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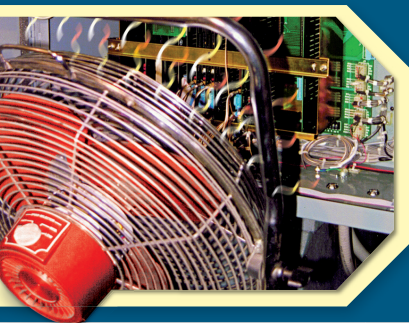
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StaCool Vest Core Body
Cooling System fits any
body shape and size to
ensure users' core body
temperature stays cool in
the summer heat all day.

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The SBC990
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cabinet
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removes
scale or rust from auto-
motive parts, cleans
up rusty tools, etches
glass, or any other spe-
cial application.

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Innodisk's iCAP Air air
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insights into air quality,
detecting temperature,
humidity, suspended
particles, and more.

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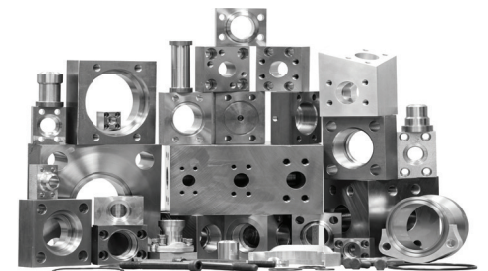
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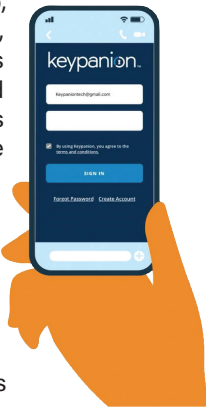


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Motivational Motor Developments

by Sheila Kennedy, CMRP

Critical motors and motor-driven systems are ubiquitous in industrial environments. Technology providers are continually devising distinctive motor designs and advanced motor optimization solutions to increase uptime, efficiency, reliability, and performance.

Motor Innovations

Fit-for-purpose motors solve unique application challenges. The **CTV-3 & TVC-3 medium-high thrust vertical motors from Nidec/U.S. MOTORS** are specifically engineered for use in vertical turbine pumping applications. The totally enclosed fan-cooled (TEFC) motor's improved conduit box sealing and cast-iron frame, brackets, and fan cover guard all help to protect the motor during operation in severe-duty environments.

"This motor features through-the-bearing lubrication, which means it is better at expelling used grease. This is particularly critical for vertical motors, as it extends motor life," says John Frese, senior product manager at Nidec's U.S. MOTORS Division.

Liquid-cooled SynRM motors recently introduced by ABB provide IE5 efficiency as well as a very high power density. Additionally, they can provide 100% torque starting from zero speed without a cooling fan. This innovative design minimizes noise and leaves the ambient air undisturbed, which is beneficial for different processes in food and beverage production, rubber, and plastic production, explains Ghanshyam Shrestha, R&D technology manager for ABB IEC Low Voltage Motors.

As an example, a "315-frame liquid-cooled SynRM can provide 60% more power compared to the same size premium efficiency liquid-cooled induction motor. And it does this while still providing two classes higher efficiency," notes Shrestha. "This all adds up to a



VACON drive series' condition-based monitoring functionality allows you to use your drive as a smart sensor to monitor the condition of your motor and application to detect issues early and find solutions before they become a problem.

© Danfoss

cooler motor and bearings, smaller motor footprint, lower energy cost, and lower CO₂ footprint."

Optimization Advancements

Monitoring the condition of motor systems is a reliability imperative. The **VACON 100 and VACON NX drives from Danfoss** are now embedded with condition-based monitoring capability. The intelligent drives can act as smart sensors, providing instantaneous insights into early issues in the motor and application, without a connection to the cloud or a PLC.

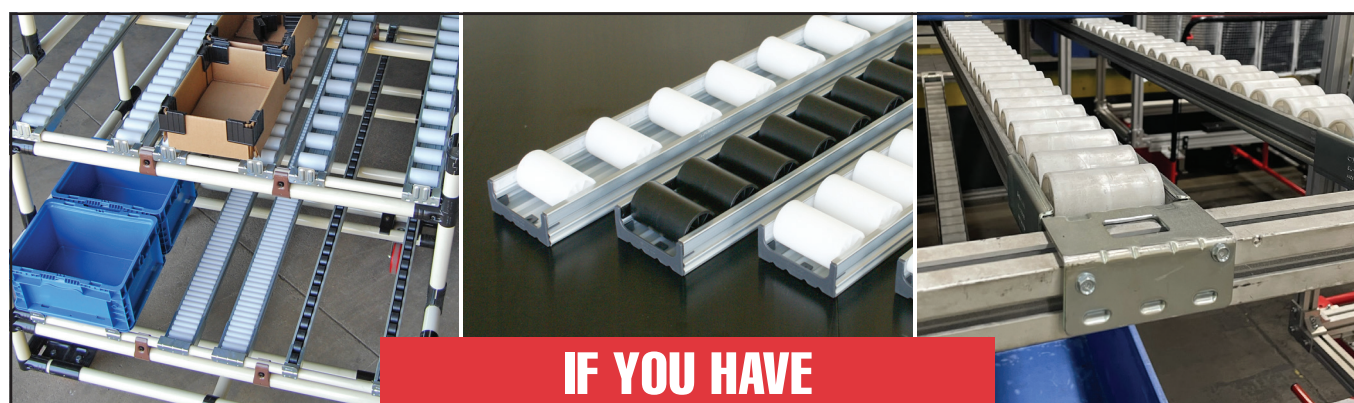
According to Kunal Shah, senior application engineer at Danfoss Drives, these intelligent drives enable regular checks of the condition and performance of the machine when the drive is in service, and detect mechanical, motor, or application failures in advance. Alarms/faults or warnings are triggered in the drive to notify customers or service technicians, and corrective actions can be performed before the process or application is impacted.

The new **K7DD-PQ Series of remote advanced motor condition monitoring**



IE5 motors have 40% lower energy losses than commonly used IE3 motors. This makes the payback time for selecting an IE5 instead of an IE3 motor often less than one year.

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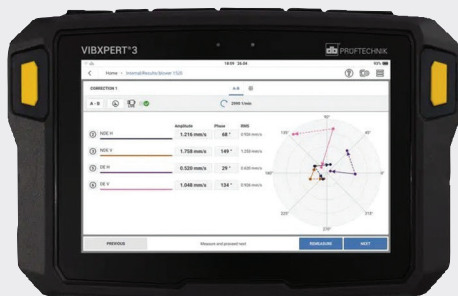
The K7DD-PQ motor condition monitoring device can detect specific failure modes such as worn blades, chip entanglement, or deteriorating bearings in machine tool spindle motors.

© OMRON Corporation

devices from Omron are designed to augment the productivity of existing maintenance resources and integrate motor condition monitoring into an IoT strategy, says Automation Engineer Jim Pankiewicz.

"The K7DD automates the data acquisition and analysis portion of motor condition monitoring. In addition, it can monitor the condition of motors that consistently change direction, such as servos, actuators, and valves," observes Pankiewicz. "It has a learning feature that can learn the conditions of a failure if it's able to be repeated. Lastly, it features failure mode templates designed to predict specific types of motor abnormalities when you're looking to detect pump cavitation, cutting tool wear, or grease degradation along with many other conditions."

The new VibXpert 3 Balancer from Pruftechnik, a Fluke Reliability company, is a smart device designed to help solve motor unbalance even in the toughest environments. It has six synchronous channels for measuring vibration levels from multiple angles at once. It supports resonance tests, phase measurements, and FFT spectrum data analyses.



The VibXpert 3 Balancer increases the reliability of machinery by reducing excessive vibration levels and improving safety, uptime, and energy efficiency of rotating machinery.

© Pruftechnik

"Unbalance is a leading cause of failure in rotating equipment and early signs are often missed by maintenance teams," says Taylor Sheppard, field application specialist at Fluke Reliability. "Whether on the plant floor, in the field, or in harsh or extreme conditions, VibXpert 3 Balancer's intuitive interface makes it easy for experts and non-experts to go straight to the root cause of the unbalance and correct it using step-by-step guidance."

Avoiding misalignment in rotating machinery is the focus of the AT-400 shaft alignment system from Acoem. Its M9 and S9 dual-axis sensors are posi-



The AT-400 Shaft Alignment System's dual sweep method captures accurate measurements during shaft rotation, ensuring optimal alignment.

© Acoem

tion-sensitive detectors with 0.001-mm (0.00004 in.) resolution. Seven unique measurement methods address diverse alignment challenges, such as Dual Sweep, which automates measurement recording during a sweep of the shafts. Other methods include Dual Sweep Express, Dual Multipoint, Dual Multipoint Express, Tripoint, Tripoint Express, and Clock.

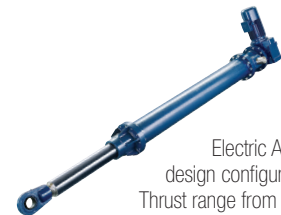
GuideU is the AT-400's patented, customizable 3D alignment graphical user interface that simplifies measuring, aligning, and reporting and minimizes errors. It uses icons, color coding, and animated help screens to guide the user through the entire process. **NED**

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 www.plant-services.com/voices/technology-toolbox.

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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.



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Bridging the Manufacturing Skills Gap With AI

By Michael DeMaria, Director of Product Management, Azima DLI – a Fluke Reliability company

By 2030, the U.S. could see 2.1 million manufacturing jobs go unfilled, according to a 2021 study led by Deloitte and The Manufacturing Institute. This shortage is already proving costly: 45% of manufacturers have had to decline business opportunities due to the lack of skilled labor.

Long-standing issues have now brought this skills gap into sharp focus. The talent shortage is fueled by two significant trends: an aging workforce heading into retirement and a technological landscape that evolves by the minute.

In the next decade, as much as 25% of all manufacturing workers are anticipated to retire, taking with them essential laborers on the shop floor and a wealth of knowledge and technical skills, and creating a critical vacuum of talent. Manufacturers must not only recruit workers who can bridge this skills gap but also actively facilitate knowledge transfer from seasoned professionals to ensure both continuity and quality.

Concurrently, the shift toward Industry 5.0 is reshaping the skill sets required on the manufacturing floor. In the modern plant, collaboration between smart machines and human expertise is becoming the norm. Workers are expected to have technical skills and experience with advanced digital technologies, but many lack the necessary training.

Artificial intelligence (AI) is poised to play a crucial role in overcoming these gaps. It could act as a bridge between current skills and future needs, preserving the deep knowledge of veteran workers and amplifying it through advanced analytics and machine learning. This lets manufacturers not only maintain but significantly boost their operational efficiency.

By integrating AI, factories can transform their workflows, making processes smarter and more adaptive to future challenges.

Training the Workers of Tomorrow

By embedding into the daily workflow, AI programs can make training continuous and closely integrated with the tasks at hand. In this context, AI digital assistants could act as on-demand tutors. They could provide specialized manufacturing knowledge and instructions directly to frontline workers in real-time, so they can easily understand data and apply it instantly to complex tasks.

For instance, Bayer CropScience's AI tool, Smart Search, quickly searches an extensive database to find and deliver the exact information workers need. It stores and analyzes records of past incidents, user-generated content like shift logs, and operational guidelines accumulated over a decade. Employees can use this valuable tacit knowledge and best practices developed over the years by experienced operators, technicians, and engineers to troubleshoot faster and perform their jobs more effectively.

Simplifying Complex Data Analysis

In manufacturing plants, teams frequently grapple with vast amounts of data generated from preventive maintenance strategies and condition monitoring devices, software, and sensors. This torrent of information requires rapid and proficient analysis, a task that becomes daunting due to the fact that many teams lack the expertise to swiftly interpret complex datasets.

Here too, AI technology steps in to overcome the skills gap. It interprets and analyzes large volumes of data so that less experienced workers do not have to. These applications share the actionable insights employees need to get on with the job.

Take handheld vibration testers as an example. User-friendly interfaces guide technicians through the data collection process. Once the data is recorded, AI-powered software can analyze the information and alert them to irregularities in assets that need to be addressed immediately before they escalate. As factories transition from handheld to installed wireless vibration sensors, AI-powered software becomes even more essential in analyzing vast amounts of data at scale. This is prescriptive maintenance in action, where solutions not only predict failures but prescribe fixes.

Powering Predictive Maintenance

Traditionally, predictive maintenance—and the critical analysis of machine data that supports it—has been a resource-intensive process. This often involved collecting data with sensors as a machine ran in order to monitor individual component health and track failures.

Experts would then painstakingly analyze this data, looking for patterns and anomalies that indicate wear or potential failure. Even after setting up such systems,

continuous monitoring and data analysis requires significant manual effort and expert intervention.

However, by leveraging machine learning, generative AI can automate the detection of patterns and anomalies, predicting equipment failures before they happen. This reduces the need for manual monitoring and the reliance on specialized personnel for daily operations.

Manufacturers at the forefront of the industry already know that this automation not only streamlines the maintenance process but also extends machine life and reduces operational costs. But, importantly, it also democratizes the use of predictive maintenance by enabling new maintenance workers to confidently work with and maintain complex machinery. This capability is crucial, as it allows a broader segment of the workforce to engage in sophisticated maintenance tasks without the need for extensive training in data analysis.

Embracing AI: A New Era for Manufacturing

The true power of AI in addressing the manufacturing skills gap lies in its ability to expand human potential, not replace it. And by redefining roles within the industry, AI will not only create more dynamic and skilled positions but also improve interactions between teams and technology.

The factories of the future will be powered by intelligent systems that are proactive, efficient, and inclusive, making the most of every level of talent available. So, the race is on for manufacturers to acknowledge the skill constraints and identify how new technology can help, lest they get outpaced by their competition. **NED**

As director of product management at Fluke Reliability, Michael leads the team responsible for overseeing hardware platforms, integrations, diagnostic software, AI tools, and user portal deliverables and business metrics. Prior to joining Fluke Reliability, he was director of product management at Azima DLI, which was acquired by Fluke in 2023. That role included several years of fieldwork, program management, and detailed vibration analysis. With over three decades of experience in vibration analysis, his expertise is rooted in his background in Navy nuclear engineering.

4 Intelligent Tools to Help You Manufacture a Resilient Digital Future

By Maggie Slowik and Andrew Burton, Global Industry Directors of Manufacturing at IFS

Complex market challenges are part and parcel of the manufacturing landscape, and businesses are no stranger to embracing technology in order to keep abreast with new industry regulations and ever-changing customer expectations. In 2024, manufacturers must look toward AI as well as beyond it to improve efficiency and strengthen supply chains, helping them stand out from the competition.

1) Manufacturers Must Redesign for Circularity to Eliminate Excess Waste

It's becoming increasingly evident that manufacturers' "take-make-waste" linear business models have become unsustainable, unpopular, and exposed to more business risk. Nearly half of global manufacturers are worried about the lack of key supplies, with the same percentage expressing concerns about the increasing costs for raw materials. There is also increasing urgency surrounding circularity as the regulatory landscape and circular economic policies evolve rapidly. As various regulations come to fruition, such as the SEC disclosure requirement, the transition to the circular economy has been accelerated.

Meanwhile, Bain & Consulting found that 33% of executives expect their industry to be disrupted by circularity start-ups that put products or materials back into the supply chain. By reusing materials over and over again, companies not only create resilience through a decreased dependence on virgin materials but also yield more profitability out of the same product.

To ensure manufacturers are prepared for their transition to a circular business model, they need to be enabled by the right technology. Indeed, approximately 80% of all product-related environmental impacts are determined during the design phase of a product. At this stage, manufacturers need to think about the choice of their suppliers, but also how redesigning their products them can make them easier to disassemble, repair, and recycle in the future to enable circularity.

Going further, the industry at large needs the ability to handle returns and incorporate reverse logistics, a strategy that Gartner recognizes as a key engine to drive circularity strategies. Using a circular business model, reverse logistics allows manufacturers to return goods at their end-of-life, creating an efficient flow of goods and reducing waste.



Finally, traceability is another key capability needed for circularity, as it enables manufacturers to track and trace materials, parts, and products throughout their lifecycle. That way, manufacturers never lose sight of a product's journey and environmental impact.

2) People are a Business' Greatest Asset—Invest in Employee Productivity to Unlock \$100 Billion in Value

The manufacturing industry is facing a talent crisis so deep it could threaten its growth and recovery. In the U.S. alone, the manufacturing industry is expected to have 2.1 million unfilled jobs by 2030. Aging workforces and 'disintegrating behaviors' inclusive of a change in work ethics and demands are key causes of this talent crisis.

Workers increasingly expect more flexibility and other non-monetary rewards, a phenomenon likely accelerated by the COVID-19 pandemic. Meanwhile, increasing employee turnover has significantly disrupted shop floor productivity, schedules, and workflows.

To address these dynamics, manufacturers have called for the integration of technology to improve productivity. Indeed, a recent study has shown that almost two-thirds (62%) of employees could get more work done if they had better tech tools, with more than half (58%) claiming that their technology needs have increased in the last five years.

Utilizing connected worker technology and digital collaboration has the potential to unlock more than \$100 billion in value for the manufacturing industry. In addition, it could lead to productivity boosts of 20 to 30% within intensive work processes.

An IDC study commissioned by IFS revealed that 45% of manufacturers have made it a priority to augment the worker experience with the help of technology. Embedding technology by involving workers in the process—a concept also known as the "connected worker"—will enable manufacturers to drive productivity, efficiency, and improve the shop floor worker experience.

3) Manufacturers Connect the Dots With AI-driven Data Recognition

In just a few years, AI spending in IT is expected to rise by 40%. This rise in investment will help manufacturers improve efficiency through AI data pattern recognition.

By using historical data, AI swiftly analyzes real-time production data, identifying patterns and anomalies. The long-term value of AI and data pattern recognition will provide manufacturers with ongoing root cause analysis, streamlining work, and predicting potential product quality issues by comparing various data points. According to a McKinsey report, using AI pattern recognition tools can lead to a 4% increase in revenue, up to a 20% reduction in inventory, and a decrease in supply chain costs up to 10%.

As manufacturing systems become more complex, AI-driven data pattern recognition also is crucial for sharpening quality control, predicting equipment issues, and optimizing production for fewer defects, higher OEE, and significant cost savings.

4) From Reactive to Proactive—AI Integrations Bring a New Level of Control to Inventory Management

Recent IFS research has shown that manufacturers continue to face ongoing supply chain challenges. However, by leveraging AI, ERP, and EAM technologies, manufacturers can optimize their inventory with real-time machine data. With the addition of AI-powered tools, manufacturers will have the ability to respond swiftly to demand shifts, supply chain disruptions, and market changes.

For example, using AI embedded within ERP systems, manufacturers will be able to swiftly adapt to unexpected raw material changes, predicting potential supplier delays. By doing so, manufacturers can enhance their adaptability, reduce lead time, and minimize the impact of supply chain disruption for efficient production. **NED**



Autonomous Piece Picking Solution Without CAD

The **MI.RA/OnePicker** is a perception-based piece-picking robot that picks miscellaneous objects from the same bin without relying on CAD-based assistance or prior information about their size, shape, color, or characteristics. AI, vision technology, and sensors are paired together to pick randomly displaced objects after calculating the picking pose in seconds. The robot determines the most effective way to empty a bin while saving costs and lowering risks. It's able to recognize the surface from which an object can be picked using a suction cup to identify the best grasping point.

Comau

More online: newequipment.com/55038735



AI Pallet Jack Operates 24/7

With advanced AI pallet detection powered by NVIDIA Jetson AGX Orin, the **MiR1200 Pallet Jack** uses 3D vision to identify pallets and then pick up and deliver pallets with precision. The pallet automates detection, transport, and delivery of pallets up to 2,600 lb. (1,200 kg) at 5 ft/s (1.5 m/s). This robot operates continuously, with shift-long battery capacity and opportunity charging for uninterrupted performance. Navigating tight spaces, it optimizes logistics, ensuring timely pallet delivery without additional infrastructure.

Mobile Industrial Robots, Inc. (MiR)

More online: newequipment.com/55038780

Bin-Picking Software With AI

Featuring an intuitive UI and programmable AI to tackle high-mix, low-volume bin-picking tasks, **CapSen PiC 2.0 software** combines 3D vision, motion planning, and control algorithms to provide robots the ability to locate, pick, and manipulate objects from cluttered bins and shelves. The system accurately detects 3D objects in a range of different positions and orientations, even when they're partially occluded or in tight workspaces. Its advanced motion planning algorithms ensure collision avoidance while enabling fast and accurate parts picking, regrasping, and advanced tasks such as detangling and assembly of shiny metal objects, such as bolts, springs, and washers.

CapSen Robotics

More online: newequipment.com/55039681



Scalable HMIs

Modular Vision Series HMIs are offered with wired and wireless networking options and typical industrial interfaces. These HMIs feature standard interactive touch display sizes of 7, 10, and 15 in. and resolutions ranging from 1024 x 600 to 1920 x 1080 and a brightness of >400 cd/m². The scalable series are available as standalone panel PCs or as OEM products that can be integrated into the respective application using various adapters. All 3 models are designed to operate in ambient temperatures ranging from 32 to 140°F (0 to 60°C).

SECO S.p.a.

More online: newequipment.com/55039673

Modular Vision



Optical Black Surface Treatment

96.5%
Light Absorption

Micro-Robot Eases Reflection Challenges

The **Meca500-OBS** is a micro-automation robot that features a unique optical black surface treatment that absorbs up to 96.5% of light, reducing reflection and enhancing safety in sensitive manufacturing environments. Engineered to tackle challenges in optics manufacturing or AI vision systems, its color enables faster production load times. As the only light-absorbing 6-axis robot in its class, the Meca500-OBS offers value for automation processes that are highly impacted by light reflection such as optics and photonics.

Mecademic

More online: newequipment.com/55039690



Hollow-Wrist, 6-Axis Articulated Robots

The **S-Family of small, 6-axis, articulated robots** have payloads of 30 or 40 lb. (13 or 18 kg) for arc welding and handling applications. Featuring an IP68 hollow-wrist design, with integrated arc and gigabit dressings, the robots can access small spaces, protect cables, and offer multiple mounting positions to optimize space and increase robot density. The S-13 has a reach of 70 in. (1,700 mm) and the S-18 has a reach of 80 in. (1,960 mm).

Comau

More online: newequipment.com/55038407



EZAutomation/AVG since 1968

***NEW IDEAS* to cut downtime and
Improve Productivity by 10-50%**

Fact: Touchscreen and/or display in an HMI are
most likely to go out first due to wear and tear!



Made in America

EZ 7 EZTouch HMI
**Designed to minimize
downtime**

**Replace Touchscreen & Display in less than
2 minutes, no rewiring, no re-programming**

- * No panel cut out needed, only 3/4" hole in control panel door
- * Patented On-Line Edit to make program changes, no Down Time
- * MiniWifi included that allows programming from 50ft away w/o cable
- * 30 Day Money Back Guarantee
- * Communicates to over 95% of PLCs
- * Programming so simple even your CEO can do it in minutes

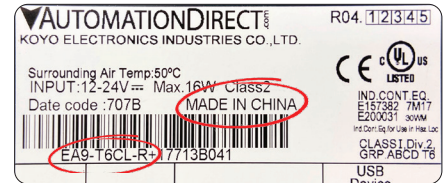
Same day FREE SHIPPING if Ordered by 6 p.m. CST

Call or text Application Hotline at 563-726-1359

Make a Statement, Support American Jobs Say No to all HMIs Made in China

C-more from AutomationDirect, Maple, Schneider, Omron, Siemens, Idec, Mitsubishi, a lot of Rockwell, all Made in China

*** Don't be fooled by the large American flag on Automation-Direct's building in Georgia which is only a distribution center. ADC is owned by Koyo and their HMIs are made in China.**

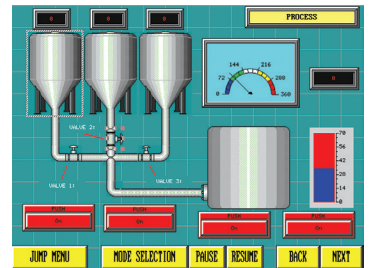


We do recognize that currently you do have to buy some products made in China but, HMI is a significant part of the cost of your control system, so why not start with buying Made in America HMIs?

*** Programming so EZ, that even your CEO can do it in minutes**

Program this screen in less than 10 minutes

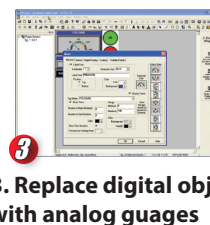
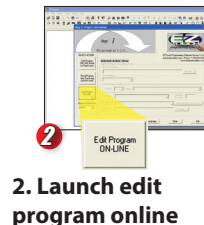
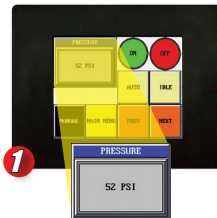
Most of our competitor's products require a 3-5 day class to learn how to program their products. Our programming language is so intuitive and so simple that the design time for the entire project is reduced to hours instead of days. <http://ezautomation.net>



*** Patented On-Line Edit Saves Down Time**

Most studies confirm that on the average, a new HMI installation requires 5 edits in the first three months. EZAutomation/AVG is the only company on this planet that allows on-line edit of the screens without shutting down or disconnecting the HMI. This saves the user thousands of dollars in down time. <http://ezautomation.net/e7uniquefeatures>

1. Operator wants to have an analog guage



4. All done without missing a beat.

No Downtime

*** 21 Unique Features:** <https://www.ezautomation.net/e7uniquefeatures>

Including Full Project simulation on your PC, "C level" scripting and logic expressions, Data-logging, Recipes, Emails, USBs, Free Chart recorder, Most advanced Alarm management and logging and On-Screen Recipe Edit.

EZ mini Wifi

FREE, Included with every EZ 7



Program/Edit your HMI from 50ft away, no Programming Cable needed!



*** Troubleshoot EZ 7 Remotely via Smartphone or Internet**

Text 563-726-1359 or email: EZ7@EZautomation.net

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Temp 84.5 Prssr 60.2
TGT 1099 ACTUAL 1025
CONVEYOR2 NEED MTNC
SAFETY MEETING 2:15P

- * Connect to 95% of all PLCs
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TCP/IP, Profibus, DeviceNet

FREE EZ Software

Only Marquee that communicates to DH+

Display Production Data & Machine Operation Time



TGT 132 ACTUAL 124
Average Time 131 Sec

Display Alarm Conditions

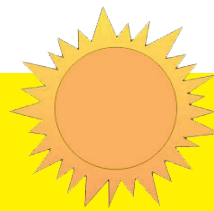


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<https://www.EZautomation.net/EZPPS>

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Wifi, Monitor Actual on
EZPM and Computer



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w/realtime clock,
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Starter Kit
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<https://www.EZautomation.net/EZPM>

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Email to applications@ezautomation.net



Magnetic Cobot Smart Gripper

The **CoBot SmartMagGrip E30** is designed specifically to work with cobots. Its variable field output allows for adjustability of the magnetic strength between 0 and 100% for de-stacking, picking single parts, or picking multiple parts. Its integrated sensing technology can be used to determine or confirm the proper part is picked. The parts are taught to the tool through a simple learning process. The Cobot SmartMagGrip E30 is currently supported with direct integration to Universal Robots and Fanuc CRX robots with dedicated plugins operating via RS-485.

Magswitch Technologies

More online: newequipment.com/55039695



Palletizing Robot for 44 lb. Payloads

Using the heavyweight CS620 robotic arm which features a 44 lb. (20 kg) payload and a 6 ft (1,800 mm) radius, Elite Robots' **all-in-one palletizing solution** integrates a lifting column to increase the robot's reach and a custom-crafted end-of-arm tool. The pallet position sensors inform the robot when an empty pallet is ready for action, while the proximity sensors and the dynamic safety plans ensure enhanced safety. From the software side, the embedded palletizing wizard ensures rapid setup, ease of operations, and real-time monitoring of the production status.

Elite Robots

More online: newequipment.com/55038739



Cobots Offer Limitless Flexibility

Powered with NEURA Robotics' robotic assistant platform, the **CL Series of cobots** combines the safety of standard cobots with the speed and productivity of industrial robots. They offer a speed of 200-deg./s and repeatability of ± 0.02 mm (0.0008 in.) with payloads and reaches of 7 lb./20 in., 11 lb./30 in., 18 lb./50 in., and 22 lb./40 in. (3 kg/590 mm, 5 kg/800 mm, 8 kg/1,300 mm, and 10 kg/1,000 mm) free mounting orientations, extremely small footprints, and IP66 classification.

Kawasaki Robotics USA, Inc.

More online: newequipment.com/55038762



Fixed Industrial Scanner

The **FS42** is designed for resource-intensive tasks like deep learning-based optical character recognition (OCR) applications and high-throughput scanning requiring speed. Its onboard memory and NPU enable fast scanning and complex AI-based deep-learning machine vision applications. Decoding information from every component and package as it moves through the manufacturing, storage, and fulfillment phases, the FS42 has efficient track-and-trace capabilities and is able to handle challenging barcodes quickly.

Zebra Technologies

More online: newequipment.com/55038426

AI Fleet Management Software Helps You Make the Right Decisions

InOrbit RobOps Copilot uses AI to turn robot operations data into actionable insights to optimize autonomous robot fleets. RobOps gives insights to anyone regardless of technical expertise. Using the latest large language models it lets users ask questions in their preferred language, get detailed explanations, refine their analysis, and arrive at key decisions, easily transitioning between their favorite messaging platform for casual queries and a fully integrated experience with chat-driven dashboard explorations.

inOrbit

More online: newequipment.com/55042166



Extra-Safe, Low-Profile AMR

Using real-time intralogistics management to automate material handling to reduce expenses and increase efficiency in manufacturing and warehouse processes, the **AMR F12** is a super-safe, low-profile AMR that automates transportation operations within manufacturing plants. With a maximum payload of 1,700 lb. (800 kg) and a speed of 5 ft/s (1.5 m/s), the robot offers ergonomic and efficient handling of logistics processes. Thanks to AI and machine learning methods, the AMR can be autonomously managed without operator supervision by the Qursor Fleet Management System which communicates with any production and WMS, as well as RTLS.

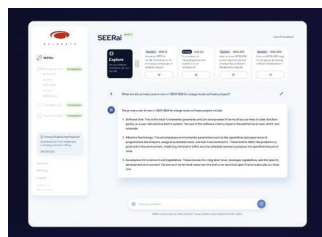
Aformic, Inc.

More online: newequipment.com/55042155



AI for Engineering Project Estimation

SEERai, an advanced chat-based generative artificial intelligence (AI) built to assist engineers with planning and estimating projects in various sectors, provides real-time, data-driven insights to make better decisions in analysis and planning. SEER, the flagship cost, schedule, and risk estimation platform, streamlines cost and should-cost estimation and project planning with real-time insights into cost drivers, risk factors, and the potential impact of hundreds of project variables. Users can chat with SEERai and gain action-oriented insights for their projects and initiatives. SEER accurately forecasts project costs, schedules, and potential risks. Machine learning algorithms improve predictions over time as project data is shared and easily adapts to new information and changing conditions. It evaluates the probability/impact of various risk factors on a project and develops mitigation strategies.



Galorath

More online: newequipment.com/55039930

Distributed Control System for Process Automation

Valmet DNAe is a fully web-based process control system that comes with a cybersecure system architecture, control software, hardware, engineering, and analytics tools, helping customers improve the efficiency, productivity, sustainability, and safety of their operations. The system provides a common user interface for controls, analytics, configuration, and maintenance. Intuitive workflows simplify operations and enable users to manage larger process areas with less effort. Advanced analytics tools enable turning real-time and historical data into actionable insights. Additionally, the web-based environment provides a unified environment for all engineering needs from office to field.



Valmet

More online: newequipment.com/55039642



AM Technology Significantly Reduces Build Times

TEMPUS technology, for RenAM 500 series of metal additive manufacturing systems, achieves up to 50% reduction in build times, detailed build insights, and advanced process monitoring. The technology uses advanced scanning algorithms that sequence the layer data in a way that maximizes productivity while maintaining part quality. The optimization suits some part geometries more than others, but all geometries can see some productivity benefits. Parts with thin, vertical features, for example, are likely to experience proportionally higher productivity savings. While traditional powder bed systems require the powder recoater to fully distribute powder before the layer can be consolidated, TEMPUS technology fires the lasers as the recoater is moving. The patented technology communicates between advanced software and hardware components to synchronize the system lasers with the powder recoater, removing up to 9 seconds of build time from every layer.

Renishaw Inc

More online: newequipment.com/55039664

IoT Wireless Pressure Sensors

The **65xxN wireless pressure sensor** for short-range coverage and the **69xxN wireless pressure sensor** for long-range coverage offer practical, efficient solutions for industrial monitoring challenges.



Designed for periodic condition monitoring, 65xxN leverages BLE 5.3 communications for localized data collection and transmission. Engineered with LoRaWAN technology, the 69xxN offers long-range coverage over several kilometers, low power consumption, and scalability to support numerous devices within a single network. With security features and certifications for use in hazardous areas, both sensors are safe for critical applications and high-risk areas.

TE Connectivity

More online: newequipment.com/55039983



Miniature Force Sensor With IO-Link

U93A, an easy-to-mount miniature force sensor with optional digital or analog interfaces, is for use in production and assembly lines or overcoming test challenges that require measurements of tensile/compressive forces in confined spaces. It's available as a traditional passive mV/V sensor or as a force transducer with different hardwired amplifier modules. Models with 0 to 10V or 4 to 20 mA are available, as well as a digital module with an IO-Link interface. The small and stiff sensor measures static and highly dynamic tensile and compressive forces. Its small dimensions and dynamic properties make it a cost-effective alternative to piezoelectric force sensors.

Hottinger Brüel & Kjaer (HBK)

More online: newequipment.com/55039624

Quality Starts at the Source!



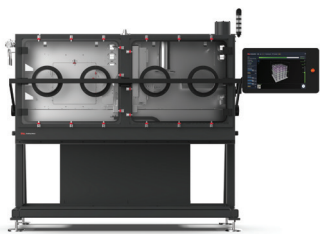
Admiral Steel has spent 75 years sourcing the best steel available because we know that our customers expect nothing less.

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Binder Jet 3D Printing for Titanium, Aluminum

The Production System P-1 is now offered with a **Reactive Safety Kit** that unlocks safe, high-speed production of ultra-fine titanium and aluminum powders. The P-1 uses Desktop Metal's high-speed Single Pass Jetting (SPJ) technology in an inert environment and can complete each part layer in less than 3 seconds, depending on the material, with full builds printable in less than one hour. The P-1 Reactive Safety Kit features ATEX-rated components, as well as critical hardware and software updates to ensure the highest level of safety.

Desktop Metal

More online:
newequipment.com/55039944



Large Robot Family Reduces Energy Consumption

The **IRB 7710** and **IRB 7720** robots offer 16 new variants for many industries. They're perfect for high payload assembly, such as giga casting, high-speed press tending, and palletizing, as well as high-accuracy contact applications, such as machining and friction stir welding. Powered by OmniCore, the robots achieve motion control with path accuracy down to 0.02 in. (0.6 mm), even with multiple robots running at high speeds of up to 63 in/s (1,600 mm/s) and moving payloads of up to 1,400 lb. (620 kg).

ABB Robotics

More online:
newequipment.com/55039968

Heavy-Duty Robot Grippers

Two powerful grippers designed for heavy-duty applications, the **3-fingered 3FG25 gripper** and the **2-fingered 2FG14 gripper**, deliver gripping and payload power while providing customization for applications. The 3FG25 has a 55 lb. (25 kg) payload in an all-electric, lightweight form and excels at handling oddly shaped items. The 2FG14 has a parallel finger grip with a payload of 30 lb. (14 kg). The gripper is ideal in for example CNC machine tending applications that involve heavy metal workpieces with a base that handles oils or cutting fluids. Both electric grippers offer an all-around plug-and-produce experience, including fingers with multiple configurations, flange adapters, cabling, and software that removes the complexity of robot programming.

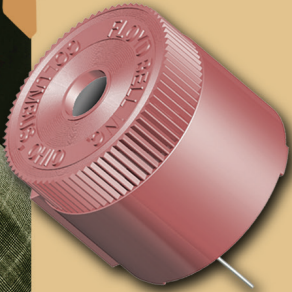


OnRobot A/S

More online: newequipment.com/55039973

Sound Solutions Since the 1970s

Since 1972, Floyd Bell Inc has been providing solutions for audible alarms. We're now the industry leader in alarm technology, expanding into LED alerts, voice-capable products, combination components and CAN technology.



M-80



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- Combination Light/Alarm Components
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Made in the USA



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Floyd Bell Inc
SOUND SOLUTIONS

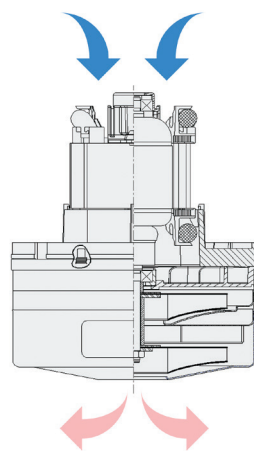


Radio Communication Tester for IoT Devices

Manufacturers of IoT chipsets, modems, and end devices as well as test houses can now rely on the **CMW500 radio communication tester** to bring next-generation IoT devices based on NTN to the market, enabling connectivity on land, at sea, and in the air. The tester allows engineers to assess their NTN NB-IoT devices under realistic conditions, establishing a real-time, comprehensive connection with the simulated satellite network and testing the relevant signaling and RF scenarios in line with the 3GPP Rel. 17 specifications. The test solution emulates geosynchronous orbit (GSO) and geostationary orbit (GEO) as well as low earth orbit (LEO) constellations. It helps engineers to verify NTN device challenges like time and frequency synchronization due to prolonged delay and Doppler effect, low Signal-to-Interference-plus-Noise Ratio (SINR), power saving mechanisms, satellite ephemerides, and GNSS acquisition.

Rohde & Schwarz USA, Inc.

More online:
newequipment.com/55039659



Reverse Airflow Motor Technology

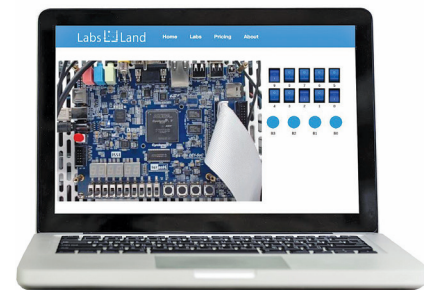
RAM Reverse Air Movement Blower Motor is a cutting-edge invention that overcomes the shortcomings of traditional through-flow air blower motors. The motor side is only exposed to ambient air intake, ensuring optimal cooling even in near-sealed conditions. It eliminates the need for thermal protection or bleed holes, enhancing reliability, sound performance, and motor life. The technology achieves a 6.5% reduction in decibel levels and a 48% reduction in Sones compared to traditional thru-flow motors. It also completely removes the necessity for a leak path at low flow conditions, leading to increased product performance and reduced noise.

Bison

More online:
newequipment.com/55039951

Remote Engineering Hardware System

LabsLand Prism4 is a modular structure for building interactive, real-time, remote hardware systems faster and more efficiently. It can control hardware platforms remotely anywhere in the world, 24/7. The Prism4's design supports remote hardware systems with cameras, modular lights, and evaluation boards. The platform also includes a set of Phase Dock workbench bases where devices can be attached using clicks and slides. The Prism4 hardware system enables users to control and interact with the target platforms while providing video feedback demonstrating outcomes and results in real time.



DigiKey

More online: newequipment.com/55039757

Wireless Video Boroscopes

Exttech BR450W Series of video borescopes inspect difficult-to-reach areas in building, automotive, and plant maintenance applications. The two models, the BR450W-D Dual HD Wireless and BR450W-A2 Two-Way Articulating Wireless, provide users with remote control and display, documentation, and sharing options. Connecting via Wi-Fi to the Exttech ExView App for remote viewing of the 1280x720 image, users can capture images, videos, and audio recordings through the app, share them, and use the information to identify and document problems. The BR450W-D is designed for HVAC, electrical, attic, and crawlspace inspections. The BR450W-A2 is for automotive, industrial, and commercial building inspections.



Teledyne FLIR

More online: newequipment.com/55039937



Ultrasonic Sensors With Adjustable Sound Cone

Available with an adjustable sound cone and switching (HTU) or measuring (DMU) sensors, the **420B and 412B series of ultrasonic sensors** can be used for many applications. The sound cone can be set via an IO-Link interface to narrow, medium, or wide to adapt to the respective application. The sensors can detect glossy, reflective, very dark, or transparent surfaces as well as liquids without problem. The 420B series includes ultrasonic sensors in compact cubic plastic housings with small dead zones. The 412B series complements the range of cylindrical sensors in M12 housing with devices featuring IO-Link and analog output.

Leuze Electronic

More online: newequipment.com/55039763



TELEDYNE | Teledyne FLIR
Integrated Imaging Solutions

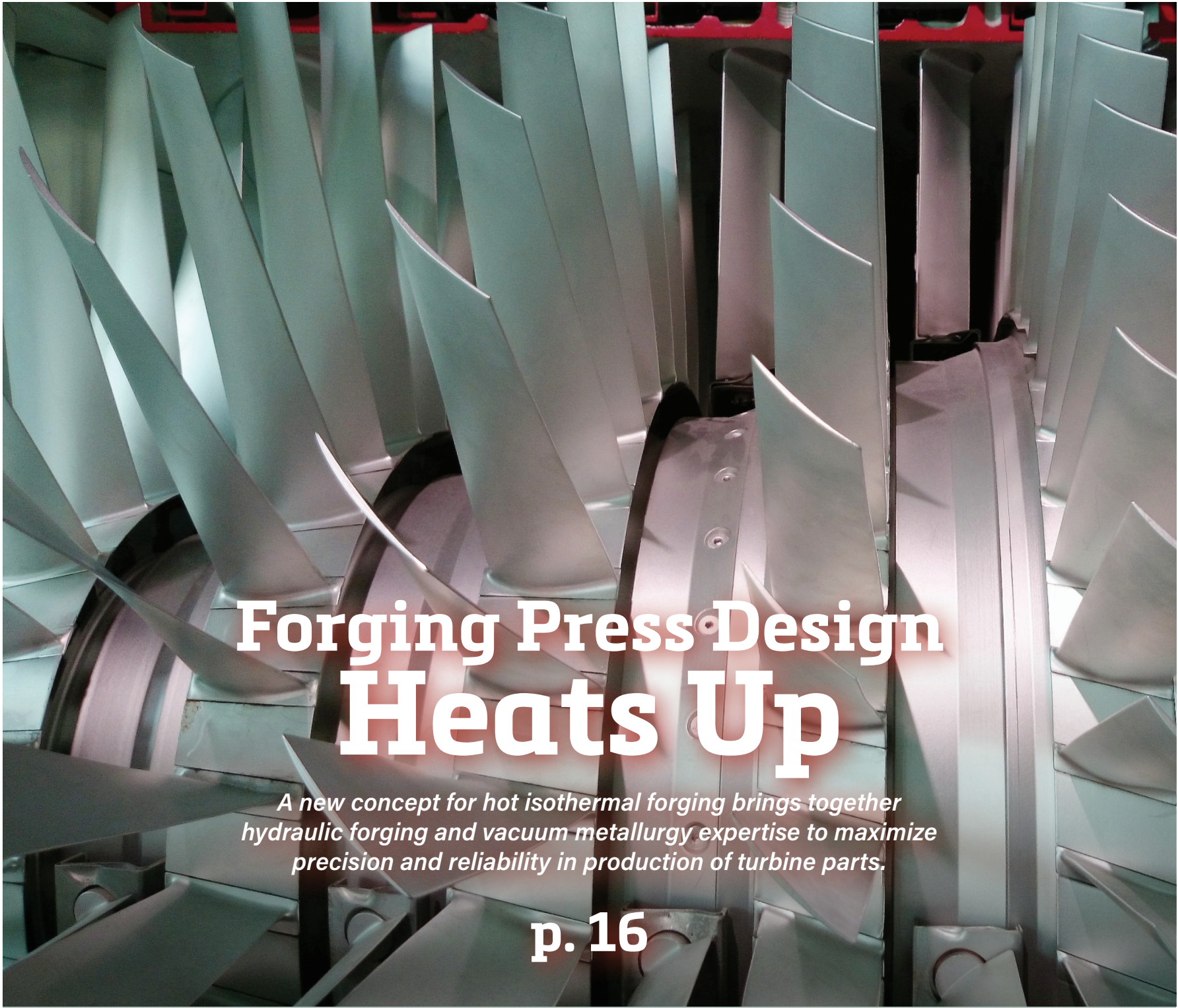
Stereo Vision for Robotic Guidance

The **Bumblebee X series**, an advanced stereo-vision solution, tackles complex depth-sensing challenges with ease. Perfect for factories and warehouses, customers can test and deploy depth sensing systems that work up to ranges of 65 ft (20 m) with the wide baseline solution. The low latency makes it ideal for real-time applications such as autonomous mobile robots, automated guided vehicles, pick and place, bin picking, and palletization. It offers onboard processing to output a depth map and color data for point cloud conversion and colorization with the ability to trigger an external pattern projector and synchronize multiple systems together for more precise 3D depth information.

Teledyne FLIR

More online: newequipment.com/55039628

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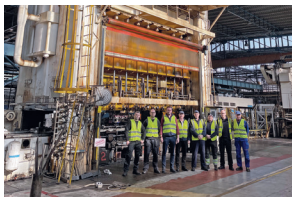


Forging Press Design Heats Up

A new concept for hot isothermal forging brings together hydraulic forging and vacuum metallurgy expertise to maximize precision and reliability in production of turbine parts.

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Titanium Billet Forging Expanded at ATI

ATI Inc. commissioned a 12,500-ton billet forging press it described as “critical to production of titanium for aerospace and defense” at its plant in Bakers, N.C., during Q1 2024. The new press – the second at that site – matches ATI’s expanded capacity for titanium melting there, supporting manufacturing of high-performance alloys. According to ATI president/COO Kim Fields, the new press “delivers 25% greater tonnage than our legacy press, at the closest possible tolerances. With precision and speed, we’re meeting the demanding technical requirements for latest-generation cast materials critical to high-temperature jet engines.”

Forging News in Brief

- ▶ **Onex Inc.**, a Pennsylvania manufacturer, has an order from a Southeastern U.S. forging manufacturer to supply multiple box forge reheat furnaces: box forge furnaces heat metals up to 2300°F before the workpiece is put into a press. ... High-velocity burners help to provide maximum circulation, which aids in heat distribution and product temperature uniformity. Typically, a box furnace features a vertical lift allowing the various sized products to be placed in the furnace. That style of door opens/closes quickly and has a proper sealing through refractory selection which reduces the amount of heat loss during operation.
- ▶ **Aalberts Surface Technologies**, a provider of specialized thermal processing, surface treatment, and material coating services, has added austempering services at its Canton, OH operation, which will provide a logistically favorable option to customers located in the Midwest, East, and Northeastern markets. In parallel, the company is closing its plant in Ft Smith, AR.
- ▶ **EcoTitanium**, an Aubert & Duval subsidiary, chose **Seco/Warwick** to supply a vacuum arc refining (VAR) system as it continues to expand production at its operation in Saint-Georges-de-Mons, France. It was the first plant in Europe to recycle and refine titanium alloys when it opened in 2017, with cold-hearth furnace technology processing titanium reverts from forging and machining aerospace castings.
- ▶ **Ramkrishna Titagarh Rail Wheels Ltd.** contracted **Schuler** for a turnkey production line to produce railroad wheels, including a wheel roller, two forging presses, automation, dies, as well as a rotary hearth furnace and a heat-treatment line... TRSL has been awarded the largest-ever order for wagons by Indian Railways, in addition to the orders to manufacture and supply metro trains in India.

New Press Construction Underway at Sheffield

Sheffield Forgemasters continues its recapitalization program, the centerpiece of which is a new, 13,000-metric ton open-die press now under construction, housed in a new, 12,700-sq-m structure adjacent to the existing forge building at the historic works in Sheffield, England. It will replace the company’s existing 10,000-metric ton press, which was installed in the 1950s and upgraded in the 1980s.

“The new facility will significantly improve our throughput of large, complex forgings and will enable us to push the envelope in terms of forging techniques and processes, as well as improving accuracy and reducing downtime.”

The recapitalization is estimated to be worth up to \$500 million (£400 million) of new investments at that location over ten years, to upgrade the defense-critical assets. Specifically, the new forging press will support Sheffield’s manufacturing of nuclear submarine programs, civil nuclear power projects, and other commercial sector work.

Among other new installations supporting the new press, Sheffield recently contracted for seven gas-heating furnaces with up to 1,000 metric tons of capacity, with rail-mounted ‘car-bottoms’ so that ultra-large workpieces can be rolled in and out; along with seven heavy-duty overhead cranes.

The target date for the completion of works and the new forging press to be in operation is 2025.



An illustration of the new building under construction now to house Sheffield Forgemasters’ new, 13,000-mt open-die forging press.
[Sheffield Forgemasters illustration]

Wheel Forger Operating Reliably, Again

Maxion Wheels is the world’s largest manufacturer of aluminum wheels for automobiles and steel wheels for commercial vehicles, with operations on five continents. But at its forging operation in Ostrava, Czech Republic, an aging hydraulic press forging aluminum wheels had been overheated, and a maintenance program was in order. Schuler Service undertook the task of dismantling the 4,000-metric ton press into its individual parts on site, repairing and reassembling the machine so that now it is performing reliably again.

“Upon disassembling the machine, we uncovered more extensive damage than initially anticipated,” recalled



The 4,000-mt press at Maxion Wheels, Czech Republic.
[Schuler photo]

maintenance manager Zdeněk Hrabal. “While the repair was prompted by overheating, the damage exceeded our expectations, presenting a significant challenge for both Schuler and Maxion.

“Nonetheless, Schuler’s expertise enabled them to address and rectify the situation,” added Hrabal, who oversees plant maintenance and investments activities at the plant.

“Efficiency in the repair process and the assurance of managing it with both speed and quality were pivotal factors,” he explained.

The service team included experts from Schuler in Slovakia, Germany, and the U.K., and their efforts resulted in “the smoothest machine start-up following such a substantial overhaul,” he reported.

Italian Forger Adding 6,000-mt Press

Roda Forge, in Valperga, Italy, near Turin, has placed an order for a 6,000-metric ton press with Farina Presse, a Schuler business. The scotch-yoke press design, a specialty product for the Schuler AG business, will be the largest installation for Farina in a region well known for high-quality forging products.

In operation for more than 40 years, Roda Forge is a highly specialized producer of forged and mechanically machined parts, which it supplies to major manufacturers including Elso-Elbe, Kessler and Didimo Zanetti, among others.

With the introduction of the new press, Roda Forge’s products will range in weight from 0.5 to 75 kg in weight.

“In the forging business, the accuracy of the end product offered by state-of-the-art installations as well as great

attention to energy saving is fundamental for being competitive,” commented Roda Forge owner, Donato Manieri. “In addition to this, the decision is even easier to make if a system offers such great productivity, reliability, and precision like this press from Farina.”



A 6,000-metric ton press designed by Schuler Group's Farina Press business. [Schuler photo]

Aubert & Duval Installing Closed-Die Press

Aubert & Duval – a specialty manufacturer of high-performance materials and forgings for aerospace components and structures – placed an order with SMS group for a hydraulic closed-die forging press to be installed at Ariège, France.

The investment is reported to top \$80 million.

The four-column, hydraulic closed-die forging press to be supplied by will have a forging force of 60 MN (6,000 metric tons), which will equip Aubert & Duval to produce particularly precise forgings, such as turbine disks, shafts, and structural parts.

The modular structure of the hydraulic press will mean it can accommodate an isothermal forging module, for manufacturing high-performance components based on vacuum powder metallurgy.

The press design will incorporate a force-transmitting telescopic cylinder driven by frequency-controlled pumps that can be switched off: This will optimize energy with three press-force stages (20, 40, and 60 MN.) The press

will be outfitted with Industry 4.0-compatible sensor technology, for future digitalization.

The new press is scheduled to go into operation in 2027, replacing a Schloemann (SMS) closed-die forging press installed in 1932.

“This major investment paves the way for Aubert & Duval’s medium- and long-term future. In serving our customers, our primary goal is to modernize and drastically improve our industrial performance and capability. Yet to make Aubert & Duval the metallurgy leader in Europe, we need to look even further ahead and anticipate what technical developments are to come: This is also the task of this new instrument,” stated Bruno Durand, CEO of Aubert & Duval.

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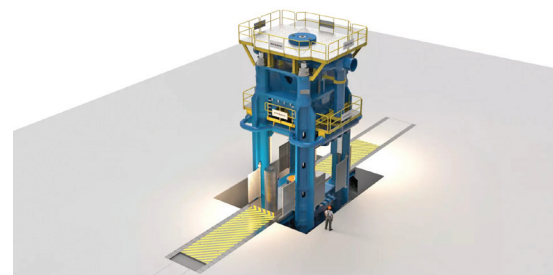


Illustration of SMS hydraulic closed-die forging machine from Aubert & Duval, which will have a maximum press force of 60 MN. [SMS group photo]



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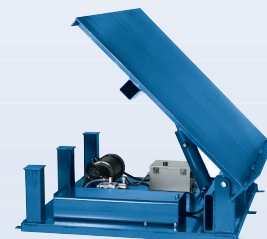
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Forging Press Design Heats Up

A new concept for hot isothermal forging brings together hydraulic forging and vacuum metallurgy expertise to maximize precision and reliability in production of turbine parts.

Strictly according to definition, “isothermal” describes a process of changing volume or pressure under conditions of constant temperature. In forging, that means the workpiece and the die are heated to the same temperature. As the forging plant and machine developer SMS group explained, the advent of isothermal forging operations is a milestone development for advanced manufacturing: isothermal forging makes it possible to produce parts that mechanical integrity and near-net-shape on an industrial scale in a controlled and constant, high-temperature sequence.

As for the target markets, aerospace and energy sectors – i.e., turbine engines – require systems with component parts able to perform reliably while enduring high mechanical and thermal stress. That has brought forth a range of new materials, notably for manufacturing large-dimension parts. Taken together, these factors point toward a production process that is cost-effective.

SMS group has developed a production process to address that market. Previously, isothermal forging processes have been developed as custom manufacturing operations, notably in aerospace engine design and production, where the part design and certification requirements informed the development. As a result, those manufacturers were able to establish customized machinery, systems, and processes for isothermal forging.

The SMS hot isothermal forging process is rooted in the company’s long experience designing forging press equipment, specifically a closed-die hydraulic forging press; in combination with the group’s capabilities developing vacuum metallurgy processes. Conducting forging under

vacuum conditions while maintaining a constant temperature is one of the advantages of its isothermal process, SMS noted.

The SMS hot isothermal forging (HIF) line also integrates the die stack and heating technology to achieve a

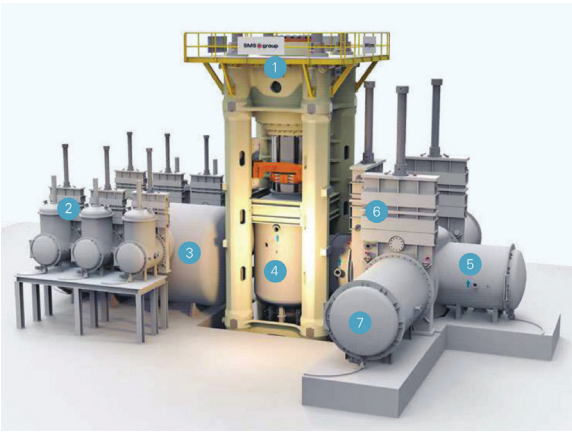
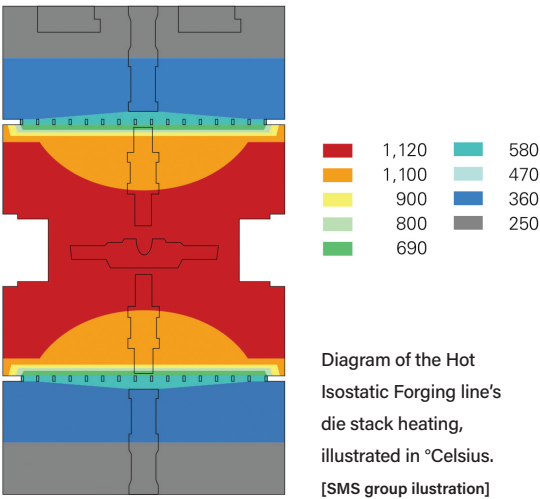


Diagram of the Hot Isostatic Forging system.

- 1. Hydraulic closed-die forging press
- 2. Loading and unloading chambers with integrated furnaces to heat workpieces
- 3. Charging chamber with integrated manipulator
- 4. HIF chamber with combined heating furnaces for the upper and lower dies
- 5. Tool chambers for exchanging the upper and lower dies
- 6. Vacuum slide gates
- 7. Charging chamber, with integrated handling for upper and lower dies

[SMS group illustration]



forging process capable of processing a wide range of critical workpiece materials.

This HIF line is installed as a consolidated system, to operate without any interfaces.

The innovation of SMS’ design is based on a round, multi-vacuum chamber that maintains stable synchronization of temperatures between the upper and lower forging dies and the workpiece throughout the forging process.

Another innovation is SMS’ application of ceramic blocks for thermal insulation of the tools. These blocks are highly effective, particularly under the significant forces of the forging process, and it also is critical to shielding press components from excess heat.

The press hydraulics are notable for what SMS describes as “tightly controlled strain rates” that allow operators to maintain precise production speed and force control during forging. The hydraulic system incorporates an energy-saving concept and a dynamic functionality for the hydraulics that improves overall performance.

The “hot” element of the SMS HIF system is based on furnaces equipped with multi-zone heating elements that makes possible the precise temperature control and uniform heating that characterize the design. Process monitoring technology is provided for both the workpiece and the dies.

The atmospheric control required to achieve the conditions for hot isostatic forging is achieved by the system’s vacuum chamber, with integrated mechanical pumps and filtration units.

Power for the HIF system is supplied for the furnaces as well.

A power management system is provided for the furnace and other process functions, along with ancillary power supply, to support uninterrupted forging operations. And SMS provides monitoring and control technology to oversee and coordinate the entire hot isostatic forging operation, which is supported by its own “Management Information Diagnostic Indication System” digital platform.

The SMS package leverages forging press design and other technological expertise to define a new and “intelligent” approach for producing high-temperature turbine components in demand by aerospace, energy, and industrial markets. **FORGING**



The Grid's Complex Risk Environment

Learn why “grid down” events are becoming more likely, and how to avoid – or even benefit from them.

by Brian Reinke

As a consumer or as a manufacturer, you may sense that electric power is becoming more expensive, or more restricted, or more erratic. And you'd be right. But do you know why? Insiders know of the decreasing reliability of our electric grid. But you should learn why “grid down” events are becoming more likely, and how to avoid – or even benefit from them.

For background, understand that the “grid” is probably one of the largest machines ever built by man. Its purpose is electricity collection and distribution, and it's all interconnected, all instantaneous, but it is built from many different operating parts. It began to form about 100 years ago, when electricity suppliers figured out that AC power could be transmitted at long distances and distributed. From that, the electricity-generating industry grew at a phenomenal rate.

There were competing utility companies trying to provide power, and eventually Congress told the states to provide the legislative framework and enforcement to manage the industry.

Electric power generation grew into a vertical industry: they produced electricity, they delivered it, they did customer maintenance and all of that. As the industry continued to grow, some larger electric utilities put together interconnections, but that structure needed organization and control too.

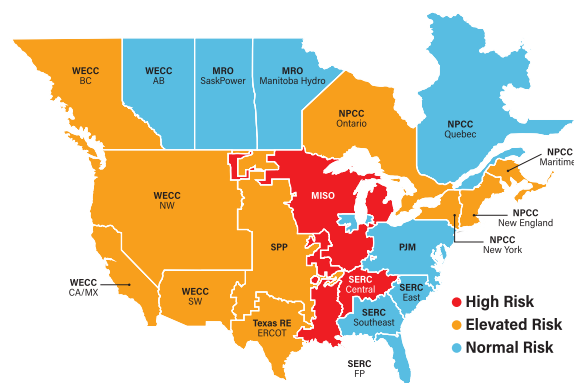
And so these utilities established independent system operators – or regional grid operators. The ISOs manage the overall grid by managing electricity supply and demand. With that in place they established grid interconnections, large networks like the Midcontinent Independent System Operator (MISO) in the upper Midwest and Mississippi Valley, that manage electricity supply and distribution across the U.S. and Canada.

Governing the grid

Different grid operators may develop some conflicts at times, and so these different business entities formed the North American Electric Reliability Corporation (NERC), to reduce risks to the reliability and security of the electrical grid.

NERC really is the controlling arm for the operation of the grid that delivers electricity to businesses and consumers. But, meanwhile, a great deal of the planning and the pricing models for power generation and delivery are done at the state level. And that now means a mixed bag of priorities and objectives for power supplies.

“The electric sector risk environment has rapidly evolved and is hyper-complex, stemming from grid transformation,



North American electric grid risk area summary, 2024-2028.

High Risk: shortfalls may occur at normal peak conditions.

Elevated Risk: shortfalls may occur in extreme conditions.

Normal Risk: low likelihood of electricity supply shortfall.

[NERC illustration]

increasingly frequent extreme weather systems, escalating physical and cyber security threats,” explained NERC president and CEO Jim Robb, in a presentation last year.

According to NERC, the complex of risks include:

- 1. A rapidly changing mixture of energy resources due to**
 - Retirements of traditional generating sources
 - Natural gas interdependencies
 - Inverter-based resource (IBR) integration
 - Distributed energy resources (DER) performance and visibility
- 2. Extreme weather complexities**
 - Extreme, not infrequent
 - Broader, deeper, longer
- 3. Energy and environmental policies**
 - Electrification
 - Emissions
- 4. Rapidly evolving threat landscape**
 - Software vulnerabilities
 - Supply chain
 - Ransomware
 - Physical attacks

Overseeing the electrical supplies at the federal level is Federal Energy Regulatory Commission (FERC), and last year its top official FERC commissioner Mark C. Christie testified that the U.S. electric power system is headed for “potentially catastrophic consequences” as dispatchable generating resources are retiring “far too quickly” and in quantities that “threaten our ability to keep the lights on.”

The problem, he said, is “not the addition of intermittent resources such as wind and solar, but the far too rapid subtraction of dispatchable resources, especially coal and gas.”

According to the MISO 2024 Reliability Imperative report, “There are urgent and complex challenges to electric system reliability in the MISO region and elsewhere. This is not just MISO’s view; it is a well-documented conclusion throughout the electric industry.”

The risk environment

What can manufacturers do to avoid the “hyper-complex risk” of the electric grid?

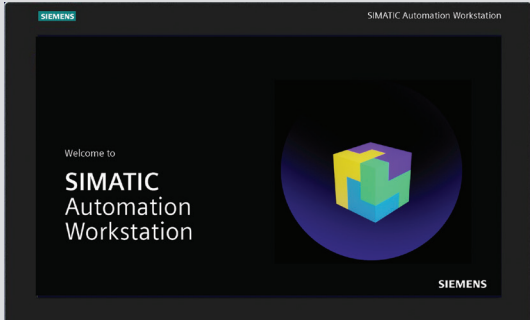
Install on-site, independent power-generation capability to support your manufacturing operation. Choose generating functionality that will work with or without grid power. Use that as your emergency backup power source, or as a peak-cost shaving tool. Or use on a continuous basis.

Consider the advantages for on-site power generation. Running generators will directly reduce your utility electric bill. And, when power is out, on-site generation will mean you continue to operate when your competitors may not.

Many factors must be considered to provide an estimate of the financial implications for your company. We provide a no-obligation analysis of those factors for your consideration, including estimated ROI, NPV, IRR, and more. Our analysis will be tailored to your local electric utility costs, as well as your preferred generation solutions.

*Brian Reinke, president of TDI Consulting, is an energy-cost saving consultant. **FORGING***

FROM THE COVER



Workstation Reduces Shopfloor Hardware

Closely managing numerous hardware control points throughout the factory, the **SIMATIC Automation Workstation** allows manufacturers to replace a hardware PLC, a conventional HMI, and an edge device with a single, software-based workstation. Every Siemens SIMATIC Workstation can be viewed and managed from a central point. Since programming, updates, and patches can be deployed to the entire fleet in parallel, the shop floor remains in sync. It's an on-premises OT device that uses Siemens industrial edge technology for high data throughput with low latency to run a variety of modular applications. This applies not only to traditional automation tasks like motion control, sequencing, and safety but also novel automation tasks that use AI-in-the-control-loop, such as visual inspection and robotic grasping and placing.

Siemens

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Cabinet Coolers for Explosive Environments

316 Stainless Steel ATEX Cabinet Cooler Systems protect sensitive electronics in ATEX classified areas. UL tested, CE compliant, and meeting the stringent requirements for classified purged and pressurized electrical enclosures within Zones 2 and 22, the cooler has capacities up to 5,600 Btu/h. They easily mount via a standard electrical knockout while maintaining the NEMA 4/4X integrity of enclosures in explosive areas. These systems include an auto-drain filter separator so no water, dirt, or contaminants pass into the enclosure.

EXAIR Corporation



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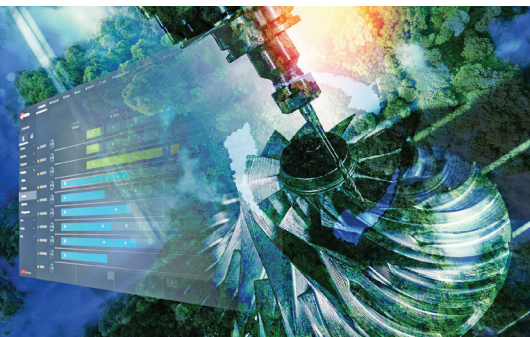
Brakes Provide Precise Positioning for Assembly Robots

BXR-LE brake models provide controlled braking in confined areas using minimal power for SCARA assembly operations. The power-off engaged brake holds a semiconductor wafer in place. For subsequent operations, the brake is energized to disengage the rotor disc for the next assembly operation. The brake uses 24V DC for a split second to overcome compression spring inertia to open the brake, then consumes only 7V DC by using the BEM power control module. They have a max 6,000 RPM and a static friction torque range of 0.044 to 2.36 ft-lb (0.06 to 3.20 Nm).

Miki Pulley US



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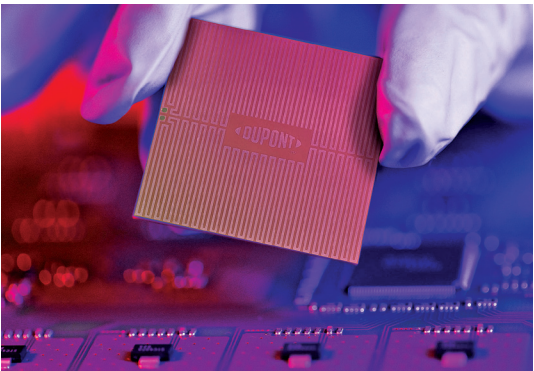


CNC Automation Software Improves Sustainability

Version 8.2 of Fastems' Manufacturing Management Software helps CNC manufacturers use automation to measure, report, and optimize production sustainability efforts. Users can measure the energy consumption of NC programs, minimize power usage during machine idle times, and dedicate specific machine tools to process certain metals for high-quality chip recycling. Manufacturers can calculate energy usage to adjust inefficient NC programs or run certain parts overnight.

Fastems, LLC

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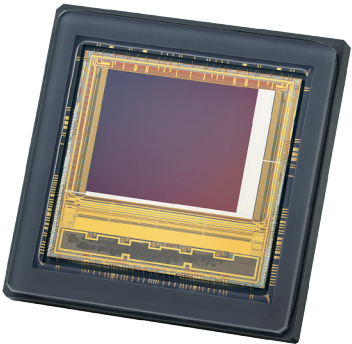


Double-Sided Metal Laminates for PCBs

DuPont Pyralux ML Series of double-sided metal-clad laminates for flexible and rigid-flex PCBs were developed for optimal thermal management in aerospace, defense, EV, AI-related networking, and other electronic devices. Pyralux ML contains metal alloys, such as copper-nickel, featuring Kapton all-polyimide dielectric technology. The alloys provide thermal resistance for heating, thermal conductivity to improve heat transfer, resistivity for heat output, and thermoelectric properties as needed for the application.

DuPont

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Teledyne e2v US, Inc.

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OneH2



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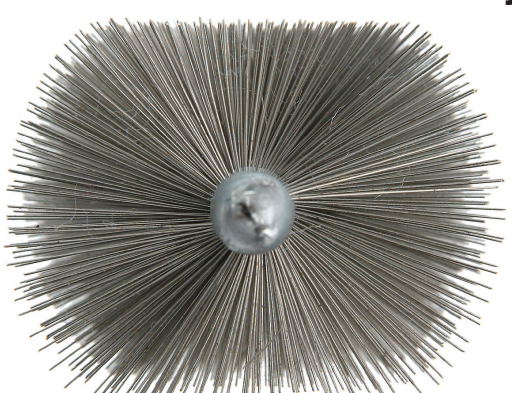
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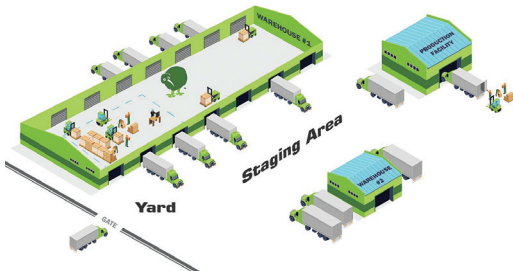


StaCool Industries, Inc.

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ENM Co.

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Emerson Electric Co.

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Gas Chromatograph Mass Spectrometer

A gas chromatograph mass spectrometer, the **GCMS-QP2050**, uses a DuraEase ion source to maximize uptime and sensitivity while requiring minimum maintenance. The system can detect trace compounds while maintaining high scan speeds of 30,000 μ /s. The interface minimizes cold spots to enable favorable peak shapes and sensitivity, even for reactive or larger molecular weight compounds. LabSolutions GCMS software with analytical intelligence allows users to acquire data across many applications and provides remote system access.

Shimadzu Scientific Instruments Inc. (SSI)

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Gigabit Passive PoE Injector for Every Environment

The **INJ-C200G-PASS-T**, an industrial-rated Gigabit Passive PoE injector balances device power requirements with budget limitations. Network administrators can reliably supply up to 90 W of power to passive PoE devices, such as cameras, IP phones, and Wi-Fi access points, in a wide temperature range. Its plug-and-play design brings instant PoE capability to non-PoE Ethernet switches. The INJ-C200G-PASS-T has an input/output range of 12 to 55V DC.

Antaira Technologies

More online: newequipment.com/55041554



Eco-Friendly PPE Collection

A collection of eco-friendly PPE staples made with post-consumer materials is now available from Ergodyne: **8205HL-ECO Hi-Vis Vest**, **8289-ECO Hi-Vis Shirt**, **7002-ECO Coated Gloves**, and **6821-ECO Fleece Balaclava**. The vest and shirt are both Type R, Class 2 certified with reflective tape for low-light visibility that meets ANSI/ISEA 107-2020 requirements. The gloves have PU-coated palms for a strong, flexible grip along with touchscreen capability and meet ANSI/ISEA 105-2016 level 4 abrasion-resistant and level 2 puncture-resistant standards. The balaclava uses high-quality fleece and full thermal head/neck coverage that tucks into jackets while also fitting comfortably under a hard hat or helmet.

Ergodyne

More online: newequipment.com/55039450



DE Pumps With Permanent Magnet Motors

Design Envelope Permanent Magnet pumps with motors up to 60 hp deliver a 35 to 65% reduction in energy consumption. Operating at NEMA Ultra-Premium efficiency levels, the pumps feature small dimensions and are easier to install while lowering embodied carbon. Design Envelope technology also provides highly accurate flow metering (+/- 5%).

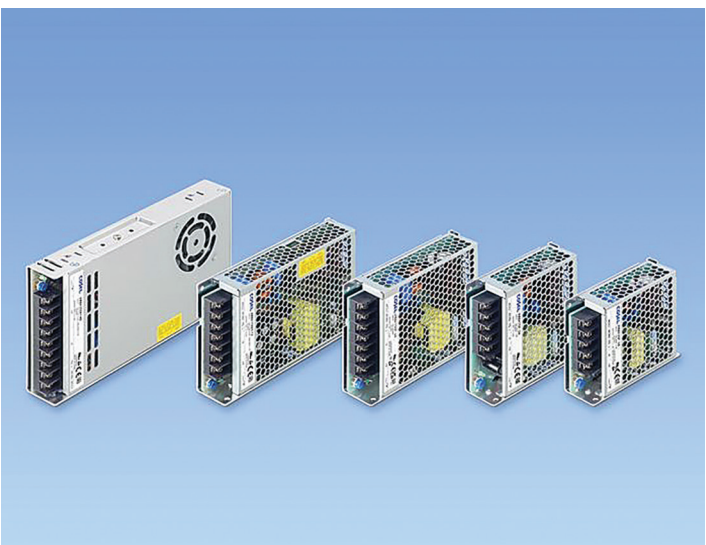
Armstrong Fluid Technology

More online: newequipment.com/55041606

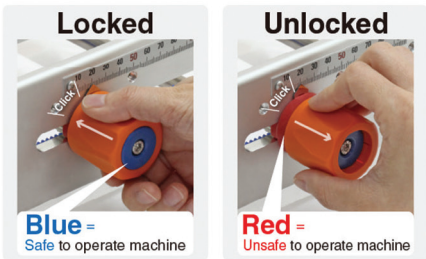
Low-Profile, High-Efficiency Medical Power Supplies

A wide range of low-profile power supplies for medical applications, the **WMA series** includes 2 families: the WMA-F and the WMA-H. The WMA-F has a universal input range of 85 to 264V AC and is available in 3 power levels: 35, 75, and 100 W. Designed for medical systems integration the WMA-H is available in 2 power levels—150 and 350 W—and in 2 ranges of input voltage that's switch selectable. The series complies with international safety standards for medical applications and features an isolation grade of 2MOPP (IN/OUT) and 1MOPP (IN/FG).

Cosel Co., Ltd.



More online: newequipment.com/55041574



One-Touch Clamping Knobs

One-Touch Clamping Knobs enable secure locking of a spindle with one-touch action for radial feeding and thrust feeding applications. Indicating whether the spindle is locked or unlocked, red indicates caution and unsafe to operate the machine, while blue indicates that the machine can safely operate in locked mode. The housing, boss, and base of the knobs are made from plastic and come in either orange or black colors. The insert is made from 304 stainless steel and the package includes one stainless steel socket head cap screw and one stainless steel cup point socket head setscrew. They are available in 1.5 in. (40 mm) diameter and 2 in. (43 mm) depth.

Fixtureworks

More online: newequipment.com/55041436



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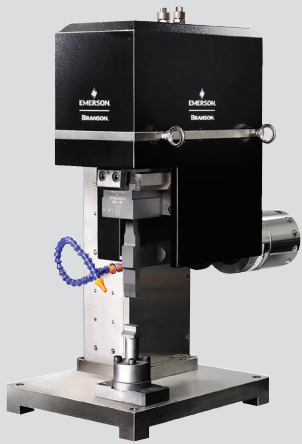


FROM THE COVER

Ultrasonic Metal Welders

Branson GMX-Micro ultrasonic welders offer advanced controls and better connectivity for faster welding of EV batteries, conductors, and terminations. With a computerized operating system, multiple power levels and configurations, advanced controls, and improved connectivity, the welders are able to meet changing material and production requirements for electric vehicle batteries, battery chargers, conductors, and electronics applications, with faster cycle times that can increase productivity and reduce costs. With 4,000 W of welding power, the GMX-Micro 4400W has a standard weld stack, while the more powerful 5,500-W GMX-Micro 5500W is available with either a standard metal welding stack or a direct press weld stack. The direct press stack is specially designed to exert higher downforce with greater stability, making it possible to complete complex, many-layered battery film welds or large-conductor welds with greater stability and consistency.

Emerson Electric Co.

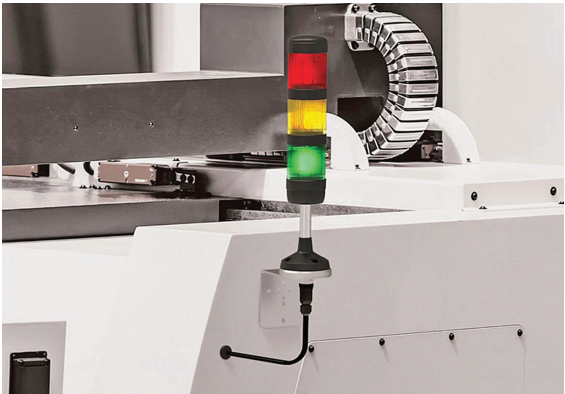


More online: newequipment.com/55039660

M12-Ready Configured Signaling Solutions

Pfannenberg's full range of audible, visual, combination, and stacklights are now available with M12 readiness. M12 technology removes the need for an electrician to wire the device and connections can be made in 30 s. Signaling devices become plug-and-play ready for low voltage—12 or 24V DC—applications. All Pfannenberg M12 compatible signaling devices are pre-assembled and wired for quick installation; simply mount the device to the machine and plug in the M12 wire connection.

Pfannenberg USA



More online: newequipment.com/55041559

Pressure Regulator Maximizes Hydrogen Fuel Efficiency

With a contamination-resistant design, the TESCOM HV-7000 Series two-stage pressure-reducing regulator maximizes fuel efficiency and improves reliability in hydrogen-powered vehicles. Easy to install, it provides stable pressure delivery, high reliability, and long service life for heavy-duty vehicles powered by fuel cells or hydrogen combustion engines. It features tied valve stems, integrated filters, and redundant seals.

Emerson Electric Co.



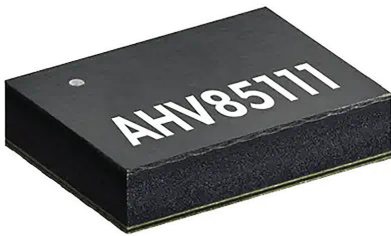
More online: newequipment.com/55040324

Isolated Gate Driver With Bipolar Output

The AHV85111 isolated gate-driver IC adds critical safety features while simplifying the design of high-power energy conversion systems for e-mobility and clean energy applications, including OBC/DCDC, solar inverter, and data center power supply. The gate driver adds bipolar output to eliminate the need to design a complicated negative isolated DC power supply and remove unnecessary external components. It has a low common-mode capacitance, a small footprint, and reduced noise.

Allegro MicroSystems

More online: newequipment.com/55041568



Large Area Travel XY Tables

The XY-BSMA-WJ series precision XY tables are low-profile stages designed for a wide range of applications. It uses stiff crossed roller mechanical bearings for support and smooth motion with precision preloaded ball screws for high speeds and accuracy. Servo motors and linear encoders can be added for more precise positioning and accurate feedback for high repeatability and accuracy. These XY tables are ideal for robots, fiber optics, vision systems, machine tools, micro-machining, electronics, and other applications.

IntelLiDrives, Inc.

More online: newequipment.com/55040282



Mini Brushless DC Slotless Motor

The 08ECP20 brushless DC slotless motor, a mini actuation solution, is ideal for engineers looking to downsize devices and applications without compromising performance. This 0.3 in. (8 mm) motor incorporates Portescap's proprietary Ultra EC winding and an optimized bearing assembly so the brushless motor achieves speeds up to 60,000 rpm. Application examples include miniature actuators in the aerospace & defense sector, portable medical pumps, bionic & exoskeleton systems, and optical/laser systems.

Portescap

More online: newequipment.com/55041581





Ready-to-Integrate Laser Welding Packages
Ready-to-integrate laser welding packages simplify integration into a larger automation line. Sometimes called sub-systems, the packages include a combination of laser, beam delivery, machine vision, and process monitoring components bundled for quick adoption into an enclosure or onto a production line. Included with the package are GUI software, manuals, drawings, industrial communication command set, and integration examples providing the necessary mechanical, electrical, and communication information to easily integrate into a system.

AMADA WELD TECH
More online:
newequipment.com/55041433



Multistage Mini Vacuum Pumps
The CMS M series multistage vacuum pumps for handling porous parts, emptying tanks, or random gripping in harsh industrial environments guarantee suction flows of up to 19.42 SCFM while reducing compressed air consumption. Available in 2 suction capacities (10.59 to 19.42 SCFM) and with or without vacuum and blow-off control, these mini pumps also offer 2 exhaust configurations to perfectly match each specific need. Multistage technology maximizes the energy input of compressed air by cascading several stages of Venturi profiles and combining their suction flows. Intermediate valves progressively isolate each stage to achieve maximum vacuum level, generating high suction flow at low vacuum levels.

Coval
More online:
newequipment.com/55040365

Flexible Safety Work Boot
The Evanston work boot provides all the protection of a traditional boot but with the athletic and flexible feel of a sneaker. Blending a burly top with an energy-returning bottom, the boot includes responsive KEEN.ReGEN cushioning, carbon-fiber safety toes, a waterproof, breathable membrane, and full-grain Barnyard Resistant leather upper to keep you shielded from job site messes.



KEEN Utility
More online: newequipment.com/55040104

Antistatic Hoses for Transfer Applications
Boston by Danfoss EHP530 and EHP531 antistatic hoses for oil, fuel, and gas transfer applications increase safety and reliability. Protecting against static buildup and discharge, they ensure 100% antistatic performance. EHP530 has a pressure rating of 10.5 bar (150 psi) and is available in sizes ranging from -12 to -192. EHP531 features a pressure rating of 20.7 bar (300 psi) and is available in sizes ranging from -16 to -128. All hoses within each product line maintain these pressure ratings, offering consistent performance regardless of size.

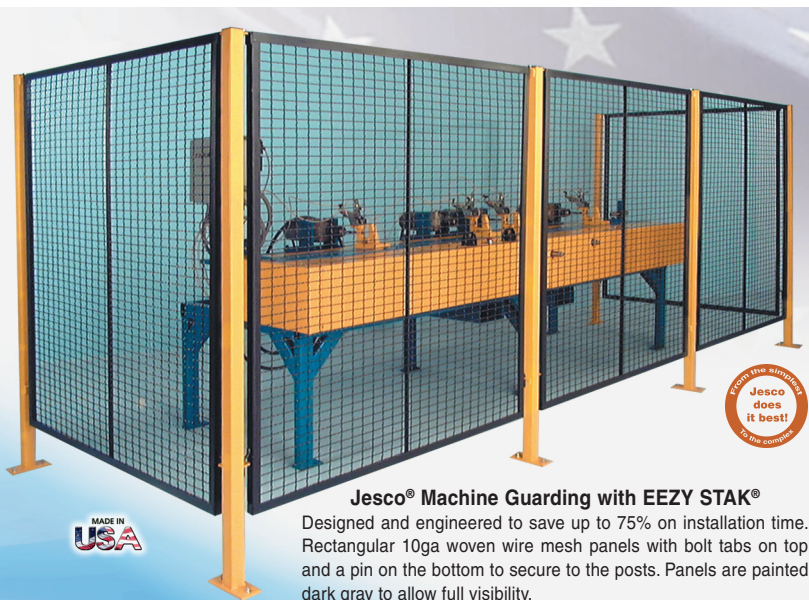


Danfoss
More online: newequipment.com/55041281



Fanless Industrial Embedded Computers
Flexio Fanless Industrial Embedded Computers, fueled by a Quad-core Intel Atom or Core processor, provide an ideal controller for automation, point-of-sale, test & measurement, medical, and security applications. With support for DIN rail or VESA mounting, the computer is easily installed in existing frameworks or new system integrations. The embedded computer combines industrial processing with application-specific I/O to meet any requirements.

Sealevel Systems
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Automotive Sandblast Cabinet

The **SBC990 sandblast cabinet** removes scale or rust from automotive parts, cleans up rusty tools, etches glass, or any other special application. It features a large interior and an extra-large, front-loading door to blast big parts. A powerful vacuum frees the work area from floating rust and used media. A foot pedal controls the flow of abrasives from the air gun so users can concentrate on the work inside the cabinet rather than holding the trigger of the air gun. The blasting gun uses ceramic nozzles with a variety of hole sizes to provide the most effective blasting area for the application.

Atlas Automotive Equipment

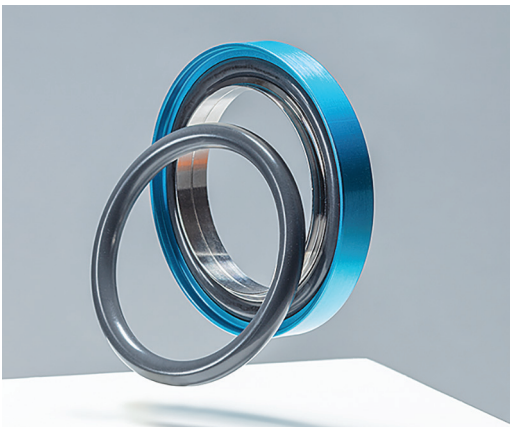
More online: newequipment.com/55040275

Performance-Enhanced FKM for Subfab Exhaust Lines

Fusion F07, a performance-enhanced fluoroelastomer, withstands common etch and CVD oxygen/fluorine-based gases in semiconductor processing subfab lines, at temperatures up to 355°F (180°C). With an expected lifetime of at least 6 months, it lasts longer than standard FKM in subfab vacuum system lines. Fusion F07 can be purchased as a seal assembly or as an individual O-Ring. A blue outer ring allows for easy identification when installing and replacing. Fusion F07 seals are available in most typical sizes, including KF16, KF25, KF40, KF50, ISO63, ISO80, ISO100, ISO160, and ISO200.

Greene Tweed

More online: newequipment.com/55041599



Polymer Concentration Measurement for Wastewater

Valmet Polymer Concentration Measurement (Valmet PCM) is the first advanced optical inline polymer measurement for municipal and industrial wastewater treatment, as well as pulp & paper processes. Despite a compact probe design, the optics maximize measurement volume. With more optical channels to collect scattered and reflected light, the probe delivers 6x more information compared to conventional solutions improving the performance. To counter probe contamination, the automatic flushing system keeps the probe clean and measurements stable. The integrated sensor probe flushing unit also includes support for a manual lab sampling valve.

Valmet

More online: newequipment.com/55041601



Robot Palletizer/Depalletizer for Labeling

For packaged goods that require case-level labeling, the **Robotic Print and Apply Palletizer** provides a 1-robot workflow that easily handles palletizing and depalletizing mixed SKU cases. It can accurately identify cases, apply labels according to requirements, and replicate pallet patterns. Since it works with a variety of pallet/conveyor input and out combinations, the palletizer can be used in inbound, storage, and outbound processes.

Dexterity, Inc.

More online: newequipment.com/21278323

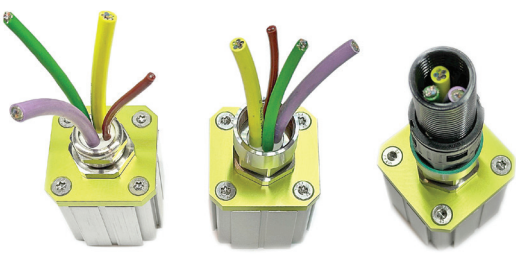


PFAS Soil Sampler

The single-use **Combo Core soil sampler** for field preservation VOC analysis collects soil core samples for PFAS analysis under EPA Method 537M. The system is also suitable for the collection of VOCs and SVOCs under EPA Method 8260 and EPA Method 8270 respectively. The sampler has an easy-to-use T-shaped handle and can collect both 5 and 10-g samples from a single tool, eliminating the need to carry multiple sizes. To switch between the two, sampling technicians need only lift and twist the center plunger. The barrel easily fits into standard 20 and 40 ml vials in to help reduce spillage.

Q.E.D. Environmental Systems

More online: newequipment.com/55040374



Cable Outlet for Protective Enclosures

A cable routing option for protective camera enclosures, the **RWA+C adapter** combines existing rear wall options RWA featuring an IP69k cable conduit and RWC featuring an IP68 cable gland. The adapter sleeve replaces the cable gland's compression fitting and tightly packs its large sealing insert, reliably sealing multiple cables. The M32 thread allows the attachment of corrugated plastic or metal conduits, which are supplied in specified lengths. The sleeve adapter made of V4A stainless steel is suitable even for under-water use. The hose option also protects cables from UV light, aggressive cleaning agents, and chlorine.

autoVimation

More online: newequipment.com/55040351

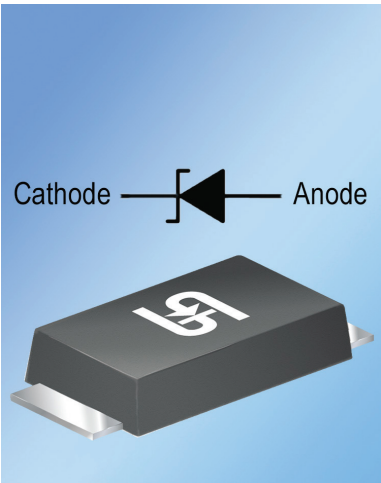


Programmable Benchtop Cutting Machine

The **Kwik Kut** is a programmable benchtop machine for precision cutting of rubber, plastic, and elastomers, including tubing, belts, and extrusions. Simply input the desired length and quantity, and press "GO." It has a touchscreen display with embedded controls and includes a memory card that stores hundreds of cutting recipes. User-friendly controls allow precise adjustments to the material feed and cutting force as needed. It also includes independent safety switches on the guard door and output chute. Custom systems are available.

Kwik Mark Inc.

More online:
newequipment.com/55041444



Ultra-Low Bias Current Diodes

A series of **Zener diodes** offer regulated voltages from 1.8 to 39V DC, all with ultra-low bias current (IZT) of 50 μ A and maximum power dissipation of 500 mW. The 39 individual diodes in the series are all packaged in a low-profile, SOD-123 surface-mount package. With their low IZT, these devices are a straightforward upgrade to existing designs without the need for PCB modifications, as well as for new designs.

Taiwan Semiconductor

More online:
newequipment.com/55040087

Pre-Built Pump Station for Wastewater

The **EVERLAST Series 4000** is an above-ground wastewater pump station that uses premium efficiency motors designed for wastewater to reduce energy consumption costs and create a smaller carbon footprint. All mechanical equipment is safely located and easily accessible above ground and outside the wet well. It features a 2-piece split, rolling UV-coated fiberglass enclosure that provides 360-deg. access to all components. The pump station has STAR ONE Non-Clog Pumps which are centrifugal solids-handling pumps that last 5x longer than a typical submersible pump.

Smith & Loveless Inc.

More online: newequipment.com/55041590



Panel Potentiometers With Knobs

P16F and PA16F panel potentiometers feature integrated knobs and IP67 sealing with a high dielectric strength of 5,000V AC and power ratings up to 1 W at 40°C (104°F). The potentiometers reduce the clearance behind the panel to just <0.6 in. (15 mm). With a conductive plastic resistive element, the PA16F is for audio applications, while the cermet P16F is for industrial motor drives, welding equipment, HVAC & lighting systems, and control panels.



Vishay Intertechnology, Inc.

More online: newequipment.com/55020402



Solid-Carbide Orbital Drill/Thread Mill

The **TC685 Supreme orbital drill/thread milling cutter** reduces hard machining times by producing the core hole, the chamfer, and thread in one operation. After chamfering to start a hole in the workpiece material, the tool creates the core hole and thread using helical interpolation. Applications include blind-hole and through-hole threads in steel and hardened steel from 44 to 65 HRC (ISO P and H material groups). The tool is designed for producing thread depths of 2 x DN and 2.5 x DN.

Walter USA, LLC

More online:
newequipment.com/55041394



High-Performance Li-ion Batteries

NUEPower high-performance LiFePO4 batteries cater to a range of sectors including industrial applications. From solar energy storage to telecommunications and from off-grid remote living to electric transportation, NUEPower offers innovative, reliable, and sustainable solutions. The batteries have been tested to operate down to -40 and up to 131°F (-40 to 55°C).

New Use Energy

More online:
newequipment.com/55040083



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FROM THE COVER

Precise & Fast Battery Torque Wrench

Precise and fast, the **BTW-Series Battery Torque Wrench** quickly moves between bolting jobs while achieving torquing precision with preprogramming and calibration processes. Weighing 10 lb. (4.5 kg), the BTW-Series has a digital motor vectoring system that delivers accurate and repeatable torque up to 6,000 ft-lb. (8,130 Nm). Available for 0.75 to 1.5-in. (19 to 38 mm) square drives, the wrench can be used for most bolting scenarios, providing a versatile solution, no matter the industry. Compared with conventional bolting operations that need multiple operators, the BTW-Series only needs a single operator. Its handheld, battery-powered design makes it easy to reach difficult places and offers the potential to double the productivity of 2-man bolting teams.

Enerpac



More online: [newequipment.com/55038086](https://www.newequipment.com/55038086)

Efficient and Pure Hemp Extraction

The **ENTEXS Ethanol Extraction Platform with Inline THC Remediation** is a new system that promises to transform hemp extraction through efficiency, purity, and cost-effectiveness. The platform uses ethanol as a solvent to extract cannabinoids and terpenes from hemp biomass. Through a proprietary process, the platform can selectively remove THC from the extract stream, allowing for control over the final cannabinoid profile. Inline THC remediation meets GMP requirements by ensuring regulatory compliance, maintaining product quality and consistency, mitigating risks, preserving brand reputation, enhancing cost-efficiency, and upholding supply chain integrity.

ENTEXS Corporation



More online: [newequipment.com/55041277](https://www.newequipment.com/55041277)

Robotic Piece-Picking With AI

The **RightPick 4** piece-picking system uses AI-based software algorithms to pick & place more items, even ones it has never seen. It provides better item handling capacity via its smart grasp and suction seal quality detection, piece-picking for markets such as general merchandise, office supplies, apparel, pharmaceutical products, cosmetics, and 3PLs. Powered by RightPick AI, the system continuously learns and improves on the overall range of items that can be picked successfully.

RightHand Robotics

More online: [newequipment.com/21285156](https://www.newequipment.com/21285156)

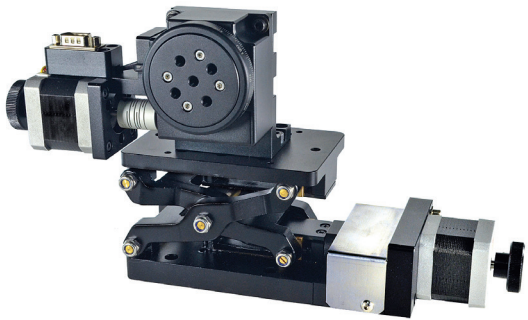


Rotating Equipment Controller

The **RMS-G (Non-Contact Motion Control)** is a zero-speed control that protects various types of rotating equipment. The controller uses an inductive proximity sensor and a ferrous target disk affixed to the end shaft to determine if a piece of equipment is rotating or if it has lost motion. It's available in a NEMA 4 weatherproof polycarbonate enclosure with either 120 or 240V AC or 24V AC/DC input power. The unpowered DP/DT output relay is capable of 5 A at 120 or 240V AC. The inductive sensors, sensor mounting brackets, and target disks are sold separately.

Conveyor Components Company

More online: [newequipment.com/55041457](https://www.newequipment.com/55041457)



Dual-Axis Elevator-Rotary Stages

The **ATR-V-60-60 Series of Dual-axis Elevator-Rotary Stages** feature high stability with a 5 x 3 in. (120 x 80 mm) table and 2 in. (60 mm) of vertical travel and a load capacity of 11 lb. (5 kg). The scissor lift design of the stage combined with roller bearings and slide rails assures smooth motion and very high parallelism throughout the travel of the table. These stages require a Motion Controller that can be ordered as a complete plug-and-play system with RS-232, USB, joystick, trackball, and keypad control.

Optimal Engineering Systems, Inc.

More online: [newequipment.com/55042185](https://www.newequipment.com/55042185)



Waist Belt Transmitters

The **TEQ series of waist belt transmitters** are worn using a neck, shoulder, or hip belt offering 2-handed operation. The large, sturdy handles ensure a relaxed working position. They're offered in 3 sizes with variations of push buttons, switches, joysticks, feedback information, etc. These waist belt transmitters are widely used in crane applications and construction machinery.

Tele Radio America LLC

More online: [newequipment.com/55039423](https://www.newequipment.com/55039423)



AI Air Quality System

iCAP Air air quality management solution enhances air quality while giving users a monthly AI-generated air quality data report for insights and informed decision-making. Integrating the iAeris7 air quality detector from Sysinno, it detects temperature, humidity, fine suspended particles, suspended particles, CO₂, formaldehyde, and TVOC. It can also be customized to detect NO₂, SO₂, CO, NH₃, and other air factors. Designed to manage large-scale deployment and data from up to 100 air quality detectors, organizations can monitor air quality in real-time via a mobile app or internet browser, receive alerts, and optimize air purification or exhaust ventilation systems.

Innodisk

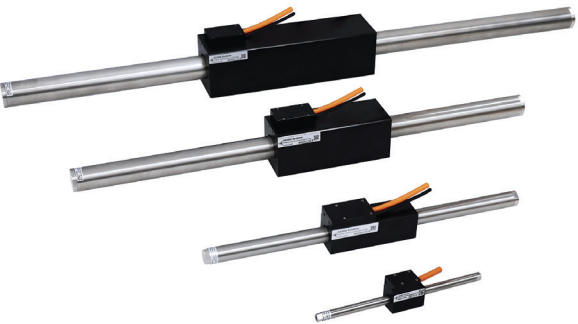
More online: newequipment.com/55040298

Rod Motors for Space-Constrained Applications

RDM-A Series rod motors are for space-constrained applications that require high motor forces and smooth linear motion. Compact in size, the rod motors have a tubular design to distribute magnetic flux evenly along the circumference of the stator. They achieve continuous forces from 2.1 to 137.8N and peak forces from 6.2 to 413.4N. An air gap between the coil and magnet track enables non-contact axial linear movement and steady force production over the length of the stroke, and ironless construction ensures cog-free motion.

Akribis Systems Inc.

More online: newequipment.com/55041419

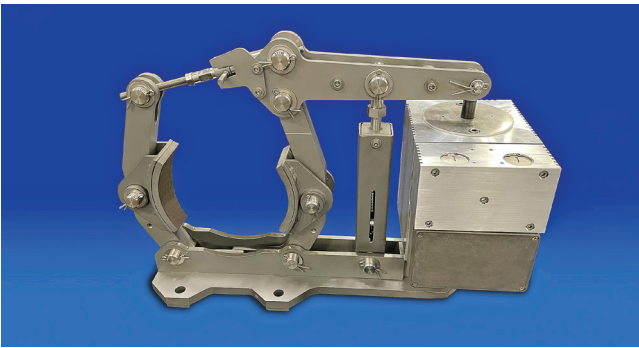


Thruster Brake Ensures Even Brake Pad Wear

An AC Thruster Brake that meets BABAA requirements, the **HT series of thrusters** are designed for 8 to 16-in. (200 to 400 mm) frames with force ratings ranging between 50 to 180 lb. (23 to 81 kg) and various stroke ratings. This thruster brake technology uses a pair of slotted arms to eliminate shoe drag and ensure that the brake pads wear evenly.

Force Control Industries

More online: newequipment.com/55040100



Reverse Panel Mount Light Pipes

LFBR Series 3 mm Reverse Mount Press-Fit Rigid Light Pipes provide optimized light transmittance in regular and harsh environments. Built with a special long-life resin system, they're UV-ready, reduce light loss, work in high-temp & high-moisture environments, and have a plug-and-play reverse-mount design for hard-to-reach locations. Engineers can choose from 22 products with flat or domed lenses in lengths ranging from 0.1 to 0.83 in. (2.5 to 21 mm). The series is compatible with single and multicolor SMD LEDs.

Visual Communications Company, LLC (VCC)

More online: newequipment.com/21285041

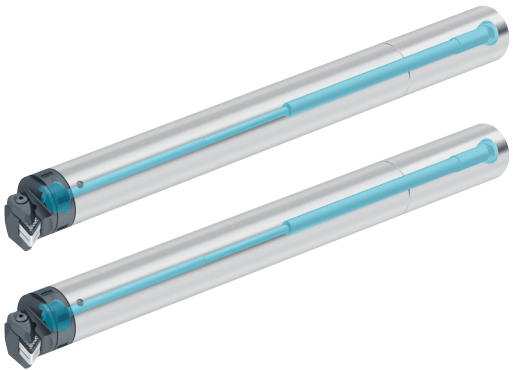


USB-IF Certified UPort USB Hubs

Industrial USB Hubs certified by the USB Implementers Forum have USB 3.2 Gen 1 SuperSpeed 5 Gbps data transmission rates through every port. The series hubs deliver 10x the performance of USB 2.0, even in heavy-load applications. Depending on the model, the hubs can expand a single USB port on a host PC to either 4 or 7 USB ports for communication to various USB upstream (type B) and downstream (type A) devices such as sensors, analyzers, cameras, and other peripherals.

Moxa

More online: newequipment.com/55042178



Quick-Change Cylindrical Shank Adaptor

The **A2100 boring bar/plain cylindrical shank adaptor with QuadFit exchangeable heads** for counterboring and internal profiling/copy-turning work well for aerospace engines, pumps, and general mechanical engineering. The boring bar is available in 1.5, 2, and 2.5 in. (40, 50, and 60 mm) diameters. With a dimension of 3xD, it can machine long bores. The exchangeable heads have a precision-ground, tetrahedral polygon attachment that can be rotated 180-deg. for use overhead. The heads have a locating face for adjusting the center height and internal coolant delivery for optimum chip removal.

Walter USA, LLC

More online: newequipment.com/55040315

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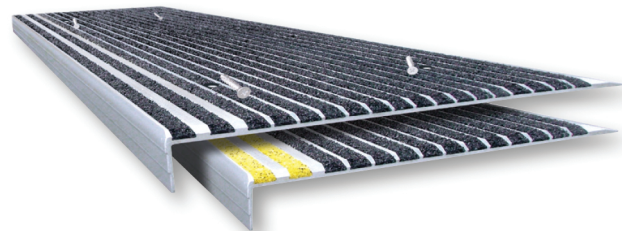
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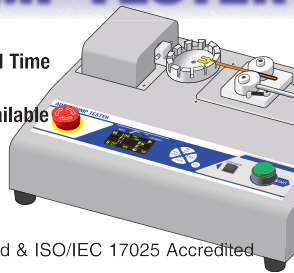


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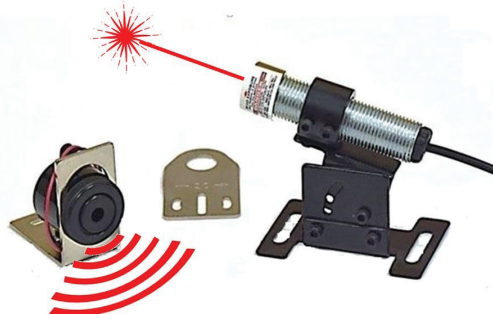
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FROM THE EDITOR



The Rise of All-in-One Devices

When you write about products all the time, things can get jumbled together and it can become a sea of the same. That's not necessarily a bad thing. If most are the same and accomplish the same functions, that tells me that needs are being met in the right way—to an extent. There's always an outlier of "this product could be better to accomplish x, y, or z" but that would likely cost more to produce, or by having it accomplish these other things, another area would be forgone. Not all products or equipment can do it all.

But I am seeing a trend amongst new products lately where some of them are not exactly promising to do it all, but promising to do most of a task to help eliminate extraneous devices. So instead of needing five different components or devices to do one task, you only need one.

Now this can bring up a different conversation: When you group everything together and something breaks, you might be out the entire device rather than if you still had five separate components and would only need to replace one at a time. But that's not what I'm getting at right now.

Overall, I think this trend is a good thing.

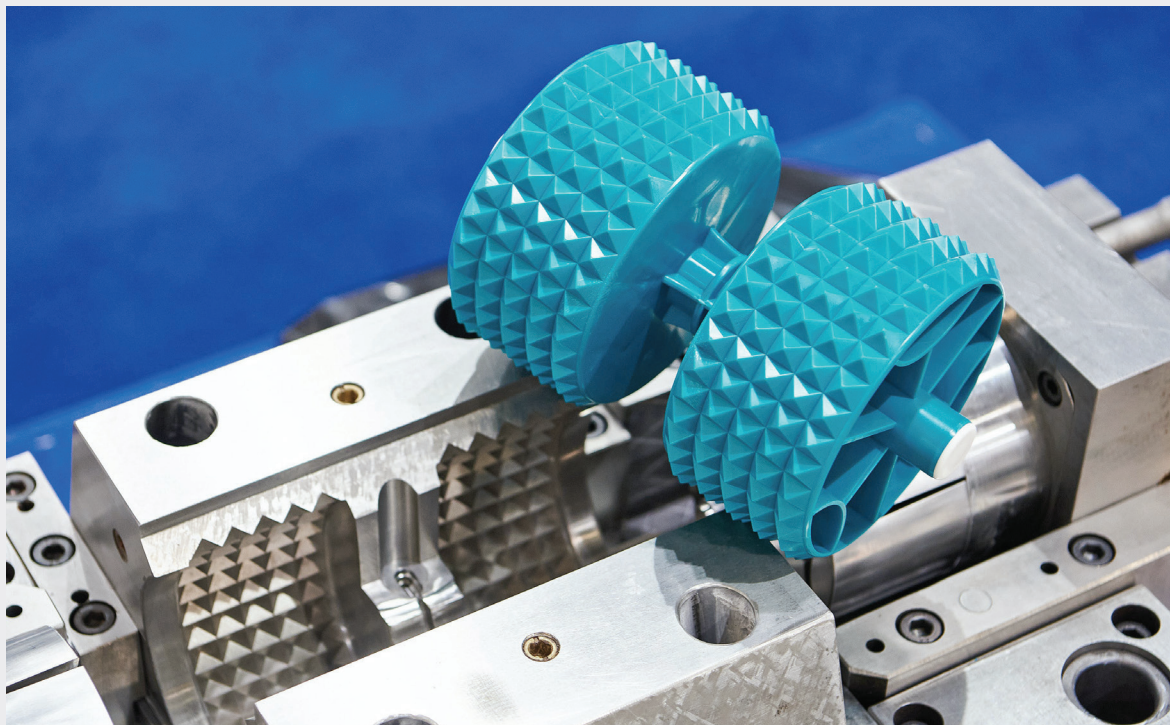
In addition to products grouping devices into one to accomplish a task, I'm seeing where all of these products also promise to be easy to integrate and implement, easy to scale, easy to upgrade, easy for new users, etc. And it seems the driving force behind this trend is that there's a pain point among executives that adopting new technology is hard, costly, and doesn't always result in higher efficiency right away. When you couple that with the workers who are having pain points with a reduced workforce and issues with upskilling, devices that promise to make it easy to do all these things can bring a sigh of relief.

It's funny that the issue from the executive side is not wanting to adopt the new technology, while the issue from workers is the dwindling workforce and loss of that expert knowledge when their colleagues retire or have already retired. I think executives need to understand that you don't have to remake the entire production process, but workers need help. There's a lack of new people coming into the trades, so if you provide devices or equipment that don't require that expert knowledge from the get-go, but allow people to learn as they go, then it can help tremendously.

Yes, cost can be an issue and there are more factors to consider than just cost and integration, but if you sit around and wait for circumstances to change, then it's either going to be too late, harder than it would have been if you had just started earlier, or you're going to be out more employees than before, bringing another whole issue into the forefront.

This trend of integrating multiple functions into single devices presents opportunities and challenges. It's providing an easier and faster way for companies to adopt new technologies to increase efficiency and production output while easing the workload on employees. Also, at a time when no one is buying anything due to high interest rates and prices, investing wisely in devices that can eliminate extra costs and take on an entire task or more by itself can help to ensure sustainable growth and productivity.

— **Laura Davis**, Editor-in-Chief



5 Tips to Reduce the Costs of Injection Molding

by Chandrakant Isi

Injection molding is the preferred method for mass-producing precision plastic parts. However, its upfront costs can be hefty. It's worthwhile to tweak the production process to decrease both the complexity and the overall expense of your project.

Before diving into some tips, let's pinpoint the primary cost factors in injection molding:

- Tooling costs, which encompass the design and machining of the mold.
- Material costs, based on the amount of material and its price per kilogram.
- Production costs, tied to how long the injection molding machine runs.

For smaller batches, tooling has the greatest impact, contributing roughly 50 to 70% of the total cost. Therefore, it's essential to plan in advance to accommodate your project's needs.

Most molds are CNC machined from metals like aluminum or steel for durability. These molds can cost anywhere

from \$10,000 to \$100,000. If you're producing thousands of parts, that investment is justified. However, for smaller batches, 3D-printed molds have become quite popular due to improvements in additive manufacturing.

As explained here, opting for 3D-printed molds can drastically reduce mold expenses, bringing them down from thousands to just a few hundred dollars. But, this choice is mostly suitable for short runs where wear resistance isn't a primary concern.

For high-volume production runs (10,000 to 100,000+ units), material and production costs eclipse the impact of tooling costs on the overall expense. In such scenarios, your focus should be to reduce both the volume of the part and the duration of the molding cycle.

Here are some tips to help you optimize the cost of your injection molding project:

1. Stick to the Straight-Pull Mold

Using side-action cores and other in-mold mechanisms can bump up tooling costs by 15 to 30%. This means you might face an extra tooling expense ranging from \$1,000 to \$1,500.

To keep your production on budget, avoid using side-action cores and other mechanisms unless absolutely necessary.

2. Redesign the Injection Molded Part to Avoid Undercuts

Undercuts add to costs and complicate things, so it's always worth the effort to get rid of them where possible.

3. Make the Injection Molded Part Smaller

Smaller parts can be molded faster resulting in a higher production output, making the cost per part lower. Smaller parts also result in lower material costs and reduce the price of the mold.

4. Fit Multiple Parts in One Mold

Using a single mold for multiple parts is standard practice. Typically, you can fit 6 to 8 small identical parts in one mold, cutting down production time by roughly 80%. You can also place parts with varying shapes into the same mold, much like model airplane kits. This strategy significantly trims assembly costs.

Sometimes, two assembly parts share the same main body. With a touch of inventive design, you can craft interlock points or hinges at symmetrical spots, essentially creating a mirrored part. This lets you use one mold for both parts, halving your tooling expenses.

5. Avoid Small Details

Manufacturing a mold with fine details takes longer due to extended machining and finishing times. Text serves as a prime example, often demanding specialized techniques like electrical discharge machining (EDM), which can drive up costs.

6. Use Lower-Grade Finishes

Hand-applying finishes to molds can be pricey, especially for high-grade finishes. If your part isn't meant for cosmetic purposes, it's best to skip the expensive high-grade finish.

7. Minimize Part Volume by Reducing Wall Thickness

Slimming down the wall thickness of your part is a prime strategy to reduce its volume. This not only uses less material but also significantly speeds up the injection molding cycle. For instance, cutting the wall thickness from 3 to 2 mm can slash the cycle time by 50 to 75%. Why? Thinner walls allow the mold to fill faster.

Even more crucial, thinner parts cool and set more rapidly. Consider that nearly half of the injection molding cycle is dedicated to letting the part solidify, with the machine on standby. However, it's essential to strike a balance. You don't want to compromise the part's rigidity, which could affect its mechanical performance. To maintain stiffness, consider adding ribs in strategic areas. **NED**

Chandrakant Isi is a Content Distribution Specialist at Hubs, a Protolabs company, which is an online manufacturing platform that connects engineers to a global network of manufacturing services. From CNC machining to 3D printing, injection molding to sheet metal fabrication, Hubs makes custom part manufacturing accessible.

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