalls explain the motivation to find automated inspection solutions, manufacturers hoping to leverage machine vision still face several challenges when applying it to inspect assemblies, packages, and kits.

THE LIMITS OF CONVENTIONAL VISION SYSTEMS

Vision solutions are limited in their ability to handle part-to-part variation, for example. Components tend to vary one from the other in small ways. This is not an issue if the variance is a bent or missing lead on a semiconductor chip. But

it is much more difficult to program a machine vision system to detect variances among several components in a finished assembly, or even identify cosmetic differences on a single component, such as a blemish on a casted or machined part.

Conventional machine vision can also struggle to validate the correct relationship between multiple assembled parts. An automotive motor transmission, for instance, incorporates hundreds of individual parts and dozens of critical components. Programming a vision system to confirm the size, location, and position for every critical component is time consuming and impractical.

If these challenges were not difficult enough for conventional machine vision systems, consider also that assembly, packaging, and kitting lines undergo regular changeovers in response to new sales and production requirements. With each changeover, new components may be introduced to a kit, or similar parts might be packaged a different way to accommodate a specific customer's needs.



Door Assembly 4/4

The emergence of deep learning software has introduced new tools that “learn” by analyzing images that a quality control technician has first graded and labeled. Vision systems that leverage deep learning algorithms can be trained to recognize any number of component/assembly variations. (photo: Cognex)

Programming and reprogramming an inspection system for each new assembly, grouping, package, or kit would incur the same high offline engineering costs as for assemblies with high component counts.

EVERY INDUSTRY VALUES ASSEMBLY VERIFICATION

Almost every industry produces some type of assembly, packaging, or kitting application, either as a final inspection step, an interim inspection step prior to adding value, or some combination of both. Similarly, deep learning technology offers solutions that span virtually every market. Cognex is working with leaders across several verticals to optimize deep learning solutions for both final and in-line assembly verification.

Automotive assemblies that comprise thousands of individual components are emblematic of the need for more sophisticated inspection systems. A single missing hose or plug can stall a production line, costing millions of dollars an hour. Worse, they may result in consumer safety issues, such as a seized engine or a fatally flawed brake system. Automakers negotiate contracts and their suppliers that closely stipulate acceptable levels of defects per shipment as well as the financial penalties due for failing to meet those levels. Subsequently, inadequate inspection to confirm that final assemblies are complete and correct can spell significant financial penalties, loss of key customers, and costly product recalls.

Similar financial and safety risks occur in the food industry, as well as medical packaging and kitting. If someone with severe food allergies mistakenly ingests food containing nuts, for example, the result could be fatal. The dangers of incomplete surgical kits or incorrectly packaged medical supplies are obvious, and just as clearly unacceptable to manufacturer and customer alike.

Additionally, the high-volume production of electronics operates on razor-thin margins. A single missing screw in a laptop or cellphone screen assembly can result in thousands of dollars in lost revenue.

In each of these areas, Cognex is actively working with market leaders to develop deep learning solutions.

A DEEP LEARNING SOLUTION FOR ASSEMBLY VERIFICATION

With the release of ViDi 3.4, Cognex’s deep learning vision software, automated inspection of complex assemblies, packages, and kits is not only possible but is significantly simplified compared to traditional machine vision solutions.

As part of the ViDi 3.4 release, Cognex added a Layout Model feature to the Blue Locate Tool. For assembly, packaging, and kitting applications, ViDi depends primarily on the Blue Tool and the Layout Model feature to locate and verify assemblies.

How Deep Learning is Different from Traditional Machine Vision

Unlike conventional machine vision solutions, deep learning machine vision tools are not explicitly programmed. Rather than numerically defining an image feature or object within the overall assembly by shape, size, location, or other factors, deep learning machine vision tools are trained by example.

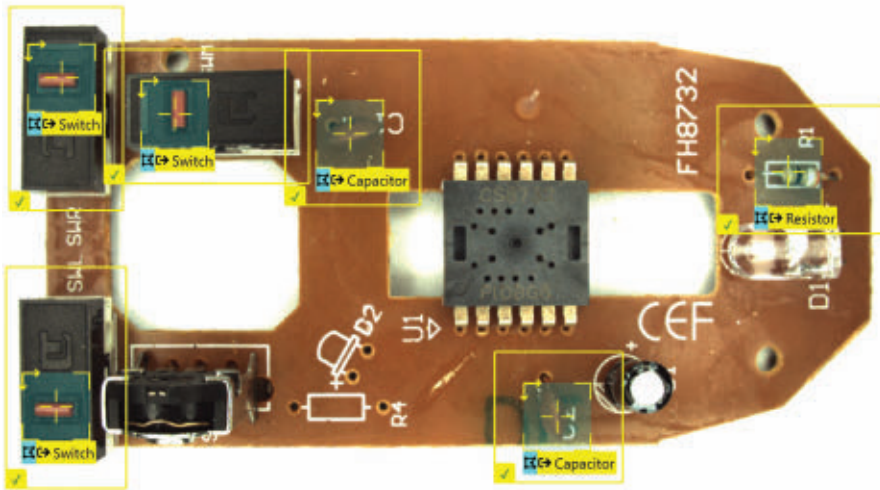
A neural network requires a comprehensive set of training images that represents all potential variations in visual appearance that would occur during production.

For feature or component location as part of an assembly process, the image set should capture the various orientation, positions, and lighting variation the system will encounter once deployed.

Training the system to recognize new components or assemblies simply requires the addition of new representative data sets.

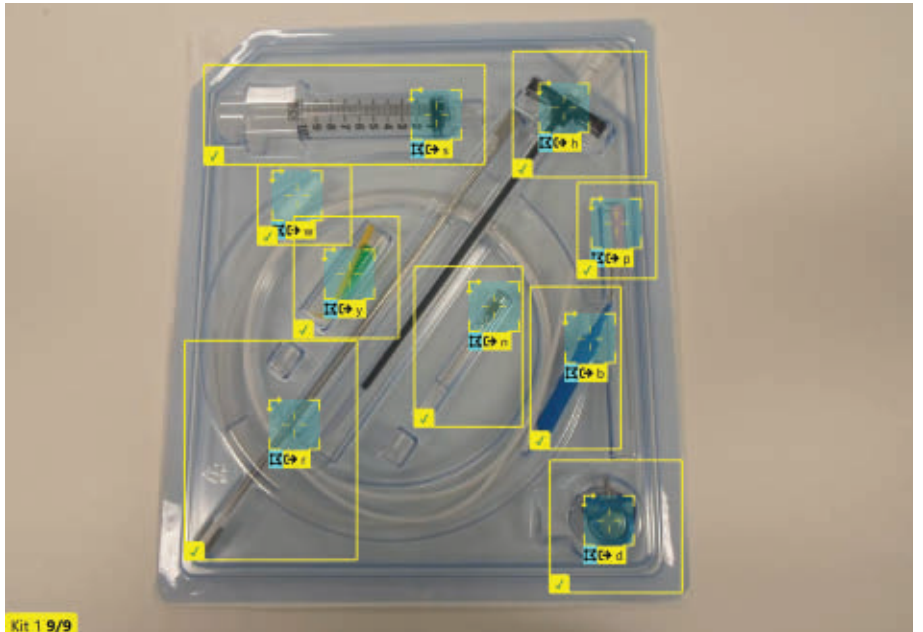


A car door panel assembly verification, for instance, includes checks for specific window switches and trim pieces depending on the door being assembled.



Model 1 (Region) 6/6

When components are combined into larger assemblies, such as a printed circuit board, then defects, random product placement, lighting variations, and other factors can quickly overwhelm a traditional vision system. (photo: Cognex)



Kit 1 9/9

(photo: Cognex)

A car door panel assembly verification, for instance, includes checks for specific window switches and trim pieces depending on the door being assembled. The same factory can produce doors for different trim levels as well as for different countries. A single Blue Tool can be trained to locate and identify each type of window switch and trim piece by using an image set that introduces these different components. By training the tool over a range of images, it develops an understanding of what each component should look like and is able to locate and distinguish them in production.

Unlike conventional machine vision systems, which require different algorithms combined in different ways for each object of interest in an image, ViDi's Blue Tool can locate any number of different components without explicit programming. By capturing a collection of images, it incorporates naturally occurring variation into the training, solving the challenges of both product variability and product mix during assembly verification.

Finally, to make sure that the correct type of window switches and trim pieces are installed, ViDi 3.4 uses Layout Models. With a Layout Model, the user simply draws different regions of interests in the image's field of view to tell the system to look for a specific trained component (driver's side window switches) in a specific location. The Layout Model is also accessible and configurable through the runtime interface. No additional off-line development is required, simplifying product changeovers.

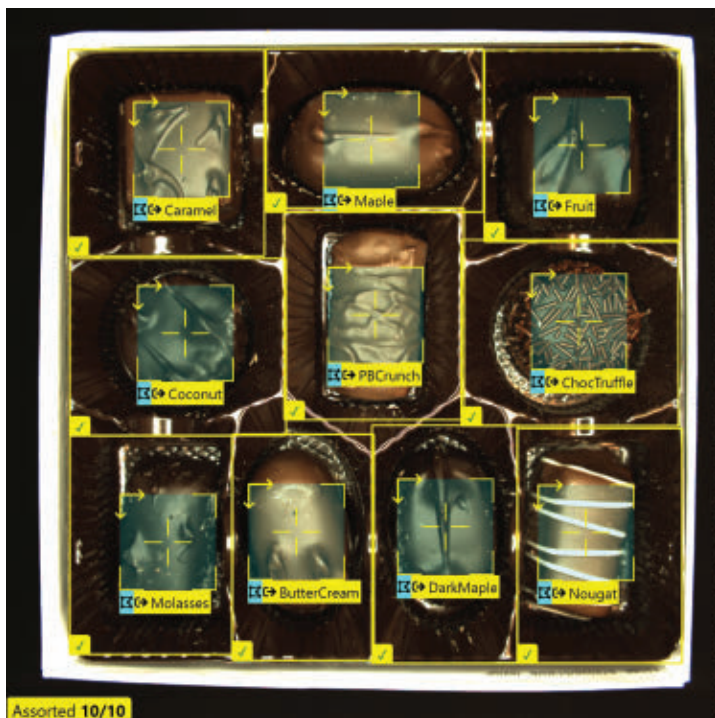
DEEP LEARNING CONTINUES TO EVOLVE

The number of factors required to verify final assembly combined with the difficulty of training conventional machine vision systems to navigate broad variations has made it nearly impossible to automate final assembly inspection. Deep learning technology is rewriting that script, however. With deep learning tools, manufacturers in every industry can now automate the assembly verification process by breaking the application into two steps.

The first step is to train the deep learning neural network to locate each component type. The second step is to verify each component is of the correct type and in its correct location.

As manufacturers continue to employ deep learning tools, they can accumulate production images to re-train their systems to accommodate future manufacturing variances. This may help limit future liability in the event that unknown defects affect a product that has been shipped. **NED**

For more information download our free guide, [Deep Learning Image Analysis for Assembly Verification](https://www.cognex.com/assembly-verification-deep-learning) (URL: <https://www.cognex.com/assembly-verification-deep-learning>).



Assorted 10/10

Programming traditional vision systems to confirm the size, location, and position for every critical component is time consuming and impractical. (photo: Cognex)

To understand how ViDi 3.4 solves the assembly challenge, consider the common challenges outlined earlier in this article: variability, mix, and changeover. Unlike traditional vision solutions, where multiple algorithms must be chosen, sequenced, programmed, and configured to identify and locate key features in an image, ViDi's Blue Tool learns by analyzing images that have been graded and labeled by an experienced quality control technician. A single ViDi Blue Tool can be trained to recognize any number of products, as well as any number of component/assembly variations.

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Creating an ergonomic, comfortable, and even more productive workplace, the Chairless Chair is a flexible, ergonomic, wearable sitting support that allows users to effortlessly switch between a sitting, standing, and walking position. With the Chairless Chair, users walk with the sitting support while wearing it, at the same time avoiding strenuous postures such as bending, squatting, or crouching.

Taking less than 60 seconds to put the device on and off, the wearable replaces disruptive chairs and auxiliary seats and allows employees to always work in a comfortable position. By decreasing back and leg stress, the Chairless Chair reduces costs resulting from sick days and capacity constraints.

Noonee

www.nedinfo.com/76472-26

SEE-THROUGH WEARABLE DISPLAY

Improve productivity and task accuracy with the rugged HD4000 Enterprise Head-Mounted Display. The HD4000 puts the information your workers need right into their real-time field of view, enabling hands-free directed action workflows that increase order processing, repair, and production volumes—without adding staff or expanding your production lines.

Developed in collaboration with Six15 Technologies, a leader in wearable optical displays, the HD4000 delivers unmatched color, contrast and image clarity, plus a focal distance that is optimized for head-mounted applications to minimize eye fatigue.

The design eliminates the need for an integrated battery, processor, and wireless radios. Only components required to deliver augmented reality functionality are required—a display, camera, head tracker, and microphone. As a result, the HD4000 weighs about an ounce—significantly lighter than any other enterprise wearable display.

Zebra Technologies

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FULL-BODY EXOSKELETON

The Guardian X0 full-body exoskeleton is the world's first battery-powered industrial robot to combine human intelligence, instinct, and judgment with the power, endurance, and precision of machines.

Set to transform the way work gets done, the industrial exoskeleton augments operator strength without restricting freedom of movement to boost productivity while dramatically reducing injuries.

Uniquely suited for safer, more productive manufacturing/assembly, construction, field service, and warehouse/logistics use cases, the Guardian X0 enables a single person to deliver the productivity of many, while significantly reducing the risk of occupational injury.

The Guardian X0 exoskeleton makes light work of heavy-duty tasks, empowering the operator to safely lift and manipulate up to 200 lb. without fatigue or strain.

Sarcos Robotics

www.nedinfo.com/76472-28

REMOTE ASSISTANCE SOLUTION

An easy-to-use remote assistance and inspection solution using Moverio smart glasses, Moverio Assist, enables enterprises to address difficult repairs and work tasks out in the field in a cost-effective manner.

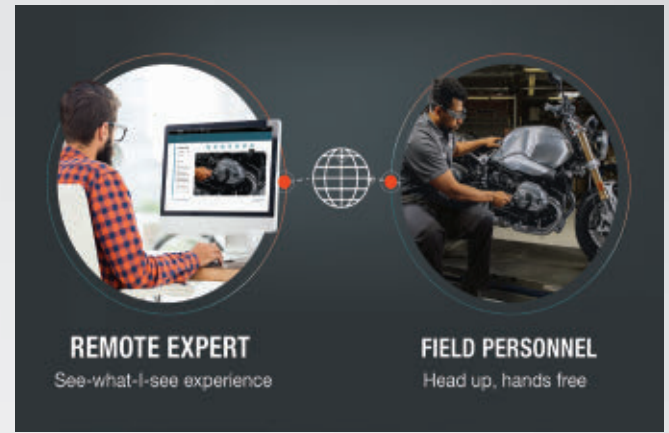
Moverio Assist enables “see-what-I-see” real-time collaboration between remote experts and on-site personnel to accelerate repairs with fewer mistakes, leading to increased productivity, improved customer satisfaction, and reduced travel costs.

Leveraging the Moverio Assist app and Epson’s Si-OLED display technology featured on the Moverio smart glasses, Moverio Assist allows field technicians to view instructions, photos, PDFs, and videos in high quality while communicating with remote company personnel in real-time.

Moverio Assist offers an affordable, hands-free remote assistance and inspection solution for small, medium, and large enterprises. Unlike using handheld tablets or smartphones, field technicians wearing the Moverio BT-300 or BT-350 ANSI smart glasses with a built-in camera have their hands free to make repairs while collaborating in real-time with company experts using the Moverio Assist app.

Epson

www.nedinfo.com/76472-29



iOS SMART GLASSES

Iristick smart glasses are ruggedized, certified safety glasses equipped with two cameras and a powerful optical zoom lens, barcode scanner, voice commands, unrestricted field of view, and “full-shift” battery capacity. All combined in a unique and comfortable design.

The smart safety glasses are the first to be compatible with iOS smartphones. This combines the best of both worlds: powerful yet comfortable to wear smart glasses, complemented with the fast-evolving processing power of a smartphone.

Linking the Iristick.Z1 to an iPhone gives companies with a strict iOS company policy the benefits of working with smart glasses for remote assistance, work instruction guidance and pick-by-vision.

Iristick smart glasses are now fully compatible with both iOS and Android smartphones.

Iristick

www.nedinfo.com/76472-30

WEARABLE SPATIAL COMPUTER

By placing the processing power on your hip instead of your head, Magic Leap 1 delivers the performance of a laptop computer in a device that’s light enough to wear every day.

Leveraging machine learning, computer vision, sensors, and human-centered AI, Magic Leap’s head-mounted digital light field display applies advancements in spatial computing that work with the human eye-brain system to integrate digital content in the physical world. It combines artificial intelligence and computer vision to seamlessly blend digital content into the user’s reality using eye tracking and head pose to see what the user sees with the power to learn.

Magic Leap, Inc.

www.nedinfo.com/76472-31



AR TECH SUPPORT PLATFORM

TeamViewer Pilot is now integrated with RealWear Wearable Headsets, Vuzix, and Epson smart glasses. TeamViewer Pilot expands the power of remote assistance software beyond IT support into the real world through augmented reality (AR) and enables experts to remotely guide users through complex operations via live camera-sharing, voice, and on-screen annotations.

Organizations will benefit with faster problem resolution, reduced downtime and travel costs, and improved oversight promoting safer work environments.

Experts in centralized support organizations can use a computer or smart mobile device to virtually be transported to the field and see what field workers are seeing through headsets and smart glasses in real time. They can then make AR annotations with guiding arrows, free-hand drawing, sequence guidance, and more, right on top of objects in the field of view of the onsite worker. Experts can connect and collaborate in seconds, no matter where the field employee is located—either through headsets and smart glasses, or just by using a handheld smartphone or tablet.

TeamViewer

www.nedinfo.com/76472-32

FROM THE COVER

Adaptable Powertrain Concept

features self-learning capability



Representing FPT Industrial's vision on the future of powertrain, **Cursor X** is a Power Source concept whose main features can be identified by four "Ms": Multi-power, Modular, Multi-application, and Mindful.

The **Cursor X** Concept would adapt to provide the most suitable solution for the customer's business and mission, whether based on natural gas internal combustion, hydrogen fuel cell electric generation, or on battery-stored energy. **Cursor X** would be the same size as an internal combustion engine, with a modular architecture that allows easy assembly, vehicle integration, servicing and full scalability.

Thanks to its wide range of options, **Cursor X** is designed to supply energy for traction, auxiliary systems, implements, and PTOs to any kind of industrial vehicle or machine.

The Power Source Concept has been designed to have self-learning capability and to provide a significant amount of information for further hardware and software design developments. It could be fitted with processors and sensors that recognize anomalies, analyze wear and tear, and predict maintenance needs.

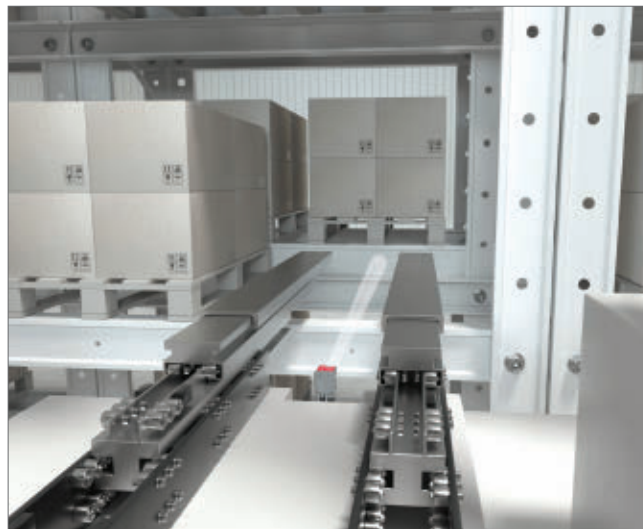
Overall, the **Cursor X** is intended to be aware of its status, capable of anticipating future trends through the exploration of AI and enabled to interact with the Control Room.

FPT Industrial

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Optical Positioning Sensor

provides precise control of double-depth positioning processes



A positioning sensor for high-bay storage devices, the camera-based **IPS 400i** requires little space on the high-bay storage device, detects round holes or reflectors in single and double-depth bars, and determines the position deviation relative to the target position in the X and Y directions. Due to its powerful, ambient-light-independent IR LED lighting, fault-free use in warehouse technology is possible with just one single device for a working range of up to 2,400 mm. With the integrated TCP/IP interface and PROFINET RT, the **IPS 400i** can be directly integrated into the network environment and enables quick, location-independent diagnostics.

Leuze Electronic

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Water-Based Topcoat

offers excellent UV resistance

VpCI-386 is a fast-drying, water-based acrylic topcoat that can be applied directly to metal for protection in harsh, outdoor, unsheltered applications. The mixture of corrosion inhibitors offers protection that competes with most paints and zinc-rich primers. **VpCI-386** comes as a clear coat for minimal change to the surface appearance, or it can be matched to most custom colors.

Cortec Corporation

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Ultra-Cool Heat Sink Family

maximizes thermal performance on crowded boards

A family of ultra-high performance heat sinks for cooling high powered CPUs, GPUs, FPGAs, and AI processors includes active heat sinks with integral blowers and passive heat sinks that use available airflow to



provide thermal management. The sinks feature an aluminum or copper straight fin base with a powerful blower on top. The dualFLOW heat sinks draw air from two opposite directions, and quadFLOW sinks pull air from all four linear sides.

Advanced Thermal Solutions, Inc.

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Enclosure Simplifies Applications

delivers high temperatures in small form-factor



Hot Box for outdoor process sampling applications delivers high temperatures up to 150°C/300°F in compact footprints and employs a combination of conduction and convection heating assisted by a novel air circulation system. The compact boxes provide elevated temperature environments

for sampling systems in small form factors.

Intertec Instrumentation, Inc.

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Fuel-Efficient Trailer Tire

offers a wide footprint to promote even wear

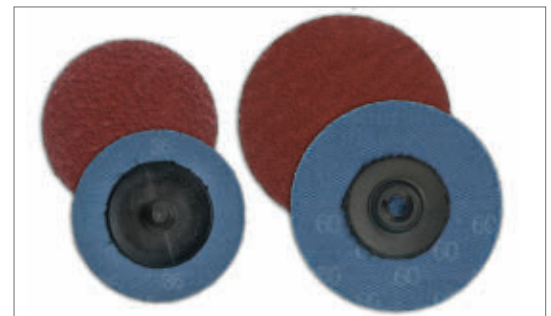


Firestone FT492 trailer tire offers fleets a fuel-efficient, SmartWay-verified tire backed by the Firestone brand. Available in five sizes, the tire is California Air Resources Board compliant and features a fuel-efficient tread design to promote low rolling resistance. The trailer tire is

also engineered with tough sidewall protection and a wide tread footprint, helping hardworking fleets achieve the performance they need, every day.

Bridgestone Americas, Inc.

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Quick-Change Ceramic Discs

provide higher metal removal rates

Used for finishing, grinding, deburring, and blending, Quick-Change, Roll-On, ceramic **C-PRIME** discs offer a finer crystallized structure for longer life, more aggressive grains, and improved self-sharpening features.

Weldcote

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Heavy-Duty Dock Barrier

withstands up to 30,000 lb. of force



The Dok-Guardian XL Safety Barrier helps facilities with loading docks comply with Walking-Working Surfaces regulations mandated by OSHA. At 58-in. tall, the Dok-Guardian XL provides a physical barrier at loading dock opening and can stop up to 30,000 lb. of force.

Rite-Hite

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Gentle Cleaning Pump

reduces pulsation and noise emissions



OptiLobe rotary lobe pumps feature high-precision rotors and a low-shear operation for general applications requiring gentle product treatment and easy serviceability. With full cleanability, the OptiLobe also complies with the world's leading hygienic standards.

Alfa Laval Inc.

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Industrial Foot Switches

feature positive-break NC contacts



STEUTE's Series GF/GFS Industrial-Grade Foot Switches provide on/off or cycle control of a wide range of manufacturing equipment. Available with and without a protective shroud, the units feature positive-break NC contacts; a rugged, powder-coated, die-cast aluminum housing; and are IP65 and cCSAus-compliant.

ZF Electronic Systems

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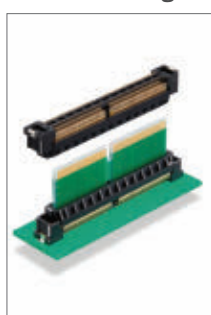
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Flexible Stacking Connector

absorbs misalignment and simplifies multiple mountings



The high-speed card edge FX27 Series connector allows for varying board stack heights by simply changing the length of the PCB interposer, eliminating the need for different height connectors. Supporting a floating range of 1.2 mm in both the X and Y directions, the connector absorbs stress from misalignment while tightening screws and PCB shrinkage caused by high temperatures.

Hirose Electric Co., Ltd.

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Full-Featured Volumetric Feeder

designed for water, wastewater, and chemical processing



The VMF-90D volumetric screw feeder is an automatic, metering screw feed system for mixing and dispensing dry materials into a secondary process. To expedite delivery and installation, the feeder features a concentric material conditioning overwind auger, an SCR controller that may be remotely mounted, a 4-20mA output integrated cycle timer, an alarm sensor, and a vibratory agitator.

Scaleton Industries, Ltd.

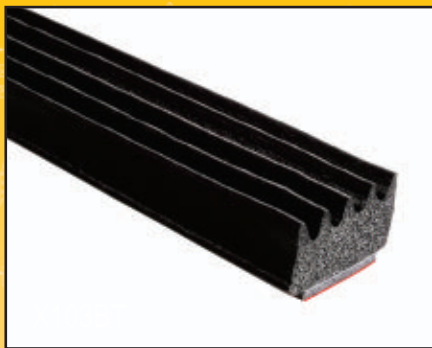
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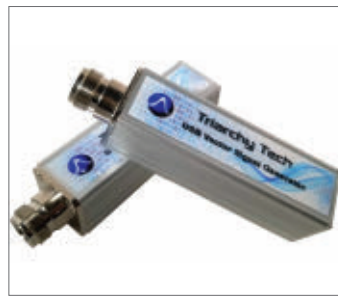
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Compact Signal Generator

provides test signals with or without a PC connection



Triarchy Technologies' VSG2G5C RF Vector Signal Generator is a cost-effective pocketable USB-connected RF signal source that provides standalone and PC-controlled functions comparable to full-size analog RF signal generators. Offering frequencies from 100Hz to 1MHz (low-band) and 100MHz to 2.5GHz (RF Band) with a frequency resolution of 1Hz, this handy unit's features include frequency sweep, frequency hopping using I&Q modulation, and arbitrary signal generation.

Saelig Company, Inc.

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Orbital Stretch Wrapper

eliminates additional product protection or dunnage



The H. BÖHL orbital stretch wrapper eliminates loose fill packaging material by providing superior load stability. The unique design wraps the stretch film over and under the product, tightly securing it to the tray. After the product is placed in the outer box it is safely secured, minimizing additional product protection or dunnage.

Signode Packaging Systems

MORE ONLINE: nedinfo.com/76472-46

Automated Hardness Testers

provide highly accurate readings



Featuring full automated load / unload procedures, the digital Rockwell and Superficial Rockwell Benchtop Hardness Testers use a closed-loop control unit with a load cell, a DC motor, and an electronic measurement

and control unit instead of traditional dead weights, enabling high accuracy measurements at all test loads up to 0.5%. They feature a built-in micro-printer, touch screen control on a high definition LCD display, USB output, and are furnished with PC-based software.

The L.S. Starrett Co.

MORE ONLINE: nedinfo.com/76472-47

Heavy-Duty Draw Latch

accommodates misalignment of heavier doors



Designed to accommodate misalignment of heavier doors and panels, the 37 Lever Assist Latch provides tight latch grip and additional clamping force in challenging operating conditions. The latch features a flexible design and

substantial handgrip area that allows the latch to easily engage in challenging field conditions, even with gloved hands. Constructed of corrosion resistant, flexible rubber, the latches absorb and reduce vibration and will remain closed even when the application flexes or moves.

Southco, Inc.

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Industrial PCs for Edge Computing

are IoT enabled with a small footprint



MELIPC Series industrial-use computers are great for data computing, edge computing, remote monitoring, and the integration of hardware and software technologies. The series is targeted towards manufacturers who require a computing and data monitoring solution that takes up a limited amount of space with a small footprint. Most importantly, MELIPC is designed to enable IoT on factory floors that have not been introduced to it yet, or improve it where it is already enabled.

Mitsubishi Electric Automation, Inc.

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Double-Insulated Universal Pliers

deliver excellent leverage and clean cuts



Double-insulated, 9-in. Universal Pliers designed for safe use in Arc Flash environments are heat-treated and feature a compact head with serrated jaws and a useful crushing area. The pliers feature a high-leverage design for greater cutting and gripping power, and are designed for cutting round cable up to 9.2 mm or soft steel wire up to 2 mm.

Cementex

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Hybrid Motor Starter

streamlines installation and safety integration



CONTACTRON pro simplifies wiring and safety integration. It has a T-bus backplane system that rapidly distributes 24 V power, bridges the e-stop enable signal, and adds auxiliary contact modules to allow feedback of the motor state.

Phoenix Contact

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Food-Safe Bearings

offer longer operating life under the toughest conditions



Corrosion-Resistant Ball Bearing Housed Units, coupled with food-grade lubricant, protect against a variety of wet and dry contaminants and are ideal for a multitude of food processing applications, including conveyors, mixers, metal detectors, checkweighers, tumblers, slicers, peelers and more.

The Timken Company

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Camera Offers Fast and Detailed Error Analysis

captures images as soon as errors are detected



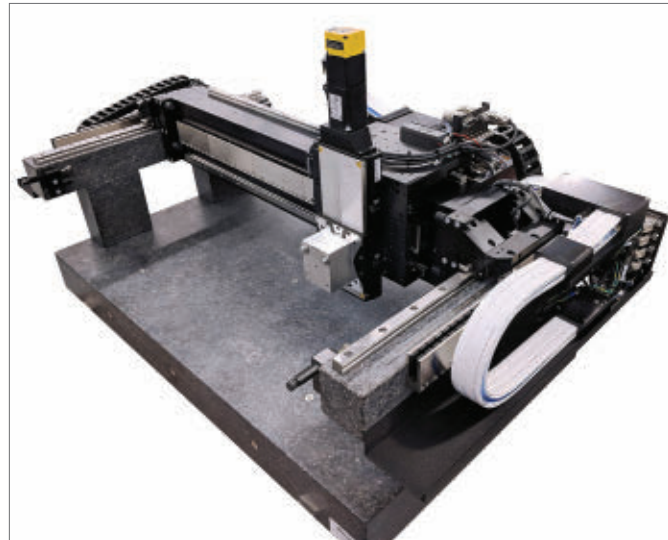
Spontaneous errors in the manufacturing process can be a thing of the past thanks to the EventCam—a 2D camera that brings clarity when unexplained gripping, handling, and positioning problems arise. The EventCam is designed for the detection and analysis of sporadic errors in industrial processes, can be integrated easily into stationary and mobile applications, and delivers single frames and video sequences in ultra-high image quality for detailed error analyses.

SICK USA

MORE ONLINE: nedinfo.com/76472-53

Linear Motor Gantry System

features recirculating ball bearing guides for high load capacity



The MGS gantry system, A-351, maximizes throughput for applications requiring overhead motion. It uses preloaded linear mechanical bearings to provide optimized stiffness and precision. The gantry axis incorporates dual, noncontact linear motors and dual linear encoders to eliminate backlash, wear, and maintenance concerns. Ironless linear motors provide smooth motion and no cogging or attractive forces. The A-351 is coupled with industry-leading controllers and drive modules from ACS that offer superior servo performance, advanced control algorithms to improve dynamic performance and error compensation, and a wide suite of software development tools.

PI USA

MORE ONLINE: nedinfo.com/76472-54

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Compact, Hydraulic Driver

operates up to 2X quieter than standard impacts
 As the first 12V subcompact hydraulic driver on the market, the SURGE uses a technology called FLUID-DRIVE Hydraulic Powertrain, which delivers 2X less noise and vibration and maintains peak torque longer than standard impact drivers. The compact design offers users a new solution for working in tight spaces as its smaller size allows for it to be easily transported on a tool belt or in a backpack and allows the best access in confined workspaces. The exclusive FLUID-DRIVE Hydraulic Powertrain design replaces the traditional hammer and anvil mechanism found in standard impacts with a hydraulic mechanism that generates the power necessary to create torque. Because there's no metal-on-metal contact, the net result is smoother performance, with a decrease in noise and vibration, as well as longer sustained torque.

Milwaukee Tool

MORE ONLINE: nedinfo.com/76472-55



Bulk Solids Level Indicators

can be used in temperatures exceeding 300 °F
 DJ CIP Bulk Solids Level Detectors can operate as high, mid, and low level indicators for bulk solids materials ranging from low-density flakes and powders to pellets and heavy granular materials. The durable Level Detectors contain no moving parts, gaskets, or seals and rely on mechanical oscillations to determine if the probe is covered or uncovered.

Dynatrol USA

MORE ONLINE: nedinfo.com/76472-56



Automated Dust Extractor

captures dust at the source
 Designed for factories that need immediate dust filtration, the Auto Start Dust Extractor Pedestal eliminates dust by capturing it at its source.

Palmgren

MORE ONLINE: nedinfo.com/76472-57



Hygienic Electric Actuators

provide modular clean-in-place solutions
 Designed to hygienic standards for eliminating harborage points and preventing bacterial growth, IMA-S integrated electric servo actuators provide excellent corrosion resistance and withstand high pressure, high temperature, and caustic wash-down.

Tolomatic

MORE ONLINE: nedinfo.com/76472-58

Discharger Provides Safety Guard

prevents contact with moving parts



BULK-OUT Model BFF Bulk Bag Discharger features a steel safety cage to prevent contact with moving parts during operation and automated unloading of bulk bags. The enclosure features externally-mounted controls and full height doors with an intrinsically safe relay that halts operation when the door is open.

Flexicon Corporation

MORE ONLINE: nedinfo.com/76472-59



Micro Duct Cutter

has a triangular blade for square and straight cuts
 Designed to create quick, clean, and straight cuts in fiber ducts up to 28 mm, the MDC-28 is perfect for cutting PVC, CPVC, HDPE, and other plastic tubing.

Jonard Tools

MORE ONLINE: nedinfo.com/76472-60



UPS Series with One Cable Technology

minimizes installation work
 With flexible and cost-saving connection options including One Cable Technology (OCT), the CU81xx UPS series is suitable for a broad range of applications. In combination with the Beckhoff IPCs, particularly efficient cabling is possible with just one cable for 24 V supply and communication through UPS-OCT.

Beckhoff Automation LLC

MORE ONLINE: nedinfo.com/76472-61



Automatic Motor Purge System

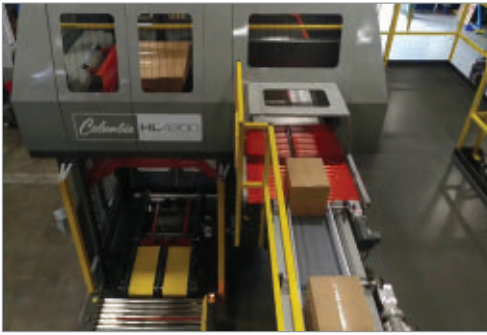
has a maximum flow rate of 14,000 l/min
 Bebeco EPS purge and pressurization system, for use with large motors or enclosures in Zone 1 hazardous areas, can purge an enclosure over 450 ft³. The 6100 series system is perfect for applications in the chemical/petrochemical and oil and gas industries.

Pepperl+Fuchs Inc.

MORE ONLINE: nedinfo.com/76472-62

High-Level Palletizer Handles a Variety of Package Types

forms side-to-side and front-to-back layer gaps



The HL4200 high level palletizer offers users a compact footprint and high performance. Standard features include a VFD-controlled pacer meter belt, bi-parting apron, and Columbia's Product Manager controls package. Ideal for both retrofit and new applications, the HL4200 can handle a wide variety of package types including cases, display packs, totes, trays, bundles, shrink film without pad, crates, small cases, and more.

Columbia Machine, Inc.

MORE ONLINE: nedinfo.com/76472-63

Compact Solid State Relays

feature high power density of up to 75 amps



The DR67 and PM67 Series are ideal for use in large industrial equipment where highly accurate power control and ease of installation is required. These SSRs feature high power density of up to 75 amps at 600 VAC per channel at 40°C in a compact, easy to install package. Features include integrated overtemperature protection with optional alarm output, a choice of two or three controlled leg options, built-in overvoltage protection, and a choice of either AC or DC control.

Sensata Technologies

MORE ONLINE: nedinfo.com/76472-64



High Pressure Relief Valves

may be used in temperatures up to 400 °F

Designed to protect liquid and gas tubing systems from over-pressure damage and failure, the soft seat relief valve provides pressure ranges from 1,500 to 25,000 psi for 9/16-in. O.D. tubing with adapters for other sizes available. The valve design provides a bubble-tight seal ideal for venting gas and can be reseated.

High Pressure Equipment Company

MORE ONLINE: nedinfo.com/76472-65



Cut-to-Length Belt Cleaner

can fit virtually any application

Combining the benefits of previous designs into one product, the QC1+TM Belt Cleaner can be cut to length to fit virtually any application, reducing the need for customers to stock multiple blade sizes to accommodate different belt widths. Operators simply trim the blade to the desired size from the stock 9-ft length to match the material path, slide in the blade holders, and lock them in position. The blade can be retrofitted to virtually any Martin main frame and most competing designs.

Martin Engineering

MORE ONLINE: nedinfo.com/76472-66



Camera Captures the Smallest Details

provides detailed, low-noise images

The Sony IMX183 20 MP sensor is now offered by IDS in the uEye CP camera family with USB3 Vision interface. The models are well-suited for challenging image evaluations and are also extremely compact. The rolling shutter sensor delivers fast 19.5 fps and, thanks to BSI technology (back-side-illumination), ensures outstanding image quality and accurate image reproduction—even under poor or fluctuating lighting conditions.

IDS Inc.

MORE ONLINE: nedinfo.com/76472-67



Heavy-Duty Construction Adhesive

creates a strong, permanent bond

Able to hold vertical projects in place instantly without the need for bracing or clamping, DynaGrip Heavy Duty offers a powerful instant grab along with a strong permanent bond and an excellent adhesion on common building materials. DynaGrip Heavy Duty is a great solution for both interior and exterior construction and remodeling projects.

DAP Products Inc.

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FROM THE COVER

Platform Speeds Up Digital Future

builds, integrates, and extends data systems



Xcelerator—an integrated portfolio of software, services, and application development platform—can be personalized and adapted to fit customer and industry-specific needs to help companies of all sizes become digital enterprises.

Xcelerator combines the full portfolio of Siemens' software for design, engineering, and manufacturing with an expanded Mendix low-code, multi-experience application development platform.

The Mendix platform includes cloud and app services for digital engineering and IoT powered by MindSphere, the cloud-based, open IoT operating system from Siemens, in addition to Mendix's market-leading unified low-code and no-code development environments.

Unique to Xcelerator, this platform drives digital transformation by enabling anyone in the ecosystem—including citizen developers and engineers—to easily build, integrate, and extend their existing data and systems.

Siemens Digital Industries Software

MORE ONLINE: nedinfo.com/76472-69



Heavy-Duty CNC Lathes

built to reduce machine vibration and allow fast and accurate machining

Romi C Series heavy-duty flatbed CNC lathes are built with Romi made monoblock cast iron beds for optimum rigidity, accuracy, and performance. The heavy-duty C Series includes nine models ranging from the C 1100H with a 28-in. swing over cross slide and 72-hp main motor, to the massive C 2600H with an 80-in. swing over cross slide and a 155-hp main motor. The lathes are powered by a high torque, continuously variable speed AC motor and the manually driven quill has a built-in live center with high precision bearings.

Romi Machine Tools Ltd

MORE ONLINE: nedinfo.com/76472-70

Tamper-Evident Neck Bander

features extended shrinkband length



The automated Pharmafill NB1, Series II neck bander accommodates shrinkbands and full sleeve labels ranging from 0.79 to 10-in. in length. The NB1 neck bander enables packaging professionals to automatically apply tamper-evident neck bands to a wider variety of glass and plastic bottles, jars, vials, dropper bottles, metal tins, and other containers in a wider range of sizes and shapes on the same, versatile neck banding machine.

Deitz Co., Inc.

MORE ONLINE: nedinfo.com/76472-71

I/O System Controller

features a high-speed processor



The 750-8215 is IIoT-ready, comes with two Ethernet ports, two PROFINET ports, and is programmable with WAGO's e!COCKPIT software (CODESYS 3.5). The PROFINET ports are switched for use as a line configuration enabling the controller to function as an I/O device connected to a PROFINET master. The two Ethernet ports can be used in a switched configuration or separated, and support other protocols such as EtherCat and Sparkplug (with additional licenses).

WAGO

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Industrial Panel PC

fulfills virtually any monitoring requirement

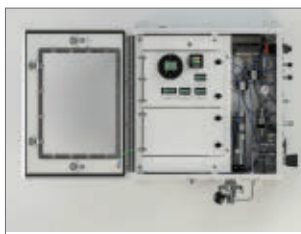
Experion Panel PC, an industrial-grade touch panel PC, brings Experion control room capabilities to field operations for the first time. The solution's interoperability and more efficient operational workflows throughout the plant reduce annual maintenance and integration efforts by up to 3%.

Honeywell Process Solutions

MORE ONLINE: nedinfo.com/76472-73

Water Analyzer Offers Pollution Control

ensures water is properly treated before released



Model 204 Hydrocarbon VOC in Water Analyzer quantifies total hydrocarbons and volatile organic compounds in cooling towers, heat exchangers,

holding ponds, run-off water, and wastewater. Using a sample transfer stripper and solid-state sensor, it measures oil and VOCs directly in the water as opposed to the air around the water, and measures very low levels to detect a small leak before becoming an environmental issue.

Analytical Systems Keco

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Stainless-Steel Sifters

condition granular and powdered products

Ideal for flours, sugars, salts, and other materials, the GS Series sifters in stainless steel feature a rotating paddle assembly that harnesses centrifugal force to pass fine particles through a mesh screen and divert oversized particles to the discharge.

Gericke USA, Inc.

MORE ONLINE: nedinfo.com/76472-75

Manual Conveyor Weighing Scale

weighs products ranging from 0.2 to 250 lb.



Capturing static weighments of products as they manually move down a conveyor line, the Roller Conveyor Scale helps manufacturers economically speed production and increase operational efficiencies. The scale weighs products ranging from 0.2 to 250 lb. and accommodates objects sized from 32 to 36 in. It is a cost-effective solution for capturing shipping weights, missing parts inspection, over/under checkweighing, common carrier chargeback protection or manufacturing.

Fairbanks Scales Inc.

MORE ONLINE: nedinfo.com/76472-76

Low-Cost Process Monitoring for CNCs

requires no additional hardware



NUMmonitor software enables users of high throughput, multi-process CNC machine tools to implement process monitoring without incurring any additional hardware costs. It initially operates in "learn" mode to acquire the varying loads and drive currents of motors when the CNC machine tool is running at optimal performance levels and with a sharp new tool. Up to 8 motors can be monitored simultaneously throughout the machine's operating cycle, and the software accommodates up to 11 different error detection criteria per motor.

NUM

MORE ONLINE: nedinfo.com/76472-77

Multifunction Temperature Calibrator

calibrates temperature, electrical, and pressure signals



Offering a better way to perform temperature calibrations, the MC6-T shows through when you consider that this one device can provide high accuracy reference measurements and simulations for temperature, pressure, and electrical signals such as resistance, mA, mV, V, mA, pulses, and frequency together with HART, Profibus PA, and FOUNDATION Fieldbus communicator. The combination of superior temperature metrological performance, shortened calibration cycle time, and special design consideration for immunity to environmental conditions are a few of the unique features.

Beamex Oy Ab

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attractive finish



BLACK

Decorative,
powder-coat finish



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and will not rust



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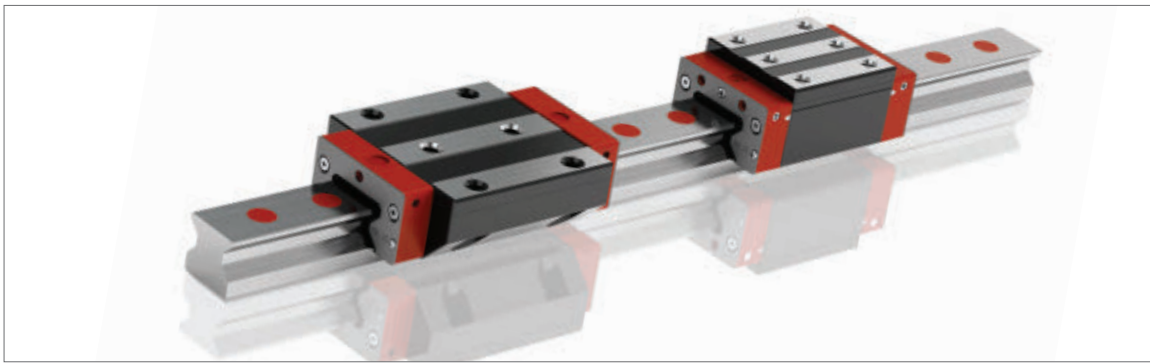
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Profiled Linear Guideway

moves workpieces up to 150 tons

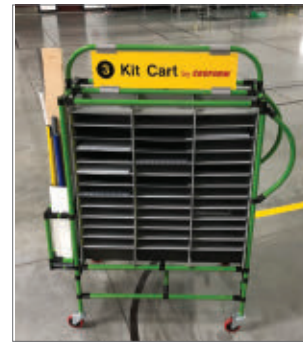
The latest from the MONORAIL MR profiled linear guideway series, the MR 30 MONORAIL 30 mm rail and cross roller cartridge, moves especially heavy workpieces of up to 150 tons—with extreme accuracy—in milling, turning, drilling, or grinding machines. It delivers higher machining rates, enhanced geometrical accuracy, and improved surface quality of machined workpieces in a wide variety of applications.

SCHNEEBERGER Inc.

MORE ONLINE: nedinfo.com/76472-79

Kitting Cart

holds up to 500 lb.



Creform's kitting cart allows users to pull parts from a storage area and create a production kit. The cart has a 28 x 40 in. footprint and is designed to hold up to 500 lb. to provide various methods of handling inventory. Options

can include feet rather than wheels for stationary operations, label holders to identify positions, hooks, and clipboards. The cart can be outfitted with a hitch for towing by a Creform AGV Tugger to make the cart part of an AGV-supported kitting system.

Creform Corporation

MORE ONLINE: nedinfo.com/76472-80

Bottom Blowdown Valve

protected from cavitation and flashing effects



RTK Bottom Blowdown Valve is ideal for optimizing equipment efficiency and simplifying blowdown operations. The valve features a unique angle design that offers quick and problem-free clearing particulate and dissolved solids from the bottoms of steam and hot water

boilers. The seat design enhances valve life with hardened trim and an anti-flashing seat that protects the valve body from cavitation and flashing effects.

CIRCOR International, Inc.

MORE ONLINE: nedinfo.com/76472-81

Carbon Fiber T-Boom End Effector

increases production rates by up to 20%



The enhanced carbon fiber T-boom tooling includes a 15% increase in carbon fiber stiffness as well as modifications to the profile for easier joining. By improving the stiffness of the tool, there is less vibration and deflection for improved speed and precision. Bilsing T-Booms feature a modular design with extreme design flexibility, enabling users to simply change out components instead of having to replace the entire unit should a component break or need to be changed out. The booms are well suited for pressroom and stamping applications including hot forming as well as assembly, plastic injection molding, and more.

Bilsing Automation GmbH

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Rugged Scrubbers for Mining Industry

removes high particulate loadings emitted from mineral dryers



Built to withstand the harsh and rigorous demands of mineral processing, the rugged Series 8500 High Efficiency Venturi Scrubbers with Spin Separator is specifically designed to take on and remove high particulate concentrations emitted from molybdenum concentrate and mineral dryers. The scrubber comes complete with induced draft fan, recirculation pumps, piping, full instrumentation, electricals, and controls for easy field installation. An adjustable throat feature allows complete flexibility to precisely meet needed gas flow rates and particulate collection requirements.

Bionomic Industries, Inc.

MORE ONLINE: nedinfo.com/76472-83

PTFE Thread Sealant

maintains stability in temperatures up to 500° F



Formula-8 is a shear-sensitive paste that sheets out into PTFE strings when torqued and delivers exceptional sealing performance on all sizes of threads. It is ideal for use in oxygen and fuel systems, hydraulic cylinders, and natural gas applications. It maintains stability in environments of -400° to 500° F, and is solvent-free and non-hazardous.

Fluoramics, Inc.

MORE ONLINE: nedinfo.com/76472-84



Conveyorized Curing System

can be used as a standalone system
Horizontal Conveyorized Gas Fired and Electrically Heated Hot Air Convection Drying and Curing System is designed for customers to dry water off of and/or cure liquid and powder coatings on a wide range of products processed horizontally. The system features great temperature uniformity using bottom up, horizontal or top down air flow and controls, an air recirculation and exhaust system, and a complete energy efficient insulated oven enclosure. The system can be used as a stand-alone system or in conjunction with coating application equipment and incoming and outgoing conveyors.

David Weisman, L.L.C

MORE ONLINE: nedinfo.com/76472-85

Stackable Shaft Collars

evenly distributes clamping power



Stafford Stackable Stainless Steel Collars feature two-piece construction with flats on two opposite surfaces that are drilled and tapped to allow attachment to each other along with a countersunk hole

for mounting to a surface or a threaded rod. Designed for securely holding shafts, tubing, and hoses, they can be easily adjusted and a cap version has a finished outside surface for the end of a stacking array.

Stafford Manufacturing Corp.

MORE ONLINE: nedinfo.com/76472-86

High-Airflow Filter Fans

can be used in high-vibration applications



The Filterfan 4.0's patented "click and fit" technology requires no tools and makes installation quick and easy. The unit's patented hinges make changing filters fast and simple with no need for tools. The filter mat is fluted, which makes for superior air-flow and filtering over this component's lifespan. For

use with wet applications, the Filterfan 4.0 is also equipped with a drain to keep water from collecting in the device's enclosure.

Pfannenberg, Inc.

MORE ONLINE: nedinfo.com/76472-87

Selectable Voltage Power Supply

can energize two static eliminators



Gen4 Two Outlet Selectable Voltage Power Supply allows users to choose input voltages of 115 or 230VAC. Two 5kV stainless steel output connectors can energize two static eliminators. Applications using up to two Gen4 Super Ion Air Knives, Ion Air Guns, Ion Air Cannons, Ionizing Bars or any other Gen4 static eliminator product can be connected to one power supply.

Like all EXAIR Gen4 products, these two outlet power supplies are UL component recognized, CE, and RoHS compliant.

EXAIR Corporation

MORE ONLINE: nedinfo.com/76472-88

Dry Solids Feeder

ensures unrestricted movement of materials



Model Bin Discharger (BDF Series) Feeders produce positive flow and feed of even the most difficult handling dry solid ingredients. The unique design combined with an opposed multiple auger/agitator action eliminates impediment of

product flow and feed, ensuring smooth, gentle, and unrestricted movement of even the most stubborn to handle materials.

Acrison, Inc.

MORE ONLINE: nedinfo.com/76472-89

Space-Saving Folding Basket for Cranes

can easily fold up in less than a minute when not in use



The Single Man Folding Basket for service cranes provides fall arrest and fall protection while helping to eliminate the need for ladders or climbing on equipment. When not in use, the basket's space-saving design folds for easier transport and storage. Featuring a large open area for increased productivity, the Single Man Folding Basket has a full-sized floor to accommodate workers and materials. The slotted floor allows water to drain, while the upset holes offer skid resistance. An inward-opening gate provides easy entry into the basket, while minimizing space needed.

LiftWise

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FROM THE COVER

Mobile Robot Expands Flexibility

can transport payloads of up to 250kg



The latest addition to the LD Series of autonomous mobile robots, the LD-250 carries payloads of up to 250kg and has a sturdy structure that is optimized for items like transmission blocks, automotive seats, and voluminous packaging materials that are bulky as well as heavy.

Together with Omron's powerful Fleet Manager, the LD-250 helps manufacturers construct a more flexible and optimized autonomous material transport system, as Fleet Manager now enables the control of multiple mobile robots with different payloads through a single system. The system can manage traffic, battery charging requirements, and vehicle navigation for a diverse fleet of up to 100 robots.

In addition to its extra-sturdy structure that carries unwieldy items traditionally transported in human-operated carts, the LD-250 is also highly customizable with special conveyor tops, courier systems, and adaptive material handling mechanics.

Omron LD mobile robots can avoid people and obstacles while automatically calculating the best routes to transport material, thereby optimizing materials transport requirements while reducing labor requirements.

Omron Automation Americas

MORE ONLINE: nedinfo.com/76472-91

Winch Redefines Heavy Lifting

handles capacities up to 70 metric tons



Konecranes has retooled its flagship heavy winch design, incorporating the best features of its Uniton and Smarton models into the M-series winch. The next-generation, heavy-duty winch offers improved hook approaches and flange mounted motors for positive motor to gearcase alignment that reduces component wear. M-series' updated trolley layout improves safety while better facilitating inspections and maintenance with the use of convenient and safe trolley walkways. These design features have resulted in a winch that can easily be configured to fulfill the needs of various production processes.

Konecranes, Inc.

MORE ONLINE: nedinfo.com/76472-92



Fail-Safe Control Valve

travels at 2mm/sec

ARIA Series electrically actuated, modulating, globe control valves are ideally suited for challenging, modulating, industrial processes that require electric actuation with the actuation speed and reliability of pneumatics. The ARIA is designed for 1.5 million cycles and can withstand ambient temperatures up to 140°F, with travel speeds at 12 seconds per inch. It is equipped with an electric spring fail safe (when opened or closed), robust enclosures with IP67/NEMA 4X enclosure and water tight 3/4-in. NPT fittings, and has split range input capability for 1/3 to 2/3 high/low applications.

Warren Controls

MORE ONLINE: nedinfo.com/76472-93



Hybrid, Flexible Coupling

can run at speeds of up to 3,500 RPM

TSC150 features a patented design that allows the coupling to do the job of two different coupling technologies in one, as well as offering a truly maintenance free product as it contains no bearings. The Twin Spring Coupling TSC150 can handle high speed/low misalignment, while being more flexible than the current industrial couplings due to its dual spring construction. It can also run at lower speeds and higher misalignment like the industry standard universal joint, which requires constant maintenance (greasing and worn bearing replacement). Adding to that, the one-piece design also means no

broken yokes, which is another area of product failure with universal joints. The Twin Spring Coupling is torque rated to 150 ft-lb. of torque and can run at speeds of up to 3,500 RPM at low degrees of misalignment.

Twin Spring Coupling

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Proportional Isolation Valves

allow for custom flow profiles

Using the industry's most robust and powerful miniature linear actuator, Eclipse valves are ideal for critical applications for liquid and gas delivery, analytical and industrial automation requiring ultra-fine resolution and excellent repeatability.

Clippard

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Rough + Finish Large Turbine Blades

For jet engine and power generation turbine blades up to 1.4 m in length, the Liechti Turbomill 1400 g produces high-quality finished part surfaces that require minimal polishing and less benchwork than those processed on general-application machines. To provide fast, cost-efficient production, the Turbomill clamps blades at each end and rotates them between centers for heavy-duty roughing and dynamic finishing of complex airfoil contours, root forms, and shrouds.

GF Machining Solutions

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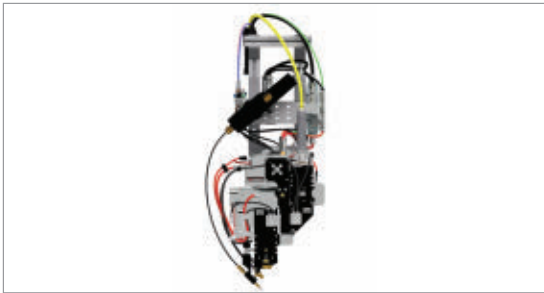


TOF Photoelectric Sensors

E3AS Series Reflective-Type Photoelectric Sensors combine accurate detection for diverse targets, exceptional sensing distance, environmental robustness, and a compact size to help manufacturers manage flexible production needs more effectively. The E3AS family's sensing distance of 1,500 mm is five times longer than that of previous models, and the full sensing range of 50 to 1,500 mm eliminates the need for manufacturers to select different sensors for each application.

Omron Automation

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Remote Welding

Redefining tactile laser soldering and welding, the AL04 features an intuitive user interface, plug & play for shortened commissioning times, and optics control as well as an industry 4.0 connectivity.

Scansonic MI GmbH

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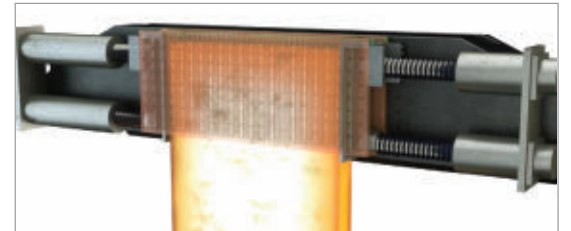


Online Ordering Tool

GoSelect, an online ordering tool, streamlines product selection and makes cost quoting a breeze. The interface offers pricing and availability on hundreds of products and users can instantly download CAD drawings that are available in a variety of formats.

Bosch Rexroth Corp.

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Real-Time Casting Control

ABB Ability Optimold Control system works in real-time, using feedback from a high-resolution sensor system to actively control electromagnetic devices which can influence fluid flow, correcting casting problems in the mold and ensuring that casting takes place under optimal conditions.

ABB

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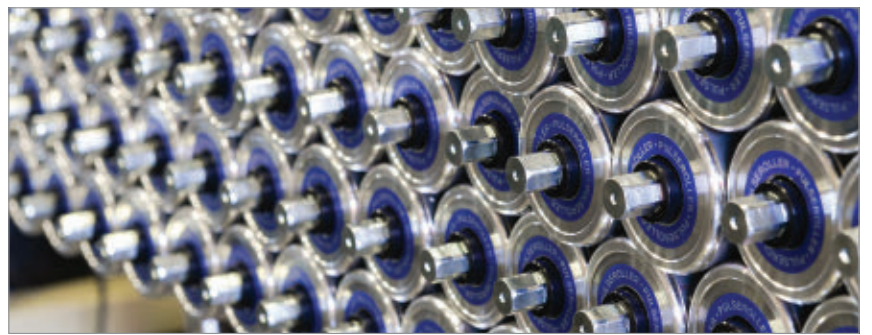


Wireless Energy Sensor

PowerTag Energy is a wireless communication energy sensor that provides precise, real-time data on energy, currents, power, voltage, and power factor. Small in size, large in performance, PowerTag Energy sensors accurately monitor energy consumption and wirelessly communicate this data to your mobile device in real-time via a gateway. Use energy more efficiently and economically on all electrical loads, from heavy and critical equipment to smaller residential appliances.

Schneider Electric

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Versatile Motor Drive Rollers

Consuming up to 60% less energy than alternative conveyors, Senergy motor drive rollers can reach speeds up to 1,000 fpm with a starting torque up to 215 in/lb. for use in lower speed, heavy-duty applications.

PULSEROLLER

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Rotary Screw Compressors

The SM Series of air compressors come standard with Sigma Control 2, combining reliable, energy-efficient control with access to operating and maintenance information.

Kaeser Compressors, Inc.

MORE ONLINE: nedinfo.com/76472-103



Upgrade to Smart Utilities

LEDSENSE, an IoT software, allows for buildings to wirelessly upgrade to smart utilities, making it simple to retrofit any building of any size with smart utilities.

SIELO

MORE ONLINE: nedinfo.com/76472-104



Transparent Energy Meter

Energy Meter 750 allows comprehensive error detection by continuously recording consumption and also monitors residual currents. Overvoltage, asymmetries, transients, flicker, and other disruption parameters are recorded and analyzed.

Weidmüller

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TESTING & INSPECTION



Ground Penetrating Radar Goes Deeper

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Geophysical Survey Systems, Inc.

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Klein Tools

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Mahr Inc.

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Megger

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Rohde & Schwarz USA, Inc.

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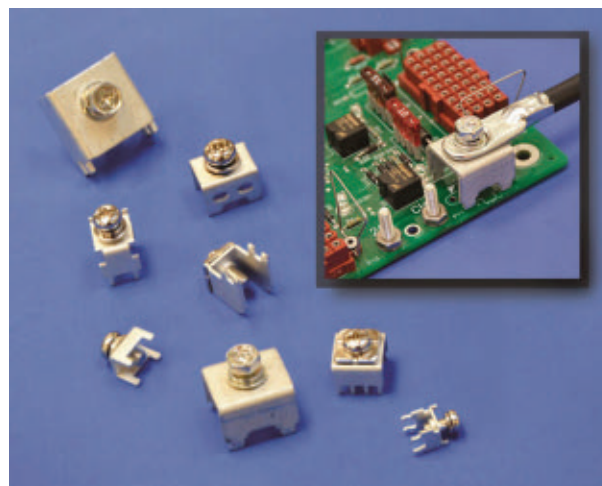
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FROM THE COVER

Design Solution Improves Productivity

reduces design cycles from days to hours



MSC Apex Generative Design, a design optimization solution, improves quality through unparalleled automation of design processes with embedded manufacturing knowledge.

MSC Apex Generative Design aims to improve productivity by up to 80% compared to classic topology optimization. The software produces a part design that is ready for additive manufacturing within a few hours—a fraction of time usually required—making reliable additive manufacturing more cost efficient and accessible.

The designer only needs to specify the boundary conditions and design objective. Multiple lightweight design candidates that explore the possibilities of the design space will be produced that provide optimal stress distribution and minimize weight. This enhances the creative process, so designers have more time to optimize the product's concept and integrate additional features that add value. The software's intelligent smoothing technology ensures that every candidate has a perfect finish that is ready for print.

MSC Software Corporation

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works well for complex geometric shapes



BvL's Niagara MO cleaning system is a two tank machine that features a flood spray cleaning system and revolving wheel technology. Niagara's cleaning technology includes a holding fixture that revolves or swivels around the horizontal axis. A special nozzle frame provides the best cleaning and nozzle/nozzle frames can be adapted to the workpiece. Maximum permitted load and the permitted dimensions are adjustable. Processing takes place in several steps including washing spray cleaning, flood cleaning, injection flood cleaning and ultrasound cleaning.

German Machine Tools of America

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FROM THE EDITOR

The End of Errors

Deep learning and the hidden value of smart technology

At a tradeshow recently, I ran into a guy on a frantic mission to find "some kind of really smart software" that would prevent, as he put it, "another catastrophic f**k up" in his plant.



Apparently, an entire line of machines had run a full shift out of spec—five machines running full-tilt to produce eight hours' worth of scrap. Which certainly explained his choice of words.

What got me about this was not just the immediate hit the company took in terms of material cost and on-time delivery, it was the collateral damage. They guy lost a third of his day to this mistake, which meant days or weeks of overtime and frenzy, scrambling to make up for lost time, to get the old orders filled and keep the current orders running—it meant plant managers were spending their time apologizing to and updating upper management, who spent its time apologizing to and updating the customer. It was a total, chaotic, top-to-bottom mess, all from one simple coding error that resulted in invisible imperfections.

A catastrophic screwup of epic proportions.

It made for a great story. But not a terribly original one.

No matter what industry you're in or what your company produces, firefighting is almost certainly part of your job. If I had to guess, I'd say I've personally spent maybe 30% to 40% of my working life fixing yesterday's problems (or hunting for the right person to solve them). Which also means I've spent over a third of my working life achieving zero productivity.

Whenever we talk about smart technologies—be they performance-tracking hand tools or AI/machine learning systems or anything in between—we tend to focus on the incremental productivity improvements they can offer. Leaders can make more informed decisions, workers can get more done per shift, etc.

But maybe the real benefit to these technologies is somewhere else. Maybe the real, immediate potential of all these sci-fi gadgets and systems is in their potential to save us from a lifetime of firefighting and scramble.

This, at least, is the promise detailed in this issue. From deep-learning systems that can detect any misalignment during assembly (or, presumably, a coding error that would result in a shift of scrap) to wearable devices that can show us what to do before we do it (or connect us with someone who can show us how), we're presented with a future without human error, without production mistakes, with no frenzy or collateral damage to clean up. The potential of that is enormous—taking my estimates, that would mean up to a 40% productivity boost right from the start, without even improving any active processes.

In this sense, I think the trade show guy might have a jump on us. Maybe the first goal in the digital transformation can be just to find some kind of really smart software to prevent catastrophic f**k ups. After that, the incremental improvements these smart technologies offer could add up to truly transformative growth.

T. Travis Hessman
Editor-in-Chief

10 Heavy Equipment Safety Tips for INCIDENT PREVENTION

It doesn't matter what level of training operators or site workers have, following these safety tips can help them avoid injury while working with heavy equipment.

By Bailey Hudson

According to a report by the United States Department of Labor, 5,250 employees died on the job due to work-related injuries in 2018. Over 20% of these fatalities were in the construction industry. The deaths were attributable to falling objects, electrocution, and caught in-between (getting stuck, struck, or crushed by equipment or objects). Here are 10 of the best ways to prevent accidents while working with heavy equipment.

1. HAVE AN INCIDENT MANAGEMENT PLAN IN PLACE

You can never quite predict when an accident will occur. An incident management plan allows companies to identify, analyze, and correct any hazards to avoid future recurrence. This type of plan allows you to curb distractions when an incident occurs so the problem can be dealt with immediately.

2. ENSURE ADEQUATE TRAINING FOR OPERATORS

Anyone who is operating heavy equipment must have the relevant training. It is not the best kind of equipment for trial and error because it can be dangerous for both the operator and other workers. Ensuring operators have knowledge on essential mechanical aspects allows them to easily identify any issues. If you are working with contractors, ensure you see their certification.

3. ALWAYS REMAIN VIGILANT

You must always remain vigilant while operating heavy machinery. Have a good feel for your surroundings and take into consideration any obstacles or dangerous spots. Be exceptionally watchful for power lines, barriers, sewer, gas, and electrical lines, among others. It helps to demarcate such areas to avoid any accidents or incidents. Only allow workers who are actively engaged to be within the field of operation so crowding can be avoided at construction site. It also allows the operator more space to do their job.

4. MOUNTING AND DISMOUNTING HEAVY MACHINES

A common cause of injury on construction sites is falling from heavy machines. Falling objects are also a significant cause of concern. When mounting or dismounting heavy machines, you must be careful. Ensure you have a good grip and use hand holds, as well as steps at all times. Do not carry unnecessary equipment into the cab and do not dismount while the machine is moving.

5. INSPECT THE HEAVY EQUIPMENT BEFORE YOU USE IT

Let professionals service your equipment regularly. If you do it for your car, why would you not do it for heavy machinery? Heavy equipment training 101 will tell you that you need to inspect all equipment before operations. If you see there is a problem and it is outside your area of expertise, let the professionals take care of any serious issues before you use the equipment. Remember—put the machine in a parking position when performing any maintenance services.

6. HAVE THE RIGHT GEAR

When you are at a site with heavy machinery, you must have the right protective gear. Goggles, hard hats, gloves, and boots are a requirement. Other protective gear includes high visibility clothing, fall protection equipment, etc. Do not compromise your safety because you think the protective gear is cumbersome.



7. AVOID BLIND SPOTS ONSITE

Anyone who is operating heavy machinery must ensure that they have a clear vision on all sides. If you have a blind spot, get the help of a colleague to spot for you. He or she will direct you to a safe position.

8. COMMUNICATION IS CRITICAL

You must ensure that you keep the channels of communication open for everyone who is on the construction site. It pays to invest in walkie talkies, two-way radios, or any other system that works well for you. When you give your team the relevant information, they can avoid dangerous areas and inform the others as well.

9. EACH MACHINE HAS ITS USE

Every piece of heavy machinery has its use. You may, however, find that you are using a piece of equipment for something outside of what the manufacturer intended. While it is entirely within reason to try and find multiple functionalities for the equipment you have, it may not be a very good idea when it comes to heavy machinery. Overloading or overworking can lead to damage or even a breakdown. A piece may break off, leading to injuries or death at the site. Trust the manufacturers and stick to their recommendations.

10. DO NOT IGNORE YOUR SEATBELT

You may convince yourself that since you're not driving down the highway, you do not need to have a seatbelt on. However, you need to ask yourself why manufacturers put it in the first place. You never know when the seatbelt could save your life. There have been cases where the heavy equipment tips over and the saving grace for the operator is the seatbelt. Even if it does not tip over, you could avoid some severe bangs and jostles by having your belt on.

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