

JULY
AUGUST
2024

PRODUCTS FOR INDUSTRY

NED

NEW EQUIPMENT DIGEST

OPTIMIZING STEAM SYSTEMS

*A Crucial Aspect of
Industrial Efficiency*

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PLANT OPERATIONS & MAINTENANCE

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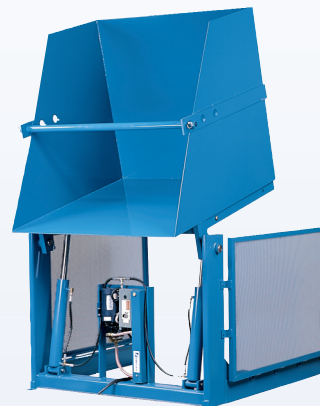
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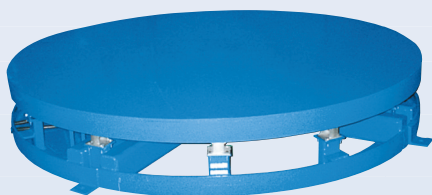
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FuelPro Trailers' are available in 475, 700, and 950-gallon sizes and allow users to transport diesel fuel without a HazMat endorsement legally.

9 Years

100% virgin urethane (no regrind waste) makes stonger, longer lasting belts.

LONG-LIFE BELTS MOVE HEAVY LOADS

When a competitor's belts failed after only nine months service in a large postal distribution center, Dura-Belt's **Long-Life HT belts** replaced them. **Nine years** later, HT belts are still going strong -- moving your mail on conveyors that run 24 hours/day, 7 days/week.

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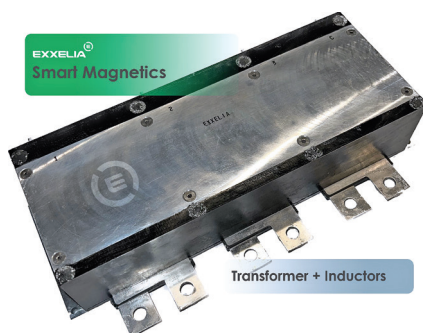
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f i in y

Smart Magnetics Technology Enhances Converters

Exxelia, a manufacturer of complex passive components and sub-systems, has made advancements in **smart magnetics technology**, specifically tailored for resonant bidirectional power converters. Its smart magnetics integrated technology combines an inductor and a transformer into a single ultra-compact/miniaturized, lightweight component, regardless of the inductance value, for seamless integration. The 3 Phase 24 kVA integrated component (transformer + inductors) 360/27 V @ 100kHz incorporates series inductors (18 μ H), withstands net bias current 10% of load current, and has a size of 1,085 cc.

Exxelia



More online: newequipment.com/55126564



Portable Stick/TIG Battery Welder

The **Renegade VOLT ES 200i Stick/TIG battery-powered welding system**, developed with Stanley Black & Decker, offers a Stick output of 10 to 130 A and TIG output of 10 to 150 A on battery power. With fully charged 12 Ah batteries and an output of 80 A, it provides the power to weld with up to 33 electrodes or TIG weld for up to 45 minutes on a single charge. It works in difficult-to-reach locations, locations without power, and where portability provides operational efficiencies.

ESAB

More online: newequipment.com/55126622

LoRaWAN Gateway Provides Wireless Utility Data

The **BMS1000 LoRaWAN gateway** provides integration and interoperability between a building management system and H2O Degree's wireless water submetering and leak-detection system via BACnet, Modbus, MQTT, and other protocols. The interface is provided via wireless IoT connectivity using the LoRaWAN protocol or wired connectivity. It leverages data collected by the submetering system, enabling property managers to implement automated controls, such as adjusting plumbing and HVAC systems or lighting schedules based on utility consumption, occupancy patterns, or demand response signals.

H2O Degree



More online: newequipment.com/55126004

Customizable Workbench

The **Cornerstone workbench**, manufactured in the USA, has a 1,500 lb. (680 kg) weight capacity and steel construction. It's great for heavy-duty tasks across many industries, from testing and packing to repairing and inspecting. Whether it's a specialized setup for a laboratory, an ESD electronics facility, or a busy logistics center, the Cornerstone can be customized to optimize workflow and productivity, with faster delivery thanks to U.S. manufacturing.

Treston, Inc.



More online: newequipment.com/55094234



Combination 2-in-1 Universal Finishing Machine for Any Finishing Operation

The **combination 6 x 10-in. universal finishing machine** is a 2-in-1 machine that can be used for contour part finishing, flat stock finishing, polishing, grinding, and deburring—virtually any finishing operation. It features a direct drive power train, an adjustable guard for both the belt and disc sections, a dust port for both sections, cast-iron tilting worktables with a slot for miter gauge, and easy-to-read trunnions. The belt head adjusts vertically, horizontally, and in any position in between.

Palmgren

More online: newequipment.com/55124983



Touchscreen Wireless Gauge Gives Digital and Analog Readouts

The **No. W4900 Wireless Digital Electronic Indicator**, a precision measurement gauge, features touchscreen technology, multiple resolution and color settings, digital and analog readouts, seven languages, and wireless output. With large capacitive touchscreen menus, its backlight function enables digital and analog readouts to be viewed in the same indicator. It has a 1-in. (25 mm) range and an accuracy of ± 0.00012 in. (0.003 mm), with resolutions of .001, .0005, .0001, and .00005 in. (0.01, 0.005, 0.002, and 0.001 mm).

The L. S. Starrett Company

More online: newequipment.com/55093334



**Versatile LED Work Light
Reduces Glare**

The **UNILED SL LED light** is a system luminaire, available in 4 different lengths. Each version achieves an efficiency of 155 lm/W. When it comes to glare control, you can choose between the version with an opal white cover or with a microprism cover. The matte, opal white glare control has a softer, homogeneous, and low-shadow illumination, while the microprismatic cover increases the illuminance. This ETL-certified, maintenance-free LED light has an aluminum housing and a service life of 60,000 hr.

LED2WORK Inc.

More online:
newequipment.com/55126640



Fast PoE++ Managed Switch
PLANET WGS-6325-8UP2X Industrial L3 4-Port 2.5G 802.3bt PoE + 4-Port 10/100/1000T 802.3bt PoE + 2-Port 10G SFP+ Wall-mount Managed Switch enables fast performance with a 480W PoE++ budget. It operates in temperatures ranging from -40 to 167°F (-40 to 75°C) and comes in a compact IP30 metal housing. Advanced L3 switching and PoE++ capabilities simplify enhanced network performance and security, providing fast recovery for critical network applications.

Planet Tech USA

More online:
newequipment.com/55126733



**Internal Temperature
Monitoring in
Food Packaging**

The **HPT Data Logger System** provides an all-encompassing solution for monitoring the internal temperatures of canned and packaged foods during processing. It combines the precision of the HiTemp140-CF data logger with the versatility of the ThermoLock thermowell to not only facilitate heat penetration testing but also ensure detailed temperature distribution monitoring for detecting cold spots and maintaining uniform heat distribution.

MadgeTech Inc.

More online:
newequipment.com/55126744



**Supply Chain Risk
Rating Software**

PO Line Risk Rating is a toolset that enhances quality management and risk assessment by using AI to analyze thousands of historical data points, providing businesses accuracy and efficiency in managing their supply chain's quality risks. Continuously improving risk assessments for quality failures, such as product type, materials used, country of origin, and many others, the system assigns a percentage risk score to each purchase order line, indicating the likelihood of quality issues or delays.

TradeBeyond

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Compressed Air Technology Is Coming Into Its Own

by Sheila Kennedy, CMRP

Purposeful innovations are changing how compressed air systems are designed and managed. From integrated, intelligent performance monitoring solutions to advanced system engineering, today's compressed air technologies are better equipped to support reliability, efficiency, performance, and sustainability goals.

System Optimization

Using industrial sensors to track key metrics in compressed air systems facilitates performance optimization. The new **Kaesar Measurement Technology (KMT) suite of intelligent sensors from Kaesar Compressors** is designed to deliver real-time insights on a range of metrics including pressure, flow, energy, and air quality.

"You can set alarms for specific 'do-not-cross' pressure or dew point levels to protect production or control room ventilation in real time to prevent overheating. You can also use KMT to allocate compressed air costs to specific production lines according to their usage. These are just a few examples. The big point is to get actionable

information—not just streams of data," explains Neil Mehl-tretter, technical director at Kaesar Compressors.

CO₂ and Centrifugal Solutions

For industrial refrigeration and large-capacity heat pumps, modern systems ease the transition to natural refrigerants. The transcritical **HGX56 CO₂ T from Danfoss BOCK** is a 6-cylinder, semi-hermetic compressor designed for demanding conditions with natural refrigerant R744.

The HGX56 CO₂ T "is ideal for use in high process applications like in the Food & Beverage industry as it helps produce water up to 90°C (194°F)," says Manuel Froschle, head of product management at Danfoss BOCK. "With a wide operating envelope and frequency range, one compressor is suitable for industrial heat pumps, commercial refrigeration, and district heating systems, and offers an efficient alternative to ammonia and synthetic refrigerants."

A new **oil-free centrifugal compressor with friction-less Aero-lift bearing technology from Copeland** serves

large chiller and heat recovery applications. It offers efficient, reliable performance, and is compatible with lower global warming potential (GWP) refrigerants.

Unlike other oil-free compressor solutions that rely on electromagnetic levitation bearings, Copeland's Aero-lift bearing technology delivers oil-free simplicity without sensor and controls complexities, observes Mike Oakley, director of centrifugal solutions at Copeland. "The results are increased reliability and efficiency in full- and part-load conditions, robust performance in high-ambient environments, and increased operational continuity during power outages," he adds.

For high-pressure applications where air quality is paramount, the **P400HPR centrifugal air compressor from FS-Elliott** provides an "economical and eco-conscious" solution. It is designed with more aero stages to achieve discharge pressures up to 250 psig and delivers ISO 8573-1 oil-free compressed air.

"The launch of the P400HPR shows our continued commitment to innovation, efficiency, and reliability," says



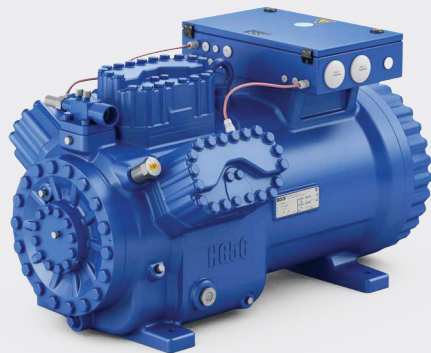
The Sullair TS Series comes in either air or water-cooled configurations with standard fixed speed, variable speed, or with Sullair-exclusive electronic spiral valve technology which matches compressor supply with demand to tolerate harsh environments.
© Hitachi Global Air Power US, LLC



While traditional compressed air monitoring solutions often offer limited data points via a single 4-20mA output, KMT delivers multiple data points to paint a complete picture of compressed air system health.
© Kaesar Compressors, Inc.



The EQ Series is designed to provide great performance and reliability for small and medium-sized operations that traditionally use small belt-driven air compressors.
© ELGi Compressors USA



The HGX56 CO₂ compressor offers up to 135 kW for cooling and 360 kW for heating, greater efficiency and reliability, low noise and vibration, a compact and lightweight design, and a minimal oil carry-over rate.

© Danfoss BOCK

Michael Wik, director of product management at FS-Elliott. “The P400HPR was developed to optimize compressor performance in high-pressure applications, allowing us to set a new industry standard for aerodynamic design at high-discharge pressures.”

Rotary Screw Advancements

Efficiency and reliability, the two biggest demands of Hitachi Global Air Power’s big air customers, were answered with its Sullair TS Series rotary screw air compressors. “By re-imagining how air flows between the two compression chambers in our two-stage air end, we were able to achieve higher efficiency—actually best-in-class efficiency—with our patent-pending interstage cooler design,” explains Abram Valencic, senior manager air end engineering.

The TS Series and new two-stage air end are designed to be remanufactured for second and third lives, enhancing sustainability. The compressors’ over/under design enables a smaller footprint and uses fewer parts, improving serviceability.

The new EQ Series of oil-lubricated, direct-drive rotary screw air compressors from ELGi Compressors USA is available in multiple capacities from 25 to 30 hp. It comes in fixed or variable-speed drive configurations with a totally enclosed, fan-cooled (TEFC) electric motor.

According to Robert Horneman, product manager at ELGi USA, “The new EQ Series air compressors are ideal for small to medium-sized operations that require high reliability. With a direct-drive design, they provide superior efficiency and a more compact form than traditional belt-driven models, all at a lower initial cost.” NED

Technology Toolbox is a monthly feature by Sheila Kennedy, CMRP, that appears in our sister publication Plant Services. Email sheila@addcomm.com with products for consideration. The full Tech Toolbox library is available at: <https://www.plantservices.com/voices/technology-toolbox>.



With the P400HPR compressor, users can achieve pressures of up to 250 psig with 3 compression stages while the aero design ensures peak performance and substantial energy savings.

© FS-Elliott



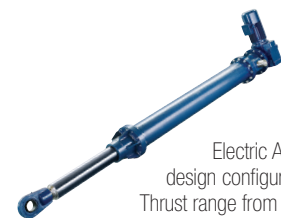
Copeland’s frictionless, oil-free compression technology offers efficient, robust, and reliable performance in air and water-cooled chiller applications.

© Copeland

The True Pioneer of Electric Actuators

RACO International, LP

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



RACO MA-Series

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

RACO LM-Series

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



RACO Rotary-Series

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



RACO International, LP

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Electronic Assembly Pick-and-Place Machine

The **NPM-GH Pick-and-Place machine** minimizes manufacturing expenses by reducing material waste, provides relief for industry-wide labor shortages, and helps manufacturers reach Industry 4.0.

The robotic surface-mount technology maximizes output using three newly designed heads and shorter spindle strokes to reduce pick and place times and vibrations for higher output and accuracy with minimal human interface.

The NPM-GH is a pick-and-place machine with industry-leading mounting accuracy ($\pm 15 \mu\text{m}$). Using a smaller and lighter mounting head, it achieves high-level productivity, reaching 51,000 chips/hr. The mounter can also be configured as the industry's first ultra-precise specification ($\pm 10 \mu\text{m}$) focusing on achieving highly precise and accurate placement capabilities. The enlarged operation screen has an intuitive user interface making the machine easy to train on and execute operations in real-time. While enabling a better worker experience, the interface and machine design reduce production errors and delays.

Panasonic Corporation of America

More online: [newequipment.com/55126404](https://www.newequipment.com/55126404)



Non-Invasive Temperature Sensor Removes Need for Thermowell Testing

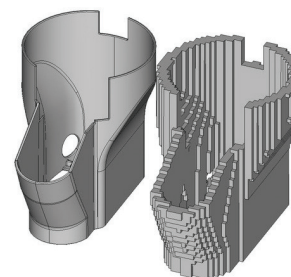
ABB's enhanced version of its **NINVA TSP341-N non-invasive temperature sensor** delivers safer and simpler temperature measurements for applications in the chemical, oil, and gas industries.

The SIL2-certified non-invasive temperature transmitter uses the surface temperature of the piping to infer the process temperature. It provides the same level of accuracy and performance as an invasive measurement device without the risks and life cycle costs associated with specification, installation, and maintenance.

Features include a remote mount configuration, improved resistance to vibration, optional configurations for applications up to 1,022°F (550°C), and simpler calibration and maintenance through extractable measuring insets with independent sensor calibration and trimming. Clamp collars for pipe diameters of 1.5 to 98 in. (40 to 2,500 mm) and special designs for diameters below 1.5 in. (40 mm) also avoid the need for complex thermowell designs for smaller pipes without sacrificing accuracy or performance.

ABB

More online: [newequipment.com/55126931](https://www.newequipment.com/55126931)



AI-Supported 3D Nesting

The new version of the universal **3D printing software 4D_Additive 1.6** features an AI-supported nesting technology that increases efficiency when operating SLS and MJF printers. It automatically places parts in the virtual build space of a 3D printer, intelligently pre-sorting parts that will be nested for better packing densities, reducing print time with the same number of parts due to a lower packing height.

To avoid heat pockets and achieve optimum surface quality, nested parts are evenly distributed. After nesting, the software automatically rearranges components in the X, Y, and Z directions to ensure heat pockets are avoided. Large parts can also be nested and will be evenly distributed based on available space, with gaps being efficiently used for smaller parts. With higher packing densities, parameters can be used to limit the maximum packing density and temperature development.

CT CoreTechnologies Inc.

More online: [newequipment.com/55093523](https://www.newequipment.com/55093523)

Conveyor Belt Cleaner for Easy One-Worker Maintenance

Designed to withstand the stress of heavier loads carried on wider, thicker belts at higher speeds, the **SQC2S Orion Secondary Cleaner** uses individually cushioned tungsten carbide blade cartridges to better clean the conveyor without risk to the belt or splices. Able to be used for all bulk-handling applications, the unit is made up of individual 6-in. (152.5-mm) blades mounted on a square steel tube assembly. Not designed for reversing belts, it's suitable for 18 to 96 in. (457 to 2438.5 mm) belt widths, belt speeds up to 1,200 fpm (6 mps), and temperatures up to 250°F (121°C).

The slide-in/slide-out design allows a single worker to perform maintenance with easy access outside of the conveyor structure, eliminating the need to crawl underneath or awkwardly reach inside.

Martin Engineering

More online: [newequipment.com/55091590](https://www.newequipment.com/55091590)



Beer Foam Separator Keeps Foam Out of the Vacuum Line

A new solution for beer bottling processes, the **Beer Foam Separator (BFS 900)**—built to be used with the industry 4.0 ready GHS VSD+ screw vacuum pump—is designed to improve energy efficiency, reduce life cycle costs, and lower rejection rates of over and underfilled bottles.

The BFS 900 solves foam entering the vacuum line with its auto-draining tank and logic control system. When the excess foam enters the vacuum system, it collapses in the separator by a calming section with a large diameter for foam settling. The rising liquid level is detected by sensors and an automatic separation process is initiated by an airlock consisting of electro-pneumatic actuators and a receiver tank to enable drain in continuous operation.

Atlas Copco

More online: [newequipment.com/55092170](https://www.newequipment.com/55092170)

Monitor the Health of Industrial Networks

plantPerfect Monitor, a solution for comprehensive condition monitoring of industrial communication networks and installed systems, provides detailed insights into the status of industrial networks.

Version 1.00 is designed for use with Softing's hardware gateway smartLink HW-DP, which enables controller-independent access to PROFIBUS DP networks. Softing Industrial will launch an extended version of the "plantPerfect Monitor" for status monitoring of PROFINET devices in the fourth quarter of 2024. That version will be compatible with Softing's smartLink HW-PN hardware gateway.

plantPerfect Monitor provides centralized access to real-time and historical data. Through live inventory, it provides an overview of all installed PROFIBUS devices and monitors the status of all connected PROFIBUS devices, including PROFIBUS diagnostic messages. Access is provided via a web browser and can be shared by multiple organizations and users. The solution is deployed using a container architecture on a Windows workstation.

plantPerfect Monitor is a powerful and flexible solution specifically designed for plant operators and maintenance personnel. It enables efficient monitoring of industrial networks and facilities.

Softing Industrial

[More online: newequipment.com/55126712](https://www.newequipment.com/55126712)



All-In-One Optical Measurement for the Shopfloor

Metrios 332, an optical measuring machine, was born from the need to meet the demand of component manufacturers who don't want to give up precision from multisensor machines but seek the speed and simplicity of modern measuring systems.

A 12 x 12 in. (300 x 300 mm) X-Y measuring range and an 8-in. (200 mm) part passage create a wide measuring range combined with a high part passage enabling flexibility and versatility. It can hold parts up to 44 lb. (20 kg) on the stage, allowing even heavier parts to be placed in the working area. A wide-field sensor detects parts on the stage and measures them at max speed while an ultra-high magnification sensor detects points in X-Y-Z even on the smallest details.

Metrios

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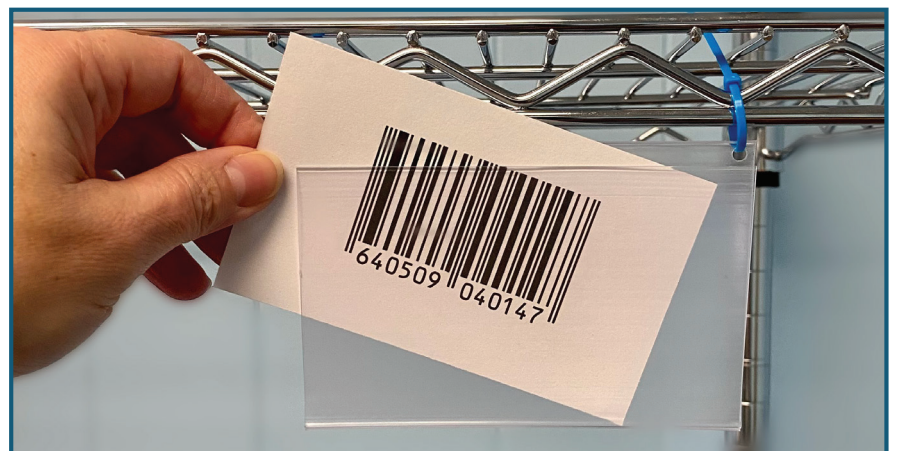


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SMART-Spray, I-BOOST, and SPRAY-Check create easier handling, faster response times, shorter test cycles, and more reliable measurement results for intelligent leak detection.

SMART-Spray is a portable, hoseless helium spray gun for the UL Family of leak detectors with an illuminated color display that makes leak detection on complex semiconductor systems with many test points and potential leaks easier. These applications have limit leak rates of less than 1 x 10⁻⁹ mbar x l/s.

I-BOOST software cuts leak detection and location time by up to 50%, providing fast, precise measurement results for the most varied chamber volumes.

SPRAY-Check is an easy-to-install test leak to ensure that you can rely on the complete functionality and operational readiness of your leak detector. The tool is based on quartz windows that are only permeable to light gases such as helium and hydrogen, increasing safety and extending the functionality of leak detection. It has a range of 10⁹ to 10⁸ mbar·l/s.

INFICON Inc.

More online: [newequipment.com/55126909](https://www.newequipment.com/55126909)

5G Smartphone Combines Thermal Imaging and Night Vision

Slim, light, and powerful, the **Armor 25T Pro 5G smartphone** offers thermal imaging and infrared night vision capabilities in one device.

Its ThermoVue thermal imaging sensor offers a resolution of up to 160 x 120 for ultra-clear thermal images. Its frame rate of up to 25 Hz allows for lag-free thermal video recording. With a 64 MP night vision camera and advanced imaging algorithms, it delivers exceptional low-light photography, allowing users to capture clear images even in the darkest conditions.

Built to withstand extreme conditions, it's certified with IP68/IP69K ratings and meets MIL-STD-810H standards. It has up to 12GB of RAM and 256GB of ROM for easy multitasking. The 6500mAh battery, supported by fast charging, guarantees that the device can keep up with most needs throughout the day.

Applications are vast and can include inspection, diagnosing mechanical issues, detecting leaks, and much more. Advanced settings and modes are engineered in the thermal app for a more user-friendly UI.

Ulefone

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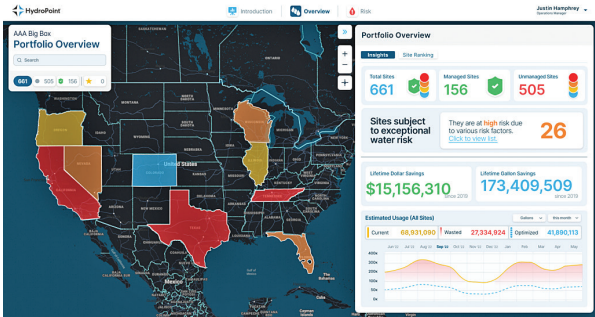
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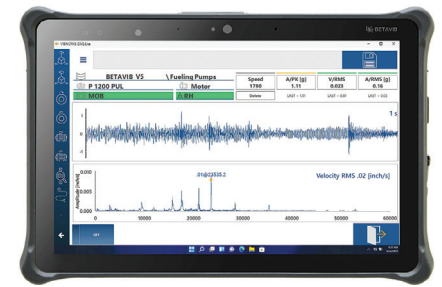
Monitor the Health of Vibrating Screens 24/7

Pulse Condition Monitoring (Pulse CM) technology monitors the health of vibrating screens using modern algorithms and AI, providing accurate measurements and forecasts in an easy-to-digest manner. Monitoring equipment 24/7 through permanently installed sensors, the system captures real-time information and provides alerts via e-mail when it detects problems. By constantly monitoring the accelerations of the vibration screen, it provides a forecast of the equipment's condition in intervals of 48 hours, 5 days, and 4 weeks.

To collect all data from the body and drive components, it has a gateway that can connect with up to 20 wireless sensors, within a radius of up to 246 ft (75 m). Using a cellular signal or Wi-Fi from the plant, it sends all data to the Haver & Boecker Niagara cloud, available through the company's web app.

Haver & Boecker Niagara

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VibWorks LT, an entry-level, portable data collector for industrial maintenance, features advanced AI for real-time data collection and analysis. Enhancing maintenance decision-making with minimal setup and training, its design and customizable reporting ensure comprehensive monitoring and easy documentation. With intelligent anomaly detection, the system predicts potential issues well before they escalate into costly downtime. Upon detecting an anomaly, the AI suggests the most probable causes and recommends actionable solutions, streamlining the troubleshooting process and saving valuable time and resources. Generate reports with a single click to document issues and actions, ensure regulatory compliance, and have a historical record. The system's user-friendly interface allows for easy navigation and setting adjustments, making it accessible to users with varying levels of technical expertise.

LUDECA Inc.

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Communication Box Creates All-in-One Condition Monitoring System

The **iComm Box** communication module lets users integrate i.Sense sensors into the igus superwise condition monitoring service. The superwise dashboard displays real-time information on the service life of the networked components, along with maintenance recommendations and information on system anomalies.

The i.Sense series sensors monitor moving machine components like energy chains, cables, linear guides, and bearings. They can also trigger messages or automatic system stops in the event of an anomaly. The data is transmitted through a cable to an evaluation module in the control cabinet. The evaluation module connects to the iComm Box through an additional cable. From there, the iComm Box sends the data to the superwise dashboard through a secure, encrypted mobile network, which remains separate from the user's TCP-IP network. The personalized dashboard simplifies monitoring by showing the remaining service life of networked components and streamlining maintenance plans.

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The **CANplus CP500 engine control panel** and **DynaGen 200 engine controller** feature advanced software, high-resolution graphic interfaces, in-depth troubleshooting tools, and 24/7 support.

The CANplus CP500 engine control panel is for small, electronically or mechanically-governed engines, and the DynaGen 200 engine controller is for vehicle-mounted auxiliary engine and generator applications in harsh environments.

These products share the same software and firmware, streamlining configuration and operation across both products and simplifying fleet management. Both units integrate with Cattron's QR-Assist, enabling troubleshooting through QR code scans and providing users with instant access to detailed diagnostic information. The systems can integrate with Messenger BLE or Messenger Lite, powered by RemoteIQ, enabling remote monitoring and control.

Cattron

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Optimizing Steam Systems: A Crucial Aspect of Industrial Efficiency

by Ricardo Aguirre

Steam systems serve as the backbone of numerous industrial processes, providing the essential thermal energy required for a wide range of applications across various sectors. From powering machinery in manufacturing facilities to sterilizing equipment in healthcare settings, the importance of steam cannot be overstated. However, despite their critical role, steam systems often operate below their maximum efficiency, leading to energy wastage, increased operational costs, and potential safety hazards.

To address these challenges, American Plant Maintenance (APM Steam) offers specialized services aimed at optimizing steam systems. Rather than merely providing reactive maintenance solutions, they take a proactive approach, focusing on comprehensive optimization strategies that consider the entire steam system.

Why Steam? The Science Behind Steam Systems

Steam, often called the “invisible workhorse” of industry, is utilized in a myriad of applications, ranging from heating and sterilization to power generation and mechanical work. It’s a versatile energy source, but its efficient use requires a deep understanding of its properties and the intricacies of steam systems.

At its core, steam is water in its gaseous state. Its unique properties make it an excellent medium for transferring heat energy over long distances. When water is heated to its boiling point, it undergoes a phase change, transforming into steam. When the reverse occurs, steam condenses to water. This process releases a significant amount of energy, which can be harnessed for various industrial applications.

Steam systems are composed of several key components, each with a specific role. Boilers, the heart of the system, generate steam by heating water. Piping is responsible for distributing the steam to different parts of the facility. Valves control the flow of steam, while heat transfer equipment ensures the energy is directed to where it’s needed. Lastly, steam traps remove condensate to maintain efficient operation. Understanding the function of each component is crucial to optimizing the system.



Even a small steam leak can lead to significant energy wastage and operational inefficiencies. It is crucial to have experts meticulously inspect your system and identify and rectify issues before they escalate.

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Challenges in Steam System Optimization

Despite its advantages, steam systems face several challenges that can impact their efficiency and reliability. One common issue is steam leakage, which can occur due to faulty valves, fittings, or failed piping. Steam leaks not only waste energy but also increase operational costs and pose safety risks to personnel.

Another challenge is steam trap failure, which occurs when steam traps malfunction and fail to remove condensate from the system effectively or allow live steam to enter the condensate system. This can lead to water hammer, uneven heating, and reduced steam quality. Identifying and addressing steam trap issues is essential for maintaining optimal system performance and a safe system.

Additionally, improper system design and maintenance practices can contribute to inefficiencies in steam systems. Poorly insulated pipes, piping failures, poor piping practices, fouled (scaled) heat-exchanging surfaces, failed tube

bundles or plates, failed condensate return pumps, inadequate ventilation, and equipment oversizing are common issues that can affect system performance. Regular maintenance and thorough inspections are crucial for identifying and rectifying these issues before they escalate.

The Role of Optimization Services

Specialized services aimed at optimizing steam systems are crucial for addressing these challenges effectively. Rather than merely providing reactive maintenance solutions, it is best to focus on comprehensive optimization strategies that consider the entire steam system.

Steam trap surveys involve inspecting and testing steam traps to ensure they operate efficiently. This includes identifying failed traps and repairing or replacing faulty components to maximize performance. By maintaining properly functioning steam traps, facilities can minimize energy loss and reduce operating costs and operational interruptions.

System audits focus on evaluating the overall performance of steam systems, including pipe insulation, condensate return, air handler optimization, heat exchanger condition, and pressure-reducing stations. Engineers conduct detailed assessments to identify areas for improvement and develop tailored solutions to address inefficiencies. This may involve repairing or replacing failed equipment, upgrading equipment, or implementing other energy-saving measures.

Preventative maintenance programs aim to address potential issues before they lead to system failures proactively. This includes regular HVAC and heat exchanger inspections, testing, cleaning, flushing, equipment lubrication, and monitoring system performance metrics to identify trends and patterns. By implementing preventive maintenance measures, facilities can minimize downtime, extend equipment lifespan, and reduce maintenance costs.

Engineering Expertise: The Foundation of Optimization

At the core of steam system optimization lies a deep understanding of engineering principles and thermodynamics. To that end, steam audits require a highly skilled team of field technicians and engineers who possess extensive experience and expertise in steam system dynamics. These professionals understand not only how steam systems operate but also why they function in specific ways.

In a recent case study, APM Steam worked on a hospital where hidden steam traps had been malfunctioning for decades, unbeknownst to anyone at the facility. The condensate tank was overheating and blowing steam, and the issue had been overlooked for years. However, after a thorough inspection, the APM Steam team located the faulty steam traps and replaced them. APM Steam credited their methodical nature in finding the culprit. Fixing several small problems paved the way for the larger fix. This major fix resolved twenty years of malfunction and significantly improved the system's efficiency. This case highlights how addressing even small issues can yield substantial benefits over time.

By leveraging their engineering knowledge, experts can identify inefficiencies, diagnose root causes of issues, and design solutions that enhance overall system performance. This approach goes beyond simple troubleshooting of individual components and considers the system as

a whole, ensuring that all elements work harmoniously to achieve optimal efficiency.

Comprehensive Optimization: Addressing the Big Picture

One of the key principles of steam system optimization is the importance of taking a holistic view. Instead of focusing solely on repairing or replacing malfunctioning components, it is best to comprehensively evaluate the entire system. By examining

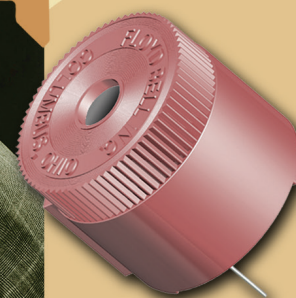
factors such as system configuration, original design considerations, and operational integrity, experts can identify underlying issues that may not be immediately apparent and develop strategies to address them effectively.

Many facilities built in the 1960s, including pharmaceutical companies, hospitals, and universities constructed during the 1950s to 1980s, were originally well-built but without much consideration for energy efficiency. Over time, as technology

evolved and energy efficiency became a priority, the knowledge of system operators and technicians dwindled. This lack of expertise proved detrimental to maintaining the original performance efficiency and operation integrity of these systems. Despite being well-designed originally, changes in load, such as the increase in lab equipment and computers, as well as external factors like global warming, necessitated a fresh and comprehensive look at these legacy systems. While these systems

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have solid foundations, they require a thorough reevaluation to rectify the issues that have accumulated over the years. It's crucial not to address symptoms merely but to recommission these systems with a focus on the original design, now with an emphasis on energy efficiency.

In a community college built in the late 1970s, APM Steam was tasked with optimizing the steam system. Often, such facilities, built decades ago, pose challenges for local staff who may struggle to understand the layout and functioning of the system. The team addressed various issues, leading to a drastic improvement in operational integrity and energy efficiency. These improvements were crucial as the college continued to expand.

Comprehensive optimization extends beyond mere maintenance tasks. It involves proactive measures to ensure that steam systems are always operating at peak efficiency. This may include implementing preventative maintenance schedules, monitoring system performance metrics, and conducting regular audits to identify areas for improvement.

The Importance of Expertise in Steam System Management

At the heart of a steam optimization regime is expertise: professionals who possess a deep understanding of steam system dynamics who can make informed decisions and implement effective solutions.

Experts can offer an independent perspective and a fresh outlook on system optimization, resulting in unbiased assessments and recommendations tailored to specific needs. In addition to optimizing existing steam systems, expertise in steam system management is crucial during the design and commissioning phases of new installations. By involving experienced engineers from the outset, companies can avoid common pitfalls and ensure that systems are designed to operate efficiently from day one.



It's crucial for engineers to review system configurations and conduct a comprehensive evaluation to identify optimization opportunities and address potential design flaws.

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Looking Towards the Future

As industries continue to evolve and technology advances, the importance of steam system optimization will only grow. Companies that prioritize efficiency and sustainability will increasingly turn to specialized providers to ensure that their steam systems operate at peak performance.

By prioritizing comprehensive optimization strategies and leveraging engineering expertise, companies can unlock significant benefits in energy efficiency, operational reliability, and overall cost savings.

Ricardo Aguirre is the CEO of American Plant Maintenance (APM Steam), a facility services contractor focused

on energy efficiency audits and projects related to steam systems at major hospitals, pharmaceuticals, and universities. Completing over 1,500 unique projects every year, APM Steam is one of the largest steam contractors in the country and a key partner to utilities looking to deploy energy-saving incentives. Before joining the facility services industry, Ricardo worked on consumer electronics, primarily on product development and manufacturing for Motorola Mobility in the U.S. and Malaysia and strategy for Samsung in South Korea. Ricardo holds an MBA from Harvard Business School and an undergraduate degree in electrical engineering and applied physics from the University of Miami. NED

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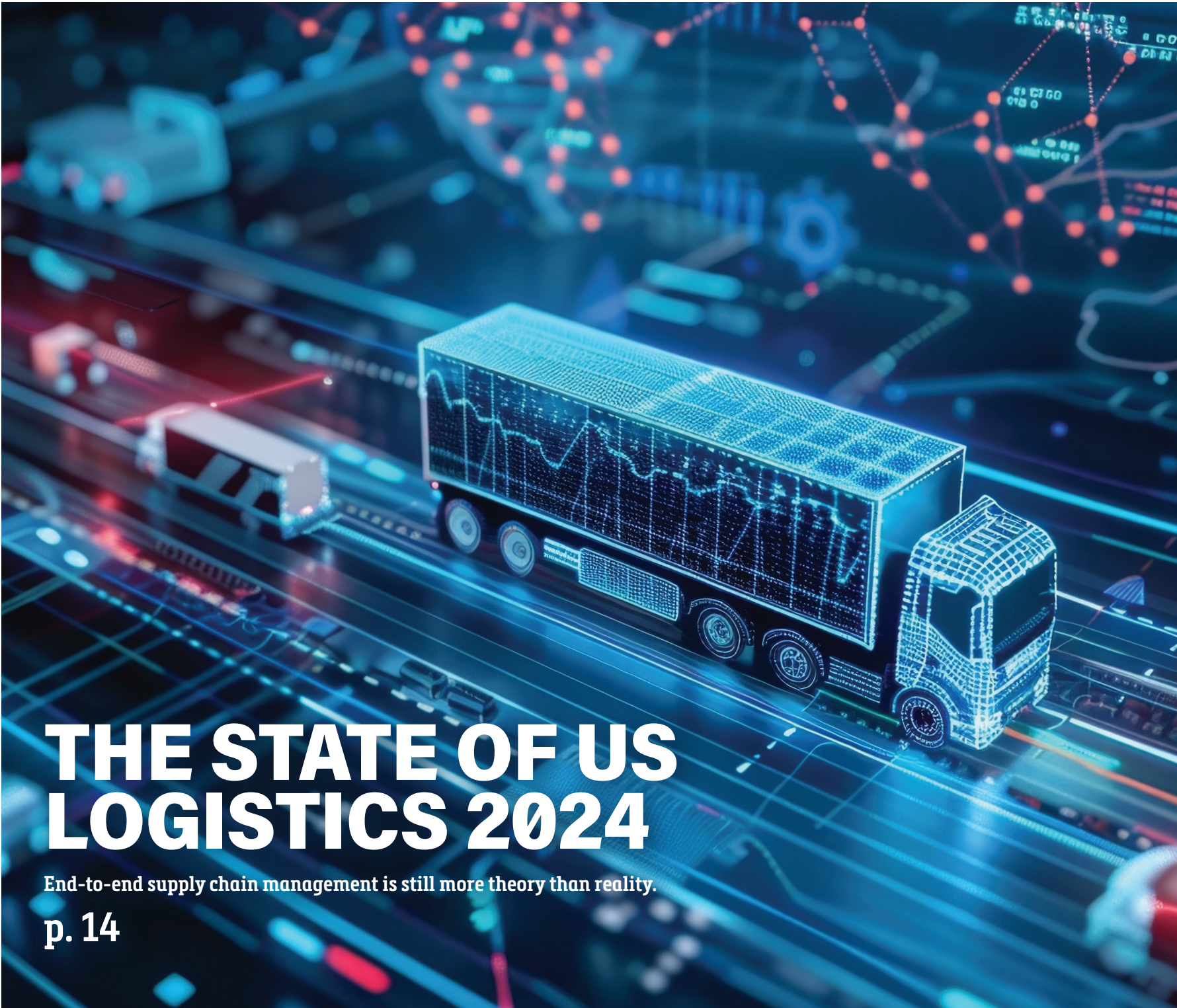


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THE STATE OF US LOGISTICS 2024

End-to-end supply chain management is still more theory than reality.

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The Key to Forklift Safety
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The State of US Logistics 2024: Shippers Learn Logistics Is No Silver Bullet

End-to-end supply chain management is still illusive after all these years.

by David Sparkman

I don't know what's normal anymore," admitted Ron Marotta, vice president of Yusen Logistics International Division, and a member of the panel of industry experts who helped launch the 35th annual State of Logistics (SOL) report at the National Press Club in Washington, DC, this June.

His remark pretty much sums up how logistics professionals regard the current situation, which seems ready at any time to plunge in one direction or the opposite. "Waiting for the Tide to Turn" is the title of this year's Council of Supply Chain Management Professionals (CSCMP) report, researched and authored by the Kearney global management consulting company and sponsored and presented by Penske Logistics.

"The period covered by this year's report—the calendar year of 2023 and the opening months of 2024—has only confirmed that admonition about the certainty of uncertainty as shippers and carriers wait for the tide to turn in a period where no tide table seems reliable," the researchers point out.

This year's report highlights some of the trends in logistics observed over the period covered, building on the observations made about macroeconomic, logistics and transportation trends in last year's report and other recent reports. New this time is the more prominent explorations about the various strategies the Kearney researchers recommend for logisticians and modal managers to deploy to deal with the constant twists and turns they will face on the uncharted paths opening up under their feet.

In 2023, US business logistics costs (USBLC) decreased 11.2% from the previous year, dropping from \$2.672 trillion to \$2.374 trillion (see **Figure 1**). All told, USBLC in 2023 represents 8.7% of the total US GDP, down somewhat from the 10.5% figure in 2022 but still the third-highest percentage of US GDP over the past decade.

While all kinds of pressures impinge on the supply chain from every direction, shippers are attempting to address

them by taking a more holistic approach to meeting their logistics needs, and in the process are breaking down traditional barriers that divide them from third-party logistics providers (3PLs) and asset-based carriers. It seems that in this new age of perplexity, abandoning the old categories appears to be a promising approach, according to the report's authors.

It is in this regard that the newest SOL will prove to be an invaluable resource for professional logisticians, giving them vitally needed tools and strategies to cope successfully with the infinite number of possibilities the future holds.

Among the most unpredictable guideposts are the macroeconomic developments and other exterior forces that shape the world in which everyone must operate. Just a few examples are our toilsome national election season this year; threats of widening wars in the Middle East, Ukraine and China; and potential domestic economic shocks like the threat of a longshoremen's strike shutting down U.S. East Coast ports later this year.

According to the SOL report researchers, we can expect to see just 2.5% in worldwide economic growth over the course of 2024, down from the 2.7% registered last year. If this prediction proves true, they believe this year could mark the close of the slowest half-decade of output growth in 30 years. Economic growth in the U.S. also has slowed and that growth has been and will continue to be uneven, the panelists at the SOL press conference agreed. For example, construction in some industry segments has been robust, while in others it's been weak.

Managing the Freight Challenge

Retail sales, which are responsible for 70% of the nation's GDP, remain relatively flat although e-commerce sales have continued to grow steadily since they exploded during the COVID shutdowns. This trend also has helped fuel continuing growth in the freight transportation and

logistics services sectors, although it is not proceeding at as furious a pace as it did during the pandemic.

The impact on transportation and other service providers has been uneven, with some able to profit in the new environment while others have failed. Ocean carriers have enjoyed strong profits even while U.S. companies who have been their customers have embraced a move towards nearshoring some of their manufacturing operations. Most of the trucking sector, however, saw a precipitous drop in rates which have not fully recovered—again with a notable exception: some parcel carriers who are heavily involved in e-commerce.

Trucking companies suffered such a persistent downward swing in rates that some of them closed or declared bankruptcy—but fewer than would have been expected under the circumstances, according to the researchers, who believe many carriers are still surviving on the fat profits they accumulated during the pandemic, when their services were in the most demand.

The cyclical nature of the over-the-road freight market will continue to fuel a challenging rate environment for carriers, they say, but it is due for an inevitable rebound. Shippers are urged to remain aware of how crucial it still is to build strong logistics management teams to bolster an organization's ability to continuously evaluate its transportation mix using analytics that will allow them to make strategic pivots in carrier relationships.

This includes drawing upon a new generation of increasingly sophisticated technological tools available for monitoring and managing their trucked shipments. Among these are new digital freight-matching tools that allow captive fleet operators to supplement their own volume with that of third-party shippers, enabling higher levels of utilization and filling of deadhead miles—key to controlling trucking costs.

The researchers also see promise in the rapidly advancing field of artificial intelligence (AI). "Although the



timeline for a full AI revolution is uncertain, shippers must stay vigilant, as the impact will no doubt be significant,” the researchers stress. “AI [will] enable a dynamic, automated approach to asset allocation which allows shippers to continuously align their asset mix to market conditions.”

For example, machine learning models are predicted to strengthen shippers’ ability to make confident, risk-averse decisions while minimizing capital expenditure. “Over the coming years, AI will surely also integrate itself into loading planning operations targeting reduced dwell times as a means to boost productivity.”

Managing in an Uncertain World

Similar advice is offered to those who must grapple with the fast-changing challenges that have surfaced in regard to managing ocean and rail transportation and warehouse services., including labor challenges and rate inflation which already have battered the supply chain and threaten to persist into the near future.

For those who are dependent on these services, the researchers offer much the same advice as they do in regard to managing trucking services: Get smarter and get the right technological solutions. “It is imperative for carriers and shippers to upskill, collaborate and take advantage of industry capability advancements to improve capacity, utilization and manage costs,” they assert.

The ocean shipping environment is experiencing downward pressure on rates due to slackening in demand and

ocean carrier overcapacity—they simply built too many ships. Customers can take advantage of that to prepare for an uncertain future in which shipping faces growing threats from ocean pirates in the Red Sea and other seas adjacent to armed conflict, a worsening Chinese economy, and the continuing threat of labor turmoil at U.S. ports.

“Shippers should engage more frequently with carriers to ensure competitive terms and conditions, and to further diversify their transit modes and routes,” the researchers advise. “This should include a greater openness to short-term deals and spot market arrangements when feasible, taking advantage of carriers’ margin pressures amid continued stagnant demand.”

The warehousing boom has cooled as shippers look more at finding ways to avoid soaring inventory carrying costs. The just-in-case model that was adopted during the COVID pandemic has slowly but perceptibly started shifting back to more of an emphasis on a just-in-time (JIT) delivery model for some shippers.

During the second quarter of 2023, big-box retailers Walmart, Target, Lowe’s and Home Depot combined brought down inventory levels by 4%, the largest quarterly inventory drawdown for these retailers collectively since 2015, the researchers point out. In the meantime, construction of new industrial warehouse space has continued at a healthy pace and rents have remained high.

“As businesses attempt to ease inventory pressures, they have adopted various strategies to deal with excess


and obsolete inventory, including discounting products through sales, shipping product to other regions, or purchasing space solely for storage,” the report states.

The researchers say companies are seeking to define “a refined inventory strategy, including the establishment of guardrails regarding stock levels and days of available supply. Retailers in particular will need to balance between the sometimes competing values of reducing excess inventory, maintaining resilience, and having capacity for agility in the future.”

The trend towards JIT means that manufacturers will need to make some adaptations in order to foster flexibility in managing supply disruptions. The researchers say that companies should remain cognizant of potential shifts in consumer demand and continue to drive toward the economic equilibrium of running lean and having contingencies in place to adjust inventory levels when the situation calls for it.

All of this blends together to put additional pressure on logistics managers by increasing critical scrutiny of the promises made over the years by the advocates of 3PL services—including some of the 3PLs themselves.

In response to decreasing inventory levels and pressure to reduce costs, the researchers say that companies are choosing to reduce their warehouse footprints after years of rapid expansion. Adding to this is the consolidation trend happening across the specialty storage spectrum, such as refrigerated facilities, which has picked up.




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Is 4PL Around the Corner?

Most commercial warehouse operations offer a menu of 3PL services, and both asset-based and non-asset-based logistics providers were in a great position during the pandemic and immediate post-pandemic economic period. However, past promises have not lived up to customers’ expectations completely in the post-COVID environment, and both 3PL customers and their providers realize that changes will be needed to successfully grapple with these new challenges.

One upshot is that some large shippers are increasingly looking to market their internal asset base and logistics capabilities to external clients, transforming these kinds of operations into potential profit centers. In the Kearney researchers’ view, this move signifies that these companies’ core business logistics requirements are being addressed, allowing them to utilize and monetize any excess capacity they may enjoy.

In response, previously non-asset-based 3PLs also are choosing to selectively offer services that require a higher degree of asset ownership, by doing things such as adding containers and trailers. These moves have been undertaken to intentionally expand their addressable markets and compete more effectively with asset-based service providers, the researchers believe.

While the prospect can hold great potential gains for each set of players, both 3PLs and shippers need to overcome significant challenges to operate in these new spaces, they add, but eventually could lead to an entirely different approach to logistics management in the future.

“This attempted expansion of 3PL capabilities brings us to the much-discussed concept of 4PL, whose name is meant to convey not so much any idea of ‘fourth-party logistics (4PL)’ but rather the promise of offerings beyond the traditional 3PL model,” the researchers note.

One of the most notable of the practitioners who are pushing the envelope among e-commerce logistics and transportation service providers is in fact Amazon, which is continuing to develop sophisticated logistics services not just for its own e-commerce business but to serve other e-commerce companies as well. What separates Amazon from the other 3PLs is that it is reaching out to control the entire supply chain from manufacturing to home delivery, something no one else has been able to achieve.

“We are increasingly seeing large shippers attempt to monetize their own logistics capabilities—a move that blurs

Figure 1

The USBLC decreased 11.2% YoY between 2022 and 2023
Overview of 2024 USBLC figures(\$ billion)

	2023	2022	2021	YOY 2023/2022	YOY 2023/2021	5-YEAR CAGR
Transportation costs						
Full truckload	408.7	490.0	395.9	-16.6%	3.2%	5.6%
Less-than-truckload	64.0	66.0	75.1	-3.0%	-14.8%	-0.2%
Private or dedicated	459.0	463.6	373.0	-1.0%	23.0%	8.8%
Motor carriers	931.7	1019.6	844.0	-8.6%	10.4%	6.6%
Parcel	215.7	216.7	207.5	-0.5%	4.0%	11.2%
Rail	96.6	98.3	84.4	-1.7%	14.5%	2.5%
Air freight (includes domestic, import, export, cargo, and express)	92.6	109.4	65.7	-15.4%	40.9%	2.1%
Water (includes domestic, import, & export for only US flag carriers)	83.7	233.5	234.1	-64.2%	-64.3%	18.2%
Pipeline	76.3	69.3	63.2	10.2%	20.8%	7.7%
Subtotal	1,496.5	1746.7	1498.9	-14.3%	-0.2%	7.1%
Inventory carrying costs						
Storage	188.1	218.5	185.1	-13.9%	1.6%	5.3%
Financial cost (WACC x total business inventory)	302.1	313.0	164.5	-3.5%	83.6%	9.0%
Other (obsolescence, shrinkage, insurance, handling, others)	210.1	227.8	149.8	-7.8%	40.2%	7.5%
Subtotal	700.3	759.3	499.4	-7.8%	40.2%	7.5%
Other costs						
Carriers’ support activities	94.7	93.8	78.6	1.0%	20.6%	8.5%
Shippers’ administrative costs	82.6	72.4	63.1	14.1%	31.0%	9.7%
Subtotal	177.3	166.1	141.6	6.7%	25.2%	9.1%
Total US business logistics costs	2,374.10	2,672.15	2,139.87	-11.2%	10.9%	7.4%

the traditional distinction between them and traditional 3PLs and brokers, some of whom also are adapting by offering asset-based services such as truck fleet management or drop trailers,” say the Kearney researchers.

However, we have not yet succeeded in reaching the halcyon achievement of being able to enjoy a fully functioning 4PL system capable of managing the entire supply chain from sourcing raw materials to last-mile delivery, something that has been predicted to be on the horizon for many years now.

A Good Place to Start: Last Mile

“While no company has yet cracked the 4PL code—though Amazon is coming close and is defining the current state of advancement—several are making some very interesting moves toward rewiring their supply networks,” the researchers observe. “These trailblazers are doing something very smart: looking at their logistical functions as a whole and redesigning them with an eye not only toward cost reduction, but also the unleashing to capacity.”

Although there are not many companies that have achieved this level of innovation, others are on their way to getting there,

according to the report. But this doesn’t need to be the goal in the short term, the researchers say. There are many other things that can be done to optimize supply chain management, such as taking steps to optimize parcel carrier cost.

For example, when it comes to last-mile deliveries, the authors hold that shippers should focus this year on building an interconnected multi-carrier network capable of optimizing parcel cost to maximize profitability while not sacrificing customer satisfaction and service levels. To accomplish this, the Kearney researchers recommend pursuing four specific strategies:

1. Increase optionality. With the expansion of diverse carriers serving broad regions, shippers are urged to maintain multiple contracted options when it comes to shopping for the optimal price at the parcel level. “Expanding the carrier portfolio will increase competition and help ensure lower rates, increasing shipper profitability,” the researchers figure.

2. Remain aware of service level offerings. The shipment speeds demanded by customers vary by industry and customer profile. Of course, the general trend is moving towards faster speeds, but shippers should identify areas where general

slowdowns may happen, and how to optimize for the right level of service and cost to meet customer standards. They even suggest taking a serious look at technologies that are just coming into their own, like drone deliveries, which after years of hype they believe are becoming more viable.

3. Deploy data-driven negotiation levers. Profitability must be incorporated into all delivery service offerings, with maximum optimization driven by a line-item analysis of accessorial fees and surcharges. To accomplish this, the researchers say shippers should identify the primary cost levers that drive parcel cost rates in their current contracts and negotiate them on a line-item level.

4. Step up the management and optimization of the returns process. Reverse logistics services have become a big deal for a good reason—the cost of dealing with returns has reached the point where they are a significant drain on shipper profit margins. In 2023, e-commerce returns grew to 17.6% of total online sales. “Shippers need to rapidly evaluate ways to manage return demand through enhanced policies and to optimize their return processes to reduce total cost,” the researchers recommend. **MH&L**

Kearney

The Human Element Is the Key Ingredient in Forklift Safety

Your safety program depends on a workforce that is properly trained, fully alert and committed to prioritizing safety.

by Stephanie Kovach and Keith Leffel

No matter the industry, it seems that technology continues to move ever more swiftly. Each June, as the material handling industry focuses on the importance of forklift safety on National Forklift Safety Day, attention often turns toward the latest technologies that can help maintain and strengthen a healthy safety culture, giving forklift operators the tools, training, feedback and confidence they need to do their jobs more proficiently.

There are technologies available today that simply didn't exist, even just a few short years ago. For instance, a growing number of operator assist technologies can help operators prioritize safety and overcome the challenges of today's dynamic supply chains. Proximity assist technology is one example. It uses LiDAR sensors installed on the forklift to scan for objects in the path of the forklift, alert the operator of their presence and actively slow the vehicle.

Telematics systems can also play a vital role in enhancing safety by providing insight concerning equipment performance, operator behavior and safety procedures. These systems can provide real-time feedback that reinforces correct behavior and alerts operators to incorrect behavior. They can also help ensure operators properly complete pre-shift inspections by providing visual guidance regarding the components and systems to be reviewed.

These are just some of the technologies that can be valuable additions to any forklift safety and/or training program. However, operators and supervisors need to remember that while these technologies can play a vital role in

enhancing safety, they are just one component of a comprehensive safety program. Technology is an important tool in your safety toolbox, but operators, supervisors, trainers and warehouse personnel all bear responsibility for encouraging and enforcing workplace safety.

Operator assist technologies are vital enhancements, but without human vigilance, they can create a false sense of security when it comes to forklift safety. Operators and/or supervisors may be less

attentive, thinking the technology will help mitigate safety concerns. Complacency may set in, increasing the risk for accidents and safety issues. At the end of the day, a successful safety program still depends on the right operator behavior and the tried-and-true fundamentals of forklift safety.

Regardless of how much advanced forklift technology you have deployed, emphasizing safety fundamentals is still vital to an effective safety program. This is even more important as the supply chain environment has become more dynamic

and workforce challenges are introducing newer, less experienced operators to the workplace.

Following are four tips to help ensure your operation continues to focus on the fundamentals of forklift safety.

1. Identify the Limitations of Your Safety Technologies

To enhance forklift safety, you must identify the limitations of the technologies you have deployed. These limitations are not the result of poor design but rather the



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inherent limitations of today's technology. They exist to enhance the capabilities of the operator, not to replace him or her.

Once you've identified the limitations, you need to understand how the human element can compensate for them. For instance, some telematics systems can tell you when and where a forklift impact occurs, but they cannot tell you why or prevent it from happening again. Operators and warehouse personnel need to evaluate the data and determine the right corrective action.

2. Train Your Supervisors to be Safety Stewards

Supervisors play a vital role in warehouse operations and that role should extend to helping operators apply their training on the job to help ensure a safe working environment. Your supervisors should be trained to spot at-risk behaviors and environmental hazards, provide positive and constructive feedback, and understand the basics of OSHA's regulations governing powered industrial trucks.

Let's look again at forklift impacts. If you have a telematic system to alert you to impact events, a properly trained supervisor can then look at the data and determine an effective course of action to eliminate the issue or minimize the risk. Is it one or two operators who may benefit from one-on-one coaching? Is it a specific portion of the warehouse layout that may be causing the issue? In some cases, it may be a more significant issue that could be fixed with changes to existing operator training programs.

3. Reinforce Environmental Awareness with Your Forklift Operators

When driving forklifts, operators need to maintain 360° environmental awareness. They must pay attention to their surroundings and maintain operational control to react accordingly. Many safety-related technologies—such as LiDAR sensors that scan for objects, pedestrians and other forklifts—are designed to operate in one horizontal plane. For instance, they may not be capable of identifying

multiple hazards ranging from slippery spots on the floor to overhead obstructions that limit lift height.

Many of these technologies are pre-programmed to work in controlled, often restricted, environments while today's warehouse can be a dynamic or even chaotic environment. When an operator drives the forklift outside of a more controlled environment or deviates from the daily routine, the technology may not be capable of exhibiting the same level of functionality.

4. Ensure Your Operators Understand All the Forklifts They Drive

Traditionally, an operator would drive one type of forklift (e.g., stockpicker, counterbalance), becoming familiar with the lift truck over time and understanding its capabilities. As many companies are challenged to fill every warehouse position, this is not always the case. It is more common today for operators to drive multiple types of forklifts across different applications during a shift.

When your operators move from one kind of forklift to another, they need to be trained to understand what is different about the lift truck and how it may operate differently in various scenarios. For example, some differences may include how the forklift behaves with a full load and the stopping distance required. OSHA 1910.178(I)(2) provides more information about training requirements for specific forklift types.

No matter the technology you've incorporated into your forklift fleet, it cannot completely address every safety issue, or eliminate every hazard in your environment. While technology has an important role to play, your safety program still depends on a workforce—from warehouse workers to operators and their supervisors—that is properly trained, fully alert and committed to prioritizing safety for themselves, their equipment and the people they work with every day. **MH&L**

Stephanie Kovach is director of training and **Keith Leffel** is director of branch health and safety with forklift manufacturer Crown Equipment Corp.

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It's Time to Alter How We Educate Future Supply Chain Professionals

Employers need to move to skills-based education to determine career success.

by Adrienne Selko

If Walmart, known for its innovative business models, is finding success in a new education model, other companies would be wise to take note. Earlier this year, the retail giant provided a **report card on its Live Better U** education program. Started in 2018 and viewed as an education benefit, it has turned into a pathway to developing supply chain professionals. The numbers are impressive. The company has provided over 126,000 associates funding to earn business-related degrees from universities such as the University of Arkansas, Purdue Global, Bellevue University and Southern New Hampshire. These degrees include those in supply chain, transportation and logistics management.

Through 50 options, the company also offers short-term certificates, which was the expressed preference of its associates. “The quicker they learn new skills, the faster they can move up,” the company said. The emphasis on skills as the basis for career success is gaining popularity and has turned into skills-based hiring. **Korn Ferry** noted that this type of hiring is a top trend this year. And a Gartner survey found that companies are “increasingly shredding the paper ceiling – the invisible barrier workers without degrees face – and embracing skills-based hiring, even for some corporate jobs long considered degree-dependent.”

This thinking is so pervasive that a survey from **Intel-ligent.com** released in July 2024 discovered that 33% of companies eliminated bachelor’s degree requirements already this year. Furthermore, 25% of companies will eliminate bachelor’s degree requirements by 2025. Why are they doing this? The respondents said that it reflects their desire to prioritize skills over degrees. And 75% said removing requirements has been beneficial for the company.

The supply chain sector is taking advantage of this new way of thinking as well. A **survey from CSCMP** found that over the past seven years the number of students achieving a technical or two-year degree in supply chain has more than doubled. And the timeframe has moved from extended certifications to shorter, more specialized courses in areas such as procurement, strategic sourcing, and inventory management.

To keep the pipeline going, companies are forming partnerships with technical and non-technical education institutions. They are also reaching out to high schools, as the manufacturing sector has done for years. One example is a program at Macy’s which is aimed at recruiting high school graduates for supply chain jobs.

The enlightenment of employers is aligning with the new attitudes of younger workers. A Pew research survey in May 2024 found that 54% of workers ages 25-34 do not have a four-year college degree.

While our education model won’t change overnight, with most companies still requiring four-year degrees, it’s nice to see a more expansive view of education on the path to career success. **MH&L**

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Supply Chain 101: Outsourcing Logistics

Outsourcing logistics allows companies to free up resources and focus on their core competencies.

by Jagan Reddy

Companies of all sizes, across all industries, are experiencing complex supply chains with an accelerated rise in e-commerce, globalization and new technology. As a result, more and more businesses are outsourcing their logistics operations—hiring an external provider to handle various supply chain tasks associated with the storing and moving of goods—to improve operational efficiency and optimize success.

The advantages of outsourcing logistics are numerous. But more than anything, outsourcing logistics allows companies to free up resources and focus on their core competencies. Most companies simply can't acquire all the resources needed across every function to run an entire supply chain operation effectively in-house. For this reason, many companies will outsource non-core functions such as distribution, fulfillment, transportation, call center and human resources activities. On the other hand, anything that an organization needs to tightly control or do very well, such as R&D, would remain in-house.

Why Outsourcing Logistics Can Be Such an Effective Business Strategy

All companies are different and the benefits gained from outsourcing logistics depend heavily on the circumstances surrounding a business and its supply chain. That being said, handing off logistics to an external service provider will help most companies:

Access Specialized Expertise: A major advantage of outsourcing logistics is that it provides access to specialized

expertise that may not be available from your internal staff. For example, if your business is inexperienced or unfamiliar with international shipping regulations or customs clearance procedures, you'll benefit greatly from a knowledgeable third-party logistics (3PL) provider who has experience dealing with these types of issues. A provider with this level of expertise will help ensure that your business is compliant with local laws while also improving efficiency within your supply chain.

Improve Transportation Efficiency: The majority of companies lack the resources and/or expertise to manage transportation efficiently. By outsourcing your transportation, you can significantly reduce overhead costs while still ensuring access to reliable transportation services. You'll also gain access to a variety of transportation modes that may not be cost-effective for you to procure on your own.

Lower Costs by Enhancing Operational Effectiveness: External logistics providers can often perform most supply chain functions better, faster and more cost effectively than your internal staff. These logistics experts use cutting-edge technologies, such as transportation management systems (TMS) and warehouse management systems (WMS), to optimize inventory levels and deliver the experience customers are expecting you to provide. By increasing inventory accuracy, shortening order cycle times, reducing transportation costs and enhancing warehouse space utilization, these technologies can deliver cost efficiency and operational excellence.

Simplify Expansion Into New Markets: Developing an effective supply chain when expanding sales into new

geographies can be a significant challenge. Outsourcing your logistics to a partner that specializes in logistics in your new market can simplify the process considerably.

Access New Technology and Best Practices: The logistics industry is a field that's always changing with respect to technology, trends and best practices. The tricky part is finding ways to integrate them into your existing business model while also continuing to meet customer expectations. Outsourcing can help your company exploit technology to improve supply chain efficiency, as many logistics providers have invested in advanced technologies such as process automation, machine learning and artificial intelligence. These can be used to streamline warehouse and transportation operations and reduce errors to better serve your customers.

Elevate the Customer Experience: When you consider all the choices that are available across any given market, it only takes one bad experience to lose a customer to your competition. This is why outsourcing logistics can be such a valuable solution. When you outsource transportation, for example, you benefit from the expertise of a company whose entire business is built around logistics. It's what they do. As a result, they have the ability to deliver shipments quickly and reliably every time—which will help bring your customers back, again and again.

Enable Employees to do What They do Best: This benefit is so valuable to an organization, it's worth mentioning again, but in greater detail. Outsourcing logistics helps businesses focus more on their core competencies rather than spending time managing complex supply chain processes. This enables you to devote more resources towards developing innovative products or services to help your company focus on the big picture—and reach its full potential.

The Emergence of Nearshoring

Traditional outsourcing in manufacturing, in the form of contract manufacturing, has often involved countries with lower labor rates, such as China, India, Vietnam and the Philippines. However, a growing number of companies are shifting towards nearshoring, which involves a business outsourcing some or all of its supply chain operations, including manufacturing, to nearby countries—typically with a shared border within the same time zone.

While global supply chains often require long lead times and incur high costs associated with transporting goods, nearshoring shortens the supply chain, resulting in faster time-to-market, lower costs and fewer problems with export logistics. Nearshoring can also help companies by improving communication and collaboration with partners while providing greater flexibility in response to disruption.

The Time Is Right for Outsourcing Logistics

When you consider the numerous benefits of outsourcing supply chain and logistics, however, it's easy to see how this strategy can provide the competitive edge that businesses need to stay ahead of the curve. With the right approach—and the right logistics partner—outsourcing can transform your supply chain and help you achieve new levels of success in 2024 and beyond. **MH&L**

Jagan Reddy is managing partner for Netlogistik US, an integrator of Blue Yonder WMS and TMS solutions.

FROM THE COVER KICKER

Safety Mobile App Tracks Inventory and Incidents

Twiceme helps protect individuals both before and after an accident by empowering workers and employers with a mobile app to make safety processes easier through digitization. With Twiceme's next-generation, contactless NFC sensors, which are installed directly into protective equipment and clothing, workers can quickly use a smartphone app to exchange crucial information between the equipment and the phone.

Twiceme helps workers monitor equipment health through a structured self-check safety process per OSHA recommendations for head and fall harness protection. Using the app, users interact with equipment to get data about the equipment and wearer, like when a harness was last inspected.

Not only is it helpful for improving safety, but it also helps track equipment inventory, ensuring it ends up in the right place so that assets are protected and workers are ready to work.

The app can also be used during and/or after an accident to support rescuers or first responders with situational awareness by providing location information to help them find people wearing the technology faster. Once on the scene, if a person is injured or incapacitated, rescuers use the app to access critical medical information about a person wearing the equipment, such as medicinal allergies.

Twiceme



More online: newequipment.com/55126472

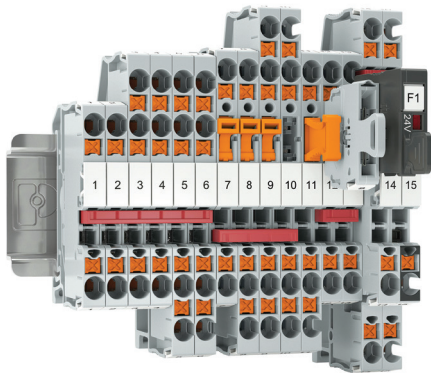


Enclosure Cooling Units Save Energy

X-Series cooling units feature an optimized control algorithm using inverter technology to allow for the precise adjustment of cooling power—within a tolerance of +/- 0.1 K—required to maintain the temperature within an enclosure. This reduces the start and stop cycle, reducing energy consumption. The X-Series includes two models: the 6X1E, covering a power range from 1,000 to 2,800 W, and the 6X2E, ranging from 2,000 to 4,500 W. Units are available in side, surface, or recessed mount.

Pfannenberg USA

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Automated Terminal Blocks for Conductors

The **XT 2.5 terminal blocks** have a front Push-X connection, allowing fast and easy wiring. The portfolio includes feed-through and multi-conductor terminal blocks as well as function versions for using disconnect knives, plug-in fuses, and components. With Push-X technology, solid, stranded, or ferruled conductors and cross-sections can now be connected even faster, manually or automatically. Direct wiring is carried out tool-free and without significant effort due to a pretensioned contact spring. Lightly tapping the release surface inside the clamping chamber sets off the contact spring, and the conductor is contacted safely and permanently.

Phoenix Contact

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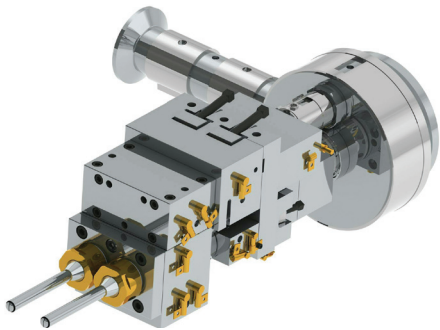


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Creform Corporation has developed a **bagged compartment picking cart** that holds lightweight parts that require surface protection, as well as uniquely shaped parts that need to be held in separate compartments. It can be loaded from either side and is sewn together with hanging bags that are custom-made for size and position. The cart measures 58 x 39 x 74 in. (1,470 x 990 x 1,880 mm) [WxDxH], can hold up to 600 lb. (270 kg) and features four 5-in. (127 mm) diameter casters for easy movement in any direction.

Creform Corporation

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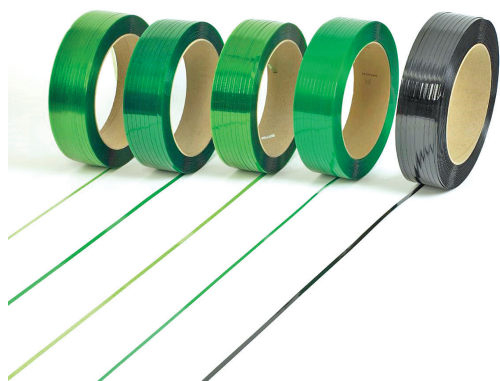


Corrugated Crossheads and Dies for Extrusion

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End-to-End Hairpin Stator Solutions for E-Motor Manufacturing

Comau has launched a **comprehensive hairpin stator technology portfolio** covering the entire stator manufacturing process, from hairpin wire forming to insertion, wire widening, twisting, and laser welding all the way to quality testing and control checks. The expanded offer provides turnkey solutions for the entire motor assembly process from design through to execution. The fully configurable stator assembly line provides end-to-end manufacturing of hairpin stators with the scalability to move from a semi-manual to a fully automated process.

Comau

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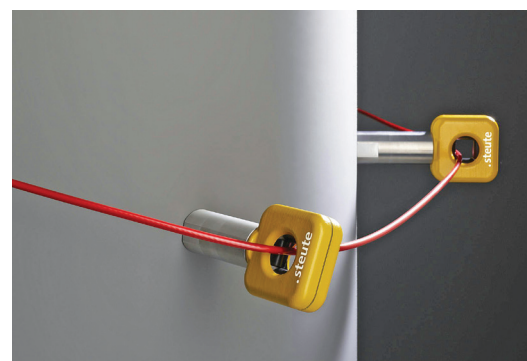
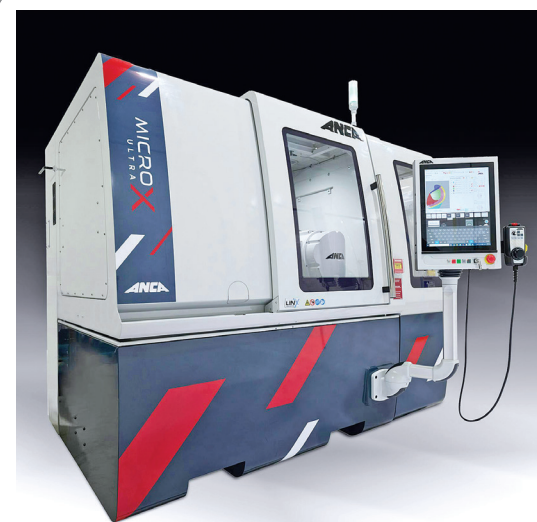


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Coval

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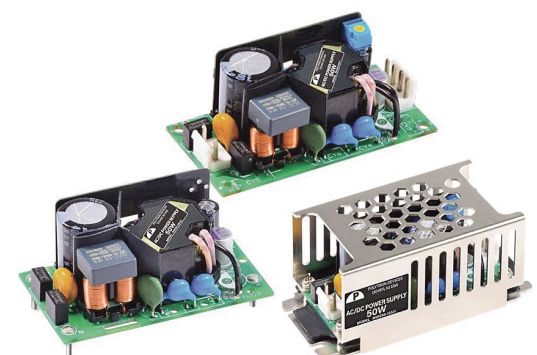


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Company

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Commercial Duty Transfer Switches
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Ruselectric
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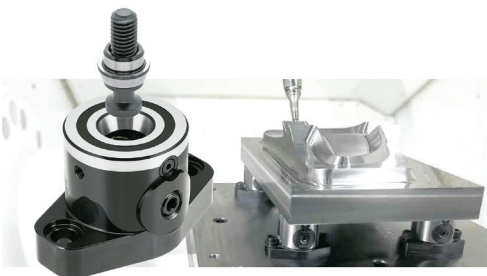


Corrosion-Resistant, Low-Profile Flush Mount Hinge
The E6-73 Stainless Steel Constant Torque Hinge has all the same benefits of a torque hinge in a low-profile, corrosion-resistant package. These hinges make sure that panels never slam shut, even when users let go. The barrel-down design reduces binding points and creates a continuous smooth surface when the panel is closed. Its corrosion-resistant stainless steel construction protects it from environmental wear and tear. It also has a resistance of more than 500 h to salt splashes.

Southco, Inc.
More online:
newequipment.com/55093324

5-Axis Modular Clamping System
Fixtureworks has expanded its 5-axis modular clamping systems offerings by introducing a larger flanged clamping module, **CP150- M20100**, with a 35 kN clamping force for large workpieces and molds. The 5-axis pull clamps enable machining from 5 sides for precision and accuracy in a single setup. The clamping system, with a locating repeatability of 5 μ , allows easy tool access and requires no additional setup. The system features a variety of tapered clamping and riser screws and tapered bushings to be used with the module. The larger flanged system measures ~4 x 4 in. (100 x 100 mm).

Fixtureworks



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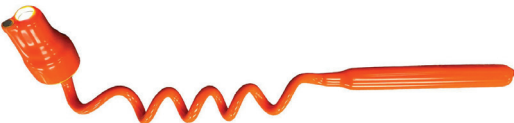


Arbitrary/Function Waveform Generators
The 4078C Series Arbitrary/Function Waveform Generators are dual-channel generators comprised of a 30 and 50 MHz model. They provide variable output voltages from 0 to 10Vp-p into 50 ohms or up to 20Vp-p into an open circuit, and a DC offset to bias the output signal at a desired level. Each channel can produce custom waveforms with 16-bit resolution and 4 million points of memory depth.

B&K Precision Corporation

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Magnetic Light-up Tool Helps Find Lost Screws
A rechargeable LED light-up magnetic retrieving tool, the **MRT-18-LED** illuminates the exact location of a lost screw, nut, or tool that might have fallen inside a panel. It features an 18-in. (460 mm) flexible shaft that has a strong magnetized tip with a rechargeable LED light. It's rated 1,000V AC/1,500V DC to be used anywhere. The insulation cap and magnet tip are removable to allow a full recharge in 75 minutes via a micro-USB charger port.



Cementex Products, Inc.

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**WHETHER IT'S TAPE,
NO TAPE OR A HYBRID...**

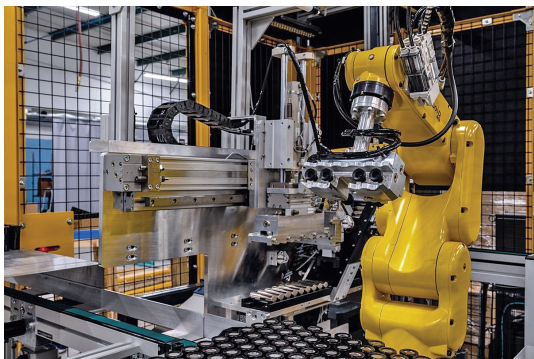
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FROM THE COVER KICKER



Automated Battery Inspection & Assembly

The **Battery Test and Assembly System** inspects and tests battery cells and the assembly of battery packs, commonly used in electric vehicles and consumer products.

Developed to support market changes and future growth, it allows battery pack manufacturers to ensure quality meets or exceeds the requirements for its design. The system tests each battery cell before putting it into the pack, reducing the number of faulty packs due to an issue with a single cell.

Modeled around the 2170 battery for broader application benefits, users can capture, store, and analyze battery cells and pack data, trace battery pack and cell performance over the entire life cycle of the product, manage incoming supplier quality, and trace defects across the value stream.

With vision guidance for robotic components, the system can be modified or reconfigured for different battery sizes or battery pack configurations. The system also features asynchronous testing and assembly stations, and pre-engineered software for an easily scalable system.

McAlister Design & Automation, LLC

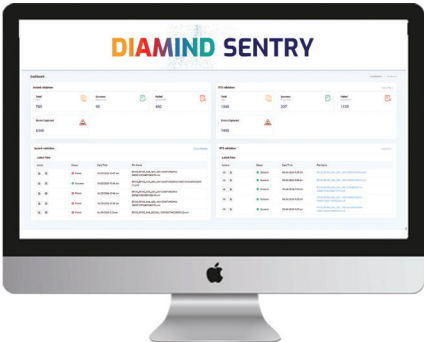
More online: newequipment.com/55125970



Unmanaged 16-Port Ethernet Switch
N-Tron NT116 unmanaged industrial Ethernet switch for industrial applications under harsh conditions offers data acquisition, Ethernet I/O, and process control. Compact in size with 16 copper ports (10/100BaseTX RJ45), the unit has a metal enclosure with high shock and vibration tolerance, and all ports have built-in ESD and surge protection. It has a 1.2M hour MTBF rating.

Red Lion

More online: newequipment.com/55091915



Exception Management System for Pharma Industry

DIAMIND Sentry allows pharma companies to efficiently manage the growing exceptions stemming from traceability mandates. Due to the widespread traceability regulations from the FDA's Drug Supply Chain Security Act (DSCSA), the cloud-based platform allows manufacturers, wholesalers, and dispensers to quickly identify and resolve product data exchange errors. It automatically evaluates inbound and outbound Electronic Product Code Information Services (EPCIS) files to ensure they meet DSCSA standards. Files that fail generate detailed validation reports and are either blocked, flagged for review, or sent back for correction.

Antares Vision Group

More online: newequipment.com/55094210



Highly-Sensitive Cameras for Video Transmission

The **EXO Tracer Series** of industrial cameras are designed with fully functional lens control of focus, zoom, and aperture via GenICam, along with high-speed USB3 and GigE interfaces to support the transmission of video. With 12 models, integrators have a choice of 12.3, 16.8, 19.6, or 20.2 MP color or mono Sony IMX CMOS sensors in speeds up to 22 fps. Its Micro Four Thirds (MFT) lens mount is compatible with MFT lenses including those from Panasonic.

SVS-Vistek Inc.

More online: newequipment.com/55091861



Suspended Electromagnets Pack More Strength in a Smaller Space

Integrated into the Eriez SE7000 line, the **SEV series of Suspended Electromagnets** feature stronger magnets housed in smaller enclosures, reducing overall weight and installation costs while optimizing performance efficiency. The new models leverage wire and conductor technology to energize the magnet circuit, also requiring less coolant for operation. The new wire configuration, with an ultra-thin anodized insulation layer, provides good thermal conductivity, ensuring high heat dissipation within the circuit for improved magnet performance.

ERIEZ

More online: newequipment.com/55125428



High CFM Top-Mounted Filter Fan

The **PTF 1200 high CFM top-mounted filter fan** is compact yet offers an unimpeded airflow rate of up to 589 CFM. Its high heat removal capacity is matched by its durability, featuring a full metal housing for challenging environments. With a protection class of IP 54/NEMA 12, this top-mounted filter fan protects against dust, dirt, and moisture. Its energy-efficient EC centrifugal fan delivers optimum airflow and uniform temperature distribution. Its energy-efficient centrifugal fan translates to low power consumption, contributing to sustainability efforts. The long service life is due to its EC fan, which provides a soft start and stop, reducing wear and tear on vital parts. The result is a 70,000-h average lifetime.

Pfannenberg USA

More online: newequipment.com/55128384

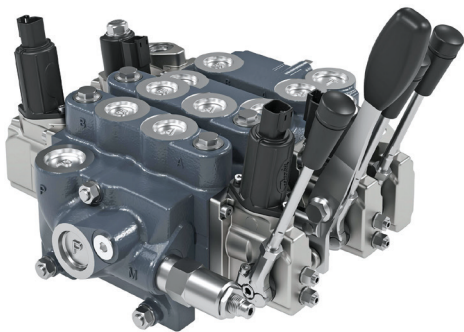


Lightweight PAPR Respirators

Miller’s new **PAPR II systems** increase comfort, convenience, compliance, and productivity with their reduced weight. The lineup includes PAPR II with T94-R, PAPR II with T94i-R, PAPR II with T94i-R XL, PAPR II with T94iH-R Hard Hat, and PAPR II with Face Shield. One standardized system caters to various applications like welding, metal grinding, finishing, and more, letting operators easily transition between different operations without needing to change gear. The lightweight design helps to reduce lower back strain and fatigue, giving workers more comfortable workdays.

Miller Electric Mfg.

More online: newequipment.com/55093655



Open-Center Hydraulic Valves for Mobile Machinery

The **DVG family of hydraulic valves** is a new line of open-center directional control valves for mobile machinery. DVG 60 and DVG 100 valves are ideal for construction, material handling, and agriculture machinery. These valves offer return flow rate, pressure drop, and active spool stroke resolution. Designed with higher meter-out flow for fast cylinder retraction, they eliminate the need for complex systems. A common interface enables flexible configuration to meet each machine’s requirements. A maximum of 12 work sections can be combined in one valve, enabling use on machines with a range of functionality.

Danfoss Power Solutions

More online: newequipment.com/55128278



Rack-Mount Online UPSs

The **SolaHD S4KD Series of industrial rack mount online UPSs** replaces the S4KC Series, offering improvements and other design upgrades to increase reliability and product availability. The online (double conversion) UPS provides a zero-transfer time from external to internal power upon utility power failure to deliver a seamless flow of power for critical loads. It’s available in 1,000 to 3,000 VA in 120V and 3,000 VA in 230V configurations, each housed in a slim 2U form factor.

Emerson Electric Co.

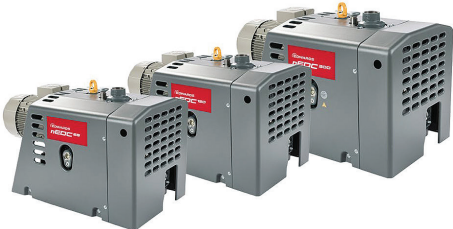
More online: newequipment.com/55128045

Low-Maintenance Vacuum Pumps

The **nEDC 65-150 pump models** are dry claw vacuum pumps for lower pumping speed classes. Easily handling contaminants, the smaller pumps are ideal for water & wastewater, thermoforming, vacuum conveying, food processing, and medical technology. Features include an oil-free pump chamber and low-wear, corrosion-free internal components. The inside of the pump is easily accessible to users for maintenance and repairs because the developers have separated the gear and pump chambers. This means that the claw pump can be easily cleaned by users themselves and then quickly put back into operation. No special tools are required.

Edwards Vacuum

More online: newequipment.com/55092566



Speed Disc for High-Volume Reaming Applications

Diatool Top Speed Disc (TSD) features more blades to deliver faster cycle times, making it ideal for high-volume reaming applications. The multi-blade design features uneven spacing of cutting edges, to create exceptionally round and cylindrical bores. It arrives set to size and requires no additional setup, delivering ready-to-cut functionality. Available in standard sizes from 16 to 32 mm (0.63 to 1.26 in.), TSD is ideal for high-volume, high-precision reaming applications in steel and grey cast iron components like yokes, engine blocks, rocker arms, and more.

Monaghan Tooling Group

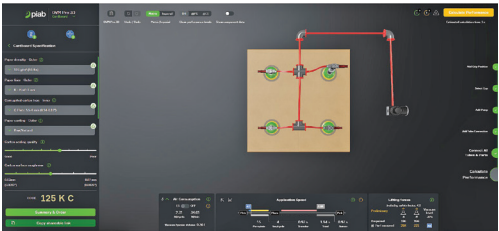
More online: newequipment.com/55128258

Online Tool Changes Vacuum System Configuration

OVM Pro 3D is an online tool designed to change the way vacuum systems are configured, simulated, and optimized. Meaning “Optimal Vacuum Management Professional”, the tool leverages 3D modeling and simulation to streamline the system design process online, offering benefits from control and efficiency to cost savings. The software is provided in an open format on piab.com and offers features including the ability to create a complete design, descriptions and technical data, a lifting force graph for total horizontal and vertical forces throughout the entire cycle, energy and power consumption visualization, performance data positioning, editable tube lengths, and more.

Piab USA, Inc.

More online: newequipment.com/55128267



FROM THE COVER KICKER



Fluid Management System Removes Errors and Spills

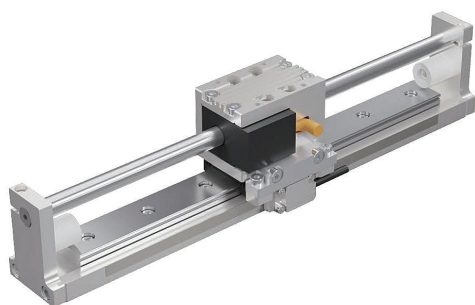
Pulse Asset, an extension of Graco's Pulse Pro Fluid Management system, is a platform-based system that features programmable ID tags to track what machines are getting filled, how much fluid is used, who did the dispensing, and when the dispensing occurred. This system is designed for manufacturing facilities where wireless signals may not always be available.

Pulse Asset dispenses are stored in the meter until synced with the Pulse HUB, allowing users to complete up to 40 dispenses without a Wi-Fi connection. Once uploaded, the data is accessible on any device connected to the local area network—removing the need for manual records.

Additional challenges that manufacturing facilities may face are ensuring the correct fluid is used in each asset and allocating fluid use to individual departments. It reduces the chance of human error by preventing fluids from being dispensed that don't match the programmed tags.

Graco Inc.

More online: newequipment.com/55093664



Rod Motor Positioning Module With Submicron Accuracy

SGR Series rod motor positioning module features repeatable, submicron accuracy. The SGR module comes with a high-precision Akribis RDM-A Series coreless direct drive rod motor, linear guide rail, and integrated optical encoder. The unit is available with strokes from 3 to 28 in. (70 to 720 mm) as well as custom strokes, and it delivers 3.1 to 114.8N of continuous force (F_{cn}) and 9.3 to 344.5N peak (F_{pk}).

Akribis Systems Inc.

More online: newequipment.com/55128027

M12 LED Task Lights

Illuminating workspaces and indicating different operating modes of machines, **M12 LED lights** come in 3 lengths: 10, 14, and 16 in. (and 250, 358, and 412 mm) with corresponding illumination ranges of 7, 11, and 13 in. (170, 270, and 332 mm). Featuring an M12 plug-in connection, they're easy to install and integrate into existing automation systems and offer customizable lighting configurations. The lights have 60, 96, or 114 LEDs and achieve luminous fluxes of 410 to 746 lm and illuminance levels of 108 to 198 lx.

binder USA, LP

More online: newequipment.com/55093339

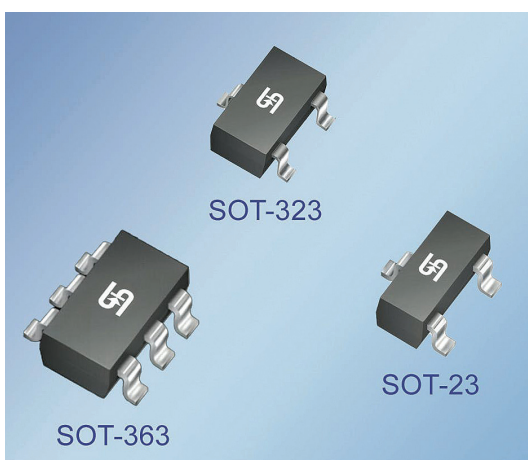


Speed Up Your Data Transformation

The **MRX Series Layer 3 rackmount Ethernet switches**, supporting 64 ports with up to 16 ports of 10GbE speed, accelerate data aggregation and help users build high-bandwidth network infrastructure for IT/OT convergence with the EDS-4000/G4000 Series Layer 2 DIN-rail Ethernet switches supporting 2.5GbE uplink options. The switches offer 16 and 8 10GbE ports, respectively, aggregating large-scale data transmissions. In addition, its port trunking features allow grouping up to 8 10GbE ports into a single 80 Gbps link to maximize transmission bandwidth.

Moxa

More online: newequipment.com/55092391



Small-Signal MOSFETs for Automotive Applications

AEC-Q101-qualified, small-signal MOSFETs bring 10 new parts to the company's extensive offering of TQM Family MOSFETs that meet the AEC-Q101 global automotive standard for reliability. The devices are offered in N-MOS or P-MOS and in single or dual-channel configurations. All provide >2KV ESD withstanding capability. Additionally, they meet J-STD-020 (level 1) for moisture sensitivity, are halogen-free, RoHS compliant, and PPAP (optional).

Taiwan Semiconductor

More online: newequipment.com/55128018



Pressure Transmitters for up to 300 psig

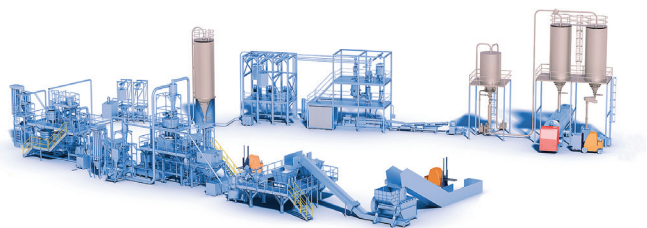
HydroMode WPT25 series pressure transmitters are UL Classified NSF/ANSI/CAN 61 and 372 for drinking water applications. Featuring a 316L stainless steel construction, they provide pressure measurement signals for a variety of applications, such as controls, data collection, and telemetry systems. The series offers full-scale pressure ranges from 15 to 300 psig, a 1/4-in. (6 mm) NPT male threaded process connection, and a 2-wire, 4-20mA analog output with an M12 quick disconnect.

AutomationDirect

More online: newequipment.com/55091889

Bottle-to-Bottle PET Recycling Plant Solution

Coperion and Herbold Meckesheim have collaborated and combined their technologies for the design and construction of entire **PET bottle-to-bottle recycling plants**—from mechanical pretreatment to finished pellets. The systems are designed for a throughput of 5,500 kg/h and deliver PET recycle that is approved by the EFSA and the FDA for direct contact with food. The bottle-to-bottle plants enable all recyclates to be processed together, even if they exhibit different Intrinsic Viscosity values or fluctuating bulk densities.



Herbold Meckesheim USA

More online: [newequipment.com/55091585](https://www.newequipment.com/55091585)

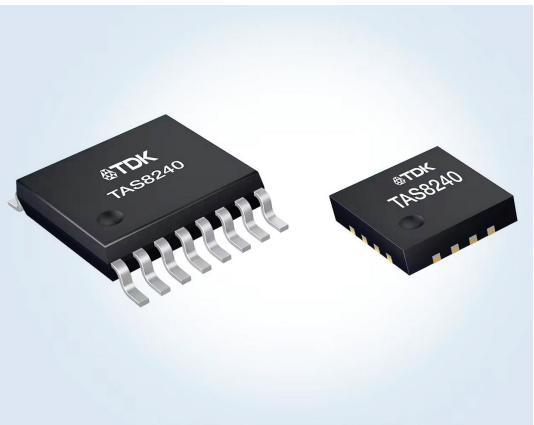
Grinding Machine Eliminates Heat Transfer

The **CUBE 350 centerless external cylindrical grinding machine** is the first grinding machine without heat transfer due to its use of carbon spindles. Even if the machine stands still for a weekend, it can produce immediately within a maximum dimensional deviation of 1 µm. Able to work autonomously for a very long time, it produces parts up to 0.8 in. (20 mm) in diameter and plunge grind parts up to 6 in. (150 mm) long



Tschudin AG

More online: [newequipment.com/55127542](https://www.newequipment.com/55127542)



Redundant Analog TMR Angle Sensor

The tunnel-magnetoresistance (TMR) angle sensor product line has a new edition with the **TAS8240 sensor** for automotive and industrial applications. Available in both QFN16 (3 x 3 mm²) and TSSOP16 (5 x 6.4 mm²) packages, it offers 4 redundant analog single-ended SIN/COS outputs and low power consumption. Its 360-deg. angle accurately measures the rotor position of BLDC motors used in safety-critical applications such as power steering, brake boosters, or traction motors.

TDK Corporation

More online: [newequipment.com/55090069](https://www.newequipment.com/55090069)

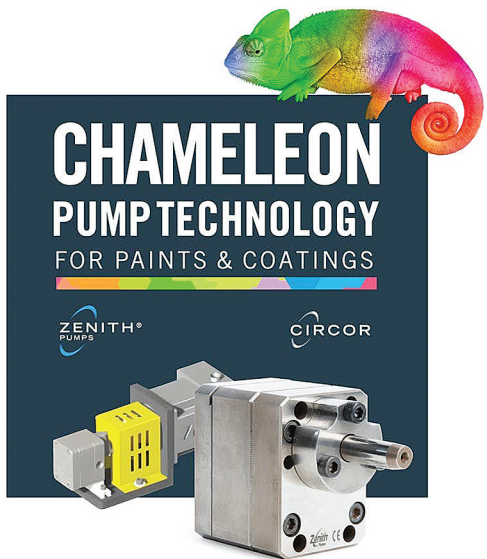


Rake Removes up to 8-in. Rocks

The **Rockhound landscape rake** removes rocks from ¾ to 8 in. (19 to 203 mm) along with other debris, leaving a level seedbed ready for sodding or seeding. With a 72-in. (1,830 mm) working width, it levels a wide swath but requires just 13 to 21 GPM of hydraulic flow. This attachment features steel construction and weighs 1,500 lb. (680 kg). Skid shoes let the operator to adjust the depth while limiting wear. It attaches easily to any skid steer or mini loader, making it ideal for a wide range of landscape contracting projects.

Werk-Brau Co., Inc.

More online: [newequipment.com/55128255](https://www.newequipment.com/55128255)

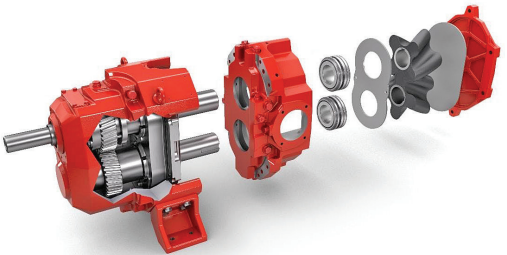


Pump Allows for Rapid Paint Changes

The **Chameleon Pump** for the paints and coatings industry helps to minimize downtime with its quick flushability, allowing for rapid changes between different paint colors and types. Its rotary-spur gears create a smooth and continuous flow, eliminating the need for check valves, accumulators, and hydraulic circuitry.

CIRCOR International, Inc.

More online: [newequipment.com/55092159](https://www.newequipment.com/55092159)



Rotary Lobe Pump for High Pressures

The **EP series** is a line of positive displacement pumps that handle extreme conditions and constant high pressures. A heavy-duty gearbox allows for a uniform pressure output of up to 260 psi (18 bar). With a one-piece housing, they can pump abrasive, chemically aggressive, and explosive flow media at temperatures of up to 392°F (200°C). Helical gears in the gearbox offer a smooth performance and reduce noise emissions. Pulsation-free conveying reduces wear on the adjacent pipeline while providing a low-shear pumping action.

Vogelsang USA Ltd.

More online: [newequipment.com/55092965](https://www.newequipment.com/55092965)

Miniature Linear Voice Coil Servo Motor

The miniature **GVCM-019-032-02 Linear Voice Coil Servo Motor** is only three-quarters of an inch (19 mm) in diameter and features a 0.875 in. (22 mm) stroke. Also called an electric cylinder, it features a continuous high-force-to-size ratio of 7.4 oz. (2.1 N) and 23.3 oz. (6.5 N) of peak force at a 10% duty cycle. These motors are ideal for haptic feedback, pipetting, medical devices, laser machining and drilling, work holding and clamping, scanners, laser beam steering and filtering, optical focusing, dynamic vibration absorption, testing, sorting, and assembly.

Moticont



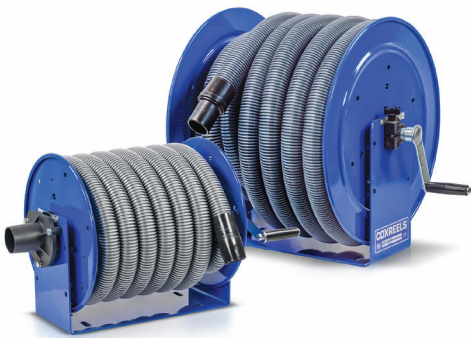
More online: [newequipment.com/55128364](https://www.newequipment.com/55128364)

Vacuum Reels Connect Multiple Hose Sizes

Coxreels V-100 Series has been expanded with the 1.25-in. (31 mm) vacuum hose reel (V-112-735 without hose and the V-112H-735 with hose). The new model is a smaller frame featuring 12-in. (305 mm) diameter discs instead of the original 17-in. (432 mm) discs and is designed for use with 35 ft (11 m) of 1.25-in. vacuum hose. The outlet connecting the hose remains 1.5 in. (38 mm) and the hose comes with 1.5 in. slip cuffs on both ends for maximum flow. The swivel design allows multiple hose sizes to be connected by using the inside and the outside of the housing.

Coxreels, Inc.

More online: [newequipment.com/55128370](https://www.newequipment.com/55128370)



Subsystem Unlocks Speed for AI Computing

A **9.2 Gbps HBM3E sub-system (PHY + Controller IP) silicon platform** takes chipset-enabled memory bandwidth to new heights of 1.2 TBps, addressing the demand for ultra-high-speed connectivity in high-performance computing for generative AI applications. The platform enables a significant reduction in the time-to-market in delivering best-in-class industry performance and exceptional power efficiency for data center and HPC AI infrastructures. HBM3E offers high bandwidth, optimal latency, a compact footprint, and power efficiency.

Alphawave Semi

More online: [newequipment.com/55128361](https://www.newequipment.com/55128361)



Universal Bridge and Strain Gauge Amplifier

The universal **ARGUSfit B-4 measurement module bridge amplifier** expands applications for the modular ARGUSfit data acquisition system. Its 4 measurement channels are galvanically isolated and can be configured independently in every respect, for example with individual measurement modes, data rates, or sensor supply voltages. The module covers applications in mechanical structure tests, fatigue strength analyses, vibration measurements with piezoresistive accelerometers, and pressure and blast sensors in bridge-based technology since it has 100 kSPS per channel and a bandwidth of 40 kHz.

imc Test & Measurement GmbH

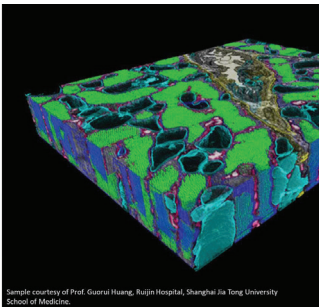
More online: [newequipment.com/55128247](https://www.newequipment.com/55128247)

Software Enhances Custom Microscopy Image Analysis

arivis Pro version 4.2 gives researchers better flexibility to tailor microscopy image analysis to their needs. This release introduces AI-powered segmentation tools, 3D analysis capabilities, and easy handling of massive datasets. A cornerstone of the new version is the integration of instance segmentation models powered by deep learning. Trained on the ZEISS arivis Cloud, these models let users precisely segment individual objects within images using AI and without any coding expertise. Users can load, visualize, and extract insights from massive 3D datasets containing a vast number of objects, enabling exploration of complex 3D volumes at scale.

ZEISS Research Microscopy Solutions

More online: [newequipment.com/55128274](https://www.newequipment.com/55128274)



Sterilization-Resistant Resin for 3D Printing

Loctite 3D MED3394 is a medical-grade resin for 3D printing that is resistant to sterilization methods that commonly challenge other photopolymers in the market. Following up to 25 autoclave cycles, Loctite 3D MED3394 preserves mechanical properties and dimensional stability, alongside high feature accuracy and low solvent absorption. This resin ensures reliable performance in demanding medical applications. It's also compliant with stringent ISO 10993 standards for biocompatibility, meeting the highest safety and quality requirements.

Henkel Corporation

More online: [newequipment.com/55128382](https://www.newequipment.com/55128382)



FORCE & TORQUE

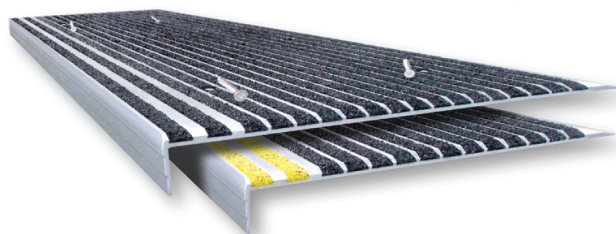


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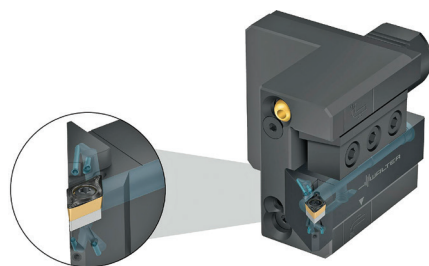


Rail-Guided Die Changing Table

A rail-guided RWS die-changing table for transporting heavy dies and molds offers 3 versions for loads up to 15, 25, or 40 tons per die. Electrically driven, the system has 2 different pull-push systems automatically transporting dies to set up presses. It can be used to change dies and molds on all types of machines, including vertical forming and injection molding machines, along with changing dies of different sizes due to the standardized base plate. Capable of semi-automatic and fully automatic die changes, RWS was created to help car manufacturers integrate numerous individual parts into large castings, like megacasting for frame or body manufacturing. The die-changing table is guided on floor-level round rails that have such a low rolling resistance that loads of up to 5 tons can be easily moved manually by just one person. It also lets several presses be connected to just one changing table so that the presses are free during prep work and can produce right up to die change.

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Walter Turn toolholder with precision cooling and screw clamping targets coolant on the rake face and flank face to maximize the cooling effect. Rake face cooling helps break and control chips, and double flank face cooling directly at the cutting edge extends tool life. Users can apply a coolant pressure from 145 to 2,175 psi (10 to 150 bar). A flexible coolant connection directs coolant transfer to a VDI tool adapter (A21XX-P) or via a coolant hose set with G1/8 in. thread (K601). Users can cut at higher speeds and the toolholder enables the production of short, manageable chips thanks to the rake face cooling.

Walter USA, LLC

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Labor Shortage = Equipment Changes

As the industry struggles with persistent labor shortages, buyers of equipment aren't the only ones turning to advanced technologies to maintain productivity and efficiency. The companies developing the equipment are also pushing forward with a noticeable change: these solutions require less human labor and involvement. What used to take a few workers to operate, might now only take one. This shift is not just a stopgap measure; it's changing the future of plant operations and how production processes are managed. The labor shortage in manufacturing isn't new and it's not going to get better. An aging workforce, a skills gap, and a lack of interest among younger generations in manufacturing careers have exacerbated the issue.

Automation and robotics have become a big cornerstone for modern processes. From assembly lines to quality control, robots are enhancing productivity, ensuring consistency, and reducing human error—and requiring way less involvement from staff than before.

Predictive maintenance is another force changing and growing by the day. IoT sensors embedded in machinery collect real-time data on equipment performance, which is then analyzed by AI to predict potential failures before they occur. With the rise of predictive maintenance, we've already seen the elimination of dedicated maintenance teams in a plant. Instead, the companies developing these platforms provide 24/7 support.

Digital twins and simulation technologies reduce the reliance on human intervention for problem-solving and allow for more accurate planning and decision-making. It also lets manufacturers train their staff in a virtual environment, enhancing skills without risking production issues.

AI can analyze way more data than a human can in way less time, identifying patterns and insights that would, frankly, go over our heads or take us way too long to decipher.

We all know the big, advanced technologies that have popped up and have made production faster, easier, and less involved. But we're now even seeing changes down to the design of traditional machinery. There's an increase in creating a piece of equipment that inherently just doesn't need more than one person to operate. A lot of these improvements and changes come from the safety and ergonomic side of designs. Making sure it's not risky for someone to operate or maintain on their own.

I know there are differences of opinion between C-suite executives and the workers on the plant floor in regards to the equipment used for production, but it's clear that there's just no getting around this change. Equipment is never going to go back to needing more than one person to operate. If anything, we'll see more and more with the ability to set it and forget it.

This industry is changing, has been changing, and is going to continue to change. I don't know what next advancement is on the horizon but I do know that at least we are finding a way to mitigate the struggles at the moment with these solutions. Use them or don't use them, but the writing is on the wall. **NED**

— **Laura Davis**, Editor-in-Chief

The Different Types of Dust Collection Methods for Bulk Dry Food Manufacturing

by John Hilgendorf, Marketing Manager — ABM Equipment

Dust collection systems remove dust and other particulate matter from the air and are very important for many companies and industries at large. They come in many forms and configurations for different applications and materials. But, at the highest level, they can be divided into three types of solutions:

- **Cartridge Dust Collectors:** Use pleated filters to filter small particles, consume little space, and are easy to maintain.
- **Baghouses:** Use a series of bags to filter large volumes of dust to very small particle sizes.
- **Cyclone Dust Collectors:** Use centrifugal force to remove particles, handling huge volumes without bag changes.

Comparing Methodologies

Given that there are several different types of dust collection systems available, each type has its advantages and disadvantages, making some better suited at certain tasks than others. Here are some key considerations.

Cartridge

Cartridge dust collectors use pleated filters, known as cartridges, to trap and remove dust and other particles from the air. They work well for a variety of industrial and commercial environments, including woodworking shops, metalworking shops, and food processing facilities.

One of the major benefits of cartridge dust collectors is their high efficiency in removing dust and other particulate matter from the air. Because the cartridges are made of a porous material, they can trap and remove a wide range of particle sizes—from fine dust to larger particles. Additionally, they take up little space and it's very easy to swap the filters. The downside is that these filters clog more frequently and are not practical for high-volume applications.

Cyclone

Cyclone dust collectors, also known as cyclonic separators, use centrifugal force to separate dust and other particles from the air. These systems work by drawing dirty air into a cylindrical chamber, where the air is then spun at a high velocity, causing heavier dust and particles to be thrown into the walls of the chamber, where they can be collected and removed.

Cyclone dust collectors are suited for applications where a large volume of heavy dust and debris needs to

be removed. They're relatively simple in design, easy to maintain, and have a low running cost. However, they are rather large and are not as efficient in removing fine dust particles as compared to the other methods because they don't use bags. For this reason, some processors will choose to pair a cyclone filter with another filter option for a 2-stage solution.

Baghouses

Baghouses, also known as fabric filter dust collectors, use a series of filter bags to trap and remove dust and other particles from the air. These systems work by drawing dirty air through the filter bags, which are made of a porous material that captures dust and other particles. Baghouses are suited for applications where a high degree of filtration is required, such as in cement plants, power plants, flour milling, and other industrial operations. They're efficient in capturing fine dust particles but are relatively high maintenance as the filter bags usually cannot be replaced by laymen.

The considerations to be made with baghouses are footprint and maintenance costs. But if you have room outside your facility and a service agreement with an apt provider, these pains can be alleviated without much trouble. For these reasons, baghouses are a popular solution.

When Dust Collection Is Needed

As cited above, each type of dust collection system has its unique advantages and disadvantages. Cartridge dust collectors are known for their high efficiency, low maintenance, and ability to remove a wide range of particle sizes. Cyclone dust collectors are well-suited for heavy dust and debris removal and have a simple design and low running cost. Baghouses are efficient in capturing fine dust particles but require more maintenance. The choice of dust collection system will depend on the requirements of the application and the type of dust or particles that need removed.

All of this addresses the "which" question, but why is dust collection a must-have piece of manufacturing equipment? Consider these 10 top-line reasons.

1. **Regulatory Compliance:** Many industries are subject to strict regulations regarding air pollution and emissions, and a dust collection system can help companies comply with these regulations by removing dust and other particulate matter from the air.
2. **Safety/Liability:** Dust and other particulate matter can be hazardous to workers' health, and a dust collection

system can help to reduce the risk of respiratory problems and other health issues by removing these particles from the air.

3. **Equipment Protection:** Dust and other particulate matter can damage equipment and machinery, and a dust collection system can help extend the life of equipment by removing these particles from the air.
4. **Product Quality:** Dust and other particulate matter can negatively impact product quality, and a dust collection system can help to ensure that products are free from contaminants by removing these particles from the air.
5. **Janitorial Savings:** Dust removed from the air is dust removed from surfaces. Catching the dust before it escapes saves the cleaning staff a lot of time and effort.
6. **Pest Prevention:** In food processing applications, dust collection is worth it even if just to deter pests because, once you house them, it can be nearly impossible to eliminate them.
7. **Energy Efficiency:** Dust and other particulate matter can clog filters and other components of heating, ventilation, and air conditioning (HVAC) systems, leading to decreased energy and equipment efficiency. A dust collection system can help to improve energy efficiency by removing these particles from the air.
8. **Fire prevention:** Dust and other particulate matter can be a fire hazard, particularly in industries that reduce the particle size of flammable materials like wood and grains. A dust collection system can help to reduce the risk of fire by removing these particles from the air.
9. **Environmental Concerns:** Dust and other particulate matter from metals and chemicals can be harmful to the environment, and a dust collection system can help to reduce the environmental impact of industrial and commercial operations by removing these particles from the air.
10. **Cost Savings:** Dust and other particulate matter can lead to increased maintenance and repair costs, as well as decreased energy efficiency. A dust collection system can help to reduce these costs by removing these particles from the air.

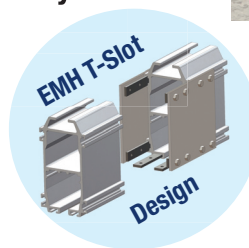
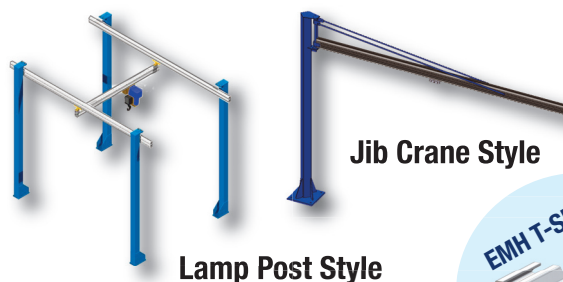
Integrated dust collection systems are a consequential component of bulk dry solids processing facilities, ensuring that particles don't get into the air and on the floor. This makes breathing easier, reduces the risk of slipping, and, depending on the application, reduces explosion risk or attraction of pests. By effectively capturing airborne particles, a cleaner and safer environment is ensured. **NED**

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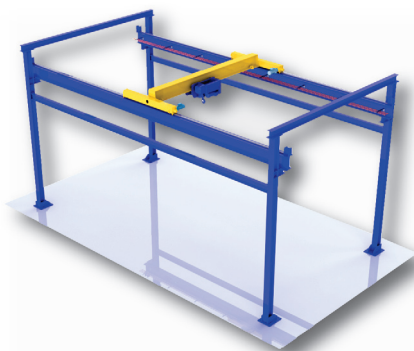
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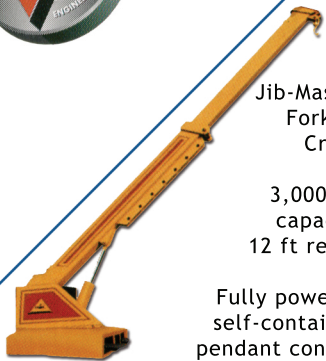


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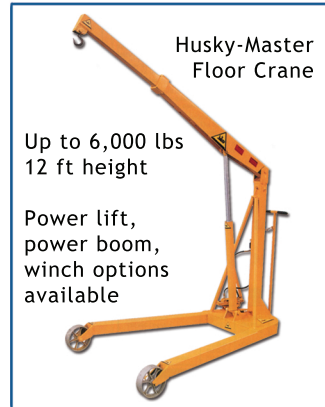


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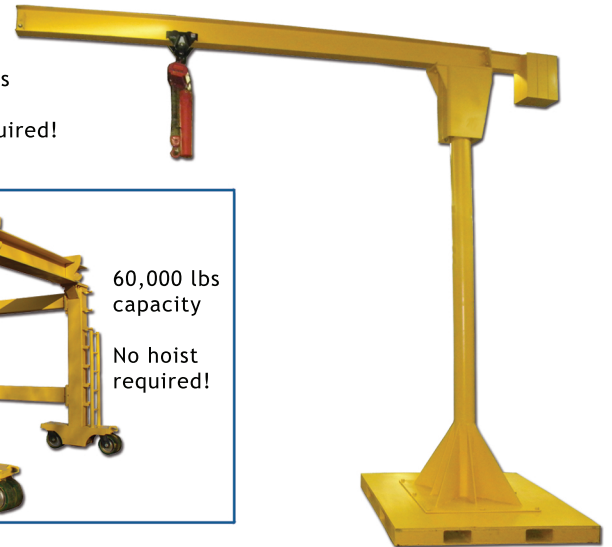
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