

# NED<sup>TM</sup>

## New Equipment Digest<sup>®</sup>

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### SPECIAL SECTION PLANT EFFICIENCY



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# N-Ray

Is the  
**New X-Ray**

*Nondestructive testing (NDT) is becoming much more accessible thanks to neutron radiography.*

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#### Innovative Logistics Robots

Acting independently while being team players, AGILOX Intelligent Guided Vehicles are self-controlled and provide real-time solutions to impossibly complex optimization problems by communicating with each other over Wi-Fi.

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#### Measure Without Losing Time

ZeroTouch measuring platform from DWFRITZ Automation uses multiple non-contact sensor technologies to rapidly measure in three dimensions and in real-time to enable 100% part inspection.

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#### Robot Protectors for COVID-19

Geek+ offers two disinfection robots, Lavender and Jasmine, that operate entirely unmanned with automatic obstacle avoidance and are designed to work 24/7 in all types of spaces.

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#### Contactless Access Control

Designed for any organization, Janam Technologies' GT2 temperature sensing kiosk screens an individual's temperature in less than one second from up to 20 in. away, making it safer than thermometers that require physical contact.

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# ProSense® Digital Panel Meters...

## ...great features at a great price!

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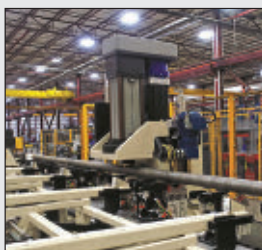
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Efficiency**



### SPECIAL ON-THE-JOB COVERAGE:

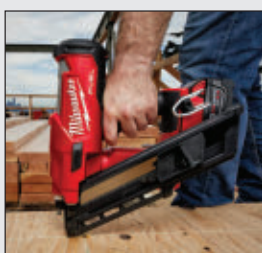
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## PRODUCT SPOTLIGHTS



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A highly automated, flexible manufacturing line, GROB Systems' linear pallet storage system can be used for individual machines or for interlinking the same machining systems.



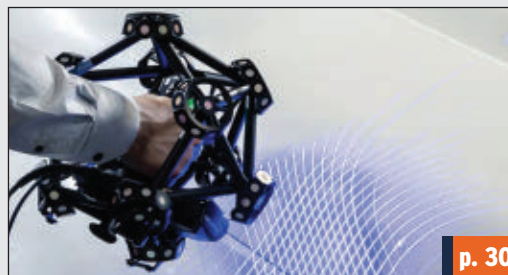
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The LXQ Fiber Laser Marker series from Laserax offers easy system integration that provides remote collaboration between system integrators and laser experts.



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Mayfran International's Con-Sep 2000 is a coolant cleaning separator that offers chip removal and coolant cleaning for most machine tool applications.



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As a portable optical CMM scanner, the MetraSCAN BLACK from Creaform USA can be integrated into any quality control, inspection, MRO or reverse engineering workflow.

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**Handheld Group**

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## All-in-One Engineering Tester

**Diagnostic Tool Set (Softing DTS 9)** for the automotive sector makes it possible for developers, engineers, and technicians to create consistent diagnostic functions and sequences on the basis of international standards and to ensure that diagnostic communication works reliably over the entire value chain. The features include remote diagnostic support and the display and recording of Ethernet communication for an all-in-one diagnostic solution from ECU engineering and development to vehicle integration and SOP.

**Softing Inc.**

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**Triax Technologies, Inc.**

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## Smart Sensor Enables Speed Monitoring

**VM3** is a revolutionary sensor that combines speed detection with triaxial vibration and temperature, enabling continuous monitoring of variable speed assets. Data from the VM3 is transmitted over WiFi to the ARO Cloud, where users can see at a glance what is happening with their assets and drill down for diagnostics with detailed analyst tools.

VM3 also offers Bluetooth connectivity for instant measurements with an iPhone or iPad.

**Petasense Inc.**

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## Versatile Router for Remote Location Monitoring

**Digi IX20** is an industrial router providing adaptable, right-sized connectivity in industrial infrastructure, location monitoring, and unattended retail applications. The IX20 integrates with Digi Remote Manager, an IoT device monitoring application that provides secure remote monitoring and control, enables automated firmware and software updates, and brings simple, comprehensive management of intelligent routers.

**Digi International Inc.**

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## Press Automation Controller

**SmartPAC PRO Press Automation Controller** features a large, easy-to-use, vivid touch screen interface, user-configurable dashboards, virtually unlimited tool setup storage, the ability to share setups among networked SmartPAC PRO units, and more. The tool summary screen enables users to view the entire contents of each programmed setup on a single screen, providing users the ability to place notes for the job, and all content can be exported to a USB disk as comma-separated values. The SmartPAC PRO architecture supports advanced connectivity features such as remote access from PCs and mobile devices, email messaging, and compatibility with Wintriss's IIoT production tracking OEE ShopFloorConnect software solution.

**Wintriss Controls Group**

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## Ensure Facility Safety for COVID-19

**SentryCheck** is a mobile application that can prompt users to perform time-sensitive tasks, record critical inputs, automatically send corrective action alerts, and more. It offers complete data transparency with cloud reporting and dashboards, allowing compliance teams to monitor all facilities from a single view. It provides automated tools to ensure all facilities comply with their company's COVID-19 procedures.

**Tompkins International**

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## Simplified Frontline Screening

The **FLIR EST** thermal screening solutions provide frontline screening at building entries and in high traffic areas to improve safety and help curb the spread of COVID-19. The FLIR Axxx-EST, FLIR T5xx-EST, and FLIR Exx-EST series cameras are designed to simplify the screening process, reducing the burden on screening operators and adhering to recommended social distancing guidelines. The camera series will be available for purchase worldwide later this year.

**FLIR Systems Inc.**

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## Configurable Machine Vision Solutions

In the **SICK AppSpace** eco-system, programmable sensors and edge devices can be configured for new tasks using SensorApps. Many apps are already available for download via the SICK AppPool. With a graphic interface in SICK AppStudio, users can solve specific sensor applications, even without programming skills, by configuring and linking pre-defined function blocks in a data flow.

**SICK, Inc.**

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## Face Safety Shield

The **full-face safety shield**'s anti-fog design protects the user's eyes, nose, and mouth from spray, splatter, dust, and other debris. The one-size-fits-most design is lightweight and durable with foam padding that provides enhanced user comfort. The shield itself allows for clear, maximum visibility while wearing it and can be easily washed or replaced.

**Mayhew Steel Products, Inc.**

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## Robotic Machine Loading Cell

For continuous uptime, the **FastLOAD DR2000** features a FANUC six-axis robot that can tend up to three machines simultaneously so an operator can load and unload parts while the robot is working. This allows companies to leverage existing machines that may be otherwise not in operation due to labor shortages.

**Acietta LLC**

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## Safe, High-Performance Cleaning

The **Clean Safely** platform provides curated solutions that meet the escalating challenge to safely eliminate viral threats. EnviroLogic CSR-2000 Cleaner is meant for large surface areas and industrial use. For smaller spaces, the Biodegradable General Purpose Cleaner and Degreaser is appropriate along with GUNK Multi-Purpose Wipes. After the surface is clean, users can sanitizer and disinfectant with BIOESQUE, which does not require rinsing, even on food contact surfaces.

**RSC Bio Solutions**

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## Heavy-Duty Leather Gloves



Genuine leather work gloves, the **CG Heavy Duty** is your first line of defense against impact, abrasion, and hand fatigue on the job. Top grain leather with reinforced fingertips delivers extreme durability when you're in full swing. Flexible Thermal Plastic Rubber (TPR) impact protection disperses

damaging blows to the top of your hand, while form-fitting stretch Spandex lets the cool air in when the heat is on.

**Mechanix Wear LLC**

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## Visual, Scheduled Sanitation

The **Clean Workspace Monitoring System**, an easy-to-implement solution, establishes scheduled workspace sanitizing as an integral part of the return-to-work process. Bright, high-visibility indicators located at workstations notify staff to pause production and implement their designated cleaning procedure—creating a data log and resetting the status indicator until the next cleaning interval.

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### Canfield Connector

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### Cast Aluminum Solutions, LLC

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### Future-Proofing Manufacturing

Future-Proofing Manufacturing & the Supply Chain Post COVID-19

COVID-19 is an eBook that provides insights, advice, and experiential value for Manufacturers and their Supply Chains.

**LMA Consulting Group Inc.**

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### Collaborative Robotics for Every Industry

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**Universal Robots**

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### Foam Bonding Guide

An excellent resource for fabricators and converters, this guide aids in adhesive selection for foam bonding applications—from gaskets, seals, and gap-filling to thermal and acoustical insulation, vibration dampening, filtration, dunnage, cushioning, and everything in between.

**Mactac Industrial Tapes**

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### Drive Systems for Healthcare

In Focus COVID-19—FAULHABER Market solutions—Drive Systems for Healthcare, Medical & Laboratory Equipment, you can learn which drives are especially well suited for medical technology applications from the areas of ventilation systems, personal protection (PAPR), laboratory automation, point-of-care analysis as well as infrared thermometry.

**FAULHABER MICROMO, LLC**

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### Energy Storage Solutions

In Energy Storage Solutions: Saving Power for the Future, subject matter experts from Analog Devices dive deep into key energy storage technologies and their applications across industries including healthcare and automotive manufacturing.

**Mouser Electronics, Inc.**

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**Essentra Components**

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### Become a 3D Printing Expert

Rapid prototyping with 3D printing gives designers the ability to fail fast, produce multiple design iterations quickly, and change a product design overnight to meet deadlines. This guide will be your aid when thinking about design and prototyping for your next project.

**Stratasys Ltd.**

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### Trailer Parts Catalog

Hendrickson's trailer parts catalog offers everything from genuine parts to suspension sliders and profiles. The digital parts catalog is instantly accessible through any mobile or desktop device and does not require additional downloads or apps. The catalog allows navigation by part number, name, or clicking on the table of contents to reach your desired destination.

**Hendrickson USA, L.L.C.**

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# New Approach to Fastener Design Prevents Loosening in Vehicles

*The approach physically prevents vehicular bolt loosening without the traditional limitations of excess weight, complexity, and length.*

By Multi Piece Fastener

In any type of vehicle—whether car, motorcycle, airplane, military tank, farming machine or construction equipment, there can be severe consequences if critical fasteners loosen or fail during operation. If this occurs, it not only affects the function of the equipment and causes substantial downtime and costs for repair, but for the operator and any passengers, it can be potentially life-threatening.

Yet this is exactly what happens to vehicles when subjected to vibration, shock, dynamic loading or thermal stress. The most frequent cause of self-loosening is the side sliding of the nut or bolt head relative to the joint, resulting in related motion occurring in the threads. The gradual rotation causes a bolted joint to lose its preload (the initial fastener tension when tightened) and subsequently lead to fatigue failure.

Although many OEMs view fasteners as commodity items, in vehicles the conditions demand superior solutions to prevent fasteners from loosening. In vehicle assembly alone, approximately two-thirds of the parts and half the labor are related to fastening in one way or another. So, applying the wrong type of fastener can have a negative impact on assembly costs, warranties, sales, liability, and even the overall brand image.

Fortunately, a new approach to fastener design is promising to resolve issues of loosening due to vibration using a smaller, lighter, and more compact fastener, without the use of adhesives.

## SOLUTIONS FOR PREVENTING LOOSENING

OEMs have long used a variety of fastener designs that attempt to stop bolted joint loosening through the use of adhesives or added components that physically restrain the bolt or nut from loosening. However, these methods have significant drawbacks.

Locking adhesives attempt to hold fasteners in place once tightened, yet the adhesives progressively lose effectiveness as temperature rises. Bolts secured with a single-use, dry patch adhesive that is activated when the bolts are tightened also add to assembly costs. With both options, if the item is to be removed and re-used the threads must be cleaned first at great cost in time and labor.

With mechanical locking approaches, the goal is to physically prevent loosening. However, this often means adding

components that increase the size of the fastener and add weight and complexity to component design. For land or air vehicles, “smaller and lighter” affects fuel efficiency, so heavier fasteners are a drawback.

Now, however, an original, innovative approach physically prevents vehicular bolt loosening without the traditional limitations of excess weight, complexity, and length.

The fastener design, called ForeverLok, involves three items: a central threaded fastener, a threaded intermediate fastener, and a retaining fastener.

Essentially, the fastener system holds the nut in place to physically prevent it from loosening. Although there are competitive products on the market that work in a similar fashion, this design is more compact than the traditional nut and bolt configuration. The locking design does not use special pins, bolts or tools to install/remove the nut, and only common tools are needed to fasten/unfasten.

The design allows the fastener to be smaller, lighter, and more compact than a larger fastener while providing a comparable torque value. For example, the torque value of a 1/2-in. fastener design tested greater than the recommended torque value of a 5/8-in. bolt.

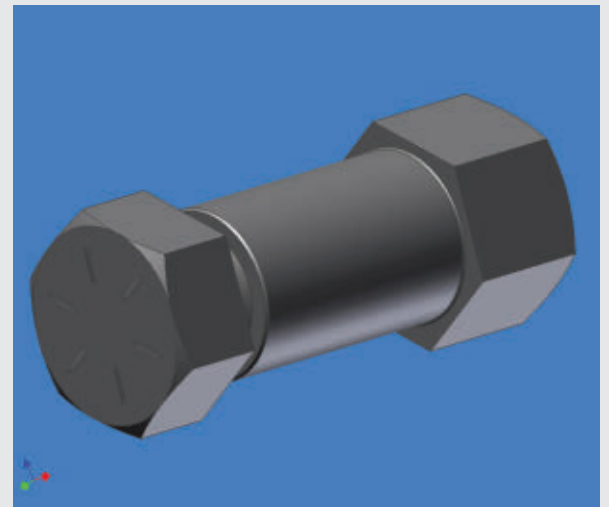
In addition, the fastener design is reusable as many times as needed. The fasteners can be made of many materials such as titanium, steel, and other metals/alloys. The design also works just as well for plastic fasteners when weight or cost is a prime consideration.

The technology, which is available for licensing, is flexible enough for a manufacturer to create its own unique new product based upon it.

The effectiveness of the ForeverLok approach has already been put to the test in three of the most rigorous anti-vibration tests.

In a maximum torque test, involving a 1/2-in. grade eight bolt, the design tested at 159.9 ft/lb., a 77% increase over the 90 ft/lb. of torque recommended for a standard 1/2-in. bolt. The higher torque value allows OEMs and design engineers to use a lighter, smaller fastener to save space and weight.

The design was also tested against the NASM 1312-7 standard, which involves accelerated vibration testing on a fastener system capable of providing a clamp-up load. In the test, the bolt/nut combination is installed in the fixture,



Multi Piece Fastener

and the fixture is subjected to controlled vibration and cycles/times until the assembly loosens. For this test, the fastener must not be able to be loosened by hand after 30,000 cycles, approximately 17 minutes of testing. Testing of the ForeverLok design, however, was suspended after over 420,000 cycles and 4 hours of testing with no loss of torque retention. NASM 1312-7 does not require the residual torque value to be reported. However, the testing facility provided the measurement: the fastener design retained 93.5% of its original torque value.

Against the tougher transverse vibration standard, DIN 25201-4, the design torque retention test results were 89.43%, clearly surpassing the certification standard which requires 80% retention or higher. This standard involves testing the fastener 12 times. The less strenuous DIN 65151 tests the fastener to a less exacting setup and verification standard, testing it once.

Although traditional locking fastener systems are available, OEMs and engineers searching for solutions to critical fastener loosening will find that considering a new design approach can result in lighter, simpler, more reliable fasteners in any type of vehicle. **NED**

For more, visit [newequipment.com/21130763](http://newequipment.com/21130763)



# Thermal Storage Technology Recovers Untapped Energy Source

*Scientists at the U.S. Department of Energy's Argonne National Laboratory have created a new kind of thermal battery that rapidly stores heat and releases it on demand.*

By Joan Koha

**T**he heat generated at factories and power plants by heavy-duty vehicles and certain other systems is often wasted. Around 60% of energy from combustion processes alone is lost in the form of heat.

What if it were possible to capture heat and use it as a source of energy? Researchers at the U.S. Department of Energy's (DOE) Argonne National Laboratory had this in mind when they developed the award-winning Thermal Energy Storage System (TESS).

Researchers were specifically looking for a way to store thermal energy at concentrating solar-thermal plants (CSP) when they came up with the idea for TESS. CSP plants generate electricity from solar power and operate at extremely high temperatures. Thermal storage is used at these plants to store heat generated when the sun is out so that power can be generated at night and on cloudy days.

TESS can be used at solar power plants and other manufacturing facilities to reduce operating costs by recovering and reusing wasted heat. Argonne Senior Scientist Dileep Singh, who leads the development of TESS, describes the technology as a thermal battery. Just as a traditional battery discharges and charges electricity, TESS discharges and charges heat.

TESS lends itself to wide-ranging commercial applications. By enhancing the performance and efficiency of combined heat and power (CHP) systems, the TESS can help power plants or other industrial, thermally-driven facilities run more efficiently by capturing the heat emitted during the day and using it at night.

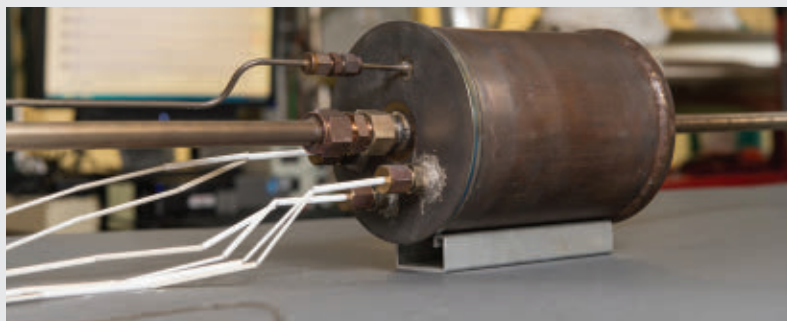
"Storing thermal energy and using it during periods of high electricity pricing can result in significant cost savings," Singh said. "This is particularly important for process and manufacturing industries and in building applications, as it reduces operating costs and increases energy efficiency."

TESS can potentially be used in heavy-duty trucks or electric vehicles to convert heat into mechanical energy or cabin heating. The system's ability to release heat quickly may also help it regulate the heating and cooling of commercial buildings.

"TESS can be an energy-efficient and cost-effective option for many different industrial processes because it is tunable to work in different temperatures and has a unique modular design," Singh said.

## HOW IT WORKS

TESS rapidly stores and releases waste heat that can later be used for a variety of applications. As a single unit, it is about the size of a trash bin. Inside of TESS, there is phase-change material infused into a uniquely designed thermally



Argonne National Laboratory

conductive foam core. The phase-change material, adapted to specific operating temperature ranges, melts when heated and re-solidifies when cooled. The foam core efficiently exchanges heat.

## ADVANTAGES OF THE SYSTEM

Three major advantages of TESS are its tunability, modularity, and efficiency, which increase its cost-effectiveness.

Researchers can customize TESS to work for different applications by selecting specific phase-change materials, making it adaptable to many industrial processes.

The thermally conductive foam core makes TESS highly efficient compared with similar technologies. TESS also has high energy density, which results in a more compact footprint compared with other commonly used heat storage systems.

TESS has a modular design which makes it adaptable for manufacturers. Instead of requiring huge storage structures to contain the system, facilities can produce units in manageable sizes and install the number that they need.

## NEXT STEPS

Since it was developed, TESS has been recognized as a novel breakthrough in thermal storage by both industry and government alike. In 2019 the technology was awarded an R&D 100 Award—sometimes called the "Oscars of Innovation"—which honors revolutionary ideas in science and technology.

Argonne's researchers were also awarded funding from the DOE Technology Commercialization Fund to refine the technology further. With this funding, Singh and fellow researchers are working with Capstone, which manufactures CHP microturbines. With TESS, the heat recovered from the operation of a CHP can be recovered and used. The Argonne team has also developed an in-house testing facility to test performance over multiple charge and discharge cycles. **NED**

*Argonne National Laboratory's work to develop TESS is funded by the DOE Energy Efficiency and Renewable Energy's Solar Energy Technologies Office.*

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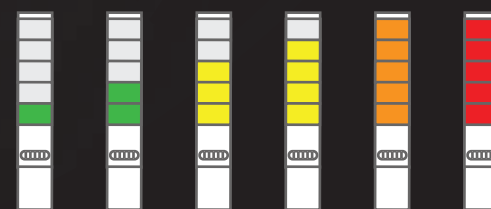


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## SPECIAL REPORT

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Together to Defeat the  
Giant Japanese Warrior

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# N-Ray Is the New X-Ray: Making NDT More Accessible

*A nuclear technology company, Phoenix LLC, has created the first system in history that makes neutron radiography a powerful method for nondestructive testing (NDT).*

By Willow Ascenzo

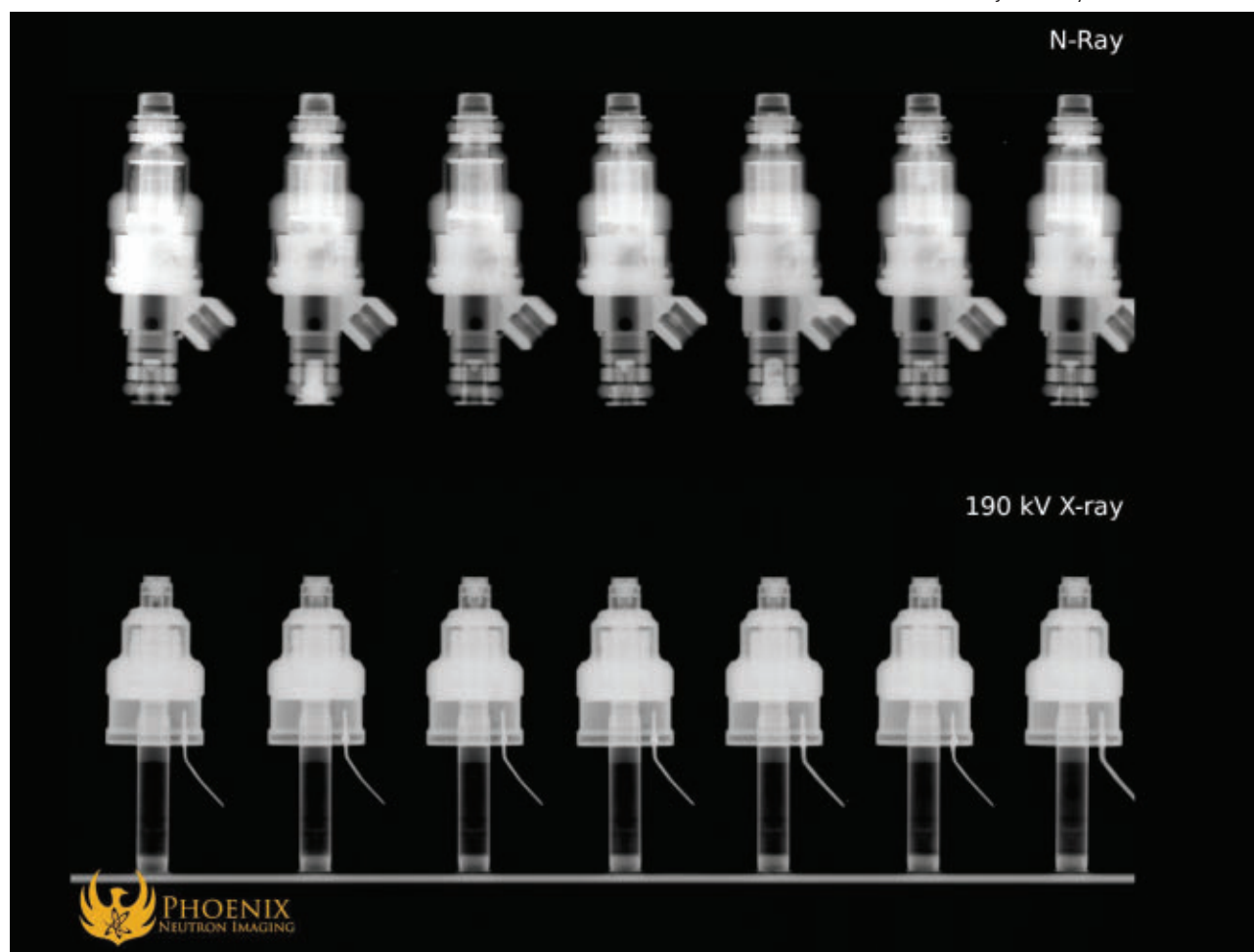
Madison, Wisconsin, has long been a hub for nuclear research in the Midwest. Some of the most cutting-edge nuclear research happening today is still centered in the heart of the Midwest, including the development of revolutionary new neutron sources for applications like industrial radiography. Phoenix, LLC., a nuclear technology company founded by University of Wisconsin-Madison alumni, has created the first system in history to provide neutron radiography for commercial use without relying on a fission reactor, instead applying cutting-edge accelerator technology. This will make neutron radiography a powerful but seldom-used method for nondestructive testing (NDT), much more accessible to the NDT community.

## WHAT IS NEUTRON RADIOGRAPHY?

Neutron radiography, like X-ray imaging and other methods of industrial radiography, uses penetrating radiation to create a film or digital image of an object's inner structure. Because neutron radiation has very different properties from X-rays and other types of radiation on the electromagnetic spectrum, it has many uses in niches where X-rays alone would fall short. For example, since neutrons penetrate denser materials more easily than lighter materials, neutron imaging is particularly handy for inspecting energetic devices such as ejection mechanisms and munitions, whose dense outer shells are often a struggle for X-rays to penetrate.

Neutrons behave quite differently than X-rays. With X-rays, the denser an atom is—i.e. the more electrons it has—the greater difficulty X-rays have passing through them. As a result, denser substances are more opaque than lighter materials, which is why, for example, an X-ray image of your hand shows your bones but not the surrounding flesh. For neutrons, there is no such simple correlation between density and opacity. In fact, even two elements placed right next to each other on the periodic table, which would look almost identical in an X-ray image, can appear completely different in a neutron image.

Neutron radiography has a wide range of uses in industrial NDT, such as detecting internal flaws in cast parts, showing defects in low-density and energetic materials, finding evidence of corrosion inside metal pipelines, inspecting welds for structural integrity, and identifying the presence and po-



sition of o-rings, seals, lubricants, and adhesives inside complex assemblies. However, due to its relative inaccessibility compared to other NDT methods, its full potential in many applications remains tragically underexplored.

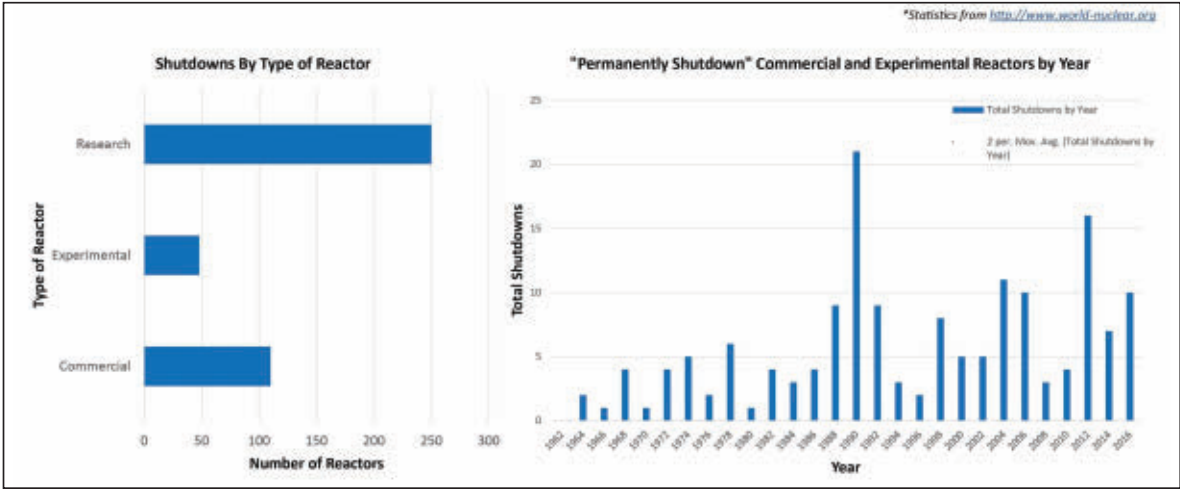
The method of neutron radiography was first used in the 1930s soon after James Chadwick first discovered the neutron, but it didn't start to see industrial use until the 1950s when research institutions began building and running fission reactors. Nuclear fission produces several distinct types of radiation out of the leftover subatomic particles that remain when an unstable atom breaks down into two or more smaller atoms: Alpha radiation, which consists of two protons and two

neutrons bound together; beta radiation, which consists of free electrons; and neutron radiation, which consists of free neutrons. Neutron radiography requires a very high, sustained neutron output per square centimeter—in other words, a high neutron flux—in order to produce sharp, clear, and detailed images which up until now, such a high neutron flux was only achievable in these fission reactors.

As there are few reactors available for commercial use, this heavy reliance on reactors has severely restricted the use of this technique. Recently, the number of reactor facilities offering neutron radiography has also been decreasing as reactors age and are decommissioned.

All images courtesy of Phoenix LLC

The slow demise of reactor neutron sources has been sad and painful for the world of neutron imaging, but the development of powerful accelerator-based sources represents a much-needed change in fortune for neutron radiography.



The decreasing number of fission reactors that are available for neutron imaging is a particular threat to NDT niches that heavily rely on neutron radiography for quality assurance purposes, such as manufacturers of the turbine blades for jet engines. Because neutron radiography is the most reliable method for detecting certain highly dangerous flaws in these parts, the manufacturers must use it rigorously to test their products, and loss of access to their neutron radiography vendors—whether permanently, in the case of reactor closures, or temporarily, in the case of shutdowns for maintenance—wreaks havoc on their supply chain.

For example, Aerotest Operations, a reactor facility which was the primary neutron imaging source for the aerospace industry since the 1980s, had to shut down due to an unexpected licensing issue. This dramatically altered the neutron imaging market landscape and forced aerospace manufacturers to find alternative solutions or give up the valuable test method altogether in favor of less effective, more accessible methods. This event brought to light how vulnerable the aerospace supply chain was by relying on a small handful of reactors for a critical aspect of production. It was clear that a more accessible and relying source for neutron imaging was needed.

NEW INNOVATIONS IN NEUTRON SOURCES

Since the 1930s, researchers have investigated many different sources of neutrons ranging from tube sources, table or desktop-sized devices which produce a low neutron output by fusing heavy isotopes of hydrogen; isotopic neutron emitters such as the synthetic isotope californium-252, which naturally emit neutron radiation as part of the radioactive decay process; and, of course, fission reactors, which produce massive amounts of neutron radiation as a byproduct of uranium-235 splitting into smaller radioactive isotopes.

Neutron radiation has many industrial and research uses, and not all applications require a high neutron output. For example, the oil and petroleum industry relies heavily on tube neutron sources for oil well logging. Neutron radiography does require a high and sustained neutron output over a given area, though, and as discussed above, reactor facilities are problematic in some ways—not the least of which being their dwindling numbers!

Fortunately, many new innovations in nuclear technology are offsetting the losses of our aging nuclear infrastructure, such as companies like NuScale and Oklo, which are designing compact fission reactors to advance carbon-free energy;

SHINE Medical Technologies, which is developing a non-reactor source for medical radioisotopes crucial for lifesaving medical imaging procedures; and Phoenix, which designs high-flux neutron generators to offset the loss of reactor neutron sources for applications such as isotope production, neutron imaging, and radiation hardening that typically require reactors.

In recent years, neutron generators relying on this nuclear process have become much, much stronger. Last year, Phoenix and SHINE, two Wisconsin nuclear technology companies in Monona and Janesville, respectively, conducted a joint test and broke records for the highest sustained neutron yield from a fusion source, beating the previous record-holder set in the 1980s by over twenty-five percent.

THE FUTURE OF NEUTRON IMAGING

Shortly after the world record demonstration, Phoenix finished construction on the very first reactorless commercial neutron imaging facility, the Phoenix Neutron Imaging Center.

The facility uses a high energy ion beam and proprietary target to generate enough neutrons for high quality, high throughput neutron radiographs.

The facility has been operating commercially since April 2020. During that time the facility achieved the highest neutron imaging quality possible according to the ASTM standard and was qualified by several key aerospace manufacturers.



Phoenix Neutron Imaging Center Production Floor



Neutron imaging, as a method for industrial NDT radiography, has more or less consistently lagged a few decades behind its X-ray. For example, standards for digital neutron imaging analogous to the existing standards for digital X-ray imaging are currently in development, whereas these same standards for X-rays have existed for decades. This is a consequence of the lag between the discovery of a technique and the technology needed to develop it to its full potential.

For example, even though medical and industrial professionals were immediately excited by the discovery of X-rays in the 1890s, it wasn't until much later that X-ray generating technologies became powerful and cost-effective enough for the technique to become ubiquitous throughout these industries.

The slow demise of reactor neutron sources has been sad and painful for the world of neutron imaging, but the development of powerful accelerator-based sources represents a much-needed change in fortune for neutron radiography as seismic as the shift from unreliable Crookes tubes to hot cathode tubes were for X-ray imaging. Facilities such as the Phoenix Neutron Imaging Center are spearheading a bright future for neutron radiography as it traces the path traversed by X-ray decades prior, exploring new ways to make industrial parts and infrastructure safer and more reliable. **NED**



Phoenix System mid-construction with President, Even Sengbusch.

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# Plant Efficiency

## FAST AND EFFICIENT ORDER FULFILLMENT

A completely scalable solution, HOMEPICK integrates systems, software, and life-cycle services to create a cutting-edge concept that facilitates the fast and efficient processing of online grocery orders.

At its core, HOMEPICK is based on a goods-to-person picking solution that makes use of ADAPTO, Vanderlande's unique 3D, shuttle-based automated storage and retrieval system (AS/RS).

The cohesive system design is modern and straightforward, and the operation is easy to understand. By using ADAPTO and modular workstations, HOMEPICK's scalability also makes it future-proof. The sequenced flows of orders ensure the right order per delivery route and maximum delivery performance, which results in significant time and cost savings.

Owing to its state-of-the-art configuration, HOMEPICK guarantees a high picking efficiency, shorter lead times, higher accuracy, improved levels of consumer satisfaction, and an excellent ROI. It also supports an omnichannel approach and can seamlessly match any desired growth strategy.

**Vanderlande**

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## IOT SOLUTION DELIVERS ACTIONABLE INSIGHT

ABLE is a cloud-based, IoT solution that provides real-time root cause analysis for manufacturing operations and is part of Sage Clarity's MES ecosystem product suite. The MES ecosystem product suite is a deep, feature-rich set of modules, integrations, and plug-in applications to expand the MES footprint. Its capabilities help drive IIoT data collection strategies that provide cutting-edge applications to unlock the value of their manufacturing software.

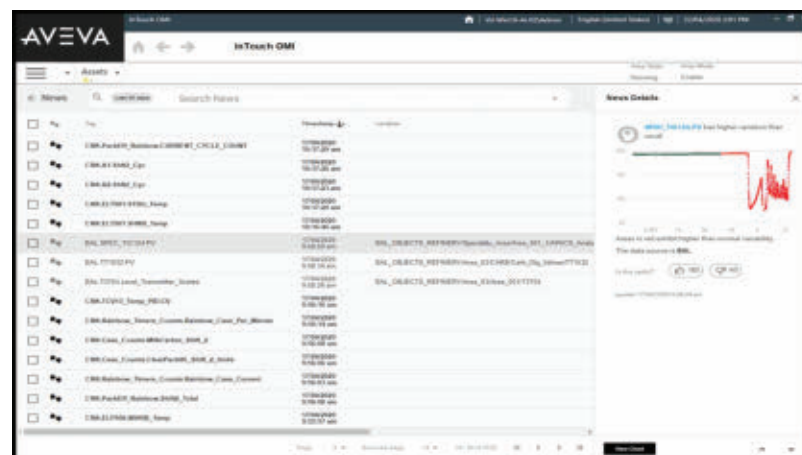
ABLE 2.0 functionality includes:

- Real-time progressive root cause analysis
- Real-time analytics and KPIs for performance including Machine Work Center Availability, MTBF, MTTR
- APIs to enable the MES ecosystem apps for MES solutions
- Tight integration with Sage Clarity's other ecosystem apps such as Next Gen Andon, for machine-driven alert tracking

The ABLE middleware solution resides between the plant floor and the MES/SCADA layer and requires no PLC data acquisition programming. Cloud technology eliminates the need for special infrastructure, providing easy scale and rapid deployment. The Middleware solution integrates with MES platforms such as Epicor Informance, Wonderware MES, and many others.

**Sage Clarity Systems**

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## SMART APP IMPROVES OPERATIONS WITH AI

AVEVA Insight OMI app infuses real-time artificial intelligence into an operator's decision-making to help improve overall operational agility.

The app provides businesses with an accelerated path toward implementing AI in the control room or on the plant floor, presenting real-time anomaly detection in a context-aware OMI visualization display.

The Insight OMI app introduces AI capabilities into the AVEVA System Platform, formerly Wonderware, and leverages predictive early warning and automatic detection of unusual operational behavior. This provides users with early notification so they can quickly resolve issues before they become critical business problems such as unplanned downtime and production losses.

A simple management interface enables operations, maintenance, and production teams to quickly train the AI engine to adapt to the enterprise's specific implementation. An intuitive thumbs-up or thumbs-down confirmation ensures AI-driven notifications are relevant to the needs of the user and support overall enterprise objectives, with no programming or data science knowledge required.

**AVEVA**

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## AUTOMATED TUBE/BAR STRAIGHTENER

The automated, all-servo-controlled Tube and Bar Straightening System handles carbon steel, stainless, aluminum, copper, brass, and other materials. This solution incorporates AI that automatically adapts by learning different part types without requiring operator intervention. As compared to traditional approaches, these systems have helped to reduce cycle times up to 80%.

Bundles of tubes/bars are loaded onto a staging deck and then automatically fed to the straightening equipment. In the straightening process, the bar stock is rotated 360-deg. while sensors measure the bar at multiple data points along its length to create a profile. This data is sent to the PLC where it is compared to the straightness specification in order to determine where it needs to be corrected.

A servo press, mounted to a servo-controlled rail, is positioned to the indicated location determined by the sensors and then bends the bar/tube repeatedly over its length to bring it within tolerance. This process continues until the straightness requirements are achieved. As a final check, the tube is then rotated again to collect the data points to confirm that the bar is within specification. Depending on the customer's process, bars or tubes may then be automatically or manually transferred to other operations.

**Coldwater Machine Company**

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## INCREASE KPIS WITH ACCURATE ASSET LOCATION

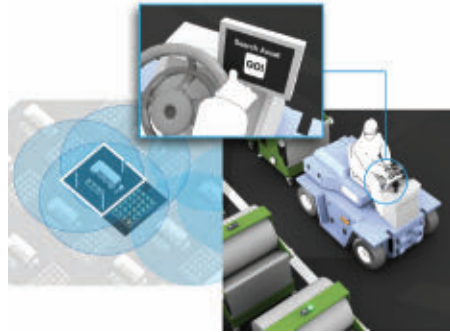
Asset Agent is a system for accurate, real-time localization and identification of vehicles and assets throughout the entire production chain from final assembly to delivery. The combination of various localization and identification technologies improves throughput from vehicles and ultimately the overall productivity and efficiency of manufacturers.

The software optimizes the unguided internal transportation processes—from the final assembly to storage indoors, as well as outdoor parking yards to further transportation. By knowing the accurate location of every vehicle in the yard, the optimal transportation route is deployed automatically, thus the time used for searching is reduced. The distinct identification of vehicles throughout the entire process eliminates incorrect deliveries and possible delays.

Every carrier gets outfitted with a battery-powered device—a so-called transponder—which enables the Asset Agent application software to identify, locate, and communicate with every single material carrier at any given location in the production plant. The solution scales up to thousands of transponders in one plant and works outdoors if required.

**IDENEC SOLUTIONS Inc.**

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## ANALYTICS APP HELPS MANUFACTURERS MANAGE THEIR FACTORY

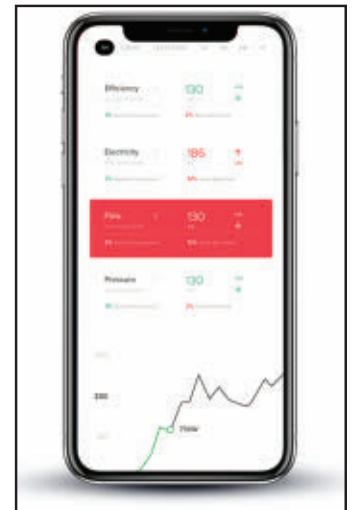
Lightapp Analytics is a mobile application for manufacturers that enables data analytics for more profitable and sustainable operations.

With Lightapp Analytics, organizations can now keep up to date on machine and system performance, schedule and track work orders, and manage inventory, all while on-the-go from any iOS or Android device.

Lightapp's intelligent resource management software platform offers easy-to-use tools that provide data analytics and a clear path to more profitable and sustainable operations. With Lightapp Analytics, users gain instant access via the mobile app to valuable data and insights. Lightapp offers straightforward KPI's for faster decision-making with faster collaboration and team alignment, which allows for increased maintenance and operational productivity.

**Lightapp**

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## FIRST IATF-COMPLIANT SOFTWARE FOR AUTO INDUSTRY

A software that is compliant with the International Automotive Task Force (IATF) standards serves as guidelines for automotive manufacturers worldwide. The product introduces KPI tracking, automated auditing, log revision, and other tools designed to simplify process management in the automotive industry. The IATF requirements help ensure product quality during the development process, but up until now, they had to be validated manually by the assigned quality control officers. The software provides a range of new functionalities to better streamline workflows, track the process, and implement necessary changes faster.

Eylean's tool is specifically designed to evaluate how the product fulfills the IATF requirements throughout the three development stages: Product Development, Product and Process Validation, and Product and Series Trial. The software enables manufacturers to better plan and perform quality checks and audits throughout all of these stages without a glitch.

Quality assurance safeguards are integrated within the project management tools, enabling managers to keep track of KPIs, allowing them to stay up to speed with the overall progress as well as stay focused on the current tasks at hand.

The software will enable the automotive industry to ramp-up processes across teams, departments, and even regions. Reducing the heavy manual workload will enable more manufacturers to stay in tune with the IATF quality standards and reduce the overall costs.

**Eylean**

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## FROM THE COVER

### Intelligent Guided Vehicles

are infinitely scalable



Providing completely decentralized autonomy, **AGILOX Intelligent Guided Vehicles (IGVs)** are completely independent, self-controlled, and intelligently designed to handle failover, recovery, and deadlock prevention perfectly. The SI system can provide real-time solutions to impossibly complex optimization problems in the most efficient way possible, often in ways that a human designer could never anticipate. The swarm can also handle unexpected changes in dynamic environments without any human intervention.

AGILOX vehicles automatically exchange information about the environment and the current work order situation with each other via WiFi several times per second. Based on virtual transport costs, which each participant constantly recalculates for all pending orders, it is automatically decided which vehicle fulfills an order and which path that vehicle can take to fulfill this order in the shortest amount of time.

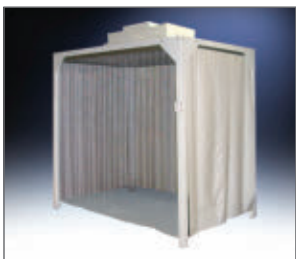
All of this is possible with almost no overhead cost to the end-customer. There are no expensive server systems, no wires added under the floor, no reflector or beacon installations—no hardware of any kind, other than your regular 2.4 or 5 GHz WiFi network and the charger. There is no software to install or maintain, no version numbers to keep up with, and no licenses with ongoing subscription fees.

**AGILOX North America Inc.**

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### Softwall Clean Rooms

operate on 115 or 220v power



**Softwall Clean Rooms** are designed to meet ISO 5 - ISO 8 requirements and feature a flexible design that allows them to locate over and around equipment, with the option of being mobile with casters. The structural framework is of aircraft anodized aluminum with clear vinyl curtains around the unit. Fan powered HEPA filter and fluorescent lighting modules along with blank ceiling tiles are positioned into a ceiling grid system and optional entry airlocks can be incorporated into the design.

The structural framework is of aircraft anodized aluminum with clear vinyl curtains around the unit. Fan powered HEPA filter and fluorescent lighting modules along with blank ceiling tiles are positioned into a ceiling grid system and optional entry airlocks can be incorporated into the design.

**HEMCO Corporation**

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### Blow Molding Conveyor

allows the creation of inclines, declines, and lateral turns



The Hybrid line of conveyors includes a model that has been specifically designed to effectively close the blow molding process loop. The **blow molding conveyor** is sure to increase plastic container and bottle molding efficiencies by featuring high temperatures, a small footprint, separation in addition to conveying, and ease of repair. Conveyor widths range from 2 to 120 in. to accompany lengths as long as 100 ft.

**Dynamic Conveyor Corporation**

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### Composite Tubing for Electric Motors

eliminates the need to ground units

**Double Insulation Dielectric Composite Tubing** is customizable to an individual application's needs,



ensuring the highest possible quality and greatest safety benefit in each individual motor design. Used as a sleeve within the armatures of electric motors, the tubing acts as a secondary layer of insulation and provides shock protection to the

operators of electrical tools and appliances. The dielectric and insulating properties eliminate the risk of capacitance coupling, while the high torque strengths ensure durability.

**Polygon Composites**

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### Mounting Fuse Clips

handle voltages up to 1,500 VAC/VDC



The **CSO fuse clip series** for 10.3-mm diameter fuses have been expanded to include an M5 screw and rivet mounting option in addition to M3, and versions for solder or through-hole mounting. The

CSO series is characterized by a strong clamping force due to the use of a special copper alloy. The series is well suited for use in e-mobility charging, PV, and other high-powered DC applications.

**SCHURTER Inc.**

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### Liquid Tight Conduit

withstands extreme temperatures

**Hi-Low Temperature LPMC** has been tested to withstand temperatures from -55/-67 to 105°C/221°F in dry conditions, and 60°C/140°F in wet conditions, and up to 70°C/158°F oil resistance. A moisture, oil, and sunlight-resistant PVC jacket is applied directly over a zinc-coated galvanized low carbon steel core and allows the conduit to be rated



for wet locations, which is essential if the conduit is intended for outdoor use and exposed to the elements. Additional wet locations may include warehouses or environments with exposure to condensation, sprinkler systems, and more.

**AFC Cable Systems**

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### Cleanroom Conveyors

provide simplified traffic control

**Edge Roller Technology (ERT250)** conveyor has received certification for use in ISO Standard 14644-1 Class 4 rated cleanrooms. This means Dorner's ERT250 will conform and not contribute to the contamination of cleanrooms to those standards. The ERT250 complements



cleanroom applications as it uses rollers, not belts which can result in releasing dust into the air, to move pallets smoothly with no friction. The conveyor's open-center design eliminates concerns of small parts or screws causing conveyor damage or jamming.

**Dorner Mfg Corp**

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### Plenum Electrical Boxes

are suitable for air-tight applications. Providing additional options for above-ceiling installations, **plenum rated boxes** are used in above-ceiling applications where air-tight enclosures are required, for use in air returns or required by code. Fifteen models are offered, including three different box styles and are constructed of drawn steel. To maintain the plenum seal, no ground screw holes are provided.

**RACO International LP**

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### Reliable Vehicle Connectors

feature a 17A-current-carrying capacity

**SUPERSEAL pro 2-position connectors** are light-weight, suitable for wire-to-wire, and wire-to-device applications. They feature 17A-current-carrying capacity and vibration resistance, improved terminal retention and proper positioning, sealing levels of IP67/IP68/IP6K9K (with back shell) with enhanced seal retention features, and better flammability protection given the UL 94-V0 material used.

**TE Connectivity**

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### Miniature Toggle Switch

ensures a perfect fit

The **miniature 7000 Series locking toggle switch** now includes an optional knurled cap. The textured pattern provides a nonslip surface that enables customers to move from one position to another without the toggle lever slipping from their grip. Offering reliable and long-term operation up to 100K cycles, the switch is available with and without the IP67 sealing to meet application requirements.

**C&K Switches**

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### Versatile Tubing Plugs

offer easy installation

Heavy wall polyethylene **Tubing Plugs** are designed to fit multiple tube gauges to ensure easy installation and provide a secure fit. The plugs are available for round, square, and rectangular metal tubing in both imperial and metric sizes. These poly tube plugs are ideal for office and patio furniture, tubular racks, appliances, exercise equipment or anywhere a finished look is needed.

**MOCAP**

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### Low Profile Pipe Stoppers

are heat resistant up to 176°F

The **Low Profile Stopper** can fit into a pipe end that may be directly on an elbow or just inside a flanged neck on a casting. Other applications include blocking pipe ends to keep gases inside or to keep debris and vermin out. Manufactured from tough fabric, these stoppers are available in sizes 6 to 88 in. diameter and provide excellent grip with an effective airtight seal.

**Huntingdon Fusion Techniques HFT**

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## Storage System Links Machines for Improved Production

*transports materials between setting stations*

The **linear pallet storage system (PSS-L)** is a highly automated, flexible manufacturing line that complements a wide variety of part types. The PSS-L is ideally suited as a modular system for individual machines or for interlinking the same machining systems. With it, up to five machine tools—including the G550a, G552, and G552T—can be connected to a pallet storage racking with a maximum of 87 pallet positions. The PSS-L can also operate “locked out” of a system, as an independent machine. Additionally, with the PSS-L, a significant increase in machine use and economic production can be achieved, and a longer unmanned production period is made possible. Other advantages include a high storage density with a small footprint, a cost-conscious acquisition investment, as well as the excellent visibility into the workspace and the pallet storage locations.

**GROB Systems, Inc.**



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## Surface Conditioning Belts

*provide smear-free removal*

**SHUR-BRITE Surface Conditioning Belts** feature an open structure to resist overheating, part discoloration or loading, to ensure a consistent quality over the belt life, making it ideal for treating large surface areas. With repeatable finishes, SHUR-BRITE belts are ideal for large scale robotic applications. Users can create linear scratch patterns on stainless steel food equipment and blend or re-orient scratch patterns after repairs. They offer high edge durability and flexibility without chunking and smear-free removal of oxidation, paint or adhesives.

**Superior Abrasives, LLC**



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## Linear Servo Brush Amplifier

*have no audible noise*

**DC Linear Brush-Type Servo Amplifier (LCAM 5/15)**



allows the current to flow continuously to the motor which prevents any dead-band issues that occur in many PWM type amplifiers. Additionally, linear amplifiers have low EMI, and no audible noise that also

can be found in many PWM type amplifiers. Therefore because of their high current loop bandwidth, coupled with a low EMI, this leads to a smooth motion profile, which makes linear amplifiers the best choice for high precision applications.

**H2W Technologies, Inc.**

MORE ONLINE: [nedinfo.com/76478-48](http://nedinfo.com/76478-48)

## Diaphragm Vacuum/Compressor Pumps

*provide outstanding isolation from vibration*



**N 630** diaphragm vacuum/compressor pump series delivers high pressure and gas tightness with a durable, long-life design. With a long service life, vacuum

down to 0.74 inHg (25 mbar abs), positive pressure up to 174 psig (12 bar rel), and a flow rate up to 2.4 CFM (68 L/min), the N 630 series offers impressive, highly versatile performance. The cost-efficient and reliable diaphragm gas pumps are available in four variants: either one or two-headed and connected in series or parallel, as a vacuum pump or as a compressor.

**KNF Neuberger**

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## Fall Arrest Anchors

*withstand a pull-out force of 5,000 lb.*

**Keel Rigid Anchors** fall arrest systems provide personal fall protection in tie-back applications including suspended platforms, window washing, equipment tie-back, and general rooftop maintenance and repair operations.

They are designed to withstand a pull-out force of 5,000 lb. applied in any direction and meet applicable OSHA, ANSI, and Cal/OSHA standards. The anchors are galvanized for corrosion resistance and durability, easy to install, and have insulated posts to stop conductivity and provide for temperature consistency on the building.

**Keel Safety Inc**



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## Uniform Pressure Jaw Rings

*compensate for jaw lift even in worn chucks*



**Dillon Jaw Forming rings**, or Jaw Boring Rings, provide uniform pressure on jaws, allowing soft jaws or full-grip jaws to be precisely machined. A firmer grip of the workpiece allows for a more consistent bore, especially on large diameter chucks. The rings

provide a jaw surface true to the machine centerline, reduce set-up times, and increase up-times for running machined parts. These proven, self-centering rings attach to the front of jaws without tools, making installation simple and fast.

**Dillon Manufacturing, Inc.**

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## Safety Renovation Tread

*offers a guaranteed life of 5 years*



**STAIRMASTER** safety renovation treads are available in many coordinating or contrasting colors, including photoluminescent, to enhance front edge visibility and safety. With a proprietary bonding process that ensures a long service life, this anti-slip renovation stair tread is ideal for exit path markings, safety egress systems, steps, and landings. The tread is available in 9 or 11-in. widths, includes a mill finish extruded aluminum base, with a beveled edge, and countersunk holes as standard.

**Wooster Products Inc**

MORE ONLINE: [nedinfo.com/76478-52](http://nedinfo.com/76478-52)



### Ultrasonic Flowmeter

*reduces potential leakage points*



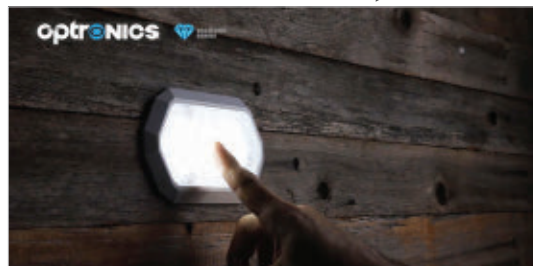
**OPTISONIC 6300 V2 ultrasonic flowmeter** features a stationary, clamp-on design and allows users to measure flow anywhere necessary, all while processes continue. The flowmeter offers a viscosity range of up to 200 cSt, eliminates the need for re-greasing due to solid coupling material, has a next generation signal converter for enhanced application range, Namur NE107 diagnostics, and integrated thermal energy calculation.

**KROHNE, Inc.**

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### Smart, Dimmable Interior Lamps

*feature a 1,500 to 2,000 lumen output*



**Opti-Brite Diamond Series LED Interior Lamps** are thin, surface-mount lamps that are dimmable and able to remember previous intensity settings. The lamps are designed for broad interior application flexibility and can be wired to operate manually or use their passive infrared sensors (PIR) to automatically illuminate in the presence of human movement. The distinctive diamond-shaped lamps feature daylight LEDs that emit light within the color temperature range of natural sunlight.

**Optronics**

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### Single Component Thermal Material

*has a thermal conductivity of 3.7 W/m-K*



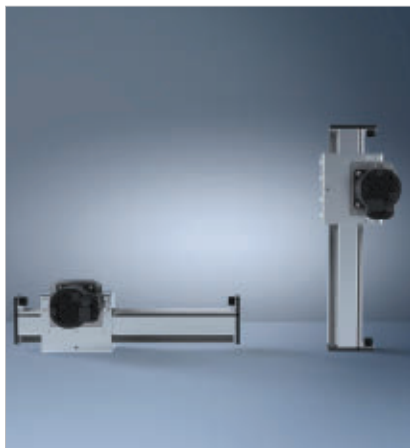
**THERM-A-GAP GEL 37**, the next generation of single component thermally conductive dispensable materials. As a conformable single component dispensable compound, GEL 37 has superior long-term stability and reliable performance. It does not require post-cure, which helps to eliminate downtime and decrease installation costs. THERM-A-GAP GEL 37 is easily conformable to irregular shapes without excessive force on components.

**Parker Chromerics**

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### Low Cost, High-Performance Actuator

*provides linear forces up to 200 N*



A high-performance, drop-in replacement actuator for rod actuators, pneumatic cylinders, and linear motors, the **ServoBelt RA** is fully guided along the entirety of its stroke, making it more resistant to off-axis loads and more stable in on-axis moves. ServoBelt RA has been built from the ground up for moving chassis installation in both horizontal and vertical Z-axis orientations. Its drive unit features standard or custom mounting hole patterns to make it easy to integrate into machines.

**Bell-Everman**

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### Adjustable Bulk Bag Filler

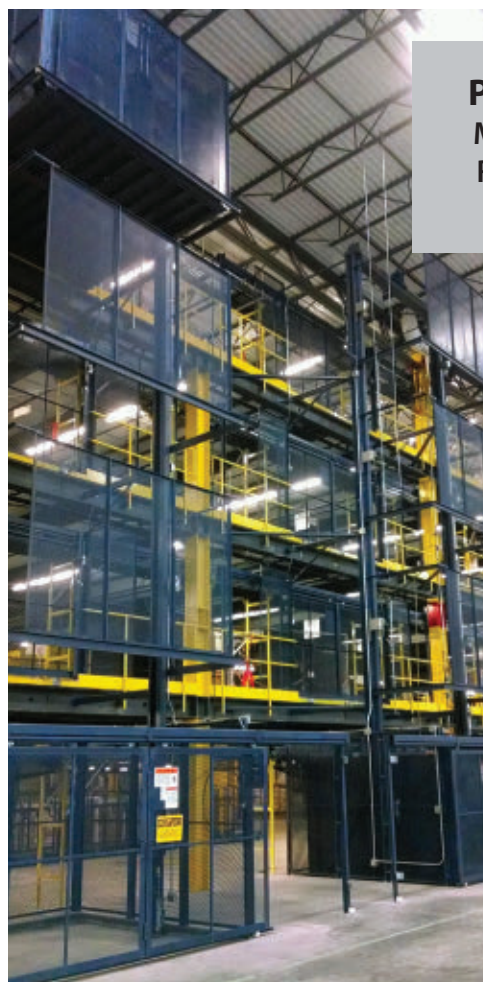
*features a 4,000-lb. capacity scale*



Featuring a heavy-duty, tubular carbon steel frame construction, the bulk bag filler is adjustable for future bag size flexibility. With a heavy-duty flat top densification system with twin electric vibrators and pallet retaining system, it quickly settles products, maximizing fill volume and enhancing bag stability. A gain-in-weight carbon steel scale system with a 4,000-lb. capacity is programmed and monitored using a remote NEMA 4 control panel with a PLC, HMI, and emergency stop pushbutton.

**Material Transfer & Storage, Inc.**

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## High-Precision System Enables 3D Inspection

*performs multiple measurements in parallel*



CMMs are typically used for quality control in various industries. Most traditional contact-based inspection systems are characterized by long measurement cycle times. Changeovers to measure other parts and the attendant programming also add to the delay. To solve these problems, the **ZeroTouch** measuring platform uses multiple non-contact sensor technologies to rapidly measure in three dimensions and in real-time. ZeroTouch's proprietary software then creates a highly accurate dense 3D point cloud. In addition, by simplifying complicated programming procedures, the system configuration time is reduced to just a few hours saving substantial production time and costs.

The near-zero friction design provides an extremely smooth, high-speed motion of precision stages and improves gage repeatability and reproducibility. Acquisition of the data points is extremely rapid, at a rate of up to 4 million points/s. Further, the user has flexibility in choosing the right sensing technologies to get the most optimal measurement results.

ZeroTouch enables 100% part inspection and is characterized by its ease of use. By giving the operator an easy-to-use tool, different types of parts produced on different lines can be quickly inspected. Such capability will enable the rapid qualification of manufacturing lines and speed up production ramp.

**DWFritz Automation**

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## Precision XYZ Axis Stages

*feature a locking brake for the Z-axis*



A series of high precision, low-cost **XYZ positioning stages** can be easily integrated into new and existing applications. They are offered in 5 travel lengths for each axis: 50, 100, 150, 200, and 300 mm. Any combination of lengths, motors, and lead screws are available. These highly adaptable stages feature high precision steel linear ball bearings and hardened steel shafting, and each stage has a 3.543 x 3.543 in. table with a precise pattern of threaded mounting holes.

**Optimal Engineering Systems, Inc.**

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## Concrete Rainscreen Panels

*can be oriented horizontally or vertically*

The thinnest precast concrete rainscreen panel, **ThinCast**, is designed for use in commercial, institutional, retail, and low to high-rise construction. This innovation provides architects with the natural beauty and character of concrete in lightweight panels that accomplish rainscreen design goals. The panels use a high-performance concrete mix and further increase strength and durability through the use of corrosion-resistant stainless steel prestressing wires.

**High Concrete Group**

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## Facility Disinfectant Spray System

*can reach remote locations 20 ft away*



Powered by compressed air, the **Syphon Spray System** is a cost-effective alternative to hiring expensive sanitizing services. Ideal for industrial facilities with in-plant air compressors, the Syphon Spray System provides wide-area spray capability to thoroughly disinfect floors, walls, and workbenches, as well as tools, machinery, and equipment. Featuring a 12-in. spray gun, the system delivers up to 16 gallons of liquid per hour. Adjustable nozzle tip controls flow and spray pattern from a steady stream to a light mist.

**Guardair Corp**

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## Bubble Spectrometer

*measures bubbles in most media*

The **ABS Acoustic Bubble Spectrometer (ABS)** measures bubble size distributions and void fractions in gas/liquid mixtures. Hardware-wise, customers have several options to choose an ABS system based on their application and budget. For example, a high-speed data sampling rate up to 100 MS/s is available, which is 10 times faster than the previous offering and is capable of expanding the bubble detection limit to the sub-micron range. For industrial and field applications, rugged ABS systems based on module PXI system are also available.

**DYNAFLOW**

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## Practical and Affordable Forklift

*is suitable for less demanding applications*



A sit-down, counterbalanced forklift, the **H40-70UT Series**, offers users a practical, cost-effective solution that provides a 4,000 to 7,000-lb. capacity internal combustion engine. The H40-70UT

uses a high-strength overhead guard with profiled steel to provide protection and visibility, while the mast is designed to help minimize blind spots and leave a significant front field of view for operators. Additional ergonomic features include spacious foot room and convenient control pedals to reduce fatigue and increase comfort.

**Hyster Co**

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## Self-Adjusting Labeler

*removes incorrect products*



The **452E Top Labeler** automatically adjusts on-product label position to ensure tight tolerances, even with particularly challenging applications. With an output of up to 250 products per minute,

the labeler is ideally suited for applications in which final presentation and appearance is paramount. The flexible setup can also compensate for production tolerances of labels and product packaging. Side guides can be adjusted quickly and without tools to various product dimensions at any time.

**HERMA USA**

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## High-Performance Liquid Pumps

*have bubble tight pressure stall*

Engineered to provide a safe, reliable, and durable hydraulic power source for applications up to 68,000 psi, the T-Series **pneumatically-operated liquid pumps** address many of the shortcomings commonly found in today's air-driven liquid pumps. The premium pumps are built to run at their maximum rated pressure and feature a robust motor and seal design that delivers a long service life. In addition, these pumps do not require a lubricated air source.

**High Pressure Equipment Company**

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## Cushion Forklifts Gain Battery Update

*can accommodate a 25-plate battery*



Two model additions have been made to the **BX Electric Counterbalanced Forklift Series**. By accommodating larger batteries, the already efficient BX Cushion series can now run even longer between charges. With onboard diagnostics

and controlled rollback, these forklifts are suited for a variety of heavy-duty applications, including bottling and grocery industries. The included battery box can accommodate a 25-plate battery for optimum capacity and battery life needs for these applications.

**UniCarriers Americas**

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## Versatile, Magnetic Drill

*features speeds from 100 to 810 RPM*



Designed for tough, industrial-level use that will keep cutting on the most demanding of jobs, the **T30944 2" Magnetic Drill** features 3,500 lb. of force and adheres to ferrous metal surfaces when turned on. The mag drill can be positioned to drill vertically, horizontally or overhead. Coupled with a spindle stroke of 6-in., a gravity-fed coolant system, and a heavy-duty case for hauling and storage, these mag drills are consistent, accurate, and powerful.

**Grizzly Industrial, Inc.**

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## High Precision Micro Drills

*achieve hole depths of up to 12 x Dc*

Supreme **DB133 solid carbide micro drills** with internal and external coolant capabilities are key to establishing precise, reliable working processes and achieving significantly longer tool life in steel, cast iron, and non-ferrous materials. The DB133 drills, with their 140-deg. point geometry, are available in a diameter range from 1/32 to 5/64 in. and 0.5 to 2.95 mm. Oil or emulsion can both be used as a coolant with these drills.

**Walter USA, LLC**

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## Tailored Solutions for Design and Construction

*streamline workflows and maximize efficiency*

**BIMrx Fabrication** was built by construction professionals to ensure the accuracy and effectiveness of everyday fabrication workflows. Regular tasks like tagging, spooling and hangers are automated, and designers have access to database properties of these parts for simplified reporting and estimating through Microsoft Excel. BIMrx Fabrication brings true automated fabrication capabilities to Autodesk Revit.

**Microdesk**

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## Laser Marker Makes Integration Easy

*can be controlled from anywhere in the world*

The **LXQ Fiber Laser Marker** reduces integration time and cost while also facilitating collaboration between system integrators and laser experts—a key factor for quick and easy laser integration. The system has a remote connection that can grant control of the system to a Laserax expert or partner anywhere in the world. Relying on a secure cloud VPN, this allows experts to better support end-users through remote services such as installation, training, after-sales support, and live demos.

**Laserax**

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## Pressure-Sensitive Labeling

*provides secure, long-lasting performance*

Mactac's **cannabis labeling solutions** feature superior form and function, including adhesion to small mandrel containers and vials.



They are able to withstand a range of environmental and other challenging conditions, such as moisture, heat, and humidity. Avail-

able in paper and film constructions, the labels are designed to meet needs for all forms of cannabis—from solid and semi-solid to viscous and liquid. They can be used in a wide range of applications, including glass, pop-top and reversible cap vials, cartons, stock glasses, bags, and pouches.

**Mactac Industrial Tapes**

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## Rectangular, Round, and Disc Magnets

*are 100% duty cycle*



**Plated N42 neodymium disc magnets** give customers greater options in selecting the perfect neodymium magnet for their application. Neodymium magnets are a member of the rare earth family, and they are the most powerful magnets in

the world. Round electromagnets provide an efficient and economical solution for handling and holding ferrous materials and parts safely and securely. Rectangular flat-faced electromagnets are ideal for achieving maximum holding force on flat, smooth, dry, unpainted surfaces. They are ideal for surfaces where the entire face of the magnet comes in direct contact with the product being handled.

**Bunting Magnetics Co**

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## Digital Twin Infrastructure Tool

*offers access to all data and systems at once*



Cityzenith unveiled its Beta release of **SmartWorldPro2**, the follow-up to its flagship Digital Twin software platform, SmartWorld-

Pro—the planning, building, and infrastructure tool for city planners and asset managers. Professionals who design, build, and manage complex, large-scale building projects, properties, and real estate portfolios value the way SmartWorldPro makes data aggregation, visualization, query, and analysis easy and fun. Import hundreds of data types into one universal dashboard including disparate formats (like BIM, GIS, and IoT) that don't traditionally play nicely together.

**Cityzenith**

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## Heavy Lifting IC Trucks

*promote comfort and ease of operation*

**Crown C-G Series** of internal combustion (IC) cushion tire LPG counterbalance forklifts feature a capacity ranging from 8,000 to 12,000 lb. The enhanced features and design of the series deliver robust lifting and agile maneuverability—even in applications with limited space—including manufacturing, warehousing, rail and freight, paper manufacturing and storage, and steel coil operations.

**Crown Equipment Corporation**

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## Toolkit Boosts Field Service Team Visibility

*uses both historical and current data*



**Service Pro Business Intelligence (BI)** is an integrated, coding-free data visualization toolkit that provides field service companies with easy-to-use analytics to drive efficiencies throughout the service process. With no-coding-required data visualization tools, Service Pro BI allows users to track critical service KPIs, boost technician efficiency, and identify potential problems

before they impact customers. Service Pro BI provides organizations with unlimited visualizations within Service Pro for each functional area, such as appointments, equipment, orders, and service technicians.

**MSI Data**

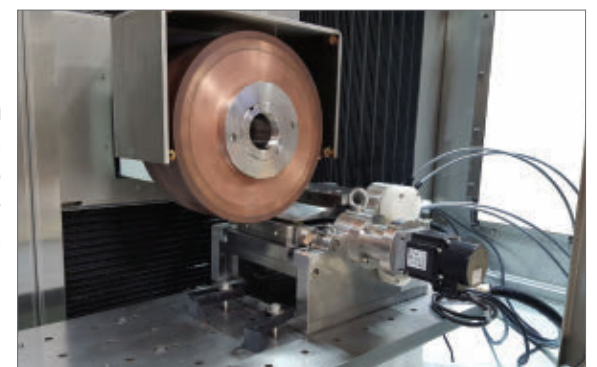
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## Needle Point Grinder

*holds 32 to 120 needles*

The **Burr Free Electrochemical Point Grinding System Model PGS-100** works as an adjunct to the Tridex SG-1645 and SG-2060 electrochemical grinders. The combination offers a fast set-up and fast changeover times. Using the ECG process, the PGS-100 is a fully programmable pointing and material handling system for medical device points on a tube or solid wire. It features a servo-controlled design for high precision rotation and repeatability. Simple tooling for loading and unloading allows any trained operator to run multiple machines at once.

**Tridex Technology**



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### Turnkey Amplified S-Band Radio

*delivers a power output of 40W at 9 Mbps*

Eliminating the need to integrate standalone components to create a long-range wireless and ISR radio links working in S-band, Triad has combined high power RF subsystems with a Silvus StreamCaster model SC4210E-235 core radio that operates from 2,200 to 2,500 MHz. Triad model **THPR1012** is a reliable, dual-channel MIMO, turnkey radio system that includes bi-directional amplifiers, RF filtering, real-time power measurements, link diagnostics, and innovative SoC-based monitoring and controls.

**Triad RF Systems**

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### Complete Security Platform

*provides secure access and file transfer*

**Anybus CompactCom IIoT Secure** products for both EtherNet/IP and PROFINET include a complete security platform for IIoT communication over OPC UA and MQTT. The leading Anybus CompactCom product family enables device manufacturers to connect their industrial devices to all major industrial Ethernet networks, and IIoT connectivity is already supported via OPC UA and MQTT.

**HMS Industrial Networks**

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### Artec Studio 15

*can conduct quick quality control operations*

Smart 3D scanning software, **Artec Studio 15** features Scan-to-CAD functionality that allows for basic quality control and basic reverse engineering operations to be conducted directly in Artec Studio 15, saving users time and effort. For CGI artists, enhanced color reproduction and model-to-model texture transfers will make creating life-like models even easier. In addition, boosted algorithms will ensure maximum accuracy and speed when scanning with Artec's handheld, long-range, and desktop 3D scanners.

**Artec 3D**

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### Industrial Kitting Cart

*organizes, kits, and transports parts*



The **Creform kitting cart** features multiple methods of separating and storing components for transit between picking and the assembly department and is durable and suitable for manufacturing or warehouse use. The unit allows for material to be moved from one manufacturing station to another, as well

as to move materials from the warehouse in a small batch or sequenced set of kitted parts. The rear of the cart features hanging industrial fabric bags with compartments that help protect parts and make for easy load/unload.

**Creform Corporation**

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### Custom Enclosures

*allows customized NEMA rated enclosures*

The **Wiegmann ModCenter** provides fast customized electrical enclosures and can work on enclosures as



small as 6 x 6 x 4 in. The maximum back panel size that can be accommodated is 90 x 61 in. All sides can be machined as long as the height is under 60 in. All in-stock Wiegmann stainless steel and carbon steel are

**Wiegmann**

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## FROM THE COVER

### Disinfecting Robots for Any Facility

*can be controlled through smartphones*



Geek+ has launched two disinfection robots to customers worldwide: The **Lavender** and the **Jasmin**. Lavender is armed with smart UV rays while Jasmin uses liquid agents to execute swift and automated sterilization. The two robots operate entirely unmanned with automatic obstacle avoidance and are designed to work 24/7 in all types of spaces, from warehouses to offices, schools, stores, transportation stations, and hospitals.

Jasmin, a Smart Spray Disinfection Robot, uses a disinfectant spray port to swiftly deliver a delicate and uniform spray that reaches a kill rate of 99.99% of germs depending on concentration and the type of liquid agent. What sets it apart from regular HPV robots is that it is capable of supporting various disinfection liquids, e.g. hydrogen peroxide, peracetic acid, and chlorine dioxide. Lavender is a Smart UV Disinfection Robot which boasts UV multi-lamps that kill 99.99% of germs.

Both robots can secure regular and systematic around-the-clock unmanned operations, thorough disinfection through comprehensive scanning, and safe operations using multi-sensor detection of objects. They use simultaneous localization and mapping (SLAM) to navigate and multiple sensors to detect objects so they can operate in complex environments. Jasmin and Lavender also support elevator integration.

**Geek+ Robotics**

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### Modular Inverter Systems

*can be configured to deliver single, dual or three-phase AC power*



**Bravo inverters** provide users with a highly efficient and modular AC or DC power solution that is fully scalable and uses hot-swap inverter modules at 2.5kVA 120VAC or 3kVA 230VAC. The ECI and TSI models are compact 2U (3.5-in. high) rackmount inverters that can be configured with up to four 2.5kVA modules totaling 10kVA in a single 2U shelf. Units can be connected in parallel to increase the overall output of the inverter system and the hot-swappable modules can also be configured with N+1 redundancy. Moreover, the models provide extra AC input to ensure a high overall efficiency that results in a reduction of energy loss and heat dissipation.

**UNIPOWER**

**MORE ONLINE:** [nedinfo.com/76478-83](http://nedinfo.com/76478-83)

### Intelligent Electromechanical Linear Actuators

*provide up to 2 kN of force*



**Electrak MD** is a compact electromechanical actuator that retains all of the intelligence built into its

larger counterparts. It comes with onboard intelligence to enhance the overall performance and eliminates space consumption by keeping any external equipment like encoders and switches within the actuator housing. In addition to the above benefits, the actuator also features extensive automation and maintenance enablers such as feedback on position, J1939 CAN bus communication, low-current switching (PLC compatibility), and end-of-stroke indication output.

**Thomson Industries**

**MORE ONLINE:** [nedinfo.com/76478-84](http://nedinfo.com/76478-84)

### Slit Couplings

*allow for speeds up to 70,000 rpm*



Ruland Manufacturing now offers **Reliance slit couplings** which provide zero-backlash and are manufactured from a single piece of aluminum with inter-

mittent slit cuts allowing for high torque and torsional stiffness capabilities, low inertia, and long-life. The design uses a proprietary slit pattern that has radiused as opposed to squared edges, reducing stresses that build up during misalignment conditions and torque loads. The couplings are offered in the RL and RS-series. RL-series couplings have longer lengths allowing for greater parallel misalignment capabilities and increased torsional stiffness. RS-series couplings are designed to fit in compact spaces and offer parallel misalignment capabilities.

**Ruland Manufacturing Co., Inc.**

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### Stainless-Steel Reels

*meet specific corrosion needs*

Coxreels offers complete **stainless steel reels** and powder-coated steel reels with stainless steel fluid paths. Customers can choose between 316 and 304-grade stainless steels for their fluid paths on many reel types to best match the necessary corrosion resistance of their reel according to the application. Coxreels stainless steel reel spools and frames will remain 302/304 grade stainless and are optionally available in an electro-polished finish for additional corrosion resistance.

**Coxreels Inc.**

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### Liquid Nozzles for Cooling, Washing, and Rinsing

*work well with liquids containing particulate*



**1/4 NPT FullStream** liquid atomizing spray nozzles provide a full cone spray pattern for pressurized liquids. They are applied to solve cooling, cleaning, washing, rinsing, and dust suppression applications for industry. Their tangential flow design is vaneless, which creates wide-open internal features to resist clogging while producing a uniform distribution in a round pattern with medium to large droplets. Their right-angle design is compact and operates up to 100 PSIG liquid pressure.

**EXAIR Corporation**

**MORE ONLINE:** [nedinfo.com/76478-87](http://nedinfo.com/76478-87)

### Refrigerated Dryers Offer Higher Energy Efficiency

*allows operation in high heat environments*



The **TF series**, with four models from 550 to 1,130 scfm, integrates Kaeser's SECOPACK LS latent heat thermal storage system that delivers consistent dew point control and energy efficiency under varying load conditions. SECOPACK LS contains a phase-changing material (PCM) that stores thermal energy as it cycles from a solid to a liquid state, greatly enhancing energy efficiency. The PCM module is 98% denser than conventional storage media. This, combined with topside air exhaust, creates a smaller overall footprint for the dryer.

**Kaeser Compressors, Inc.**

**MORE ONLINE:** [nedinfo.com/76478-88](http://nedinfo.com/76478-88)



## Coolant Cleaning Separator

handles most chip types and materials



Providing outstanding chip removal and coolant cleaning for most machine tool applications, the **ConSep 2000** handles nearly any chip type and material while providing coolant cleanliness to 50-micron nominal. The conveyor is well-suited for general purpose machining and helps extend tank cleanout periods from monthly to annually, reducing downtime and maintenance costs. Its modular design makes it simple to add additional components for extended coolant cleaning requirements below 50 micron. The integrated, media-free backwash system eliminates filter replacements, clogged screens, and pumps.

**Mayfran International**

MORE ONLINE: [nedinfo.com/76478-89](http://nedinfo.com/76478-89)

## Future-Ready VFDs

can read up to four encoder systems simultaneously

The **NORDAC PRO SK 500P** variable frequency drives are fitted with an integrated multi-protocol Ethernet interface, a multi-encoder interface for multiple axis operation, and a USB interface for voltage-free parameterization. Cabinet mounted VFDs cover rated motor powers from 0.33 to 7.5 HP and feature ultimate levels of connectivity, functionality, and versatility. With a wide range of customization options, these units can be tailored to most application requirements. Additionally, plug-in control, safety, and option modules ensure maximum flexibility and the compact book-size design enables space-saving installation in control cabinets.

**NORD Drivesystems**

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## Dynamic and Intelligent Milling

drills and mills at up to 12,000 rpm



As the entry-level to the Hyperturn series, the **HYPERTURN 45 G3** offers a spindle distance of 760 mm for collision-free processing with two turrets. The expanded working space offers sufficient room for the integration of BMT turrets in 12x or 16x versions. Its precision interface provides fast tool changeover and direct drive for high power milling of complex workpieces. The water-cooled direct drive has 8 kW of power; it drills and mills at up to 12,000 rpm and offers 20 Nm of torque. The stable BMT interface ensures that tools have a long service life.

**EMCO Corporation**

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## Foundry Grinding Wheels

generate significantly less dust and odor

**Winter Ironclad Diamond Single Layer Super-abrasive Wheels** achieve maximum material removal for increased productivity, especially when used in automated grinding cells.



Featuring a strong and durable bond, Ironclad wheels finish up to 50% more parts per wheel compared with electroplated wheels. Norton Winter Ironclad Wheels are a superior solution for ductile and grey cast iron applications such as fettling and snag grinding on casting gates, parting lines, sprues, and more.

**Norton | Saint-Gobain Abrasives**

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## Adhesives Line for Strong, Durable Bonds

tackles repairs from tools to automobiles

The **Tank Bond family** of products includes Tank Bond Thread Stopper, Tank Bond Liquid Grip, and Tank Bond Thread Locker. Tank Bond Thread Stopper turns any size and type of screw or bolt into a self-stopping, shock-absorbing fastener. The non-locking formula creates a strong hold without permanently bonding threads, allowing fasteners to be easily removed and replaced with manual tools up to five times. With just a drop of liquid, Tank Bond Liquid Grip prevents stripped screws for easier installation or removal by providing up to seven times more grip. Tank Bond Gel Threadlockers offer the strength needed to withstand constant force and avoid the mess of typical drippy threadlockers thanks to a gel-like formula that won't drip or run and is ideal for vertical applications.



**DAP Products Inc.**

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## High-Performance Thermoelectric Coolers

are ideal for spot cooling applications



A new generation of high-performance thermoelectric coolers offer a 10% boost in heat pumping capacity, greater temperature differential, and higher efficiency than standard thermoelectric coolers. The **UltraTEC UTX Series** thermoelectric cooler offers a heat pumping capacity of up to 296 W with a maximum temperature differential (Delta T) of 72°C. The UTX series is ideal for spot cooling applications with industrial lasers, laser projectors, medical diagnostic systems, and analytical instrumentation.

**Laird Thermal Systems**

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## Non-Contact, Thermal Camera

detects facial temperatures with a 100% success rate



**Fotric 226B Infrared Thermal Imager**—a standalone infrared camera and PC software combination—provides safe, non-contact measurement of passing human traffic without requiring person-to-person contact, ensuring the safety of the detection personnel themselves. It has a millisecond response time which automatically locks on to facial outlines to give accurate non-contact temperature measurements. When the Fotric 226B detects a face with above-normal body temperature, an audible alarm is immediately triggered, a red box is placed on the PC image of the target face, and a high-quality image is captured with the accurate body temperature overlaid. WLIR software then automatically emits a buzzer alarm to alert support personnel.

**Saelig Company, Inc.**

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## Hot Melt Packaging Tape

**HP 200** Production Grade Hot Melt Packaging Tape is a 1.8 to 1.9 mil, hot melt packaging tape used to create instant closures on medium-weight cartons in everyday manufacturing and shipping environments. It is for manual or automated industrial carton sealing applications and offers an instant, permanent bond to a wide range of substrates and surfaces.

**Shurtape Technologies, LLC**

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## Shaft Collars and Couplings



**Shaft Collars, Couplings, and Flange Mounts** are offered as standard parts in USDA and FDAA-approved 303 or 316 stainless steel, Nylon, or Delrin with 18-8 or SS fasteners. Ideal for berry and nut processing systems requiring frequent wash down, they feature hex, square, and round bores and can be supplied with special bore, face, and O.D. treatments.

**Stafford Manufacturing Corp.**

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## Lifetime Reliable Clamping

The **Subsea Clamping Cylinder** for fully automatic Bend Stiffener Connectors is designed for use for up to 25 years and provides high clamping forces, powerless holding operation, and easy installation with no need for manual work by divers. The solution withstands forces of up to 120 tons per clamping cylinder and a proven cushioning mechanism absorbs vibrations and distributes the load across a number of cylinders within the system. The unit allows straightforward, reliable actuation during commissioning and removal—even after long periods of use.



**Bosch Rexroth**

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## Robotic Screwdriver



A smart, complete out-of-the-box Screwdriver allows manufacturers to automate a wide range of assembly processes quickly, easily, and flexibly. Programming the **OnRobot Screwdriver** is as easy as entering the appropriate screw length and torque value into the user interface that is integrated into the teach pendant of any leading robot. With precise torque control and embedded axis, the OnRobot Screwdriver automatically calculates the speed and force required for consistent, accurate screwdriving.

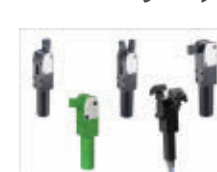
**OnRobot A/S**

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## Pneumatic Fastening Clamps

offer a life of more than 20 million cycles

The **MM range of pneumatic clamps** (up to 475Nm)

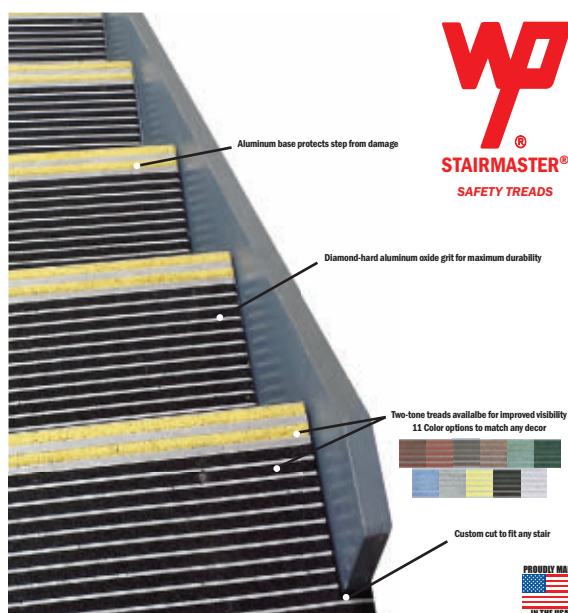


offers fast repetitive clamping cycles on manual or automated production lines to aid the achievement of lower costs and more efficient output. The MM range is available in side

locking, axial locking, and axial center-locking (twin jaw) designs to suit the many variations required for handling of jigs and components in all orientations. The clamps are characterized by a "double effect" pneumatic cylinder, which transmits a rotating movement to the clamping arm and achieves a maximum locking momentum when the clamping arm arrives at the stroke end.

**Elesa USA Corp.**

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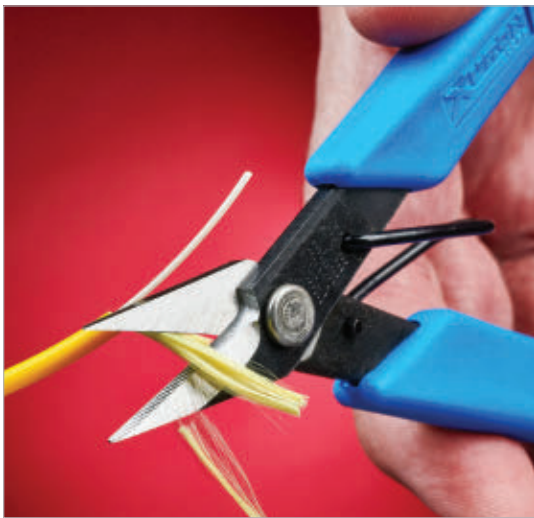
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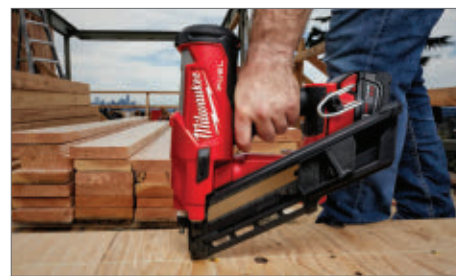
### Serrated, Ergonomic Shears

**Xuron Model 9180 Kevlar Shears** are designed with tapered cutting blades that have one serrated edge for gripping slippery aramid fibers and a proprietary sharp edge for cutting them. Ideal for cutting Kevlar cable insulation, these scissors are comfortable to hold in either hand, have soft rubber hand grips, a return spring, and no cumbersome finger loops. Manufactured from tough alloyed steel, the cutting blades are heat treated to Rc 58-60 to provide exceptional cutting and long service life.

**Xuron Corp.**

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### Framing Nailer Ramps up Productivity



The **M18 FUEL 21° and 30° Framing Nailers** deliver the power to sink nails in engineered lumber and can also fire up to 3 nails per second with no gas cartridges required. The nailers have also been optimized with the size

necessary to fit between studs and balanced weight to limit fatigue. An optional Extended Capacity Magazine accepting two strips of nails is also available for these tools, allowing users to work longer before needing to reload.

**Milwaukee Tool**

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### Pro Pry Bar Sets

**Two 4-Piece Dominator Pro Pry Bar Sets** are available with straight or curved blade styles. Each set includes an 8, 12, 25, and 36-in. length pry bar ideal for any lifting or prying applications. The various length and blade styles make it easy to access hard-to-reach areas. The tri-lobular handle design allows for a more natural, comfortable, and slip-free grip while the linear ribs around the handle neck ensure maximum transfer of torque.

**Mayhew Steel Products, Inc.**



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### Weld Prep Tool

An I.D. clamping, welding prep, boiler tube repair tool helps assure quality fit-up at biomass and fossil-fired plants by creating perfectly square end preps. The **Wart MILLHOG Beveler** mounts rigidly to the tube I.D., is self-centering, and provides torque-free operation with the ability to bevel, face, bore, and remove overlay simultaneously to create perfectly square end preps. This fully portable and easy to use tool cuts to a consistent height without cutting oils and should be the first step to a quality weld.

**ESCO Tool**

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### Compact Cable Cutter

The **High-Leverage Compact Cable Cutter** cleanly and easily cuts through thick cable and wires while taking up minimal space in your bag or on your belt. Its design cuts up to 1/0 AWG aluminum and copper cable while also cutting and removing aluminum metal-clad (MC) cable jacket. With plastic-dipped handles for comfort, the hot riveted joint ensures smooth action and no handle wobble.

**Klein Tools**

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### Shutoff Valve for Combustion Systems

The **ASCO Series 158 Gas Valve** and **Series 159 Motorized Actuator** are designed specifically for burner-boiler applications. The valve offers a higher close-off pressure of 75 psi (5.2 Bar) and ensures a safe shutoff in the event of a fuel train system failure and eliminates the need for additional safety components. The valve offers a flow rate which is twice that of other combustion valves on the market. As a result, it offers the highest BTU rating in the industry as well as the ability to deal with varying gas inlet pressures—without a reduction in burner performance and operation.

**Emerson Electric Co.**



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### Portable Evaporative Cooler

The **Jetstream 260** provides powerful cooling with 12,500 CFM that cools over 3,125 square feet. With built-in handles and heavy-duty casters, this portable evaporative cooler is engineered to generate significant airflow and provide a superior portable cooling solution with easy mobility for a variety of work and spaces. Additionally, the Jetstream 260 is equipped with Kuul Comfort evaporative media, made in the USA exclusively for Portacool products to provide maximum cooling comfort.

**Portacool, LLC**



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### Control Climate With Direct-Drive Fans

Direct drive, high-volume, low-speed (HVLS) fans deliver the climate-control benefits of traditional HVLS fans with added benefits of direct drive motor technology. The **Revolution 75 Series** is available in 8 to 24-ft diameters and is ideal for larger, industrial spaces. The fans come standard with the Fan-Commander 2.0 Touchscreen Control—a wireless station with 7-day customizable scheduling for up to 24 fans.

**Rite-Hite**



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### Air Cleaner Helps Combat COVID-19

The **Dust Wizard ambient air cleaner** not only filters molecular dust, but with an optional MERV 14, 15, 16, or HEPA filter, will combat and reduce the risk of contaminations including COVID-19. The compact system is ideal for capturing airborne dust in and around the converting equipment and the baler room where direct source capture is not feasible. Because converting and die-cutting equipment, balers, and shredders are not airtight, the dust from this machinery becomes airborne.

**Ohio Blow Pipe**

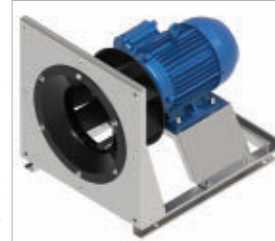


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### TEK Plenum Fans

**TEK Plenum Fans** have a robust design and feature TEK backward curved airfoil wheels, one of the quietest and most efficient OEM impellers. TEK Impellers combine precision injection molding techniques with modern high strength plastics to produce a wheel that is stronger than steel, yet half its weight. They deliver fan performances approaching aerodynamic perfection. This design saves space by eliminating traditional scroll housings, transitions, and diffusers normally found within a plenum.

**Continental Fan Manufacturing**



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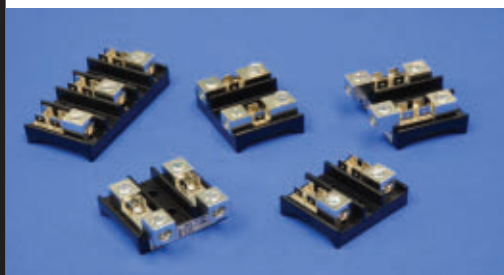
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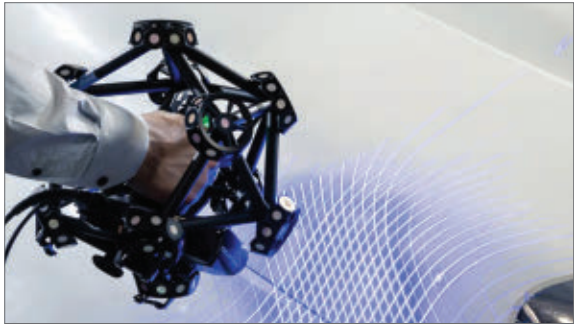
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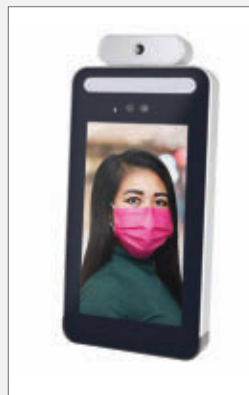
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## FROM THE COVER

### Temperature Sensing Kiosk delivers contactless access control



The latest addition to the Guardian family of access management hardware solutions, the Android-powered GT2 is an easy-to-deploy temperature sensing kiosk that enables businesses to protect the health and safety of employees and guests by identifying anyone with a fever and/or without a face mask prior to that person gaining access to a facility. Priced thousands of dollars less than other solutions of its kind, the affordable GT2 uses advanced infrared thermal imaging and mask detection technology to deliver a contactless access control solution that complies with guidelines proposed by the CDC.

GT2 is designed for virtually any organization that wants to check the temperature and confirm the identity of individuals entering their facilities. As the first line of defense against COVID-19 and other contagions, it screens an individual's temperature in less than one second, from up to 20 in. away, and is more hygienic than thermometers that require physical contact.

The GT2 is available in pedestal, countertop, and wall-mounted formats and can easily integrate with security gates, turnstiles, and door access control systems to speed self-credentialing. Featuring a 7-in. touch screen display, it offers Wi-Fi, Bluetooth, and 4G LTE connectivity for sharing information in real-time.

#### Janam Technologies LLC

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### Compact Carton Former allows tool-less changeovers

Kliklok ACE (Advanced Carton Erector) carton former was developed with a particular focus on ergonomic design, sustainability, and increased efficiency. The integrated Flex Feeder ensures a reliable and safe carton control throughout the entire process. The Kliklok ACE range runs at up to 80 cycles per minute



with single, double or triple head and is suited for a number of food applications, such as bakery, snacks, cereal bars, frozen/prepared food, tea and coffee, as well as non-food products.

#### Syntegon Technology GmbH

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## FROM THE EDITOR

# People Tracking: The Post COVID Productivity Crossroad

I have used this space throughout the rise of the coronavirus pandemic to celebrate the profound, amazing product innovations that have sprung up in a response to it. This time, I think it's worth drilling into one particular subset of these innovations, which has put all of us—managers, office staff, engineers, and frontline workers alike—into a wild experiment in people management that could redefine the future of work.



It deserves a bit of explanation first. Traditionally, humans have been the one missing element in the Internet of Things. Until recently, businesses had the opportunity (though not always the capability) to know the exact location of their materials and products across the supply chain, the condition and status of every machine on the plant floor, and to track productivity of each tool and piece of the production puzzle. From this data, management was able to tell generally how productive each individual was, but they lacked real, substantial insight beyond that.

But all this is changing.

Just flipping through this issue of NED, you'll find at least a dozen different devices and software packages that provide realtime insight into the location, movements, and actions of workers in the plant or even the realtime productivity of those workers typing away in their on-site or home offices. The intention of these innovations is to resolve real and pressing issues—keeping workers COVID safe via automatic temperature checks and contact tracing, and keeping track of our new armies of (temporarily) remote workers. Which is to say, in the short term these solutions are exactly what the industry needs.

Long term, though, they could hold real ramifications to just about every aspect of working life.

For most employers, this will offer the first comprehensive view into the activities of their individual employees—not just their outputs and quality metrics, but the specific actions specific individuals took to generate those results. It makes individual contributions immediately quantifiable and traceable, which makes workers immediately accountable for any lapse or misstep along the way.

I generally see two potential outcomes to this.

First, like other data collecting tools, this could lead to massive improvements in productivity by allowing managers to detect previously undetectable areas of waste—unnecessary movements, long travel times, bottlenecks, or even excess stretching and reaching, which could increase fatigue and likelihood of injury. Addressing these will create a better, safer, and more conformable working conditions all around, which everyone would likely welcome.

On the other hand, these technologies could also lead to micromanaging campaigns on a truly Orwellian scale. The same data that help managers detect waste could also turn them into all-knowing Big Brothers keeping score on every bathroom break or millisecond gap in cycle times, demanding ever-greater uptime and output from every contributor. This result would be detrimental to the business—it will burn workers out, disempower them, and eliminate the creative sparks that drive process improvement.

Which direction this falls will likely depend on the industry they go into and the disposition of the managers who deploy them. But as these solutions come in, we can be certain that some things will forever change. In this sense, we are all the guinea pigs in this experiment. The question is—will we use the tools to create a safer, better, more productive work environment? Or will we use them to turn humans into assets? Only time will tell.

**T. Travis Hessman**  
Editor-in-Chief



# 7 TOP TIPS: Pneumatic Solutions in the Food and Beverages Industry

*Find the right approach for pneumatic solutions for your food and beverage application.*

By Mireya Spears

**M**anipulating food-grade pneumatics equipment without proper care isn't an option for the food and beverage industries. Food and packaging machines and equipment are held to stringent national and international quality and hygiene standards. This places high demands on machine designers to commission pneumatic systems with excellent compressed air quality and hygienic designs.

## 1. Prioritize hygienic design.

Machinery intended for use with food and beverage products, cosmetics or pharmaceutical products must be designed and constructed to avoid any risk of contamination, according to a number of current standards and directives.

The demands of food and beverage applications make it critical that pneumatic components, in particular, be made of corrosion-resistant, non-toxic, non-absorbent materials. Food processing and packaging machine suppliers primarily rely on materials like metals, plastics, glass or ceramics. When designed with these materials and with hygiene in mind, the machine and its components are easy to clean and the risk of contamination is minimized.

In addition, the materials used must not react to cleaning agents or disinfectants. They should be designed to prevent food residues and microorganisms from sticking, and they cannot contaminate the final product or its packaging. Choose components that are resistant to contaminant accumulation and avoid designs having areas that cannot be cleaned properly.

## 2. Know the food zones.

Typically, the food and beverage industry will differentiate between three processing zones, each requiring different standards:

- **Food zone:** The food comes into direct contact with the surface of a machine.
- **Splash zone:** The food or beverage can come into contact with machine parts but is then removed from the handling process.
- **Non-food zone:** The food does not come into contact with the machine or individual components. Final packaging takes place in this zone.

Components must be easy to clean, particularly in both the food and the splash zones.

## 3. Understand the applicable standards and regulations.

National and international standards and guidelines play a significant role in designing machines used to produce food and beverage products. It is important to know these standards and regulations that apply in your manufacturing location as well as the right set of regulations required for the destination where the machine will be used.

Depending on your location, selection of the right pneumatic components may be guided by:

- EU Regulation on the hygiene of foodstuffs (852/2004 EC)
- FDA CFR Title 21
- ISO 21469
- 1935/2004/EG
- NSF/ANSI 51
- NSF-H1

Compliance with high requirements for hygiene offers an added benefit: It extends the device's service life and reduces maintenance effort considerably. Also, be sure that the selected devices and components use only food-grade seals and lubricants.



Image courtesy of Shutterstock.

## 4. Consider component wear and tear.

In addition to offering specific surface and material properties, pneumatic components for the food and beverage industry must be robust enough to withstand frequent cleaning processes.

For instance, the CL03 washdown directional control valve series with its hygienic design and Ingress Protection rating of IP69k can be used without the need for a closed cabinet in washdown areas. These procedures can vary within the industry. For example, depending on where the components are used, companies may apply different cleaning processes, such as high-pressure cleaning and cleaning with chemical agents. Fully understanding how the pneumatics will be used is key to sourcing components that can withstand the rigors of your application.

## 5. Understand the benefits and efficiencies of using pneumatic components.

Pneumatic systems can be optimized for high energy efficiency when designed properly. Actuators should be sized to the application considering the necessary force, pressure, and mechanical limitations. Online sizing software and cylinder configuration tools can support and reduce the engineering effort substantially. Installing the correct pneumatic

valve near an actuator not only provides efficient flow requirements for the cylinder to move the load but can also reduce the cycle time of the cylinder by optimizing the overall machine performance.

Users can precisely set pressure with mechanical or electro-pneumatic pressure regulators, allowing for efficient energy use and optimized processes. Precise pressure control ensures that only the needed amount of energy is used for the respective process. With some products, custom pressure control may be possible. On a machine with vacuum components, you can create additional energy efficiency by using an integrated vacuum sensor to automatically switch pressure on and off when a vacuum level has been achieved.

Pneumatics circuits can be designed with shorter airflow paths that require less volume and enable smaller tubing diameters and lengths, thus increasing the overall efficiency.

## 6. Look for opportunities to incorporate intelligent pneumatics.

Industrial Internet of Things (IIoT) technology can anticipate wear and tear before it leads to machine downtime and energy loss. From sensors that detect and minimize leaks to those that monitor pressure and consumption, intelligent pneumatics enables machine manufacturers and end-users to significantly increase equipment run-time availability and reduce machine servicing requirements. Intelligent pneumatic solutions can be seamlessly integrated into various IIoT scenarios, such as monitoring cylinder performance and alerting the user when cycle time is not within the threshold. Monitoring the current flow rate of the equipment based on the desired flow curve will increase the efficiency of the machine.

## 7. Leverage specialist knowledge and application expertise.

Not all companies have the internal resources to design, build, and commission pneumatic solutions. Teams not consistently involved in laying out pneumatic systems experience a learning curve that costs time and money. A supplier with both knowledge and application expertise can help free engineering resources and simplify procurement. These experts offer knowledge in the latest-generation products as well as the experience that comes from having built numerous systems. Whether they're recommending individual cushioning adjustments or determining the right dimensioning, they can help maximize results. Qualified suppliers may also offer pre-assembled actuator control systems to reduce engineering time. At Emerson, for instance, pneumatic specialists can provide additional resources for the design and implementation of "pneumatic positioning systems," which use IIoT and advanced feedback control like the AES module. These systems can be easily designed to monitor the correct position of a cylinder and load while sending valuable machine data back to a PLC for analytics and predictive machine repair. **NED**



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