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SPECIAL SECTION 3D PRINTING

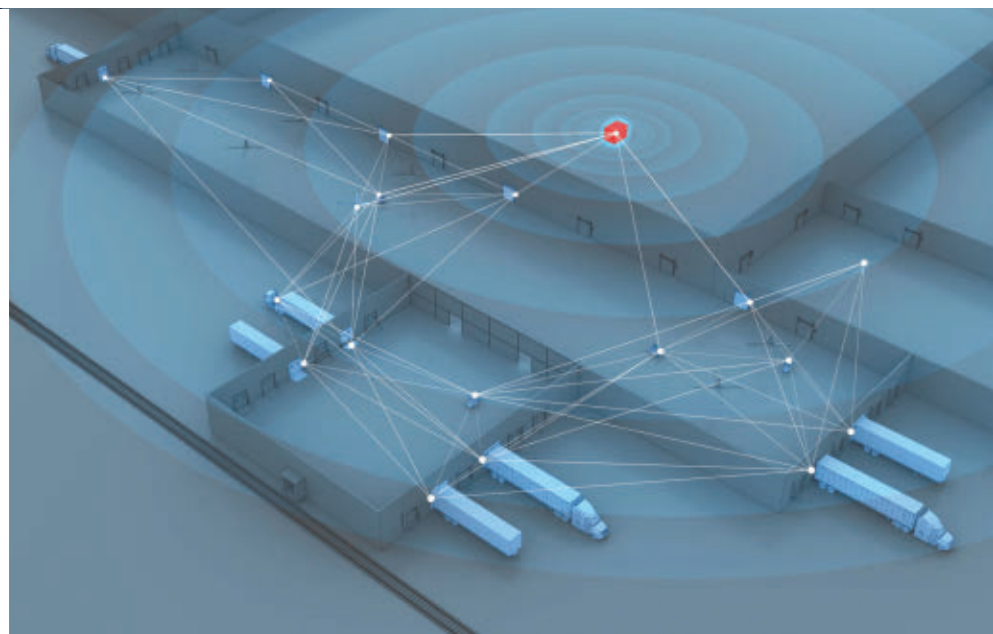


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The SMART DOCK Moves From Concept to Reality

The IIoT is enabling manufacturers to finally bridge the gap from manual docking operations to true, paperless processes. The result is a seamless, efficient system that maximizes safety, productivity, and clarity.

p. 8



Digitize Logistics with Drones

An aerial inventory solution from FlytBase, Inc., FlytWare uses off-the-shelf, reliable drone hardware along with AI/ML, machine vision, and robotics to automatically scan front-facing barcodes on one-deep pallets stored in racks

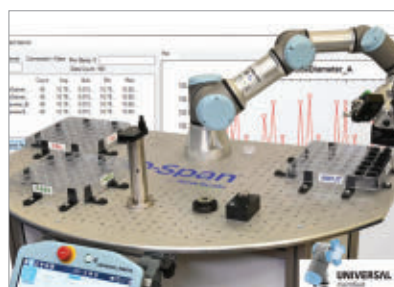
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Human-Body Temp Measurement

The vIRalert 2 fixed thermal imaging system from AMETEK Land provides an accurate and remote surface measurement of body temperature, automatically alerting the operator to elevated temperatures.

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Robotic Inspection Kit

By automating manual digital caliper inspection, Q-Span Workstations from New Scale Robotics increase consistency of small-part measurement and help quality teams achieve gage R&R targets.

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High-Speed Wheels

TerraTech Wheels from Hamilton Caster and Mfg. Co. transport loads safely up to 10-mph, offering protection of the floor surface when moving heavy loads.

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Most PLCs will do, but only some will *Do>more!*

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- **NEW!** JSON PARSE/BUILD instructions, along with the HTTP protocol addition, enable communication between BRX PLCs and data rich web servers
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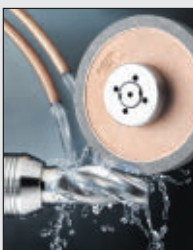
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PRODUCT SPOTLIGHTS



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Pro XD industrial vehicles from Polaris are built to withstand tough duty cycles and usage on the worksite and enhance job site productivity.



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With M18 FUEL technology, the Metal Cutting Circular Saw from Milwaukee Tool generates 15amp power on a cordless platform.



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The Rechargeable Focus Flashlight from Klein Tools is a durable LED flashlight with onboard Class IIIa laser for pinpoint accuracy.



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MSA's ALTAIR io360 Gas Detector connects worksites of any size while offering the simple usability of a smart-home product.

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Wearable Display Screen Scanner



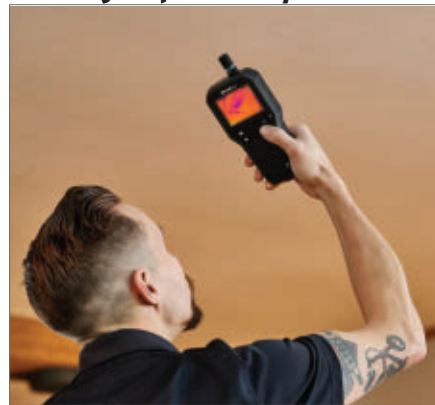
MARK Display wearable scanner brings essential information right where front line workers in the supply chain need it most: the back of the hand. MARK Display untethers workers from paper, from hand-held devices, and from static work-stations while keeping crucial information with workers at all times. Along with the high-contrast, non-reflective display, MARK Display's acoustic and haptic feedback guides

workers through their processes saving up to 6 seconds per scan and reducing error rates by up to 33%. MARK Display is IT-friendly, Bluetooth Low Energy (LE) enabled, and cloud-connected and allows customers to see immediate results across the business supply chain. MARK Display is available now for an early preview.

ProGlove Inc.

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Building Inspection System



FLIR MR277 building inspection system is a moisture meter with Infrared Guided Measurement (IGM) to offer Multi-Spectral Dynamic Imaging technology. This all-in-one, thermal-enabled moisture meter with hygrometer provides users with a full understanding of problem areas by enhancing IGM thermal images with visual details so they

can quickly find moisture, air leaks, and insulation voids. Inspectors can streamline diagnosis and documentation by using the built-in Bluetooth to connect via METERLINK to mobile devices running the FLIR Tools mobile app.

FLIR Systems Inc.

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Laptop-Sized Industry Tablet



The 13.3-in. M133 series rugged, mobile tablet offers a larger screen size of a laptop in a tablet form factor for increased visibility and computing in demanding environments such as automotive manu-

facturing and vehicle diagnostics. It provides a 7th generation Intel "Kaby Lake" Core i5-7200U processor for increased performance and includes the option for a high brightness display that will enable outdoor work to have even better viewability.

Winmate, Inc.

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5G Site Testing Solution



Providing the industry with an integrated package that combines all the necessary functional, RF, and signaling tests for 5G installation and troubleshooting, the 5G Site Testing

Solution gives network field service engineers a powerful test toolkit to accelerate the process of site acceptance and troubleshooting new cell sites. It can run 5G and LTE tests simultaneously, and it executes all necessary tests for efficient 5G site verification and troubleshooting in one integrated package.

Rohde & Schwarz USA, Inc.

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Electromagnetic Safety Analyzer



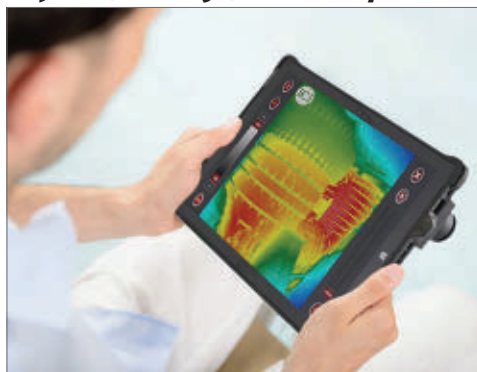
Microrad NHT 3DL Electromagnetic Field Analyzer measures electromagnetic fields in both time and frequency domains in compliance with all the main international standards and regulations. A wide selection of interchangeable probes allows this analyzer to measure complex electric and magnetic fields from DC to 1MHz in Se-

lective Mode, and 0 to 40GHz in Wideband Mode. The analyzer's battery power allows the user to perform monitoring tasks for at least 24 hours and it can be controlled remotely via fiber optic or wireless connections.

Saelig Company, Inc.

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Capture, Manage, and Analyze on One Device



The IR-Pad 640P is an all-in-one system that allows for complete inspection and reporting using a single device. At the heart of the 640P is an 8640P infrared camera, offering unmatched image quality and radiometric accuracy in a device measuring less than 5 in³. Data is streamed

in real-time to the integrated tablet making it a powerful IR imaging and diagnostic tool. Both seasoned and amateur inspectors can export images and videos to create various types of mosaics for an array of applications.

Infrared Cameras Inc

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Versatile Clamping Force Tester



The IFT clamping force tester can be used on 2, 3 and 6-jaw chucks up to 6,000 RPM regardless of the chuck manufacturer, and at a maximum clamping force of 90 kN per jaw. Using adjustable measuring extensions, it is possible to vary the clamping diameter between 72, 88, and 108 mm. The data evaluation is done with wireless data transfer via an app on a tablet or other end devices. The battery service life of the

measuring head is more than 90 minutes, and it takes less than 3 minutes to recharge.

SCHUNK

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Step Into Spring With All Day Comfort

Leaving workers reinvigorated, the Flint II and Flint II Sport work boots and shoes offer the benefit of the KEEN.ReGEN midsole: a lightweight, performance midsole technology. The all-day comfort is due to extreme underfoot cushioning, support, and shock absorption along with a superior compression-resistance that bounces back. The Flint II product series for men and women is the next step towards a more comfortable, productive workday.

Keen Utility

MORE ONLINE: nedinfo.com/76474-8



Pistol Grip Air Screwdrivers

Crafted for high production environments, the Flex Power Pistol Grip air screwdriver provides durability, power, and speed for assembly and manufacturing applications at an affordable price.

Mountz Torque

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Stand-Up Reach Truck

The EKKO EK18RR Stand-up Narrow Aisle Reach Truck is designed with the combination of the versatility of a forklift, a reach truck, and a walkie stacker. It is ideal for loading and unloading trucks, loading docks, stock rooms, manufacturing floors, and warehousing.

Ekko Material Handling Equipment Mfg. Inc.

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Compact Shifting Gripper

Weighing only 2.27 lb., aluminum feed grippers provide extension capability for use in 2 and 3-axis transfer press lines. The grippers are able to shift/extend up to 100 mm and the central vacuum units for cup holding are integrated in the grippers for a very compact design.

Bilsing Automation

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VR Simulation Improves Safety and Speeds Training



Mimic Field 3D, an immersive training experience, helps incoming workers gain a deep understanding of how changes in the field impact industrial plant processes. This VR solution gives personnel simulated hands-on experience to prepare for any plant event, helping them make better decisions regarding operating changes and practice proper procedures before entering potentially hazardous plant areas. Mimic Field 3D empowers workers to acquire knowledge and experience at a faster pace as they learn from each immersive experience, enhancing safety and overall operational performance.

Emerson Automation Solutions

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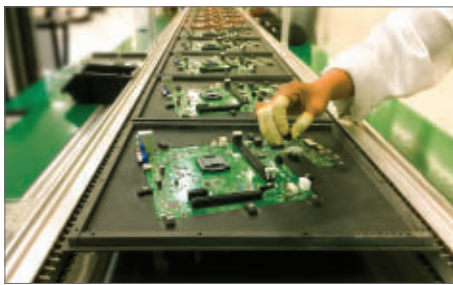
High-Torque, Adjustable Railcar Opener

Quickly opening and closing even the most stubborn gravity discharge gates, the Impacting Railcar Opener (IRCO) delivers high speed and high torque. Powered by a 1-1/2-in. pneumatic impact tool capable of delivering up to 10,000 ft-lb. of torque, the IRCO features a lifting mechanism that provides nearly 15-in. of height adjustment. Adjustable handle height and pivoting wheels contribute to an ergonomic, versatile design that can speed the unloading of unit trains with improved safety and efficiency.

Martin Engineering



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Orion Engineered Carbons

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jobs, logged-on employees, and job completion estimates. This tool rapidly transmits information between cross-functional groups, streamlining communication and increasing productivity.

MIE Solutions

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ITT Engineered Valves

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Quantum Laser Rack Systems

can be easily remotely controlled
The T-RACK is a 19-in. cabinet with modular power entry unit that can house a multitude of different modules. All of these laser modules consist of a laser head with fiber-coupled optical output and are equipped with the digital laser controller, DLC pro. The systems are reliably operated, easily remotely controlled, and offer ultimate performance.

TOPTICA Photonics Inc.

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2020 Stampings and Washers

The 2020 Stampings and Washers Catalog offers an all-inclusive guide for over 32,000 stock tools for flat washers, spacers, and shims, including 548 new washer sizes, allowing customers to choose from a wide variety of sizes, thickness, and materials with no tooling charges.

Boker's, Inc.

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Tool Tech Kits

This catalog provides an overview of the latest ServTech Kits that combine high-quality insulated tools in a convenient storage style.

Cementex

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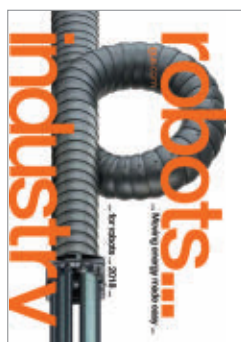


Real ABS vs Desktop ABS

This guide defines the differences between real ABS and desktop 3D printer ABS and why more engineers are choosing dimensional accuracy over resolutions.

MakerBot

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Robotic Solutions

With detailed drawings and an expanse of information, this catalog details igus' robotic solutions, from robotic construction kits to chains and assorted accessories.

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Maintenance Solutions Catalog

Featuring the latest industrial maintenance and cleaning solutions, this catalog details solutions for tube cleaning systems, industrial vacuums, cooling tower maintenance systems, and more.

Goodway Technologies

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2020 Training Catalog

OSHA's training catalog offers professionals a comprehensive guide to training programs, course descriptions, locations, and prices.

OSHA

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Orbital Welding

Learn what orbital welding is and how it's different than traditional welding as well as the right equipment to have in place to get the job done correctly.

Orbitec GmbH

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2020 Guide to Metal 3D Printers

This guide will help you cut through the noise by detailing why metal 3D printing is valuable, what technologies and materials are out there, and how you can take the first steps in adopting metal 3D printing in your own facility.

Markforged, Inc.

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Remote Presence is the New Business Travel



Virtual reality is getting an update with the introduction of remote presence, allowing workers to virtually visit places in real space and time.

By Laura Davis

With the current travel restrictions due to COVID-19, the manufacturing industry is figuring out day-by-day how to adapt to remote work. While augmented reality, mixed reality, artificial intelligence, etc. have been growing across the industry, they are not widely adopted yet. It is becoming clearer that these technologies are now more of a need, rather than a futuristic want.

We're seeing an increase in companies deploying solutions in response to the challenges of remote work in the industry. One of those companies is Imeve, the creators of AVATOUR, a remote presence platform that allows workers to travel to other facilities, virtually.

NED spoke with Devon Copley, CEO/co-founder of Imeve about what remote presence is and how it's making a new space for the industry to adapt to the distance between workers.

■ **NEW EQUIPMENT DIGEST (NED):** WHAT IS AVATOUR AND HOW DOES IT WORK?

■ **DEVON COPLEY (DC):** AVATOUR is the first and only immersive remote presence platform. Using the latest virtual reality technology, AVATOUR is a cloud service that allows people to remotely visit a place in real time without having to travel.

■ **NED:** HOW CHALLENGES IS IT HELPING TO SOLVE IN THE INDUSTRY?

■ **DC:** Even under the best conditions, travel is costly and time-consuming. Unfortunately, video conferencing is a poor tool for many manufacturing-related tasks—such as inspections, repairs, and training. AVATOUR provides a new option—a telepresence platform that enables these kinds of meetings to be held remotely.



Source: Imeve

■ **NED:** HOW IS AVATOUR DIFFERENT THAN OTHER REMOTE PRESENCE/VIRTUAL REALITY OFFERINGS ALREADY ON THE MARKET?

■ **DC:** Similar offerings on the market fall into two categories: smart glasses for “see-what-I-see” remote assistance (such as Atheer), and VR/AR collaboration platforms (such as Glue and Spatial). AVATOUR provides the full immersion of a platform like Glue, but instead of being immersed in a virtual space, guests are immersed in a real space, in real time. It's similar to a “see-what-I-see platform,” except the guests can see whatever they want to see, in full 360-deg., instead of having a small “window” based on the host user's view.

■ **NED:** DO USERS NEED TO BUY SPECIFIC EQUIPMENT, OR CAN THEY INTEGRATE WITH EQUIPMENT THEY MAY ALREADY HAVE?

- **DC:** AVATOUR requires the following equipment:
- An Android phone (from our list of compatible devices)
 - An Insta360 OneX 360° camera
 - Mounting hardware and connection cable

The following additional hardware is strongly recommended:

- Oculus Go VR headsets for each Guest participant
- Bluetooth audio headset for Host
- Extra batteries for Host

AVATOUR's host app works with the smartphone or tablet you already have. Just add a low-cost 360 camera like the Ricoh Theta V or Insta 360 One X, and you're ready to offer live immersive telepresence to remote visitors.

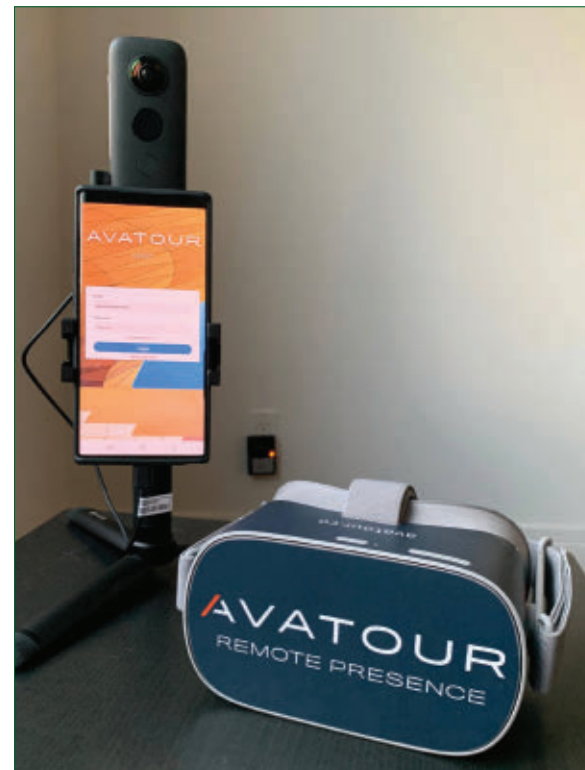
Multiple interactive remote participants can join an AVATOUR session, using any modern browser on desktop or mobile devices—or a VR headset for full immersion. All users can communicate with each other, as well as with real-world hosts, while seeing the full 360-deg. view of the real captured space.

■ **NED:** CAN COMPANIES OF ANY SIZE BENEFIT FROM THIS TECHNOLOGY? WHO IS IT BETTER SUITED FOR?

■ **DC:** We've worked with startups and multinationals. Anyone who finds visiting their facilities expensive or difficult can realize value. We offer turnkey hardware kits for lease or purchase for this purpose. A company that may not have the complete funds to permanently implement can easily lease the equipment instead.

■ **NED:** CURRENTLY AVATOUR CAN ACCOMMODATE 5 GUESTS TO DIAL IN—DO YOU PLAN TO INCREASE THAT NUMBER AS THE TECHNOLOGY ADVANCES?

■ **DC:** We can accommodate 5 *interactive* guests currently, but we can accommodate a practically unlimited number of



Source: Imeve

view-only guests. We are exploring other models to enable additional guests but have no specific commitments currently.

■ **NED:** DO YOU SEE THIS AS CUTTING DOWN ON BUSINESS TRAVEL EVEN OUTSIDE OF THE CURRENT PANDEMIC TRAVEL RESTRICTIONS?

■ **DC:** Absolutely. Even in the best of times, business travel has significant direct costs and even more significant indirect costs—lost productivity and work/life impact. We don't expect that AVATOUR can replace every trip, but if it can even reduce those trips by 10 to 20%, that's massive savings for any organization.

■ **NED:** IS THERE ANYTHING ELSE YOU WOULD LIKE READERS TO KNOW THAT WE HAVEN'T COVERED?

■ **DC:** AVATOUR is built by the virtual reality experts at Imeve. Co-founders Devon Copley and Prasad Balasubramanian helped invent the modern 360-deg. camera as leaders on the Nokia OZO team. Before deploying their technology for business applications, they've provided the technology for some of the largest live VR productions in history, including the Champions League finals and Coachella.

For more, visit: NewEquipment.com/21127091

Hybrid Cooler Technology Saves Water, Reduces Energy

The changing climate and population growth are driving demand for water-saving evaporative cooling equipment.

By Ben Cohen, Manager of Product Marketing – North America, Baltimore Aircoil Company

Several global trends are contributing to the desire for cooling system solutions that can save energy while also saving water. Heavy flooding in some regions, higher drought levels in other regions, and extreme temperatures and weather events have been driving the need for new solutions. In addition, the population is increasing in these regions, and emerging markets continue to see migration from rural areas to cities. As new trends have emerged, many customers have been looking for solutions that save water while still maintaining the benefits of evaporative cooling equipment.

Now, a new hybrid cooler technology offers energy efficiency in addition to providing water savings. A combination of a high dry switchpoint and redundancy features contributes to reliable year-round operation. In addition, the equipment has a crossflow design that reduces maintenance and operating costs while providing layout flexibility.

There are two types of cooling systems—air-cooled and water-cooled—and the difference between these two systems is related to design temperatures.

Air-cooled systems are designed based on the ambient dry bulb temperature, while water-cooled systems are designed based on the ambient wet bulb temperature. For example, the design wet bulb temperature in Baltimore, MD, is typically 78°, which is significantly lower than the design dry bulb temperature of 95°. Since water-cooled systems are designed around this lower temperature, water-cooled equipment has a smaller footprint and uses significantly less energy than air-cooled systems.

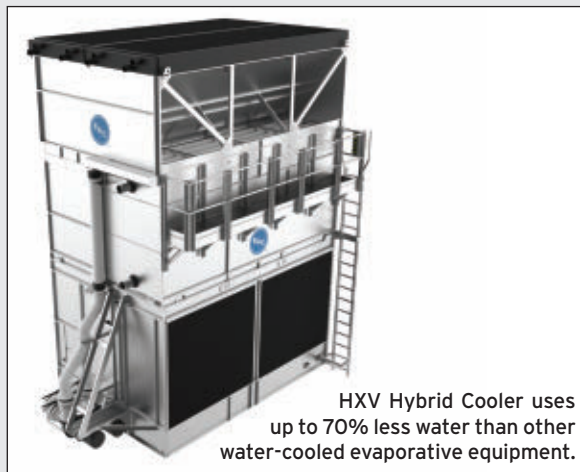
For those applications that can benefit from more closely controlling resource use, owners look for the optimal balance between energy use and water consumption, especially if access to water is limited. A hybrid heat transfer technology has been developed for applications where water is scarce or expensive.

One example of this technology is the HXV Hybrid Cooler, which offers both energy efficiency and water savings. This technology uses different operation modes to reduce water and energy consumption. The option to use dry operation and the equipment's crossflow design results in up to 25% maintenance savings compared to traditional evaporative fluid coolers.

Delivering energy-efficient cooling while maximizing water savings, this hybrid cooler saves up to 70% of water compared to other evaporative cooling equipment, with a higher dry switchpoint. It also saves up to 60% more energy than air-cooled equipment.

The unique design includes two coil sections: the prime surface coil section and the finned coil section. These heat transfer sections operate in three different modes: energy saver (combined wet/dry); adiabatic; and water saver (dry).

The energy saver mode offers the most efficient heat transfer method and flow control. Initial cooling occurs in the finned coil as air passing over the finned coil pre-cools the internal fluid. As spray water is distributed over the prime surface coil, primary evaporative cooling occurs. Using both sensible and evaporative heat transfer, the combined mode



HXV Hybrid Cooler uses up to 70% less water than other water-cooled evaporative equipment.

results in significant water savings compared to conventional evaporative units, even at peak design conditions. Energy saver mode saves around 25% water because the dry finned coil is always sensibly cooling approximately around 25% of the heat load.

Adiabatic mode occurs when the process fluid flows through the finned coil only and completely bypasses the evaporative prime surface coil. Water continues to evaporate over the fill, pre-cooling the incoming outside air before it reaches the finned coil, greatly increasing the rate of sensible heat transfer. With reduced water consumption while maintaining the low fluid design temperatures required to maximize system efficiency, adiabatic mode saves up to 75% of water.

With water saver mode, both coils are used to maximize the heat transfer surface area. The spray water pump is turned off and no water is consumed. The fluid to be cooled passes from the finned coil into the prime surface coil, maximizing the heat transfer surface available. The unit runs dry to maximize water savings and can achieve even higher dry switch points when running at partial load. Water saver mode saves 100% of water use, as all heat is rejected sensibly.

The new technology also has reduced maintenance costs compared to other hybrid products. The crossflow design provides easy and fast access with ample room to access key components, especially the coil, motors, fill and spray branches, and water collection basin. The spray distribution system and coil sections are highly visible and can be quickly inspected during operation.

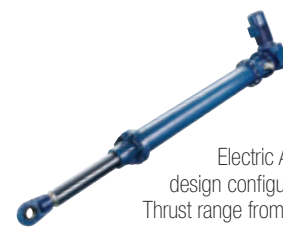
Traditional evaporative heat rejection remains the go-to solution for low system energy use and reduced footprint. However, as demand grows for evaporative cooling equipment with additional operating flexibility, new hybrid technologies offer innovative solutions that balance energy and water savings based on specific application needs. Today's customers must consider geography, application, jurisdiction, and regulations as they select the right cooling system for their projects.

For more, visit: NewEquipment.com/21122018

The True Pioneer of Electric Actuators

RACO International, LP

RACO Electric Actuators provide a reliable solution for all of your linear and rotary motion needs. A variety of design configurations provide a multitude of thrust and speed ratings. RACO Electric Actuators are designed to be robust with virtually no maintenance while also being economical to operate and friendly to the environment.



RACO MA-Series

The modular design of RACO ACME and Ballscrew Electric Actuators allow for a variety of design configurations while offering a Linear Thrust range from 70lbs to 225,000lbs, Linear Rod Speeds from 0.2"/sec to 30"/sec and Linear Travel (stroke) up to 20 ft.

RACO LM-Series

The RACO LM-Series is designed for high speeds and long travel (stroke) with capabilities that are frequently found in today's automation processes. The LM can be used as a single axis system or can be combined to form a multiple axis system.



RACO Rotary-Series

The Rotary Actuator is designed to automate the operation of valves, gates, dampers, louvers and other positioning applications requiring partial or multi-turn rotational movement.



RACO International, LP

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THE SMART DOCK

Moves From Concept to Reality

IIoT-driven smart docks aren't just a concept we'll see in the future. They're here.

By Tim Kubly, Rite-Hite

Traditional methods of coordinating logistics operations like spreadsheets, two-way radios, and yard checks on foot provide limited and outdated information that can make communication difficult. These shortcomings often lead to frustrated customers and employees, slowed operations, and risks to a company's workforce, reputation, and bottom line.

Recently, paperless software solutions have been developed to bring an enhanced sense of clarity and order to logistics op-

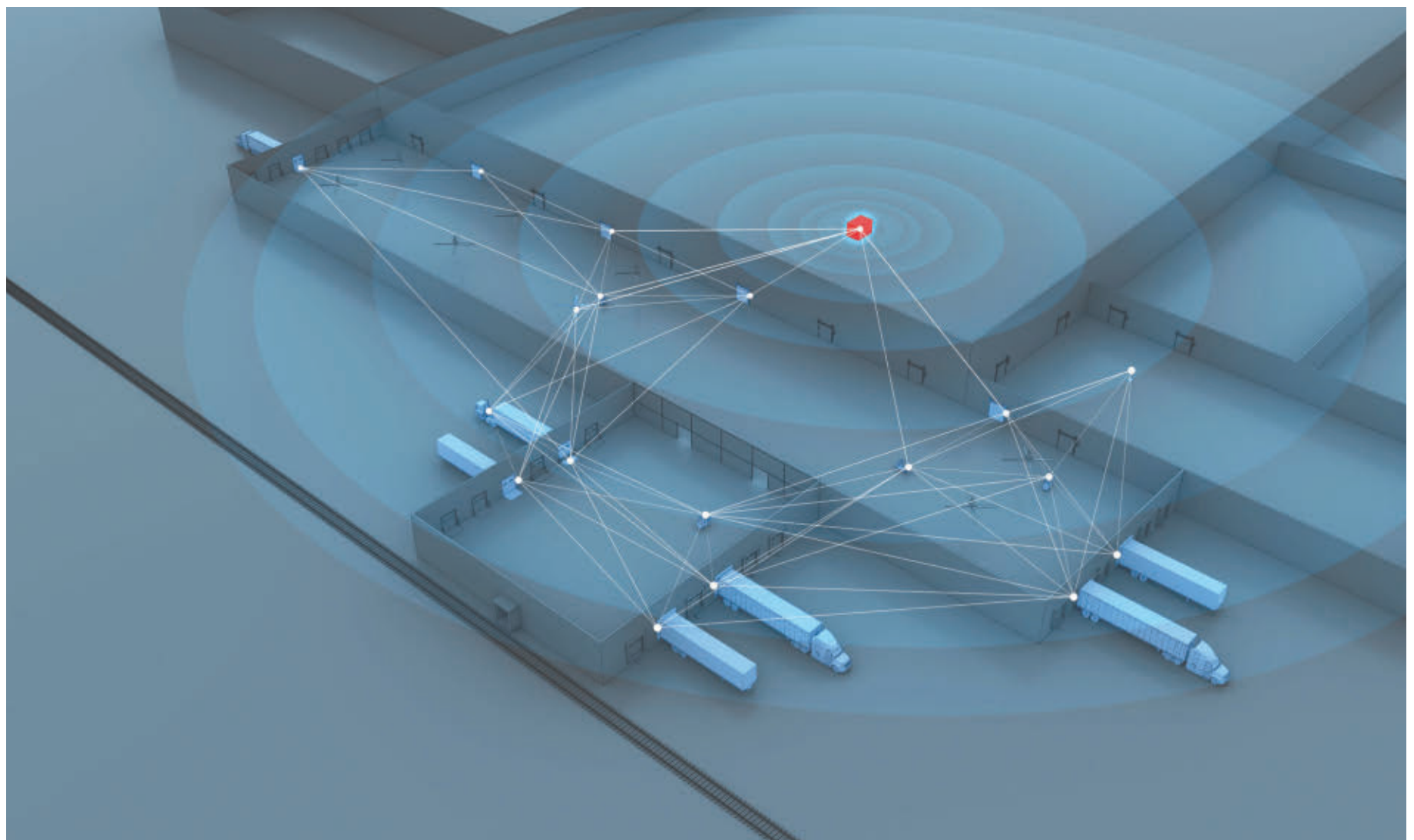
erations. Instead of using spreadsheets and radios, this new software allows everyone to communicate in real-time, bringing the long-awaited "smart dock" from concept to reality.

SMART CONTROLS: THE FIRST STEP

The development of programable, data-capturing equipment was the first step in this evolution. Smart controls that can interlock loading dock equipment, from vehicle restraints to levelers and dock doors, are a good example. Not only

can they be programmed to operate exclusively in a safe sequence of operation, but they also now provide performance and usage information.

Unfortunately, while these previously low-tech products could now provide significant amounts of data, there was still no way to distill all that data into actionable insights. However, that has changed. The most advanced dock management systems now connect smart equipment and controls with an Industrial Internet of Things (IIoT) platform.





DOK-COMMANDER® (RITE-HITE)

When Opti-Vu enabled, the Dok-Commander combined control panel allows all loading dock controls to be operated from one advanced enclosure. Including, Dok-Lok®, leveler, dock door, and more. Supporting safe sequence of operation, the IIoT connected control box monitors loading dock activities, such as restraint engagement, leveler deployment, and when a door opens and closes. These trackable insights allow safety leaders to review current and trending events, helping to strengthen proactive communication of potentially dangerous safety behaviors and activities. Corrective training plans ensure proper sequence of operation are being followed and near-miss events captured.

IIOT BRINGS IT ALL TOGETHER

The information provided by IIoT can help managers uncover potential challenges and proactively identify solutions, driving behavioral and process changes. IIoT is particularly adept at monitoring and communication, which can have a significant impact on organizational safety, as well as boosting efficiency and productivity. In fact, 93% of manufacturers agree that IoT benefits exceed risks, as reported in an IndustryWeek study.

At loading docks with data-capturing smart controls, equipment enhanced with IIoT capabilities can give facilities a more advanced look at what's happening during logistics operations. For example:

- Vehicle restraints: By connecting with IIoT loading dock management software, these pieces of equipment can share information on which loading docks are available for loading/unloading, as well as when a vehicle restraint goes into fault, so facility managers can immediately react to a potentially unsafe situation.
- Audio and visual light communications systems: These motion-sensor activated systems indicate when there is a restraint fault, if someone enters an unsecured trailer or tries to disengage a trailer with activity inside the trailer.
- The system also tracks when doors go up, levelers down, etc. as well as how long and how many cycles they've recorded.

Leading-edge logistics management software provides managers with an intuitive loading dock dashboard that allows them to review current trends and historical data. With those insights, they can make more data-driven decisions and identify additional opportunities for improvement they could never see before.

The information provided by IIoT can help managers uncover potential challenges and proactively identify solutions, driving behavioral and process changes.

THE BENEFITS OF REAL-TIME INFORMATION

Long-term insights are not the only benefit, however. By providing real-time information, the system brings a new level of clarity, order, and productivity to current operations for customers, material handling employees, and the entire operation.

This instant information can be accessed through all enabled screens, tablets on forklifts, and other connected mobile devices. Among other things, it shows which docks are open, which are in use, how long loading or unloading has been going on, when trailers are held in detention waiting for a dock position, and other critical details.



GRAPHIC USER INTERFACE (GUI) (RITE-HITE)

High-Speed Door Graphic User Interface (GUI) controls allow individuals to simply access the control box settings without the need for PPE often required when working with a live electrical panel. The 7-in. Color LCD Touchscreen allows for seamless adjustments and troubleshooting, all from a convenient door-adjacent location. When Rite-Hite Doors and GUI are Opti-Vu enabled, the IIoT Platform helps control energy consumption through comparative energy analysis as well as event capturing (false activations, excessive opens, etc.).



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Long-term insights are not the only benefit, however. By providing real-time information, the system brings a new level of clarity, order, and productivity to current operations for customers, material handling employees, and the entire operation.

Using this information, managers can coordinate appointments, monitor dwell times, and help keep docks fully in use. Additionally, the system provides carriers the option to skip long lines via self-check-in and updates them on their load status with text alerts. Allowing logistics personnel to seamlessly communicate in real-time can drastically reduce costly detention and demurrage charges.

Connecting through the IIoT software solution also simplifies scheduling. By funneling all appointments and updated schedules through one central location, it virtually eliminates the need for multiple spreadsheets or excessive paperwork. This improves worker productivity while simultaneously cutting down on errors that can happen with various spreadsheets and logbooks.

Other benefits include:

- Reduced labor costs: This system makes it easier and less time-consuming to train new employees. Additionally, the centralized information and intuitive dashboard improve current worker efficiency, helping reduce overall man-hours.
- Quiet and clutter-free communication: A singular system provided by IIoT can reduce radio noise and paper spreadsheets.
- Shipping accuracy: The central platform updates in real-time, instead of requiring changes to be made in multiple spreadsheets and logbooks.

- Appointment management: Loading dock schedulers can seamlessly enter several logistics appointments at the same time.

- Reporting and interface: Facility and operations managers can more readily identify improvements through robust reporting and an easy drill-down interface.

IMPROVING SAFETY

Instead of reacting to accidents, companies are increasingly looking to proactively address potential safety issues with improved training and safety-oriented equipment like:

- Interlocking “safe sequence” dock controls;
- Motion sensor-activated audio and visual communications systems at dock openings and intersection warning systems;
- Doors which automatically reverse when their photo-eye is tripped;
- Dock levelers with power-up/power-down controls (rather than power-up/gravity-down).

In facilities with smart controls, IIoT can connect pieces of equipment for a more advanced look at operational activities. It can help identify potentially unsafe operations and send real-time alerts about them. IIoT is particularly useful for tracking and logging events and actions that safety managers would likely want to know about, but employees

SAFE-T-SIGNAL (RITE-HITE)

Safe-T-Signal® Intersection Warning Systems actively monitor intersectional traffic when Opti-Vu enabled. For example, the IIoT platform can detail times of high traffic as well as directional congestion, capturing potential collisions when objects approach from two or more directions at once. Helping to improve awareness of hazardous events without sacrificing productivity, the wall-mounted motion-activated system provides diagnostic analytics so safety professionals can make data-driven decisions regarding facility layout, inventory placement and more.



may be hesitant to report, thus significantly enhancing near-miss reporting procedures.

For example, an IIoT smart dock can identify, record, and send alerts if a trailer restraint becomes unlocked when a trailer is still at the dock; if an employee attempts to operate the leveler without engaging the restraint; if a dock door is left open with no barrier across it; or if there is forklift or pedestrian activity in an unsecured trailer. Conversely, the motion sensor-based light communications system tied to this IIoT platform also prevents the vehicle restraint from being unlocked when activity is detected inside the trailer and emits a blue light on the leveler outside of the trailer during that time.

THE FUTURE IS HERE

IIoT-driven smart docks aren't just a concept we'll see in the future. They're here. Whether it's at the loading dock or inside the plant, facilities that have already invested in IIoT are reaping the benefits.

This isn't surprising; given the insights, efficiencies, and broad ROI that IIoT offers, industrial facilities that aren't taking advantage of it risk falling behind their competition. Now is the time for them to recognize the positive impact IIoT has on all stakeholders and embrace this game-changing technology to start seeing what you are missing. **NED**



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3D PRINTING



CUSTOMIZABLE 3D BIOPRINTING

The FELIX BIOprinter is characterized by key features that are specifically designed for medical, scientific, and research applications including syringe cooling, print bed cooling and heating, a dual head system, easy syringe positioning (ergonomic access to the machine supports researchers in their work), and automatic bed leveling.

Uniquely, the printer combines dual sterilizable printheads which have a modular design for easy changeovers, and separate heads are available to print different bio-inks at the same time.

The BIOprinter has automatic bed leveling using unique probing systems which results in a perfect first layer, which means a quality result. It also retracts with a highly precise motor for better dosage of materials and more accurate material flow versus alternative air pressure systems.

The FELIX BIO is appropriate for all types of bio-printing research and is fitted with strong motors that can extrude a range of different viscosity of materials.

FELIXprinters

www.nedinfo.com/76474-26

USING SOUND TO MONITOR AM BUILDS

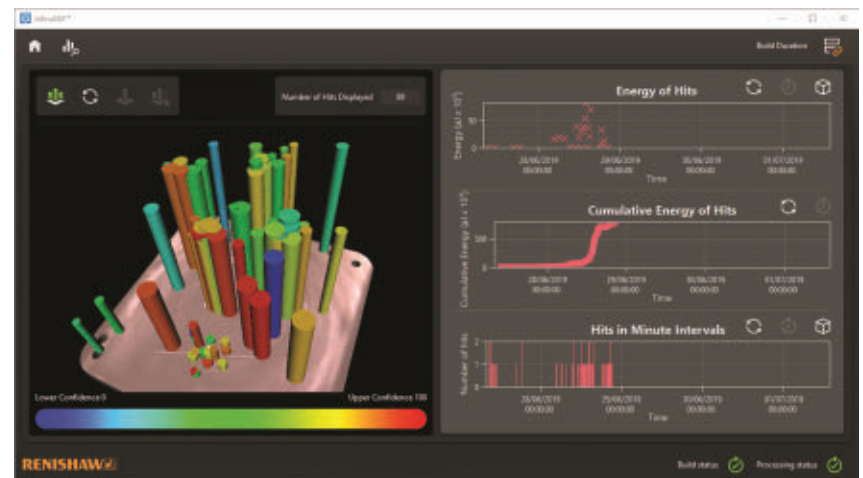
InfiniAM Sonic acoustic process monitoring software enables engineers to detect acoustic events within the AM build chamber and turn this data into useful information about build quality.

The InfiniAM Sonic package includes four acoustic energy sensors to detect vibration in the build. The sensors detect minute vibrations and collect the sound waves so that they can be heard, viewed, and analyzed. Using four high-frequency sensors in different locations results in a slight time difference due to the speed of sound. The software uses this to triangulate the position of the noise on the build plate, providing a level of assurance regarding where the noise occurred, as well as the magnitude.

InfiniAM Sonic works in conjunction with InfiniAM Central and InfiniAM Spectral, which provide improved understanding of build quality, increased confidence in the build process, and accelerated process development. The InfiniAM Central mobile app is also available, so that users can receive notifications on their build process in near real-time.

Renishaw

www.nedinfo.com/76474-27



BEGINNER-FRIENDLY 3D PRINTER

The Voxel is a unique, easy to use 3D printer that brings 3D printing to the masses with its simple menu system displayed on a 2.8-in. color IPS touch screen. The assisted leveling system reduces calibration to a single tap on the touch screen and the print nozzle can be swapped out in seconds, without the need for tools of any kind.

It features 8GB of internal memory for storing 3D models, a USB port for connecting a flash drive, a Wi-Fi radio with a hotspot option for connecting your PC, and a built-in camera for monitoring print operations. Best of all, the printer comes fully assembled and includes sample 3D models and filament, allowing you to start printing within minutes of taking it out of the box.

Monoprice, Inc.

www.nedinfo.com/76474-28

PROFESSIONAL 3D PRINTER

The F410 professional 3D printer features an enclosed print chamber and interchangeable print heads to enable users to produce large parts using high-temperature materials, at a desired speed and print quality, while maintaining class-leading accuracy.

Each printhead prints a wide variety of engineering-grade materials at different speeds and quality settings optimized for the customer's desired quality and production time.

The 2.0 Extruder provides two different filament features: one for cleaning and one for monitoring. The filament cleaning feature reduces the chance of clogging by capturing any dust or contamination on the surface of the filament before it enters the print system. The filament monitoring feature allows users to resume prints if they run out of filament or encounter a printing jam.

The F410's touchscreen interface provides intuitive controls for first-time users while maintaining advanced features that professional customers require. The onboard network interface allows customers to remotely manage their 3D printers through a secure, web-based interface.

Fusion3

www.nedinfo.com/76474-29



HIGH-SPEED SINTERING PRINTER

The VX200 HSS is a compact, industrial 3D printing system for the additive manufacturing of polymer powders that offers unprecedented open sourcing possibilities.

HSS is a physical binder-jetting process that allows the tool-less production of functional prototypes as well as final consumer parts. The process combines the advantages of two existing additive processes—selective laser sintering and binder jetting—to allow for the processing of larger parts and a wider selection of materials.

With the ProPrint control software, users can program and insert customer-specific macros in just a few steps to adapt the printer to the desired material parameters and process operations. In addition, the software can be used for individual process data mining, enabling the recording and evaluation of a wide variety of process data. Depending on the choice of material, it is possible to vary layer thickness between 80 to 100 μm .

Voxeljet AG

www.nedinfo.com/76474-30



PREPARE, SIMULATE, AND PRINT

With the MTX CNC system, machine manufacturers have the entire additive manufacturing process covered. From reading in the CAD data and simulations to the actual printing process, it offers minimal cycle times as well as enough computing power for highly dynamic, coordinated movements—including complete process monitoring. With the Open Core Interface software solution, users can easily implement other IT applications.

The system features a 3D online simulation with collision recognition. It automatically visualizes the construction time, positioning, and printing head travel, allowing users to intervene proactively before the production process. The CNC system fits seamlessly into simulation environments as "hardware in the loop" and generates realistic images of the subsequent processes.

The current version of the CNC system (Version 14) offers all the advantages of a workflow with end-to-end digitalization. The system solution supports print configuration, job management, machine monitoring including online process modification and even controls intralogistics.

Bosch Rexroth Corp.

www.nedinfo.com/76474-31



THE HEAVY-HITTER PRINTER

Finished with a powder coated exterior, the Cosine AM1 is as sleek and stunning as it is powerful and effortless. With the power to print at high speed, high volume, and high performance, the printer pushes 3D printing to a new level.

The AM1 offers two feed systems: filament or pellet. The Filament Feed System provides an open materials market and the Pellet Feed System presents a quicker, cost reduced alternative. Pellet printing is 10X faster and 10X cheaper than filament printing along with a wider variety of polymer mixed materials.

The AM1's outer dimensions offer a life-sized build volume. With an enclosed and insulated chamber, the system reaches temperatures up to 100°C. Higher temperatures mean better warp control and a wider selection of materials to print with. The high-end motion controller, ball screws, and servo motors result in 50nm positional accuracy and high speeds up to 15,000 mm/min.

Cosine Additive, Inc.

www.nedinfo.com/76474-32

FROM THE COVER

Aerial Inventory Solution

features fully autonomous drones



FlytWare combines intelligent software with reliable, off-the-shelf drone hardware for safe and cost-effective automation of inventory counts in warehouses and distribution centers. A rapidly scalable solution, FlytWare adapts to a variety of case/pallet storage formats, barcodes, QR codes, and inventory counting processes. It's ability to accurately navigate multiple drones in GPS-denied environments is enabled by multi-sensor fusion, computer vision, and machine learning techniques.

Without relying on skilled human pilots, FlytWare drones can take-off from their home locations, navigate in and around narrow aisles, and land precisely where required.

With only an Ethernet and a power connection, the ground station(s) can be made operational—with the ability to remotely manage a fleet of drones flying indoors. A trained operator can plan, execute, and monitor inventory count missions, watch live video feeds, ensure safe operations, and step through location-wise barcode and image data, as need be. FlytWare ensures that multiple images are captured and archived for each location. This data can then be used manually for audits, second counts, etc.—as well as by algorithms for object recognition, empty/full slot detection, etc.

FlytBase

MORE ONLINE: nedinfo.com/76474-33

Hydra-Drive Riding Trowel

allows convenient forward travel while moving along edges



Designed with the high-volume flatwork concrete contractor in mind, the HDX780T4 Riding Trowel comes with digital readouts for accurate fuel levels and diagnostics and a large 18-gal. fuel tank for longer run times. It is also equipped with powerful pumps that help maintain excellent torque even at high rotor speeds. The 12-ft class riding trowel provides max panning coverage on a slab and features counter rotational rotors to allow convenient forward travel direction while moving along edges. The Bosch-Rexroth Hydraulic system ensures quality hydraulic response and the Intelli-drive system allows the engine and the hydraulics to communicate to ensure peak performance, component safety, and extended life.

Allen Engineering Corporation

MORE ONLINE: nedinfo.com/76474-34

Handheld LCR Meter

tests and identifies surface-mount devices



A solution for quickly testing and identifying surface mount devices, the ST-5S Smart Tweezers provide on-board inductance, capacitance, and resistance measurements,

as well as PCB testing. Smart Tweezers automatically detects L, C, or R measurements and selects the correct measurement range and test frequency for high accuracy readings. Component type, value, and more detailed component analysis, such as Z and ESR, are all displayed on the instrument's OLED display.

Saelig Company, Inc.

MORE ONLINE: nedinfo.com/76474-35

Heavy-Capacity Load Cell Kits

capacities range from 60,000 to 200,000 lb.

DB-SP series CenterPoint mounting kits use model DB load cells that feature a center load design. The stands are available in either stainless steel or mild steel powder-painted industrial tan and they bolt directly to the floor and tank. The DB-SP's environmentally-sealed load cells are NTEP, OIML, and VCAP certified for quality and accuracy. They provide superior performance in a wide range of process control and vessel weighing applications weighing tanks, bins, hoppers, silos, and mixers.



Cardinal/Detecto Scale

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No Drip Nozzles Conserve Liquids

eliminate unwanted drips



1/8 NPT No Drip Internal Mix Air Atomizing Spray Nozzles mix liquid and air inside the nozzle and produce the finest atomization of liquids. When the compressed air supply is shut off, the nozzle positively seals off the flow of liquid eliminating the possibility of drips. Internal mix nozzles can be used on liquids with a viscosity up to 300 centipoises.

EXAIR Corporation

MORE ONLINE: nedinfo.com/76474-37

Spackling Fixes Drywall Fast

is paint ready in as little as 15 minutes



Developed for large drywall repairs, DAP Fast Dry Premium Spackling is a professional-grade spackling compound that will have users finishing substantial drywall repair projects 8x faster when compared to using other heavyweight spackling compounds. The smooth, one-stroke application leaves a rock-solid coat that won't sink, shrink or crack, offering superior impact resistance and is paint ready in as little as just 15 minutes.

DAP Products Inc.

MORE ONLINE: nedinfo.com/76474-38



Precision CNC Level

measures flatness, pitch, and roll error

SP ProTwist simplifies the process of installing, moving, and realigning CNC machine tools by offering precision measurements down to 10.2 arcsec. Consisting of two Level Spirit Levels, this system works using Bluetooth technology to ensure fast and efficient measurement of straightness and parallelism.

CENTRIC International, Inc.

MORE ONLINE: nedinfo.com/76474-39

Precision Laser Processing System

has built-in processing parameters



The ULTRA X6000 offers processing of a wide range of advanced polymer and composite materials by using hybrid laser technology with multi-wavelength and laser power optimization capabilities. The system has a modular design and can be easily configured for laser processing of a specific material or a broad range of diverse applications.

Universal Laser Systems, Inc.

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Large Capacity Vehicle Lift

eliminates overhead cable covers



A 20,000-lb. capacity, two-post lift, the ML-220 is designed with three-stage arms for lifting points of medium-duty work trucks. With A direct-drive, all-hydraulic lifting system and no overhead cable covers, the ML-220 ensures techs can fully lift high-profile vehicles.

Mohawk Lifts

MORE ONLINE: nedinfo.com/76474-41

Retrofit Door Actuator System

automates any horizontal machine door



The Safe Machine Door System is a flexible solution to support manual loading, robotic loading or other automation initiatives. The system offers switchable motion profiles supporting differing types of automatic loading that may occur on the same machine.

Dynatect Manufacturing, Inc.

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Chemical Resistant Canopy Hoods

prevent cross drafts and improve airflow



Canopy Hoods collect and exhaust corrosive vapors, heat, steam, and odors when mounted over areas with water baths, hot plates or portable equipment. Manufactured of molded, one-piece composite resin, fiberglass canopy hoods are lightweight and can be wall-mounted or suspended from the ceiling.

HEMCO Corporation

MORE ONLINE: nedinfo.com/76474-43

Fieldbus Coupler for I/O System

supports up to 250 I/O modules



The 750-363 EtherNet/IP Fieldbus Coupler offers fast boot up time that enables systems to get online quicker. The 750-363 supports a wide variety of protocols such as HTTP(S), BootP, DNS, SNMP, and FTP(S). It also features dual Ethernet ports to eliminate the need for switches or hubs.

WAGO

MORE ONLINE: nedinfo.com/76474-44



Utility Vehicles Withstand Tough Duty Cycles

broaden work UTV options for commercial professionals

The industry-leading vehicle designed for work, Pro XD, is now gas-powered. Like the diesel models, the Pro XD gas models provide a seating capacity of up to four individuals, an industry-leading payload of up to 2,075 lb., and a towing capacity of 2,500 lb. Designed for work across various off-road and on-road terrains, the gas-powered models are the ideal vehicle for increasing jobsite capabilities within the sectors of municipalities, utilities, and emergency response.

Polaris

MORE ONLINE: nedinfo.com/76474-45

Benchtop Optical Comparator

features a 16-in. travel axis for a larger workstage



Available with optical edge detection, the HB400 Benchtop Optical Comparator provides performance levels previously only available with floor standing machines. It features a large 16-in. viewing screen, a 16-in. horizontal travel, a 6-in. Y vertical travel, a 2-in. focus travel, and a 110 lb. workstage load capacity. The HB400 has rugged, all-metal construction with a hard-anodized stage tooling plate, and touch-screen operation.

The L.S. Starrett Company

MORE ONLINE: nedinfo.com/76474-46

Fully-Coated Isolation Gasket

is extremely abrasion and impact resistant



The next generation of isolation gaskets, **EVOLUTION** features easier installation, tight sealing, high-temperature operation, no permeation, hydrotesting isolation, fire-safety, and chemical-resistance. Featuring a thinner, 1/8-in. design, EVOLUTION minimizes the difficulties often encountered when attempting to install thicker isolating gas-

kets. The full-coating encapsulation allows the gasket to be hydrotested and left in the pipeline with the same isolation properties as before it was tested.

Garlock Pipeline Technologies

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Business Process Modeling Software

supports IT and business transformation with automated visualization



erwin Evolve is a full-featured, configurable set of enterprise architecture and business process modeling and analysis tools. Map IT capabilities to the business functions they support and determine how people, processes, data, technologies and applications interact to ensure alignment in achieving enterprise objectives. Such initiatives may include digital transformation, cloud migration, portfolio and infrastructure rationalization, regulatory compliance and innovation management. Whether documenting systems and technology, designing processes and critical value streams or managing innova-

tion and change, Evolve will help to turn EA and BP artifacts into insights for better decisions.

erwin, Inc.

MORE ONLINE: nedinfo.com/76474-48

Collaborative End-of-Arm-Tool

is able to lift objects weighing up to 15.4 lb



piCOBOT, a vacuum operated end-of-arm-tool (EOAT), can be configured to work with any collaborative robot and smaller industrial robots. Originally certified to work with cobots from Universal Robots, piCOBOT now extends its reach into the cobot market offering a high degree of configurability. Through a user-friendly online configuration tool, Piab's customers can choose between a generic electrical interface including a standard cable or one specified by Universal Robots. Featuring COAX vacuum technology, piCOBOT comprises a vacuum pump unit and a grip-

per unit fitted with suction cups. Providing optimal payload capacity for the cobot, piCOBOT including the gripper weighs only 1.59 lb. Despite its minimal weight, it is able to lift objects weighing up to 15.4 lb.

Piab

MORE ONLINE: nedinfo.com/76474-49

Half-Frame Discharger

allows users to quickly halt material flow



The **Half-Frame Bulk Bag Discharger** features the Flo-Lock discharge spout closure system to quickly halt material flow for partial bag discharge, allowing the bag to be retied and removed. It provides easy operator access due to the Seal-Master chamber and the Sure-Seal clamping system ensures dust-tight material discharge.

Material Transfer & Storage, Inc.

MORE ONLINE: nedinfo.com/76474-50

Programmable Digital Meter

is ideal for harsh environments



The Simpson Eagle is a digital meter with a reinforced fiberglass enclosure that protects the electronics from weather, harsh environmental conditions, and cleaning operations. It can be programmed to measure AC/DC voltage, current or frequency. The programming can create bar graphs and pre-set alarms that alert operators when an established parameter is out of range.

Simpson Electric Company

MORE ONLINE: nedinfo.com/76474-51

Thermal Condition Monitor

reduces unplanned downtime



By providing continuous, remote thermal monitoring of electrical panels and other components, the K6PM Thermal Condition Monitoring Device lowers the time and cost required for equipment inspections and minimizes unplanned shutdowns. Using the K6PM, manufacturers can rest assured that equipment is being monitored on a continuous basis for any abnormalities.

Omron Automation Americas

MORE ONLINE: nedinfo.com/76474-52

Food Safe Operating Elements

are corrosion resistant



To meet strict product safety requirements at all stages of the production process, from preparation to final product, Elesa offers two lines of standard components: **Visually Detectable** and **Metal Detectable** products. Both lines include VTT-SST solid knobs, ERZ-SST adjustable handles with stainless steel clamping elements, M.643-SST bridge handles, EKK-SST knurled grip knobs, I.780 cylindrical handles and CFM hinges.

Elesa

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CAN WE DELIVER J1939 CAN-READY PANEL ALARMS?



The industry leader in audioalarm technology is now CAN-Ready!
Use our audibles on your existing J1939 CAN network to emit LOUD alerts in a small panel-mount design.

- Optional manual volume control
- 10 discrete digital volume levels
- Many available tone-types/sounds
- Arbitrary address capable
- Tamper-proof front-mount design
- Corrosion-resistant sound diaphragm
- Manufactured in USA
- Waterproof design (IP 68 and NEMA 4X seal)



For more information,
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Floyd Bell Inc
SOUND SOLUTIONS

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Emergency Safety Stop switch

can control up to four separate circuits



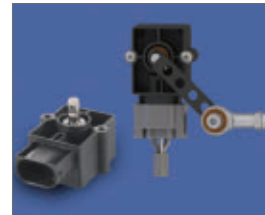
The Model RS pull cord is a rugged safety stop control that provides a quick positive shut off of dangerous equipment in emergencies. The outputs of the Model RS can control up to four separate circuits, depending on the model chosen. These alarms can include one for machinery shutdown and one for an alarm.

Conveyor Components Co.

MORE ONLINE: nedinfo.com/76474-54

Redundant Mobile Angle Sensors

withstand shock up to 50 g and vibration up to 20 g



RSA3200 Series of Hall effect angle sensors feature auto-diagnostics, fully redundant versions, and ultra-EMC tolerance for use in harsh environments. Measurement angle of the series is factory programmable for range maximum between 60 to 360-deg. An optional linkage lever that attaches to the shaft provides additional mounting options.

Novotechnik U.S., Inc.

MORE ONLINE: nedinfo.com/76474-55

Tri-Mer Packed Tower Scrubbers

Ideal for the efficient removal of inorganic gases, odors, & fumes

- Guaranteed effective, regardless of loading for H₂S, SO₂, CH₃SH, Cl₂
- Simultaneously handles particulate



Crossflow Scrubbers

Guarantees your operating permit level for HCl, HNO₃, HF, H₂SO₄, Cl₂, and NH₃

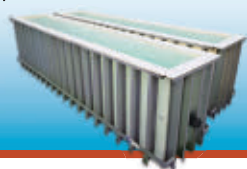
- Maintains stack emissions to specific ppm levels for all input concentrations
- System configurations for every requirement



Process Tanks

Factory tested for 72 hours & certified leak-free

- 1" solid polypropylene, copolymer, PVDF, steel and stainless steel



Details from Greg Worthington:
gworthington@tri-mer.com
(989) 723-7838

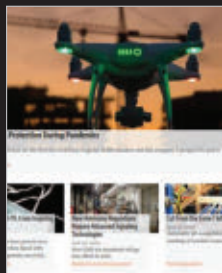


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Fire Suppressant Shipping Wrap

is lightweight and reusable



Preventing battery explosions during transport, Thermo Shield is a paper-based, fire-resistant shipping wrap. Actively and automatically cooling the internal environment of a corrugated container, the packaging prevents

damage to the outside container, suppresses fumes or gases from escaping, and limits external oxygen supply. Thermo Shield comprises a lightweight pleated material with a non-toxic moisture vapor application that ensures the safety of lithium-ion products in transport.

PACT, LLC

MORE ONLINE: nedinfo.com/76474-56

Fiber Optic Fault Locator

offers two laser colors for easy identification



The fiber optic fault locator, FIBERPOINT ET, is available with a red or green laser light with rechargeable batteries. The fiber testers differ in their clip color, allowing for quick and easy use of the tools. The FIBERPOINT ET G with green clip operates at 520 nm and the FIBERPOINT ET with red clip operates at 650 nm.

IMM Photonics GmbH

MORE ONLINE: nedinfo.com/76474-58

Automated Landing Gear Eliminates Manual Cranking

is compatible with all existing landing gear makes and models



With the flip of a switch, Automated Landing Gear Deployment and Retraction Technology eliminates the manual cranking required to raise and lower a trailer's landing gear, reducing driver exposure to a variety of musculoskeletal injuries. The 15-lb., electrically driven unit can be OE-installed or retrofitted in less than an hour, and is compatible with all existing landing gear makes and models. Using the technology, a driver can effortlessly deploy and retract landing gear in less time than it would take to do either operation manually. The technology also makes it possible to increase lot use by enabling trailers to be parked closer together. Since there is no crank arm that needs to be accessed and the controller is mounted just under the trailer apron, tighter trailer positioning is possible.

AIRman Products

MORE ONLINE: nedinfo.com/76474-60

Kanban Workstation

leads to faster turnarounds in production



Acting as a scheduling system for lean and just-in-time production, this customized Kanban Station carries a total of up to 400 individual positions, 8 rows of 50 Kanban slots oriented vertically. The plastic slots, which hold the Kanban cards, are modular and are designed to be assembled into the best configuration for the user. The white slots interlock with one another and can be ori-

ented in either the vertical or horizontal positions.

Creform Corporation

MORE ONLINE: nedinfo.com/76474-57

Tilter Loads Conveyors Quickly

has a 500 lb. capacity when fully tilted



Model GTU-500 provides a fast and efficient way to get parcels and other items from gaylords and other large containers on to conveyors and automated sortation systems. It tilts loads up to 110-deg. to provide controlled emptying of container contents. It features a unique pan-style platform that sits essentially flush with the floor when lowered, allowing gaylords to be

placed and retrieved by a hand pallet truck-no forklift necessary. A steel retention bar prevents gaylords from falling even when the unit is tilted to the full 110-deg.

Southworth Products Corp

MORE ONLINE: nedinfo.com/76474-59

Cordless Circular Saw for the Toughest Applications

ensures maximum performance and protection from overload, overheating, and over-discharge



Harnessing the power, performance, and run-time delivered by M18 FUEL technology, the cordless 8" Metal Cutting Circular Saw generates 15amp corded power on a cordless platform. The tool eliminates the hassle of cords and delivers the power to cut up to 120 ft in corrugated decking per charge. Like the corded model, the saw provides users with a cold cutting solution for thicker metals. An overload indicator light illuminates when users push the saw too hard and a durable blade shield with integrated chip collection deflects and collects metal chips and sparks. This solution is thoughtfully designed to perform in the toughest applications, such as 1-in. plate steel, angle iron, corrugated decking, and 2-in. black pipe, without slowing users down.

Milwaukee Tool

MORE ONLINE: nedinfo.com/76474-61

Portable Cable Caddy

holds cable reels weighing up to 100 lb.



The CC-2721WS Cable Caddy is made of 7/8-in. diameter tubular steel, wheels, and a permanently mounted strap for enhanced portability around the jobsite. It is able to hold cable reels weighing up to 100 lb. and measuring up to 20-in. wide and 17-in. in diameter.

Jonard Tools

MORE ONLINE: nedinfo.com/76474-62

Compact, Low-Maintenance Pump

suitable for use in large accelerators



The ECODRY series provides users with a clean, silent, compact, and low-maintenance pump for use in analytical or research laboratories. This pump class lies exactly in the transition area between small laboratory devices and large machines. Fitted with two flexible interfaces, the pump can be remote-controlled. When used in commercial analysis systems, it is often integrated into the plant control system and can be started, stopped, and monitored as required.

Leybold

MORE ONLINE: nedinfo.com/76474-63

Automated Tote Management System

automates sustainable packaging practices for improved ROI

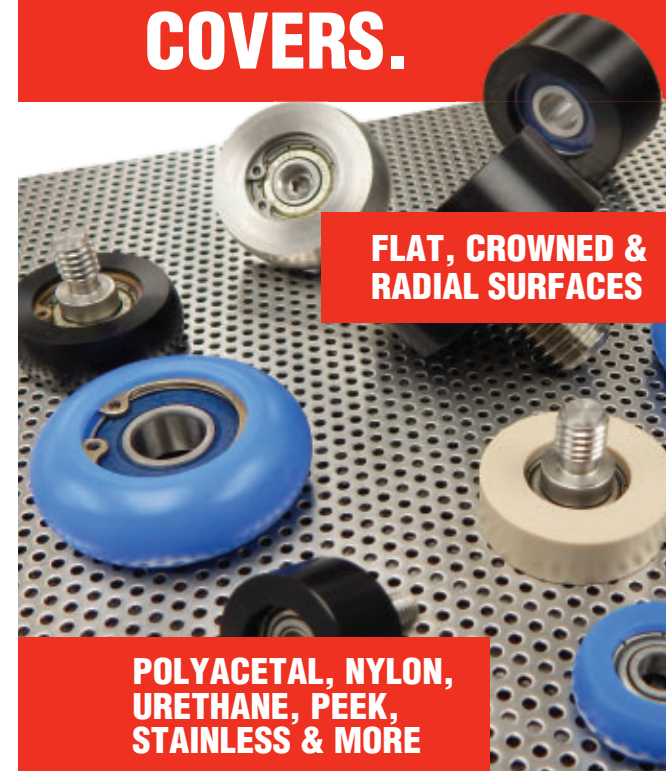


The automated tote management system uses a closed-loop process to drive cost savings. Tote systems employ reusable containers made of plastic or cardboard to transfer products, accommodating a wide range of products and primary packaging types. Reusable plastic totes not only reduce carbon emissions, waste, and natural resource consumption, they offer improved product protection versus cardboard alternatives. Durable plastic totes are easy to clean, hygienic, resist water and chemicals, and are consistently sized. In the initial automated operation, stacked foldable totes are de-palletized, de-stacked, opened using a multifunction opener (or rejected as unopened), distributed, and delivered to the packaging process. In the return phase, totes are collected, prepared/cleaned, and conveyed for set up again. The automated system increases reliability and throughput, reduces long-term costs, and provides ergonomic improvements that enhance safety.

Harpak-ULMA

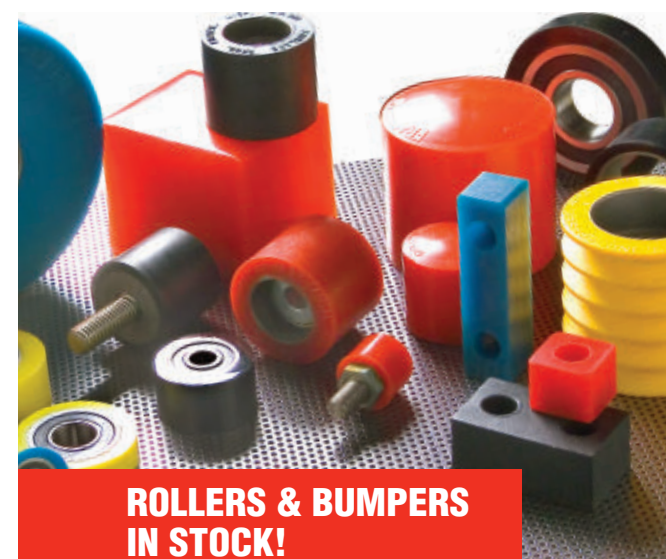
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BEARING WHEEL COVERS.

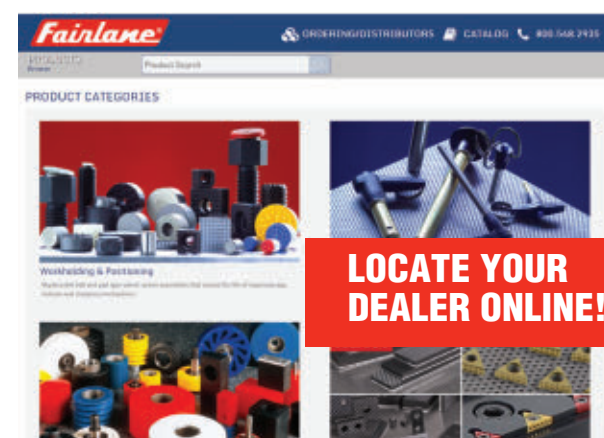


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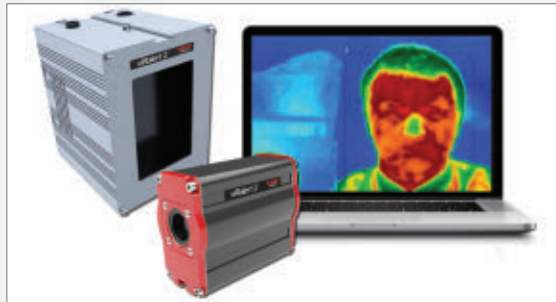
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800.548.2935

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FROM THE COVER

Fever-Screening Thermal Imager

provides a system accuracy of better than 0.5°C



The vIRalert 2 is designed for highly accurate human body temperature measurement, which could play a fundamental role in helping to contain the spread of infectious diseases.

A fever-screening thermal imaging system, the vIRalert 2 provides a remote surface measurement of body temperature.

This technology calibrates the thermal image with a blackbody calibration source in real-time to provide a system accuracy of better than 0.5°C enabling it to detect even small temperature changes induced by a fever. As a result, the system provides accurate and reliable skin temperature measurement for screening at point-of-entry into key facilities, like and any other places where infectious diseases can easily spread.

With on-screen and audible alerts when an elevated temperature is detected, it allows quick and simple decision making while reducing incorrect readings due to human error. Easy to install, vIRalert 2 is simple to operate and works straight out of the box.

The system includes a thermal imaging camera, certified blackbody source (calibrated to 38°C with power supply), connecting cables, flexible mounting options, screening software, and a laptop (optional). With a typical detection distance of 2 m, the system gives a field of view of 140 x 110 cm from the thermal imager.

AMETEK Land

MORE ONLINE: nedinfo.com/76474-65

Hybrid Tare Compensation Feeder

isolates product weight for precise measurements



Offering precise dosing of foods, chemicals, minerals, aggregates, and other challenging materials, the DIW-E-STAR feeder automatically counterbalances the tare weight of the hopper, feeder, motor, and other components to isolate the weight of the bulk material in the hopper. Negating vibrations ahead of the load cell, the

gravimetric system ensures weight measurements are consistently accurate and feeding meets a uniform rate.

Gericke USA, Inc.

MORE ONLINE: nedinfo.com/76474-69

Mobile Screw Compressor

can run continuously for 12 hours without the need to refuel

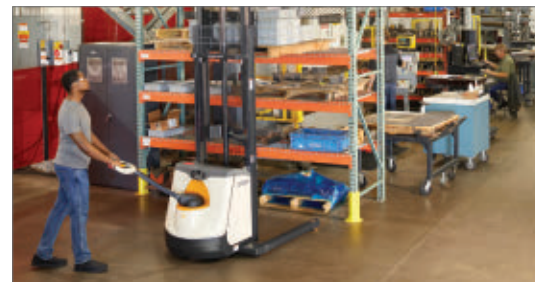


The Mobilair M500-2 is built with reliability, fuel efficiency, and flexibility in mind. It delivers up to 1,600 cfm, with a pressure range of 60 to 150 psig. The M500-2 is powered by a 600 hp Caterpillar C18 diesel engine that meets Tier 4 Final exhaust emission standards. M500-2 is designed for heavy industrial, processing, and manufacturing operations including chemical, refinery, mid-stream/pipeline, food and beverage, pulp and paper, shipyards, mining, and large construction sites. Available for rental or purchase, the M500-2 is ready to supplement plant air

during peak production, provide backup for critical applications, or support annual maintenance shut downs and turn arounds. It also has fork pockets and lifting eyes for full flexibility and can run continuously for 12 hours without the need to refuel.

Kaeser Compressors, Inc.

MORE ONLINE: nedinfo.com/76474-66



Compact Straddle Stacker

has a lift height of 144 in.

The small footprint M 3000-20 walkie straddle stacker delivers better visibility, productivity, and maneuverability for stacking, moving, and managing product. With a shorter head length, quieter operation, and a 2,000-lb. capacity, the stacker is right at home in smaller spaces.

Crown Equipment Corporation

MORE ONLINE: nedinfo.com/76474-67

High-Capacity Bulk Bag Filling System

fills 40 bags per hour

A sanitary bulk bag filling system features dual SWING-DOWN fillers fed by high capacity weigh hoppers, achieving fill rates of up to 40 bulk bags per hour. The filler simultaneously lowers and pivots each fill head into a vertically-oriented position that places the inflatable spout connection collar, inflator button, and four bag loop latches within reach of an operator standing on the plant floor.

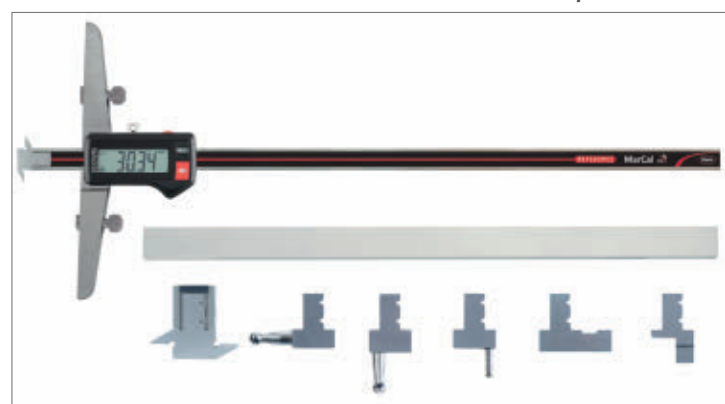


Flexicon Corporation

MORE ONLINE: nedinfo.com/76474-68

Wireless Depth Gage

features 5 anvil choices to increase measurement capabilities



The 30 EWR-U universal depth gage includes MarConnect output for wired USB RS-232 or Digimatic. The gage incorporates interchangeable anvils to multiply measurement capabilities and features a 30 Ud twin hook anvil standard for measuring basic widths and distances. The gage comes in measuring ranges of 0 to 12 in. or 0 to 20 in. and each has resolution of 0.0005 in. With the touch of a button on the instrument, keyboard, timer, remote control, or foot switch, acquired data

is sent from the gage to an i-Stick radio receiver plugged into the USB port of the computer.

Mahr Inc.

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SPECIAL REPORT

MEGABOTS: MAKING A MECHATRONIC CHAMPION

How American
Manufacturers Came
Together to Defeat the
Giant Japanese Warrior

When we step aside from competition and market advantages for a minute and focus our energies on creating something legitimately cool, something profoundly innovative and groundbreaking, the results will amaze the world.

This collection of articles and resources tracing the quick evolution of the MegaBots project demonstrates this perfectly, providing a clear blueprint for collaborating our way back into manufacturing leadership.

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NED
New Equipment Digest





Hands-Free, Rechargeable Flashlight

makes it easy to pinpoint objects at a distance

The **Rechargeable Focus Flashlight** is a durable and rechargeable LED flashlight with onboard Class IIIa laser and a battery that lasts all day. A twist focus bezel concentrates the light beam where it's needed while a strong magnetic end-cap provides users with hands-free use. The flashlight can run for 12 hours on a low setting of 125 lumens or it can run for 6 hours on a high setting of 350 lumens.

Klein Tools

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Welding Tool with Automatic Calibration

assures the best bond possible



RhinoBond with OptiWeld Technology provides automatic calibration on membrane up to 80 mils. OptiWeld Technology optimizes the energy required to generate sound and consistent bonds with installed OMG RhinoBond Plates. It eliminates the

calibration process by automatically monitoring the temperature of the RhinoBond Plate during the welding cycle to assure the best bond possible. In addition, the tool features an LED touch screen for user controls and settings.

OMG Roofing Products

MORE ONLINE: nedinfo.com/76474-72

No-Fly Zone Technology

help protect assets and personnel in working areas



Intelli-Protect System, part of the Intelli-Crane portfolio, feature no-fly zone technology to help protect assets and personnel in working areas while improving facility throughput. Intelli-Protect allows you to designate locations where a crane is programmed to

slow down or stop, using motion control products such as variable frequency drives, radio remote controls, limit switches, and sensors.

Columbus McKinnon

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Cordless, 2-Component Dispenser

extrudes accurate amounts of sealants for prolonged periods

The **COX ElectraFlow Dual Ultra 600mL 2-component cartridge** is best for operators using high volumes of sealant or two-part epoxy products. The Bosch battery prolongs usage time thanks to extended battery-life and adds convenience for users with compatible tools and chargers. The dispenser will mix two materials in a 1:1 ratio on a precise trigger-pull switch, designed to help end users extrude accurate amounts of adhesives and sealants for prolonged periods. It is compatible with the wide range of the MIXPAC application system, which covers various 2-component, side-by-side cartridges and mixers, including the waste reducing ecopaCC system. The twin-rack cordless drive technology effectively dispenses fluids from low to high viscosities while ensuring homogeneous mixing, and equal dispensing ratios for the entire volume of both cartridges.

Sulzer Mixpac

MORE ONLINE: nedinfo.com/76474-74

Chemical Processor for Cryogenic Chemistry

provides a more efficient alternative than batch processes



CryoFlowSkid enables 3 step syntheses for the continuous production of chemical intermediates or active pharmaceutical ingredients in kg quantities per hour. In particular, syntheses with highly exothermic reaction steps and proceeding through unstable intermediates can be carried out in the CryoFlowSkid with significantly higher efficiency than with a batch process. The compact, mobile system can be operated in typical chemical pilot plant environment and it is fully automated. The system is highly modular so that the reactors can be easily exchanged.

De Dietrich Process Systems GmbH

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Intelligent Automation Platform

enables quick, straightforward customization



FlexEdge Intelligent Edge Automation Platform brings a new degree of versatility to edge computing, while its ease of use makes productivity and efficiency gains from digital transformation

initiatives accessible with point-and-click simplicity. The highly modular design and intuitive software enable quick, straightforward customization and deployment to myriad applications without compromising rugged, reliable operation. The platform carries certifications that make it ideal for oil and gas, maritime, hazardous location, and factory automation applications.

Red Lion Controls

MORE ONLINE: nedinfo.com/76474-76



Harness Offers Increased Suspension Comfort

features curved webbing that fits closer to the body

Checkmate Xplorer industrial full body harness is designed to be more comfortable than conventional harnesses during periods of suspension and frequent loading. It features visual alert stitching so users can easily understand the correct way to wear the harness. Its limited slip dorsal D-ring has a precise amount of vertical adjustment built in and is designed to keep the D-ring in place after multiple loadings. Its large front ring allows for multiple attachments, and uses a lightweight aluminum quick-connect buckle to ensure a safe final connection. Hardware on the Xplorer is ergonomically suited to the product's functions, reducing wear on the webbing, allowing easy connections, and providing critical pivot points for a greater range of motion. For maximum comfort, the harness features curved webbing that follows the contours of the body for a closer fit and a sub-pelvic assembly for greater support and increased comfort during suspension.

Pure Safety Group

MORE ONLINE: nedinfo.com/76474-77

Wideband I/Q Data Recorder

enables field-to-lab tests with midrange equipment



The IQW100 brings signals from the real world into the laboratory to simulate real-world test environments, used in combination with selected midrange signal analyzers and generators. Users can record signals acquired with the analyzer in any chosen environment, then replay the recorded signals using the generator. Signals acquired with the analyzer are transferred to the IQW100 using the standard digital I/Q interface available with selected equipment, and stored as IQ data. Typical applications for the IQW100 are signals for cellular communication, EME, GNSS, radio or TV broadcast.

Rohde & Schwarz USA, Inc.

MORE ONLINE: nedinfo.com/76474-78

Drive Platform Provides Innovative Conveying

offers Industry 4.0 functionality for material flow



With the DC Platform, OEMs can choose from a coordinated range of conveyor technology solutions from a single supplier. Capable of collecting 100+ parameters of data from the conveyor system, the DC platform drives improved performance and maintenance. This level of visibility provides quick system optimization and flexibility. This platform can be used to create a unique range of conveying solutions, from conveyors that can be commissioned without a programmable logic controller (PLC) using plug-and-play, all the way to tailor-made, high-performance systems that can be consistently and transparently integrated into the data universe of Internet of Things 4.0 applications.

The Interroll Group

MORE ONLINE: nedinfo.com/76474-79

Boiler Corrosion Protection

is designed to treat 1,000 gallons of makeup water during the refilling process



Designed to scavenge oxygen and passivate metal during the initial filling of makeup water after seasonal or long-term dry layup of boilers, The Boiler Egg reduces the risk of extra downtime, clogging, leakage, and shortened service life that comes from corrosion. The egg comes in an easy-to-handle pouch that is readily dissolved upon water contact, releasing the active ingredients as the boiler is being filled. It protects against the threat of oxygen pitting during the critical startup phase of a boiler when the makeup water is normally not pre-heated and the operating chemical program has not yet been implemented.

Cortec Corporation

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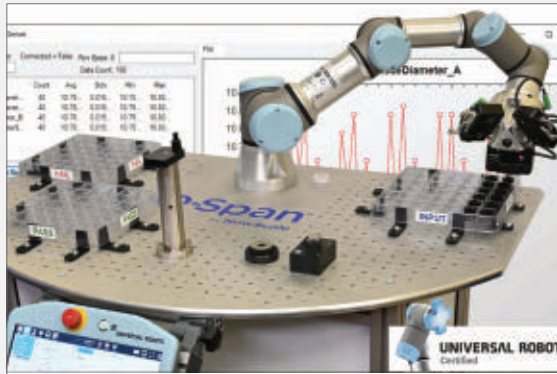
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FROM THE COVER

Robotic Inspection Workstation

automates manual digital caliper inspection



Q-Span Workstation Kit is the first application kit for quality inspection to be certified by Universal Robots and featured on the UR+ platform. The kit allows quality teams to automate measurement inspection of small parts. Deployed on a UR3e collaborative robot (cobot), the Q-Span Workstation Kit increases measurement consistency and helps quality teams to achieve gage R&R targets.

The UR+ certified Q-Span Workstation Kit includes three precision gripper/caliper tools, standard metrology fingers, an example part with parts-in and parts-out trays, measurement fixtures, a workstation table, URCaps software, and robot programs that demonstrate pick-measure-record-and-place processes for the example part.

All three gripper/caliper tools install easily on a single UR3e cobot and are controlled in one software interface. Quality teams can use the example part and demo programs as a starting point for automating inspection of their own parts.

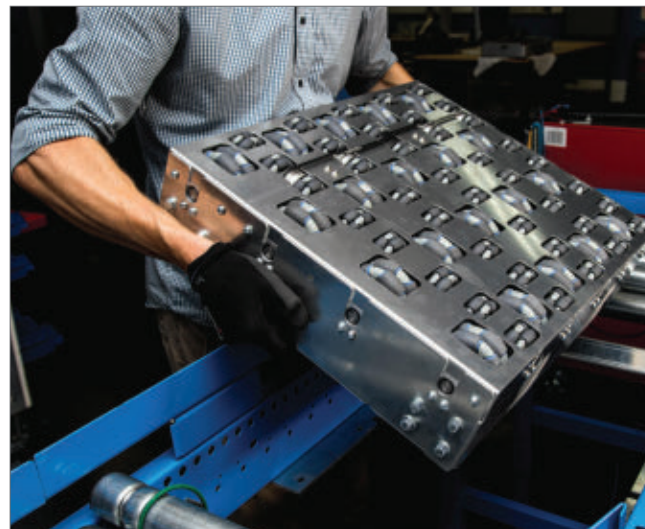
The kit aims to help quality teams in high-mix, small-batch manufacturing environments to automate the tedious manual process of measuring parts with digital calipers.

New Scale Robotics

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Omnidirectional Transfer Table

provides a transfer rate of 30 parcels per minute



Using the OMNIA omni-wheel in conveyor transfers has many benefits over traditional rollers and ball transfer systems. The OMNIA omni-wheels offer full 360-deg. maneuverability both as a manual and powered transfer table. They are made from engineer grade polymers providing unrivaled durability and prolonged lifespan—critical for maintaining and increasing productivity levels in the manufacturing industry. Due to the modular nature of the units, transfer tables can be built to any size, length, and width. Scalability also applies to load capacity. Due to the robust nature of the OMNIA omni-wheel, the conveyor tables are able to withstand and move much heavier loads than conventional conveyor systems.

Omnia

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Dual-Camera Borescope

views both straight ahead and at 90-deg.



The VJ-3 articulating video borescope is a nondestructive testing instrument used for the remote visual inspection of equipment. It facilitates the visual recording and photo documentation of an inspection and components in areas that are inaccessible. The VJ-3 consists of two modules integrated into one system: an insertion tube with distally mounted camera/LEDs, and the base unit with control panel, LCD monitor, power source, and all necessary circuitry.

ViewTech Borescopes

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Adhesive Application Carts for Roofing

are easily hoisted to the roof

OMG BeadPro Carts offer a stable platform for holding adhesive canisters and allow contractors to apply four adhesive beads spaced perfectly at 6 or 12-in. on center. Contractors simply load the cart with the canisters, secure the hoses, and apply straight line beads of Oly-Bond500 Insulation Adhesives. The carts do not have pumps or other equipment that require maintenance and come with solid tires that won't go flat.



OMG Roofing Products

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Solid Carbide Drill

produces more holes in less time



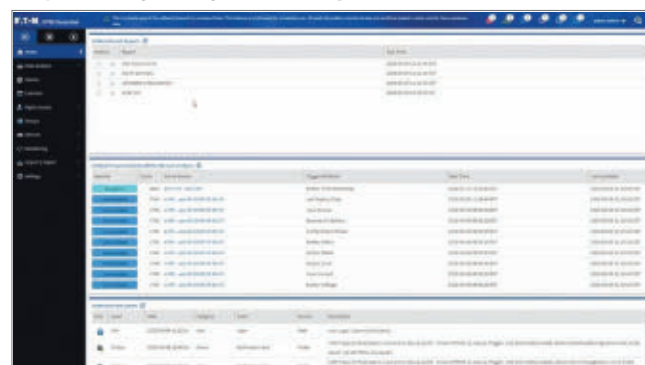
Designed for stainless steel, nickel, and cobalt-based alloys, the B21*SGL carbide drill delivers improved productivity and longer tool life for aerospace and energy applications requiring predictable, high-production drilling. The design virtually eliminates the risk of chipping and flaking that lead to drill failure. Thanks to a unique point gash, it offers the lowest thrust level on the market, enabling productive drilling even in delicate workpiece geometries.

Kennametal Inc.

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Visual Power Management

simplifies day-to-day monitoring



Visual Power Manager (VPM) software, VPM Essential, delivers the comprehensive remote power monitoring capabilities IT and data center professionals rely on in VPM, but in a self-installable, subscription-based license ideal for small to medium business applications. Supporting up to 1,000 monitored devices, VPM Essential provides a host of features, including a fully HTML5 web interface, auto discovery, mass firmware upgrade, and node-settings configuration tools, monitoring of third-party devices and multi-tenant user

Eaton

MORE ONLINE: nedinfo.com/76474-86

Improved Material Removal



of harder metals such as tungsten carbide.
Mirka Ltd.

Producers of advanced drills and end mills can look forward to better material removal and time savings with the HP Hybrid Bond diamond and CBN wheels. The wheels require a good coolant pressure in order to avoid clogging and to reach their full potential. They are particularly suitable for customers that produce medium-sized and big series of drills made

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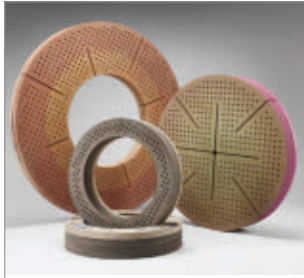
Electric Portable Grinder



The powerful AGC 18 cordless angle grinder is dust-resistant and long-lasting thanks to the enclosed brushless EC-TEC motor and protected electronics. The continuously adjustable speed of 4,500 to 8,500 rpm ensures that cutting and grinding is tailored to the material. The AGC 18 is designed for optimum ergonomics during cutting work. For especially smooth operation and fewer vibrations, the motor and housing can be disconnected.
Festool USA LLC

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Grinding Wheels Provide Longer Life



longer wheel life than existing disc grinding products and require less dressing and parameter changes for increased productivity. The wheels also have an improved material removal rate of more than 15%.
Saint-Gobain Abrasives

Norton Stellar insert-nut grinding wheels for double and single disc grinding offer improved wheel life, increased parts per wheel, and lower cost per part. The wheels have an over 30%

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Stress-Free Polishing Tool



chemical planarization and wet-etch chambers into a single system. The process wafer moves through the chambers in a three-step approach to gently remove copper overburden and relieve wafer warpage before final planarization and wet-etch steps.
ACM Research, Inc.

The Ultra SFP ap addresses yield issues arising from through-silicon via processes and fan-out wafer-level packaging. The Ultra SFP ap leverages stress-free polishing technology and integrates it with chemical

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Aggressive Stock Removal



delivering optimum stock removal on high-powered angle grinders even at higher contact pressures. The discs are specified for use on steel and stainless steel.
PFERD INC.

SG POLIFAN Z SG POWER STEELOX flap discs maintain consistent performance throughout the entire life of the flap disc yielding maximum economic efficiency for the user. This high-performance, Zirconia alumina Z abrasive handles demanding grinding work,

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Wireless Module Simplifies Drive Commissioning



Siemens has expanded its Sinamics G120 drive series to include an option for wireless commissioning and service. The Sinamics G120 Smart Access module enables wireless connectivity of mobile devices such as tablets, smartphones, and laptops over Wi-Fi to Sinamics G120 and Sinamics G120C drives. The module is setup in a few easy steps using a standard web browser and any standard operating system. Its built-in web server eliminates the need to download additional software and with its intuitive user interface and menu, the Smart Access module offers users outstanding convenience.

Siemens Digital Factory

MORE ONLINE: nedinfo.com/76474-92

Optimize Force Density and Shock Resistance



Linear H-Track actuators move loads of up to 4,800 lb. from a compact mounting envelope. The actuators are ideal for space-constrained applications requiring high load handling and shock resistance, such as snowplow blade control, agricultural plows and sprayer booms, mower deck lifts, and UTV dump boxes. The actuators are comprised of a miniaturized hydraulic pump that is powered by a DC motor.

The pump, cylinder, and reservoir are a single unit that fits into a small housing about the size of a screw-type actuator. This hybrid actuator has a force rating of 4,800 lb-f and can achieve travel speeds of nearly 4 in/sec.

Thomson Industries, Inc.

MORE ONLINE: nedinfo.com/76474-93

Right-Angled Gear Units



MAXXDRIIVE XT delivers maximum thermal and mechanical load capacities for high-speed applications, such as continuous industrial conveying and bulk material handling. It offers the grain industry a symmetrical designed gearbox for mirror image installations, which drastically reduces spare parts costs and downtime. MAXXDRIIVE XT comes in seven sizes and provides a torque range of 130,000 to 660,000 lb-in.

NORD DRIVESYSTEMS

MORE ONLINE: nedinfo.com/76474-94

Quick-Change Collet Chuck



For applications where shafts are machined between centers, the Quick Change Compensating Collet Chuck features a pullback design with a floating collet seat and incorporates a mounting in the ID of the chuck body for centers or other types of locators. The floating collet seat design together with vulcanized quick change collets allows the collet to compensate up to 1.5 mm.

MicroCentric Corporation

MORE ONLINE: nedinfo.com/76474-95

Standalone Motion Platform



The Z3TM, a standalone motion platform, provides a surface with four degrees of freedom into a stacked architecture and is an alternative to piezo-electric solutions. The platform uses a combination of three flexures and a rotary module to provide

rotary, Z-axis, and two oblique axis motions to a plate which can be anchored to a supporting table for multi-axial motion solutions.

ETEL S.A.

MORE ONLINE: nedinfo.com/76474-96

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Efficient, Robot-Based Item Picking



With ItemPiQ, item picking for e-commerce, retail and pharmaceuticals can be fulfilled rapidly and accurately. The robot cell is designed to handle repeated piece picking, error-free. The robot is operational 24/7 and can pick and place products from a source into a target bin or carton. This allows companies to better cover seasonal peaks such as Black Friday and the Holiday season. Thanks to the robot-based order picking, operating costs can be reduced in the long term and staff shortages overcome.

Swisslog Holding AG

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"Goods to Person" Picking

The Geek Picking System realizes goods-to-person picking by enabling robots to carry shelves which improve productivity and lower labor costs. The system includes Geek robots, a backstage control system, a standard picking station, and a charging station. The system is suitable for multi-SKU, normal-size goods picking operation, and operating warehouse could be tens thousands of square meters. The system can be applied in E-commerce, retail, 3PL, medical, clothing, food, daily consumables, manufacturing, automobile, etc.



Geek+ Inc.

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Material Handling Cobot



Featuring hand-guided teaching for fast implementation of a robot system, the 20 kg payload HC20XP collaborative robot is well-suited for applications where robots need to safely work with, or in close proximity to humans. It features a 1,700 mm maximum reach, enabling it to reach full 80-in. pallets without requiring an elevator or lift mechanism.

Yaskawa Motoman

MORE ONLINE: nedinfo.com/76474-99

Create Custom Robotic Grippers



GripShape is a web-based application that offers design services, a design configurator, and manufacturing services for tooling robot grippers. The interface is easy to use and requires no CAD experience to customize a one-of-a-kind design in minutes.

Fairlane Products

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Robotic Simulation Platform



RoboDK software brings powerful robotics simulation and programming capabilities to companies large and small and to coders and non-coders alike. RoboDK's software library is updated regularly and supports more than 500 robots from 50 manufacturers including ABB, Fanuc, KUKA, Yaskawa, Stäubli, and Universal Robots.

RoboDK

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Area Gas Detector Connects Facilities

can be placed wherever a gas hazard might occur



Effortlessly connecting worksites of any size while offering the simple usability of a smart-home product, the ALTAIR io360 area gas detector creates safer worksites. Users can monitor the network on-site with a mobile app or remotely monitor multiple sites anywhere in the world with the Safety io Grid, providing the data needed to take action and confidently create safer sites. Weighing only 1.6 lb., the ALTAIR io360 can be placed wherever a gas hazard might occur, quickly mounted with a 50-lb. force magnet or hung from a built-in d-ring. It's constructed with a compact portable design that can withstand environmental extremes and a 10-ft drop.

MSA

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FROM THE COVER

Super-Duty Press-On Wheels

handle speeds up to 10-mph



Comprised of five series, TerraTech Wheels are designed to transport heavy loads safely up to 10-mph. The heavy-duty wheel series offers three different polyurethane compounds and two different rubber compounds to cover a wide spectrum of industrial environments.

The wheels are ultra-thick, presson-tire-type with massive 1045 steel cores. Wheel diameters range from 9 up to 36 in. and load capacities span 1,500 to 34,000 lb. Additional non-stock sizes are also available.

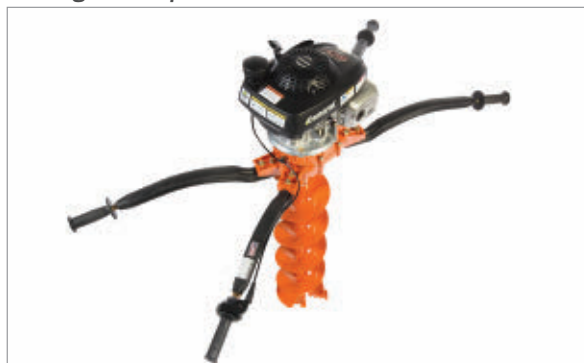
To design for the high speeds and provide greater rollability, engineers equipped all TerraTech wheels with massive double-stacked, maintenance-free, precision ball bearings. Should an application require a load capacity exceeding the standard offerings' limit of 34,000 lb., even bigger and higher capacity wheels can be designed and built.

Hamilton Caster & Mfg. Co.

MORE ONLINE: nedinfo.com/76474-103

Two-Man Hole Digger

can dig holes up to 12-in. in diameter



The 262H EPIC Series two-man hole digger offers a lightweight, long-lasting design that is suited for both homeowners and contractors in a wide variety of industrial and construction related digging projects. The ergonomically engineered Power-FLEX composite operator handles maximize control, strength, and balance, while dampening vibrations. It also reduces kickback and fatigue to increase operator comfort, productivity, and jobsite safety. The handle includes a Magura twist-grip throttle for confident control of the hole digging process.

General Equipment Company

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FROM THE EDITOR

On "Essential Business" A Salute to Manufacturers

Last month, I used my editorial to put a kind of stake in the ground about the COVID-19 crisis. It was a statement of blind faith in the industry—that no matter what happened next, innovation and manufacturers' collective creative genius would carry us through.

At the time, the coronavirus had just begun infiltrating the U.S. Social distancing wasn't a thing yet, businesses were still in operation, emergencies had not yet been declared, and manufacturing was still running strong. There was fear, though. We'd watched as China idled, as Italy quarantined, and we all knew it was only a matter of time until we saw real consequences here.

In those early days of the evolving situation, I remained confident in the manufacturing industry. I wasn't worried—manufacturing will always succeed, I said, because manufacturing always innovates.

Now, just a month later, the consequences are here. The entire world has changed: streets are empty, businesses are closed, we're all locked indoors and divided up into essential and non-essential classes. No one is even looking at pre-COVID-19 KPIs anymore, they belong to a different time, a different reality. Instead, we're all just plowing ahead, one foot after another, moving our way through this great uncertainty.

Uncertainty, sure, but one firm fact remains: manufacturers are stepping up.

With the official "essential" designation, there seems to be this long overdue realization that manufacturers are what keep society afloat—that crisis or no crisis, these products and these industries are critical to the country and the world.

Over the last few weeks, I have talked to dozens of manufacturers, from executives to operators, and all of them are racing ferociously through this crisis, going into innovative overdrive to fill this role: redefining strained supply chains, reconfiguring work processes to protect workers, and going beyond even to create new products far outside their markets to serve pressing needs of this crisis. From brewers shifting production to hand sanitizers to additive users churning out respirator frames, all across the country, companies big and small are standing up and showing the world what they can do, not just for their own businesses but for society as a whole.

It's the most beautiful outcome I could imagine. I began this crisis with blind faith that manufacturers would step up and carry us through. Now, in the thick of it, I'm happy to see that my faith was well-founded. And I couldn't be prouder to cover this industry and all the people who make it work.

I know these are tough times, I know there may be even tougher times ahead. But I want you to know that we here at NED are rooting for you—we see your work, we see your progress, and we stand in awe of what you have accomplished. You are holding the whole world together. You're as essential as it gets.

Stay healthy out there.



Travis Hessman
Editor-in-Chief

OEM or Rebuilder: Who to Turn to When Forging Equipment Breaks

Operators face a key choice when forging equipment breaks. Consider these 5 points when choosing between an OEM or a third-party rebuilder when forging equipment needs repaired.

By Ken Copeland, Ajax-CECO

While a forge operator has the responsibility to operate equipment correctly, no matter how well it is maintained, the high-impact nature of forging will eventually take its toll over time. When this occurs, parts will need to be replaced, and a rebuild may be necessary to extend the life of the forger.

At that point, the choice is either to contact the OEM to do the work or contract with a third-party rebuilder. The decision is important, given the need for a dependable rebuild that will perform as expected for many years.

Understanding a few key considerations will help forge operators decide when to rely on an OEM or a third-party rebuilder when a rebuild is required.

1. Long-Term Reliability

Over the decades, as some OEMs focused more on new equipment sales, many forgers turned to third-party rebuilders for parts and service.

To repair or rebuild forging equipment, many rebuilders use a reverse engineering process to create their own parts or have them machined at local CNC shops. Although this approach may work in the short term to get the equipment up and running, it ignores the long-term view.

When an independent rebuilder reverse engineers a part, considerable amount of critical engineering design data is lost, resulting in inferior part construction and premature wear or component failure. Often, they are rebuilding a machine without really understanding the original design intent or the loads that will be placed on the parts and equipment.

2. Essential Information

Age and modifications over forge equipment's operating life can obscure critical information, making it difficult for a rebuilder to source all the details.

Given the decades of use, there are a lot of different purpose-built forgers in the market. While common forger knowledge can be amassed just by working in the industry, it is not possible for a rebuilder to know each brand and type of forger at the same level. This is what can end up costing an operator over time.

Without the benefit of the original design specifications, there is the risk of a wrong or sub-optimal part being used in the repair or rebuild. Given the loads placed on a forger, even minor material changes can make a major difference in equipment longevity.

3. Transparency

Simple things like the size and placement of a corner radius can affect the longevity of a component. There is also the risk of working with a rebuilder who takes short cuts.



A conscientious rebuilder will try to reverse engineer how the forger was built which may lead them to contact the OEM to source the correct part. But there are also shops who will just apply a fresh coat of paint and not do all the work needed.

The cost of having an incomplete or incorrect repair ultimately is born by the operator. Forging performance may be sub-optimal, the forger may operate less efficiently, and the life of the equipment may be shortened. Often, there is no warranty offered on the repair or rebuild.

4. Original Designs

Due to mergers and acquisitions, along with some OEMs going out of business, repair business has been pushed in the direction of rebuilders. However, the large OEMs that remain have re-dedicated their efforts to providing parts manufactured to the original design specs along with repair services with quicker turnaround at a competitive cost.

OEMs remain the repository of detailed forging equipment knowledge which is a key consideration for repairing or rebuilding a forger. No one knows the equipment like the OEM. An OEM can provide vital information such as the forging equipment's design specifications. This can

include critical data on high-wear parts, the material grade of the steel, the heat-treating process that was used, and the required clearances that were used in the engineering of that forger. All this information is needed for a quality repair or rebuild.

5. Rebuilding vs Automating

Working with an OEM usually provides the option to consider replacing rather than rebuilding. Today's modern forging equipment benefits from automation, offering enhanced efficiency, enhanced safety, and no need to retrofit.

Tasks that were once performed manually—such as moving heavy steel rods, pipe, and other stock in and out of equipment—are now automated to improve worker safety.

Not only does this create a safer environment for forging operators, but productivity is increased. By automating forging operations to perform some of the tasks of a human operator, productivity can increase from several hundred pieces per hour to up to thousands, depending on the type of products being forged.

Despite the savings of having an older machine rebuilt, it may not capture the savings in efficiency, operation, and safety that automating would accommodate. **NED**

The **TRUTH** About COMPRESSED AIR!

If you think compressed air is too expensive and noisy - read this. The facts will surprise you!

Compare These Blowoffs

There are a variety of ways to dry, clean or cool products and surfaces, but which method is best? To decide, we ran a comparison test on the same application using four different blowoff methods: drilled pipe, flat air nozzles, Super Air Knife (each using compressed air as a power source), and a blower supplied air knife (using an electric motor as a power source). Each system consisted of two twelve inch long blowoff options.

The following comparison proves that the EXAIR Super Air Knife is the best choice for your blowoff, cooling or drying application.

The goal for each of the blowoff choices was to use the least amount of air possible to get the job done (lowest energy and noise level). The compressed air pressure required was 60 PSIG. The blower used had a ten horsepower motor and was a centrifugal type blower at 18,000 RPM. The table below summarizes the overall performance.



Drilled Pipe This common blowoff is very inexpensive and easy to make. For this test, we used (2) drilled pipes, each with (25) 1/16" diameter holes on 1/2" centers. The drilled pipe performed poorly. The initial cost of the drilled pipe is overshadowed by its high energy use. The holes are easily blocked and the noise level is excessive. Velocity across the entire length was very inconsistent with spikes of air and numerous dead spots.

Flat Air Nozzles This inexpensive air nozzle was the worst performer. It is available in plastic, aluminum and stainless steel from several manufacturers. The flat air nozzle provides some entrainment, but suffers from many of the same problems as the drilled pipe. Operating cost and noise level are high. For some flat air nozzles the holes can be blocked - an OSHA violation. Velocity was inconsistent with spikes of air.

Blower Air Knife The blower proved to be an expensive, noisy option. As noted below, the purchase price is high. Operating cost was considerably lower than the drilled pipe and flat air nozzle, but was comparable to EXAIR's Super Air Knife. The large blower with its two 3" (8cm) diameter hoses requires significant mounting space. Noise level was high at 90 dBA. There was no option for cycling it on and off to conserve energy. Costly bearing and filter maintenance along with downtime were also negative factors.

EXAIR Super Air Knife The Super Air Knife did an exceptional job of removing moisture on one pass due to the uniformity of the laminar airflow. The sound level was very low. For this application, energy use was slightly higher than the blower but can be less than the blower if cycling on and off is possible. Safe operation is not an issue since the Super Air Knife can not be dead-ended. Maintenance costs are low with no moving parts to wear out.

The Super Air Knife is the low cost way to blowoff, dry, clean and cool.

Blowoff Comparison

Type of blowoff	PSIG	BAR	Compressed Air		Horsepower Required	Sound Level dBA	Purchase Price	Annual Electrical Cost*	Approx Annual Maintenance Cost	First Year Cost
			SCFM	SLPM						
Drilled Pipes	60	4.1	174	4,924	35	91	\$50	\$4,508	\$920	\$5,478
Flat Air Nozzles	60	4.1	257	7,273	51	102	\$208	\$6,569	\$1,450	\$8,227
Blower Air Knife	3	0.2	N/A	N/A	10	90	\$5,500	\$1,288	\$1,500	\$8,288
Super Air Knife	60	4.1	55	1,557	11	69	\$650	\$1,417	\$300	\$2,367

*Based on national average electricity cost of 8.3 cents per kWh. Annual cost reflects 40 hours per week, 52 weeks per year.

Facts about Blowers

Energy conscious plants might think a blower to be a better choice due to its slightly lower electrical consumption compared to a compressor. In reality, a blower is an expensive capital expenditure that requires frequent downtime and costly maintenance of filters, belts and bearings.

Here are some important facts:

Filters must be replaced every one to three months.

Belts must be replaced every three to six months.

Typical bearing replacement is at least once a year at a cost near \$1000.

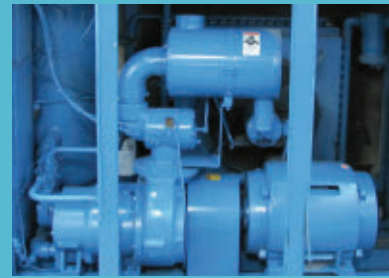
- Blower bearings wear out quickly due to the high speeds (17-20,000 RPM) required to generate effective airflows.
- Poorly designed seals that allow dirt and moisture infiltration and environments above 125°F decrease the one year bearing life.
- Many bearings can not be replaced in the field, resulting in downtime to send the assembly back to the manufacturer.

Blowers take up a lot of space and often produce sound levels that exceed OSHA noise level exposure requirements. Air volume and velocity are often difficult to control since mechanical adjustments are required.

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