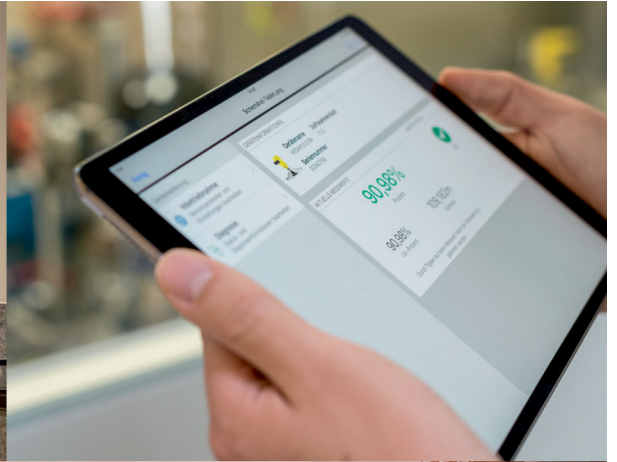


What's New in **PROCESSING**

Instrumentation, Process Automation, Chemical, Electrical, Analytical



Digital services
for process automation

VEGA HOME
OF VALUES





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What's New in Publishing
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On the cover ...

Digital Offerings: Complete Co

Digitalisation of the field level is progressing rapidly. VEGA offers the chemical industry four groundbreaking digital services that make processes safer, more efficient and more transparent.

With its own customer portal, an inventory system and a digital twin, VEGA supports sensors throughout their entire life cycle. Modern communication technologies such as Ethernet, APL and Bluetooth technology used in the VEGA Tools app ensure reliable and flexible data transmission – saving time and increasing security.

Ethernet APL: Field instrument communication goes digital

In the process industry, standardised communication down to the field level is often a challenge, especially in hazardous areas. Until now, analogue 4 ... 20 mA technology has dominated, but it does not allow for digitalisation at the field device level.

Ethernet APL (Advanced Physical Layer) offers a solution here: As a new Ethernet protocol for process automation, Ethernet APL enables fast, reliable data transmission and power supply over the same cable.

Ethernet APL is an important step forward, especially in the chemical industry, where large distances need to be accommodated and extremely secure communication standards need to be adhered to.

VEGA uses Ethernet APL to integrate the data flow from sensors into the control systems. Measured values, diagnostics and status data can be retrieved in real time and integrated directly into digital Industry 4.0 environments.

For operators, this is a clear increase in efficiency because data is available more quickly and reliably, and processes can be seamlessly monitored.

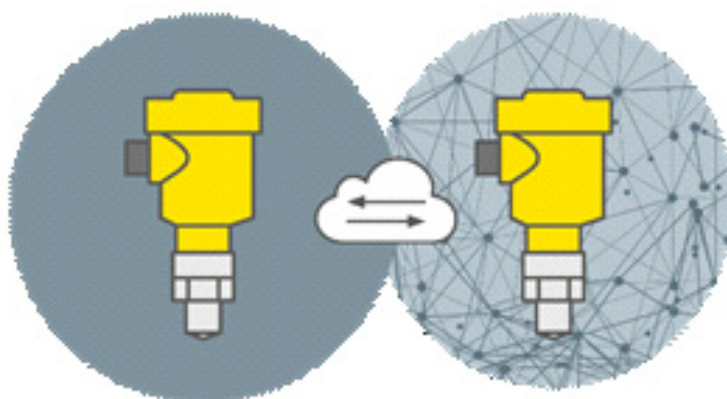
The work involved in installing the cabling is extremely simple and fast, as data transmission and power supply take place over a single cable.

This reduces costs and significantly shortens the time required for setup and commissioning.

By using Ethernet APL, VEGA opens new possibilities for digital process monitoring and predictive maintenance for its customers in the chemical industry.

This means that operators are better protected against production losses and can continuously optimise their processes. Ethernet APL provides the necessary flexibility to equip sensors for the digital future and create a powerful data basis for industrial automation and increased efficiency.

Digital twin: All sensor data is always accessible



Control of the Sensor Life Cycle

By means of the VEGA Digital Twin, VEGA provides a comprehensive digital replica of a sensor that accompanies the entire life cycle of the device and makes all relevant data available for maintenance and operation.

This is particularly valuable in the chemical industry, as an overview of sensor data and history is key to smooth and reliable process management.

The digital twin provides decisive advantages here: It stores all the sensor's specific data, including calibrations, maintenance history, certificates and even diagnostic information, and makes it available immediately when needed.

VEGA enables access to the digital twin via different interfaces. Users can simply enter the sensor's serial number on the VEGA website or scan the QR code or RFID tag attached to the sensor to access its digital twin directly on site.

This makes it much easier to obtain information and always provides technicians with the necessary device information without additional effort – even in safety-critical areas.

In addition, the digital twin supports functions like "Backup and Restore," i.e. all parameter settings can be saved and quickly restored if necessary.

This increases maintenance efficiency and ensures data integrity.

This makes VEGA's digital twin a valuable tool for predictive maintenance, ensuring that users have all important information at hand exactly when it is needed.

MyVEGA Customer portal: The central location for your VEGA sensor data



In complex processing facilities in the chemical industry, managing and documenting sensor data and configurations can be time-consuming and error-prone. VEGA meets this challenge with the myVEGA customer portal, which provides comprehensive information on all a customer's VEGA sensors in one centralised location.

Through myVEGA, users can access sensor information, save configuration data and document maintenance logs at any time. These tools facilitate a structured overview and make it easy to obtain information quickly.

One special function of the myVEGA portal is the link it provides to the digital twin of a sensor, making all relevant

information – from certificates to maintenance histories – available immediately.

Backups of the sensor data can also be managed via the portal, making it easy to restore the settings. If required, configurations or service requests can be forwarded to VEGA Support directly via the portal.

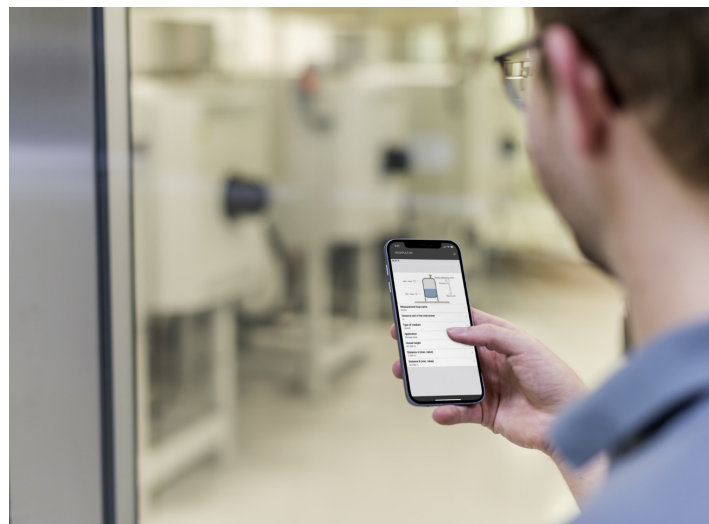
As a centralised platform, myVEGA saves lots of time and resources. Users can find all information regarding installation history, device certificates and the latest maintenance cycles saved in a structured format, allowing them to manage operational safety and compliance requirements more efficiently.

The order history also keeps them informed about all the orders they've placed, and they can download all important documents relating to the orders.

Users who access their sensors wirelessly via the VEGA Tools app can store and manage their access data securely in myVEGA.

These advantages make myVEGA an essential support for operational processes in the chemical industry and help to manage service requests and processes quickly and transparently.

VEGA Tools app: Safe parameterisation in hazardous environments



The VEGA Tools app enables simple, remote configuration and monitoring of VEGA sensors. In the chemical industry, where sensors are often installed in locations that are difficult to access or potentially hazardous, the app makes the work of technicians much easier.

With Bluetooth connectivity, sensors can be configured remotely, without the need for a direct cable connection, using a smartphone or tablet.

... continues overleaf ...

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This increases safety and saves time, as technicians can monitor the measuring instruments easily and without additional hardware, even in safety-critical areas. Cybersecurity is ensured by VEGA's rigorous cybersecurity concept.

The app's intuitive user interface allows diagnostic data to be viewed in real time and settings to be adjusted quickly.

Technicians can thus carry out maintenance or configuration tasks efficiently and check only sensors that need immediate attention. Via the app, backups can be easily created at the push of a button and transferred to myVEGA and saved.

The VEGA Tools app is ideal for modern operations that require flexibility and mobility.

It supports the chemical industry by increasing its process reliability and efficiency and makes it easier to operate and manage even complex measuring systems.

With the app, VEGA has taken an important step towards mobility and optimised process control and offers a solution that meets the efficiency and security requirements of Industry 4.0.

VEGA Inventory System: Dependable replenishment avoids production downtime



In the chemical industry, precise inventory monitoring is extremely important because it makes it possible to reorder materials in good time and avoid bottlenecks.

VEGA Inventory System offers a cloud-based solution for monitoring levels and managing stocks in silos, tanks and containers.

The system allows users to access level data across multiple locations and in real time, enabling them to optimally plan replenishments.

One advantage of the VEGA Inventory System is the option of automated reordering: When a minimum level is reached, an order is triggered, which simplifies the supply chain and can reduce the quantity of safety stock levels.

The digital solution can be accessed via a web browser or app and provides a transparent overview across all locations, allowing production and logistics processes to be optimised.

For the chemical industry, the VEGA Inventory System represents a significant increase in efficiency. The automatic, continuous flow of data reduces administrative work and improves material availability. The real-time data ensures that operational processes function seamlessly and costly production downtimes are avoided.

Digital solutions for modern process instrumentation



The demands placed on process sensors in the chemical industry are high: They must work precisely, reliably and safely, even under the most extreme conditions.

All the while, trends such as digitalisation, IIoT and AI-supported maintenance are steadily changing the industry.

VEGA supports these new developments with robust, secure and intelligent sensor solutions and is constantly expanding its portfolio of digital value-added services: The future begins with VEGA!

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Even More Scalability for Distributed 48 V Drives



Due to its flexibility and scalability, distributed drive technology has become a key part of modular machine concepts.

The AMI8100 integrated servo drive combines a servomotor, servo drive, and fieldbus connection in an ideal design for all motion requirements up to 400 W.

The ASI8100 integrated stepper motor drive meets all motion requirements up to 48 V DC and 250 W. This makes it easy and efficient to relocate the entirety of the drive technology from the control cabinet to the field.

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Protecting Cables in Equipment



The igus energy chains are widely used in machinery where they are fast replacing traditional festoon and cable reel systems due to their low-maintenance characteristics and ability to handle multiple energy types (electrical, hydraulic, pneumatic, fibre optic and even auxiliary components such as hoses) all in one neat, flexible solution.

The advanced polymer materials used means the e-chains simply act as a moving conduit or a sort of spine that keeps the cable neat and always protected and is so tough it will probably outlast the equipment.

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Hygienic Conductivity Meter

Hygienic Inductive Conductivity Meter for liquid media up to 999 mS/cm, with IO-Link and extended 5 years warranty

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- Flex-Hybrid Technology: Digital IO-Link and analog 4...20 mA in parallel
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- Maximum use of the cleaning agents in CIP processes thanks to correct re-guidance into the respective storage tanks
- Minimum cleaning time and water consumption: active switch-over after reaching the desired value by inline analysis and not by passive, pre-set time control
- Precise concentration of the cleaning agents
- Modular design: configurable from the low-cost basic version to the high-end model.



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New Frequency Counter with Unmatched Value



B&K Precision, a leading designer and manufacturer of reliable, cost-effective test and measurement instruments has a new Series 1820B Universal Frequency Counters.

These compact and versatile instruments are designed for a wide range of frequency measurement applications, from telecommunications to verification and validation of oscillators.

The 1820B Series features a clear 0.5" LCD and support for frequency, period, ratio, pulse width, and event counting measurements.

This series uses a reciprocal counting technique to provide high resolution at all frequencies, from 1 mHz to 3 GHz (1823B) or 6 GHz (1826B).

The counters deliver 8 significant digits in 1 second of measurement time, 9 digits in 10 seconds, and 10 digits in 100 seconds.

Equipped with a high-quality temperature-compensated internal frequency reference, the 1820B Series provides

exceptional stability and accuracy, with a low aging rate of ± 1 ppm across the entire temperature range.

Input A offers flexible signal conditioning over DC to 125 MHz, with configurable coupling (AC or DC), input impedance (1 MW or 50 W), attenuation (1:1 or 5:1), threshold (fully variable) and active edge. Input B provides 50 Ω impedance from 80 MHz to 3 GHz.

The 1826B also includes an additional input C with an N-type connector, 50 W input impedance, and a frequency range of 2 GHz to 6 GHz.

The 1820B Series provides a USB interface for remote control and powering the device via a computer.

Additional powering options include continuous AC operation with the supplied AC charger or up to 24 hours on internal battery power.

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The Silent System Killer - Pressure Peaks



Think your pressurised systems are safe? Think again. Water hammer, cavitation, column separation — these hidden forces don't just cause leaks. They break pumps, crack pipes, and can take down entire operations in seconds.

The worst part? Pressure peaks don't always hit where they start. They travel. They probe your system for weak spots. And when they find one, failure is inevitable. You can't ignore them. But you can measure, monitor, and control them.

With KELLER Pressure sensors and high-frequency transmitters, you get the precision data needed to see pressure peaks coming and stop them before they stop you. Don't wait for a breakdown to show you where your system is weak. Detect it. Prevent it. Protect it.

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Extremely Flexible Temperature Sensor



The compact sensor series of the new TS generation is extremely flexible, modular and user-configurable with IO-Link.

- Flex hybrid technology with a digital and analog interface (IO-Link + 4...20 mA)
- Superior quality level in temperature range, measuring accuracy and temperature resistance
- Dual Pt100: The dual RTD sensor enables dual, parallel measurement and thus a redundant monitoring of sensor performance

- Many combinations of single and dual RTD, type Pt100 or Pt1000, and accuracy class A, AA or AAA
- One-piece design entirely in stainless steel for maximum long-term stability and application reliability
- Consistent modular design for easy individual configuration
- Flex-Hybrid technology offers maximum flexibility and future compatibility in new installations
- For retrofitting in existing installations, any sensor of the TFP series can be replaced – with all the additional advantages
- A suitable model is always available for replacement of third-party devices.

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New Line Vac for Maximum Wear Resistance and Throughput



EXAIR's new Ultra Duty Line Vacs™ offer the most powerful and durable pneumatic conveyors yet.

Engineered specifically to withstand highly abrasive conveying tasks, the Ultra Duty Line Vac's design combines a hardened alloy and ceramic material that provide exceptional resistance to wear over extended periods of time.

This makes it the ideal choice for moving abrasive materials such as peat, sand, glass, powders, and other fine media commonly found in blasting, grinding, and finishing operations.

The Ultra Duty Line Vac utilizes a small amount of compressed air to create an intense vacuum with throughput 50% higher than EXAIR's standard Line Vac, making it the best solution for facilities needing maximum durability and performance.

Its efficient design ensures instantaneous response, high

throughput, and the ability to convey materials over long vertical and horizontal runs.

Housing a ceramic insert, the Ultra Duty is especially resistant to wear over longer periods of time and offers a longstanding conveyance solution perfect for filling operations, hopper loading, waste removal, sampling, and much more.

These units are available in 1-1/4", 1-1/2", and 2" sizes that fit standard hose or tube diameters.

The Ultra Duty Line Vac has no moving parts, requires no electricity, and ensures maintenance-free operation.

Optional mounting brackets simplify installation, and flow can be easily controlled with a pressure regulator.

Like all EXAIR products, the Ultra Duty Line Vac is CE compliant and meets OSHA pressure requirements.

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Specialised Exhibitions Transitions to New Name - Montgomery Group Africa

As part of a strategic move to streamline operations, strengthen regional alignment, and support long-term growth, Specialised Exhibitions has transitioned to a new name: Montgomery Group Africa.

This name change reflects the consolidation of Montgomery Group's regional divisions across Africa under one unified management structure — creating a more agile, efficient, and future-focused organisation.

While the name is new, the company's commitment to its people, partners, and purpose remains unchanged. The transition marks a significant step forward in building a stronger, more connected presence across all regions in Africa.

Celebrating 130 years in 2025, Montgomery Group is the UK's longest-running independent events organiser. A fifth-generation family-owned business, its portfolio includes over 50 events and co-locates across 15 countries.

The global team is made up of over 150 passionate events professionals, united in their mission to deliver world-class exhibitions that provide meaningful platforms for industry connection, business generation, and community engagement.

"Montgomery Group has proudly organised events across Africa since launching Specialised Exhibitions in South Africa in 1968," notes Damion Angus, Group Managing Director and Chairman of Montgomery Group.

"Since then, the Montgomery presence has expanded to include events in Botswana, Nigeria, Ghana, Kenya, Zambia, Libya and Zimbabwe — alongside our well-established portfolio of trade exhibitions throughout South Africa."

"Bringing the full African events portfolio under Montgomery Group Africa supports the vision of an ambitious new phase of growth across the continent.

"We have strong, experienced teams in every region who are energised by the opportunities this consolidation unlocks."

The move will see Propak Africa, Propak Cape, Propak West Africa and Propak East Africa leading as the largest packaging, plastics, print, food processing and labelling exhibitions across Africa.

East Africa's principal event for the security, fire and safety industry - Securexpo and its co-locates - will complement a growing portfolio including Securex Expo, A-OSH Expo, Facilities Management Expo and Fire Expo, hosted annually in Johannesburg, and launching for the first time in Cape Town this year.

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Industrial Gear Units for Mixing and Agitating Processes



Nord Drive Systems - designed by German precision engineers, Getriebebau Nord and assembled locally by BMG - encompass modular drive configurations that ensure optimum performance of mechanical speed control for specific applications, in almost every industry.

Typical applications are in water, wastewater, waste and raw materials management.

"Nord drive solutions, which meet stringent local and international quality standards, are known for reliability, energy-efficiency, low noise levels, extended service life and reduced maintenance," says Johan (Os) Stoltz, Product Specialist – National Product Specialist, Nord Drive Systems, BMG's Electromechanical Drives division.

"These modular drive systems incorporate advanced drive technology and special design features, to meet the precise requirements of every operation.

"Pumps, mixing and agitating systems are required to meet high demands in environmental technology, to distribute safe drinking water, convey wastewater and circulate activated sludge.

"BMG's Nord agitator drive systems – which easily move large masses in agitating and mixing applications - consist of an electric motor, frequency inverter, MAXXDRIVE® gear unit and accessories.

"The Nord MAXXDRIVE series is the only complete industrial gear unit system on the market with a one-piece Unicast lightweight housing for mixing and agitating processes.

"Nord helical and helical bevel gear units – available from BMG in various sizes and speed ratios – offer high operational reliability and protection against leaks through optimum sealing.

"The robust and rigid design enables the system to cope with excessive loads, while the short total axis spacing results in low bending torques and extended operation times for the entire drive system.

"BMG also offers a wide range of attachment options for simple and economical integration into mixing and agitation industry applications.

"We also supply numerous NORD drive components as explosion-protected ATEX versions, for safe operation in hazardous areas, including Zone 1, 2, 21 or 22."

Nord MAXXDRIVE units offer high output torques, from 15 to 282 kNm and ensure reliable operation even under extreme conditions. These compact industrial gear units are designed for vertical and horizontal installation positions, requiring minimal space.

An important feature is the IEC/NEMA approved (SAFOMI – Seal-less) adapter for agitators, which prevents vibrations during operation.

This adapter includes an oil compensation volume, so attachments and wearing parts, like an oil tank and drive shaft sealing ring, are not necessary.

This results in greater operational reliability and reduced maintenance. Existing MAXXDRIVE helical gear units with standard IEC/NEMA adapters can be easily converted for SAFOMI adapters.

Nord drive systems for agitators, pumps and mixers used in process plants are engineered with reinforced bearings and increased bearing spacing.

Reinforced and larger output shaft bearings allow the gear unit to absorb high radial and axial bearing loads that occur during the agitating process.

Advantages of oversized output bearings include quick assembly, large bore capacities, high radial load capacity and longer service life.

To enhance efficiency, BMG offers an agitator version (VL2 bearing) with increased bearing spacing and reinforced bearings, as well as a drywell version (VL3) with an additional oil drip plate and leakage or oil sensors.

The bearing spacing of VL2 and VL3 versions is increased with attachments, while the gear unit size remains unchanged.

Coaxial drives are recommended for agitators and mixers that require a double agitator, due to the large size of the tank.

Double agitators often consist of agitator blades which rotate in one direction in the middle of the tank and a scraper blade that rotates in the opposite direction.

ses



This system is designed to efficiently remove material that is stuck to the wall of the tank and return it to the agitation process.

NORD offers the option of operating two shafts inside each other for coaxial agitators.

The inner agitator is driven by the upper gear unit and the outer agitator by the bottom gear unit. The direction of rotation and the speed of the

agitators are independent of each other.

NORD IE5+ synchronous motors - with the highest defined efficiency class - enhance performance in pump and conveyor applications.

Notable features include a compact and hygienic design, with high corrosion resistance and easy cleaning.

For even greater system efficiency in agitating and mixing processes, BMG specialists recommend DuoDrive geared motors, which feature an IE5+ motor integrated into a single-stage helical gear unit.

With a system efficiency of up to 92%, the wash-down-capable geared motor has one of the highest efficiencies on the market in this power class.

It also achieves high efficiency in partial load operation.

Together with simple plug-and-play commissioning, this system offers a significant reduction in the Total Cost of Ownership (TCO) compared to other drive systems.

Nord decentralised frequency inverters are suitable for controlling pump applications. These units save space in control cabinets, reduce costs for wiring and cables and simplify maintenance, thus increasing efficiency of the entire drive system.

Actuating the pump drives via frequency inverters facilitates the selection of different pump characteristics by simple parameter changes.

Various parameter sets are directly stored in the inverter and pumps can be adapted to different media, flow rates or process requirements.

BMG offers fully matched Nord drive systems that are tailored to the exact requirements of every customer's application. Modular systems are easy to expand or upgrade, using a minimum of different types and sizes of components.

Local assembly enables prompt delivery of drive systems and the ready availability of spare parts.

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SCAN ME

PC-Controlled Injection Moulding: Highly Precise and



Utilizing in-house developed control devices to balance advanced control technology with cost efficiency is an approach that has long prevailed among plastics machinery manufacturers.

However, it hit its limits a while ago.

Factors such as labour shortages, financial challenges, and the need to adapt to the latest technologies have resulted in a trend for open automation systems from experienced specialists.

Nissei Plastic Industrial Co., Ltd. (Nissei Plastic), an injection moulding machine manufacturer based in Nagano Prefecture, Japan, is implementing this shift using PC and EtherCAT-based control technology from Beckhoff.

The German Industry 4.0 initiative, which highlights the importance of standardization and interconnectivity in manufacturing, underpins the success of control platforms with open architecture

Across various industries, including the field of injection moulding machines, concrete implementation is gaining momentum.

Notably, OPC Unified Architecture (OPC UA) has become the primary communication framework for Industry 4.0 standardization.

In this context, Nissei Plastic has taken what it describes as a pioneering step: developing an advanced control system based on Beckhoff Industrial PCs with TwinCAT software and EtherCAT open communication technology.

Moreover, Nissei Plastic became one of the first manufacturers worldwide to meet the requirements of the OPC UA standard.

Why opt for an open architecture?

Plastics are an essential material used in products such as smartphones, televisions, PCs, and automotive components.

Depending on the size and type of final product, the injection moulding machines required for production range from compact to massive systems with clamping forces exceeding 7,000 tons.

Nissei Plastic is one of the world's leading manufacturers of such injection moulding machines and regards the transition of its control platform to an open architecture as a pivotal decision.

Like many other manufacturers, Nissei Plastic originally developed in-house microcontroller boards for their customized control systems. However, this approach required the company to manage all hardware components internally, presenting a considerable challenge.

They had to address issues such as component discontinuation, revision changes, and technical problems unrelated to their primary expertise in injection molding technology.

Moreover, keeping up with the latest CPU technology updates added to their concerns, necessitating constant hardware development. Nissei Plastic therefore decided to focus its resources on software development and use scalable standard control hardware.

Flexibly Adaptable to the Latest IoT Trends

Selecting PC and EtherCAT-based control as the solution

After comprehensive benchmarking, Nissei Plastic found that Beckhoff's PC-based control in combination with the open and fast EtherCAT communication system was best suited to meet its current and future demands.

The main reasons for this decision included:

High performance:

The production of injection moulded parts with maximum repeatability and high quality requires a highly deterministic control system with cycle times of 125 µs or lower.

According to the experts at Nissei Plastic, PC-based control from Beckhoff offers the required performance, not least due to its in-depth development and production expertise.

This is because Beckhoff develops and manufactures the IPC motherboards in-house, creates the TwinCAT automation software for real-time control, and utilizes its unparalleled expertise in fieldbus communication as the inventor of EtherCAT. This extensive and long-standing experience is crucial.

EtherCAT:

Specifically in Japan, EtherCAT has been a de facto standard for many years. This offers Nissei Plastic significant flexibility in selecting the most suitable suppliers and components for its injection moulding machines.

Collaborating with Beckhoff ensures Nissei receives top-notch support for any EtherCAT-related queries and early access to future cost-saving EtherCAT technologies, such as EtherCAT P.

EtherCAT emerged as the only technology capable of delivering the required speed and accuracy while maintaining high flexibility and broad fieldbus coverage.

Moreover, the scalability of EtherCAT facilitates future system expansions and upgrades, increasing the company's investment security.

According to Nissei Plastic, in order to remain competitive in the plastics industry, it is crucial to develop cost-efficient machines in terms of engineering, production, and maintenance.

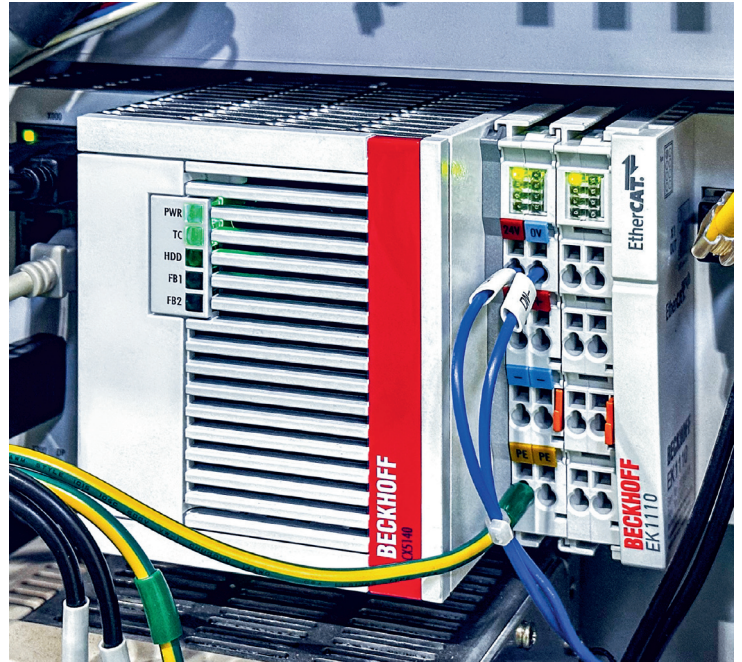
In addition to leveraging economies of scale when relying on standard automation hardware, PC-based control from Beckhoff offers various options for minimizing overall costs:

Centralized and scalable control hardware:

The Beckhoff control system is based on a centralized and finely scalable computer platform. As a result, it is possible to choose from a broad CPU portfolio to match the application-specific requirements.

If new functions such as machine learning are added, these additional functions can be programmed in TwinCAT in various programming languages including IEC 61131-3, C++ or MATLAB® and Simulink® and then executed as software modules in real time.

If higher computing power is required, this can be easily accomplished by migrating to a new IPC or CPU version without changing the existing TwinCAT project or the intended automation architecture.



The CX5140 Embedded PC forms the powerful control core of the injection moulding machines.

EtherCAT plug-in modules:

Nissei Plastic sees great advantages in the EtherCAT plug-in modules of the EJ series, which integrate several I/O functions into a single compact board – the signal distribution board.

This shortens the development and time-to-market times, as the standardized signal distribution board can be used to implement different machine types with expansion variants on a single basis.

Furthermore, this approach eliminates wiring costs and errors and provides a simple means of customization by plugging in new modules without having to completely redevelop the board – offering significant benefits for the company.

Converting standard machines to PC-based control

The development of EtherCAT-compatible injection molding machines equipped with Beckhoff technology began back in 2016.

The following year – and then globally in 2018 while announcing its partnership with Beckhoff – Nissei Plastic unveiled the new machine model FNX-IV (hydraulic version) in Japan.

This marked the first milestone of integrating Beckhoff technology into its machines.

Subsequently, the electric NEX-V series was introduced, meaning that all series-produced machines from Nissei Plastic now feature Beckhoff technology.

The FNX-IV and NEX-V models use the cost-efficient CX5140 Embedded PC with a quad-core Intel Atom® processor as the control core. This PC serves as the EtherCAT master, enabling extremely fast control cycles.

Previously, analog communication limited the speed and precision of control. According to Nissei Plastic, however,

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switching to EtherCAT allowed all applications, including peripheral devices, to be fully integrated into a high-speed network, significantly improving precision, noise resistance, and molding quality.

Additionally, TwinCAT allowed various functions to be integrated into PC-based control modules, ensuring future scalability without hardware modifications.

Nissei Plastic also values the open nature of TwinCAT as an engineering environment, e.g., with a wide range of options for integrating existing source code.

TwinCAT 3 C++ converts many of the software assets previously used on the self-developed microcontroller board directly into new control modules.

These modules are combined with TwinCAT 3 PLC to create a new control system with minimal effort. As a result, Nissei Plastic has succeeded in developing a highly flexible system in a short space of time.

Nissei Plastic's IoT strategy

Inspired by the German Industry 4.0 initiative, industries worldwide are working towards standardized data interoperability across manufacturers.

The central framework for this movement is OPC UA, but it does not fully address the needs of all production plants. To close this gap, industry-specific companion specifications have been developed in different sectors:

- plastics machinery: EUROMAP
- machine tools: umati
- industrial robots: OPC UA for Robotics
- packaging machines: PackML

Recognizing the urgency of OPC UA adoption, Nissei Plastic led the way, presenting an OPC UA-based EUROMAP solution together with Beckhoff back in 2018.

In 2019, the machine builder launched its new TACT5 controller with OPC UA as a standard feature.

According to Nissei Plastic, this open technology approach not only offers greater benefits for the user, but also fosters collaboration across Japan's plastics industry and ensures long-term competitiveness.

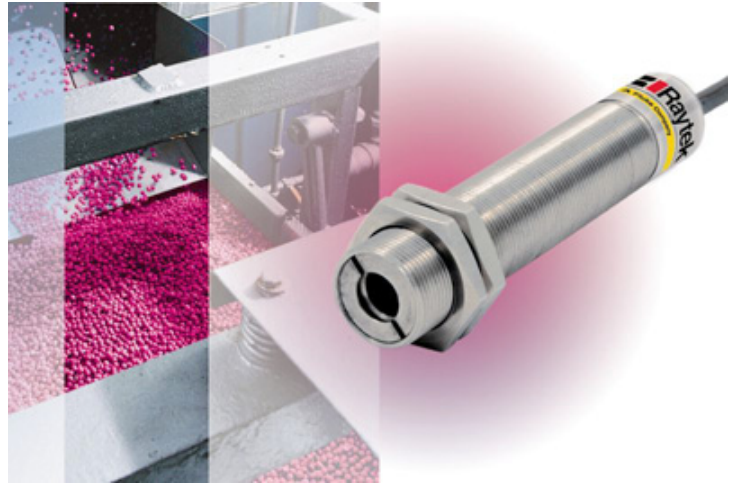
Partnership with Beckhoff

Nissei Plastic has high expectations for its partnership with Beckhoff. Moving forward, the company seeks deeper collaboration with Beckhoff, including beta testing new products to optimize cost and performance.

Nissei Plastic attaches great importance to a long-term, trusting, and cooperative business relationship.

In addition to sales and technical support from local Beckhoff experts in all relevant production countries, this also includes close contact with various Beckhoff specialist departments.

Compact Integrated Thermometer



With advanced infrared sensing technology, these compact sensors ensure reliable data for process control, quality assurance, and equipment protection - even in high speed or hard to reach applications.

The Thermalert CM provides the advantages of infrared temperature measurement in a compact, low cost integrated sensor.

The CM can easily replace traditional contact probes with a type J or K thermocouple output, or with a 0-5 volt output if your application is susceptible to noise or requires a longer cable run.

The CM is designed to measure target temperatures ranging from -20 to 500°C. The CM's onboard electronics are protected by a rugged IP65 (NEMA-4) stainless steel housing.

Features include:

- Wide temperature range from -20 to 500°C
- IP 65 (Nema-4) stainless steel electronics housing
- 13:1 optics at 90% energy
- 150 mSec (95%) response time
- Powered by 12-24 VDC at 20mA
- Scalable 0-5V, type J or K Output
- Alarm Output
- Sensor status/self diagnostic indicator LED
- RS232 digital communications for sensor set-up and monitoring
- Adjustable signal processing
- Data Temp Multidrop software compatible
- Accessories for air purging and lens protection.

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Minimise Electrical Risk in Mining



Mining is a high-risk environment for electrical hazards. Opening live electrical panels can expose technicians to shock hazards, arc flash, and unexpected downtime, putting personnel and operations at risk.

Fluke infrared windows enable safe, non-intrusive thermal inspections, while Fluke clamp meters allow for precise current, voltage, and load measurements without requiring the removal of panel covers.

By integrating these tools into your maintenance program, mining teams can:

- Identify faults early
- Reduce exposure to live components
- Maintain operational efficiency
- Safe inspections mean fewer incidents and more reliable operations.

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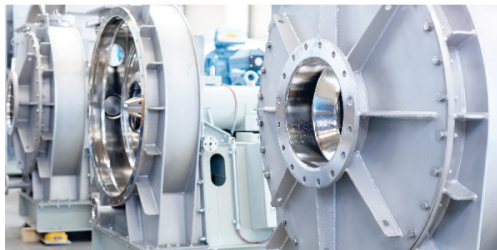
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- ▶ Food and beverage processing
- ▶ Seawater Desalination



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Software Platform for Integrated Digital Mine Management



Becker Mining South Africa has launched Smartflow®, an agnostic integrated software platform that connects hardware systems, communication networks and operational processes into a single mine management solution.

This advanced system consolidates IoT-enabled monitoring, safety devices and production data, providing operators with real-time oversight of underground and surface operations through a 3D web-based interface.

According to Becker Mining specialists, Smartflow tracks personnel, vehicles, energy use, ventilation and haulage. This system applies predictive analytics to support timely decision-making. By merging data into a unified digital environment, the platform improves efficiency, reduces downtime and enhances occupational safety.

Becker Mining's Smartflow platform brings digital transformation into the mine in a way that improves safety, sustainability and worker well-being.

By unifying data from equipment, energy and personnel monitoring, this system provides operators with a comprehensive view of operations and the tools to make informed, proactive decisions.

The modular Smartflow structure is designed for interoperability, allowing seamless integration with Becker Mining systems and certain other mining equipment.

Modules range from location and tracking, collision awareness and dispatch management to energy monitoring, ventilation, leaky feeder systems, telemetry and haulage control.

Each module can operate independently or as part of the connected Smartflow platform, providing flexibility for specific mining conditions.

The advanced engineering module enables this system to be efficiently used for specific mine design and future planning.

In keeping with the global commitment to improved environmental trends, sustainability and Environmental, Social and Governance (ESG) compliance are integrated into the platform.

The energy monitoring module records consumption at substation level, generates billing and efficiency reports and supports operational strategies that minimise waste.

Ventilation control and haulage optimisation reduce unnecessary power consumption and extend the service life of equipment. Preventive and predictive maintenance limit costly downtime and reduce premature equipment replacement, contributing to resource efficiency in mining operations.

Workforce well-being is a central feature of Smartflow. The telemetry module collects information on equipment operation and operator behaviour, identifying misuse, fatigue and ensuring training needs are met.

Vital signs monitoring can be integrated to assess heart rate, oxygen levels and fatigue indicators, creating safer working conditions and enabling rapid response to health incidents.

To enhance safety on site, the collision awareness system adds another layer of protection, using Wi-Fi and Bluetooth to detect personnel and vehicles and provide early warnings of potential accidents.

The Dispatch Centre provides full traceability of Personal Protection Equipment (PPE) tools, and equipment through Radio-frequency identification (RFID) allocation, improving compliance with safety regulations and reducing the risk of lost or damaged assets.

Together with evacuation management, bi-directional alarm notifications and access control, these features improve both operational reliability and safety in mining operations.

Connectivity is supported by the Smart Edge network monitoring system, which maintains high-bandwidth fibre links with redundancy features.

This ensures Smartflow functions reliably even in harsh underground environments, while supporting integration with CCTV, Wi-Fi access points and other smart devices.

Smartflow is currently being deployed across underground and surface sites in mines across the globe, with future development focusing on additional modules and expanded ESG applications. Becker Mining's advanced platform supports the mining industry's transition towards more sustainable, energy-efficient and worker-centred mining.

An important feature of all Becker Mining systems is they are designed to facilitate future upgrades.

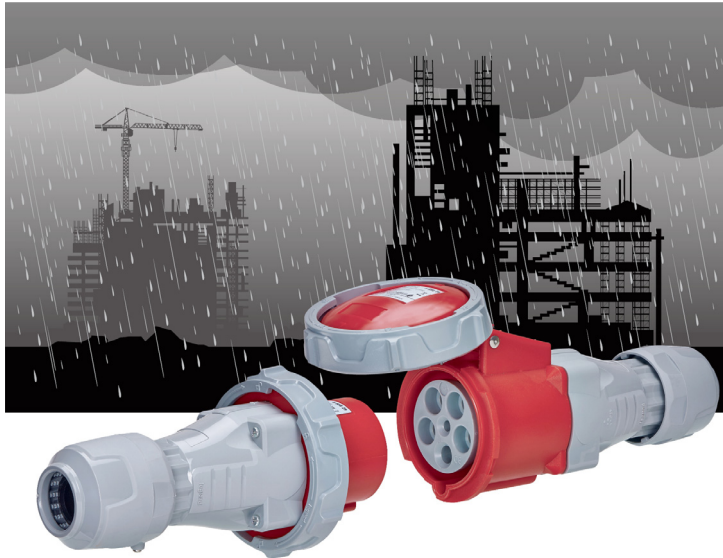
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Plugs and Sockets Deliver Safe Power in Demanding Environments



Legrand SA's P17 Tempra Pro range of industrial plugs and sockets has been specially designed for safe and reliable use in demanding environments, including data centres, food preparation areas, industrial manufacturing facilities and outdoor installations, like car wash facilities.

Many industries rely on quality electrical fittings that are easy to install and safe to use indoors and outdoors and which provide convenient and reliable access to plug points required in hot, damp, busy, risky areas.

For contractors, intuitive features of this range simplify installation and maintenance, even in tight spaces, while operators benefit from consistent safety and reliability.

Notable features of P17 Tempra Pro series include watertightness, corrosion resistance, impact strength and temperature endurance, to ensure high performance in challenging areas.

These robust devices - available from Legrand in capacities from 16 A to 125 A - comply with IEC 60309 standards and fire safety requirements for self-extinguishing materials.

Mobile and panel-mounting sockets for indoor and outdoor use have an IP44 protection rating, safeguarding against the ingress of water.

For harsher conditions, Legrand specialists recommend IP66/67/69 units that can withstand temporary immersion in water during heavy rainfall or flooding.

Straight plugs with screw connections are offered from 16 A to 125 A, supporting voltages of 100 to 500 V~ at 50/60 Hz.

Compact dimensions and a single screw per terminal simplify wiring, even in confined areas. A removable terminal cover on panel sockets, clear cable-stripping markings, the option of using ferruled cables and a quick opening and closing system improve installation efficiency.

Mobile products are supplied assembled and unlocked, ready for immediate use.

Durability is enhanced through polyamide 6 housings, anti-corrosion treated screws and Stainless Steel springs for sprocket covers.

The design withstands chemical exposure and harsh environmental conditions. IP44 models are manufactured from halogen-free recyclable materials, supporting Legrand's sustainability goals.

The P17 Tempra Pro range is fully compatible with Legrand's existing industrial socket systems and can be configured to meet specific site requirements.

Specially designed accessories include surface and panel mounting sockets, mobile sockets with cable glands, adaptors, appliance inlets and blanking caps.

Legrand also manufactures distribution trunking systems and thermal magnetic circuit breakers, providing a comprehensive industrial power portfolio.

The range is distributed nationally through Legrand's South African network, supported by technical advisory services to assist specifiers and contractors in selecting the correct configuration for each project.

Legrand's P17 Tempra Pro industrial plugs and sockets have been developed for safe and reliable use in many environments, including shopping centres, hospitals, office buildings and data centres, the food and beverage sector, hospitality and leisure, as well as transport facilities and general industry.

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VEGA

Keeping Chemical Reactions Under Control – Simply and Precisely



Chemical reactions drive innovation across industries – from pharmaceuticals to food production. But precision is key: controlling flow and pressure can make or break your process.

A typical challenge

A customer aims to optimize a chemical reaction by selecting the right combination and quantity of substances, while precisely regulating pressure and temperature—often with the help of a catalyst.

Accurate gas flow control is essential to prevent reactor overflow and ensure reliable monitoring of the reaction, ideally using user-friendly instruments.

What we do

In addition to our flow controllers, we also offer pressure controllers that enable precise and constant regulation of system pressure.

With our FLEXI-FLOW Compact series, both flow and pressure control functions are integrated into a single instrument, providing maximum flexibility and ease of use.

For applications requiring separate devices, our EL-PRESS and IN-PRESS series feature dedicated pressure controllers, ensuring accurate and reliable pressure management for your chemical reactor processes.

Three digital control modes can be selected by the customer:

1. Pressure control with flow measurement
2. Flow control with pressure monitoring
3. Combined flow and pressure control using PID regulation

This flexible setup enables safe, precise, and automated chemical reaction management without hardware changes.

Simple and economical

This compact and cost-effective setup offers three control configurations in one, with preconfigured presets and seamless digital monitoring via Bronkhorst FlowSuite software.

The instruments ensure safe, overflow-free operation and are available in both lab-style (IP40) and rugged industrial (IP65, ATEX Zone 2) versions.

Henning Springer

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Automate the Workplace



Many companies already know that automation offers enormous potential for meeting the challenges of a rapidly changing working world. However, the crucial question remains: how do you implement them?

igus RBTx provides the answer with over 500 robot solutions on the online marketplace. Even companies with no prior knowledge of robotics can put together cost-effective LCA solutions according to the plug-and-program principle.

With RBTx igus wants to eliminate all the barriers that stand in the way of companies entering the world of automation - step by step.

Ian Hewat

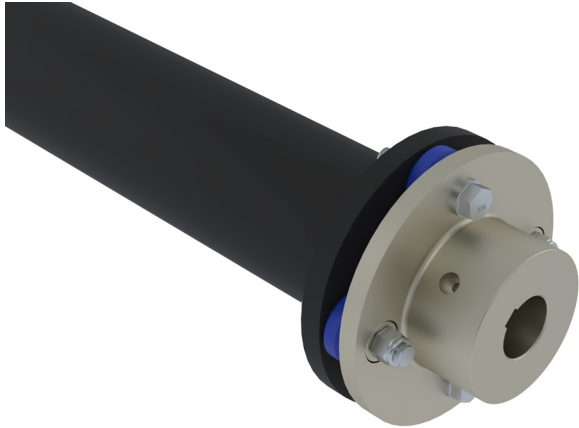
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Flexible, Lightweight Disc Couplings for Advanced Industrial Performance



BMG's Power Transmission division has expanded its extensive portfolio of quality branded couplings, with the introduction of the ESCODISC FIL series - a new generation of flexible, lightweight disc couplings.

The new ESCODISC FIL composite disc series - manufactured by ESCO Couplings SRL - has been developed from advanced composite materials, to deliver high strength and a 60% weight reduction.

These advanced couplings meet growing demand for high performance, lightweight, low maintenance components required in modern industrial applications.

"The new ESCODISC FIL, which offers significant advantages over traditional elastomeric couplings series, represents the future of flexible disc couplings.

"By combining marine-grade metals with advanced composite technology, we can offer our customers with a dependable solution that increases efficiency and reduces maintenance," says Steven Hodgkinson, Engineered Couplings Specialist, BMG's Power Transmission division.

"For example, in a cooling tower installation, the significant weight reduction of ESCODISC FIL helped lower energy consumption, while extending equipment life.

"The composite lightweight design does not require intermediate bearing support and can deliver a materials lifespan of up to 10 years, compared with elastomeric couplings that require replacement every two to eight years, depending on design, material and operating conditions.

"In this project the result was reduced downtime, lower maintenance costs and improved reliability of the installation.

"ESCODISC FIL couplings have high resistance to corrosion and ultraviolet exposure, ensuring durability in harsh environments.

"The construction of this series integrates marine-grade Stainless Steel hubs and fasteners for reliable protection, together with high-strength composite disc packs that extend service life under demanding conditions.

"In comparative testing, these composite couplings have shown service life up to 40% longer than standard metallic equivalents, as well as reduced unplanned downtime."

A key innovation of this series is its new floating composite spacer, which is produced from carbon or e-glass fibres embedded in an epoxy matrix, with UV protection.

This design reduces overall weight by up to 60% compared with conventional steel spacers, thus easing the load on connected machinery.

An optimised spacer-flange interface further enhances operational reliability and fatigue resistance over an extended service life.

These couplings have also been designed for convenient installation and easy maintenance and do not require a crane to be mounted.

The flexible elements have high misalignment capacity which facilitates assembly of the coupling on the installation.

Components are dimensioned for infinite life, with high resistance against corrosion.

Lubrication-free ESCODISC FIL couplings reduce the need for lengthy maintenance and improve cost of ownership for the end-user.

These couplings are engineered in line with recognised ISO and API compliance standards, with extensive laboratory testing validating their fatigue strength, torsional rigidity and corrosion resistance.

This ensures suitability for industrial sectors where reliability, safety and extended service intervals are critical.

BMG's Power Transmission team supports a broad range of components with technical expertise and aftersales service to ensure correct selection, specification, installation and long-term reliability.

Steven Hodgkinson

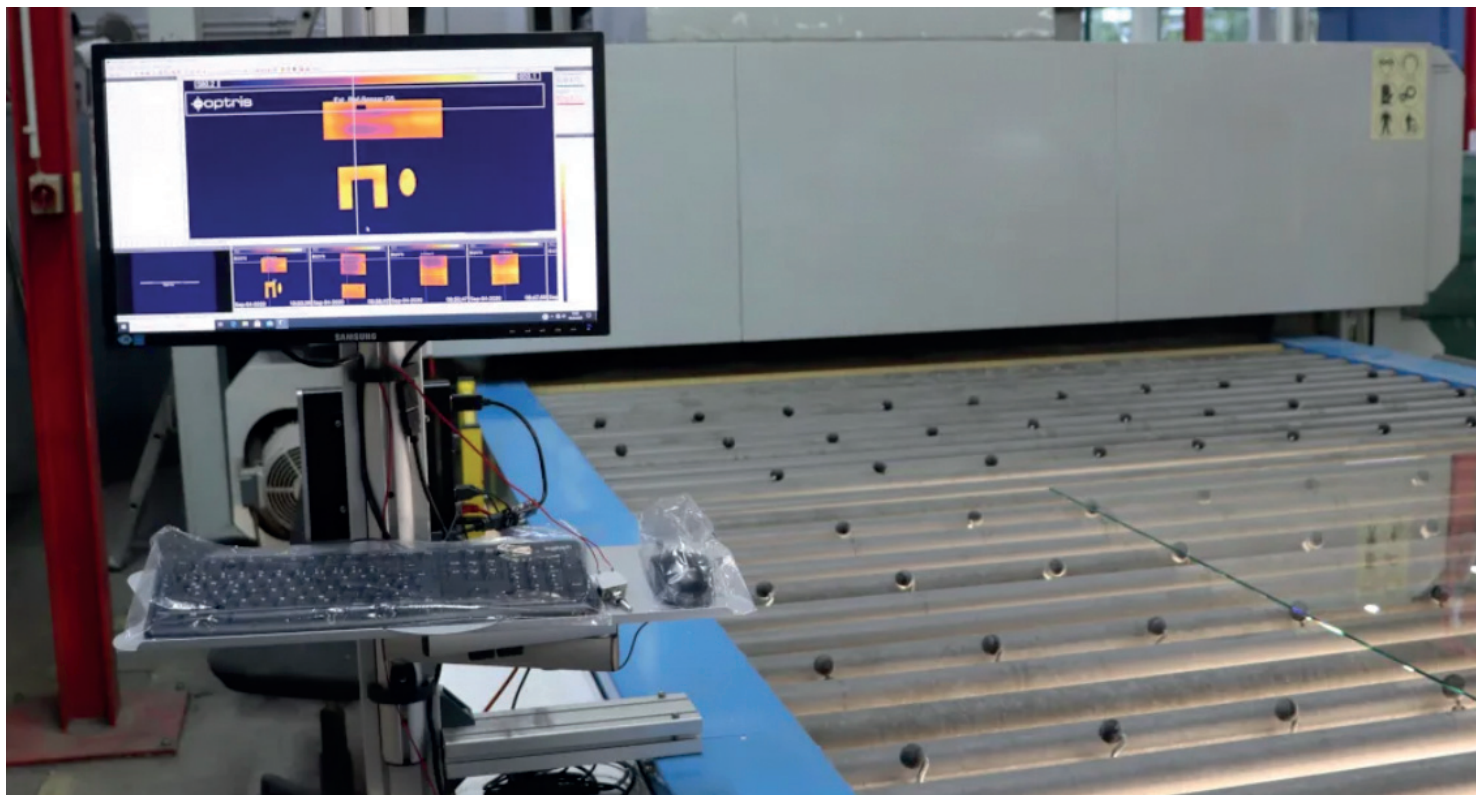
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IR Cameras and Pyrometers for the Glass Industry



In the glass industry, infrared temperature monitoring is crucial for maintaining product quality and process efficiency. Glass production involves extreme temperatures, from melting raw materials to forming and annealing, where precise temperature control is essential.

Instrotech, local representative of OPTRIS has infrared (IR) sensors and cameras which provide non-contact temperature measurements, making them ideal for these high-temperature environments.

Accurate thermal monitoring ensures that the glass is processed within its optimal temperature range, preventing defects such as thermal stress, bubbles, and uneven surfaces.

By using IR technology, manufacturers can detect temperature variations in real-time, enabling them to make immediate adjustments and maintain consistency and quality throughout the production cycle.

Enhanced safety is another significant advantage. IR sensors eliminate the need for physical contact with hot glass, reducing the risk of accidents and equipment damage.

This non-contact capability also minimises maintenance needs for temperature sensors exposed to harsh conditions.

Furthermore, IR temperature monitoring improves process efficiency.

It allows for precise control of melting furnaces, annealing lehrs, and forming equipment, optimising energy consumption and reducing waste.

Overall, integrating infrared temperature monitoring into glass manufacturing processes ensures the production of high-quality products, operational safety, and cost-effective production.

Challenges of Non-Contact Temperature Measurement in the Glass Industry

Infrared (IR) non-contact temperature measurement presents specific challenges in the glass industry. High ambient temperatures in glass production environments, such as melting furnaces and forming stations, can impact the accuracy of IR sensors.

These sensors require precise calibration to account for thermal interference and ensure measurement reliability. Additionally, the reflective nature of molten glass complicates temperature readings, as varying emissivity can lead to measurement inaccuracies.

Adjusting the emissivity settings on IR devices is crucial but can be complex and time-consuming.

Dust and smoke generated during glass processing can obstruct IR measurements. These particulates can affect the clarity of thermal images and readings, requiring frequent maintenance and cleaning of IR equipment.

Moreover, temperature gradients within the glass during processes like annealing can pose challenges. IR cameras must be configured to handle these variations effectively, ensuring accurate monitoring across different zones of the production process.

Benefits of IR Non-Contact Temperature Measurement for Glass Industry

Despite the challenges, IR non-contact temperature measurement offers substantial benefits for the glass industry. Precision in high-temperature environments is a significant advantage.

IR sensors can accurately measure temperatures without physical contact, crucial for monitoring molten glass and high-heat applications where traditional sensors are unsuitable.

This precision enables the achievement of optimal thermal conditions necessary for producing high-quality glass.

Real-time monitoring provided by IR technology enables immediate adjustments to be made during the production process. This capability is vital for maintaining consistent glass quality and preventing defects such as thermal stress or uneven surfaces.

Real-time data enables dynamic control of melting, forming, and annealing processes, thereby optimising overall production efficiency.

Enhanced safety is another key benefit. Non-contact measurement reduces the risk associated with handling extremely hot materials, thereby improving safety for operators and reducing equipment wear and tear.

This safety enhancement contributes to a safer work environment and lower maintenance costs for temperature measurement systems.

Applications and Efficiency Gains

Infrared non-contact temperature measurement significantly enhances efficiency across various glass industry applications.

In melting furnaces, IR sensors provide accurate temperature readings to control the molten glass temperature, ensuring proper material properties and reducing energy consumption.

For forming processes, IR cameras monitor temperature variations to optimise mould heating and cooling, enhancing product consistency and reducing defects.

During annealing, IR technology helps in managing the temperature profiles of glass as it cools, which is crucial for achieving the desired mechanical properties and minimising stress.

By integrating IR measurement into these processes, manufacturers can streamline operations, reduce energy costs, and improve overall production efficiency.

The ability to detect and address thermal anomalies promptly leads to higher-quality products and more cost-effective manufacturing practices.

Glass Industry Applications

- **Float Glass** - Enhancing Float Glass Production Efficiency with Infrared Technology
- **Glass Tempering** - Ensuring Uniform Heating and Cooling in Low Emissivity Glass Toughening with Precise Temperature Control
- **Glass Tube Processing** - Optimisation of the Process for Forming Glass Tubes at Temperatures above 1000°C
- **Enamel Manufacturing** - Real-Time Data Integration into Process Control for Efficient Temperature Management
- **Single Pane Glass Processing** - Boosting Efficiency and Product Quality with Under-Line Thermal Measurement
- **Glass Gob Production** - Accurate Temperature Control and Real-Time Position Tracking in Industrial Glass Gob Production
- **Safety Glass Production** - Accurate Line Scanning Infrared Technology Improves Glass Manufacturing.

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High-Tech Analyzer for pH/ORP Measurement

The Stratos Eco 2405 pH/ORP Transmitter is designed for efficient and cost-effective process monitoring. In industries where accuracy drives quality, every detail matters.

That's why plants across the globe rely on the Stratos Eco 2405 pH/ORP Transmitter for efficient and dependable process monitoring.

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- Reliable performance – proven across diverse applications



When simplicity meets reliability — process control becomes effortless.

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Radiometric Technology - A Solid Foundation for Growth



The production of cement involves a complex series of processes, from handling raw materials to the final stages of grinding.

Precise measurements throughout these stages are vital to ensure product quality, enhance operational efficiency, and safeguard equipment.

A cement manufacturer in Kenya experienced difficulties with unreliable level measurements in the cyclone preheater, often resulting in production stoppages, equipment breakdowns, and increased safety risks.

Inaccurate measurements could lead to undetected material buildup, which poses the risk of overheating or explosions.

To mitigate these challenges, VEGA introduced the SOLITRAC 31, a radiometric level measurement sensor designed to provide durability and precision in the demanding conditions of cement production.

Cyclone Preheaters in Cement Manufacturing

By effectively preheating raw materials before they enter the kiln, cyclone preheaters substantially improve energy efficiency and overall production capabilities.

The design of cyclone preheaters promotes effective heat exchange, enabling the rapid achievement of higher temperatures.

This enhancement not only accelerates the manufacturing process but also aids in the reduction of emissions, presenting a more environmentally sustainable alternative.

Using cyclone preheaters not only optimises cement production and boosts product quality but also contributes greatly to a more sustainable manufacturing process.

The operating conditions within a cyclone preheater are intense- with temperatures surpassing 900°C and elevated dust concentrations posing difficulties for equipment and personnel.

Precise level measurements within the preheater are critical for maintaining adequate material flow, optimising heat exchange, and avoiding complications such as blockages or overflows.

Enhancing Safety, Efficiency, and Operational Reliability

One of the most valuable aspects of the SOLITRAC 31 is its low-maintenance design. Unlike traditional level measurement devices used in high-temperature, high-dust environments, which require frequent upkeep, the SOLITRAC 31 is maintenance-free.

Its radiometric technology and external installation mean there are no components subject to direct wear, eliminating the need for regular cleaning or calibration and lightening the maintenance workload.

For the Kenyan plant, this reduction in maintenance needs has led to considerable cost savings. With fewer interruptions, the plant experiences reduced downtime and increased productivity.

The sensor's durability has also minimised replacement costs, resulting in substantial long-term operational savings.

The SOLITRAC 31 enhances efficiency and safety in cement manufacturing, with its precise real-time level measurements assisting in the prevention of blockages, equipment damage, and material buildup.

Consistent level measurement is critical in the preheater as fluctuations disrupt heat balance and increase fuel consumption.

With the SOLITRAC 31's automated adjustments, the preheater can maintain optimal conditions, maximising energy efficiency and ensuring consistent output quality.

Since the sensor's installation, the plant has seen improved operational efficiency and reduced fuel costs.

th in the Cement Industry

The safety of the plant, equipment and personnel is also a major concern in cement manufacturing, and SOLITRAC 31's reliable monitoring assists in identifying potential hazards before they become critical.

This feature has proven to be essential in preventing conditions that could threaten worker safety and equipment damage, supporting VEGA's commitment to safety and reliability in industrial applications.

A Solid Foundation for Growth

The experience of the Kenyan plant with the SOLITRAC 31 highlights the importance of reliable level measurements in manufacturing environments.

VEGA's radiometric solution has effectively addressed ongoing issues related to accuracy, safety, and maintenance, significantly enhancing operational efficiency and promoting a safer workplace.

The SOLITRAC 31 exemplifies VEGA's dedication to tackling complex industry challenges.

Cement production requires durability, precision, and flexibility, and VEGA's solutions rise to the challenge with a combination of innovation and practicality.

The successful implementation of SOLITRAC 31 in Kenya showcases the power of radiometric technology alongside VEGA's engineering expertise.

VEGA provides a comprehensive array of instruments designed for every stage of production: from monitoring silo levels to measuring kiln pressure.

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Ground-Breaking Battery Tester Powered by MDX-AI



Midtronics, a global leader in battery management technology, represented locally by Comtest, offers the proven MVT handheld battery tester. This revolutionary tool, powered by MDX-AI, is set to redefine the standards of battery diagnostics and testing in the automotive industry.

The MVT battery tester is designed to deliver unparalleled accuracy and efficiency in battery diagnostics, making it an essential tool for automotive technicians and quick-service centres.

This innovative product introduces a new era in handheld battery testing, showcasing capabilities previously thought to be unattainable.

Key Features of the MVT Battery Tester:

- Accurate Diagnosis of Discharged Batteries in-vehicle, eliminating the need for charging.
- Instant Test Results with no user input required in most quick lane testing scenarios.
- Accurate Battery Diagnosis when the Cold Cranking Amps (CCA) rating is not visible.

- Reliable Battery Diagnosis in the presence of vehicle system noise interruptions.

Powered by MDX-AI, the MVT delivers lightning-fast battery testing while maintaining professional accuracy, ensuring that automotive professionals can efficiently diagnose and address battery issues with confidence and precision.

In addition to its ground-breaking diagnostic capabilities, the MVT features a range of user-friendly attributes, including:

- An Intuitive User Interface for straightforward operation.
- Over-the-air data transmission and Updateability for continuous improvement.
- Email Test Results for seamless communication and record-keeping.
- An Optional Integrated Printer for convenient hard copy results.

Will Sampson, President of Midtronics, said, "The MVT enables automotive industry technicians and service centres to accurately diagnose batteries faster than ever before, improving customer satisfaction and streamlining operations. The MVT powered by MDX-AI is truly unique!"

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Product: <https://tinyurl.com/4695ryu4>

Pneumatic Automation for Food Processing Excellence



The Kinetrol Blueline actuator is an advanced FDA compliant pneumatic actuator explicitly engineered for the demanding hygiene, compliance, and reliability needs of the food, beverage, and pharmaceutical industries.

Designed as a food-grade actuator for automated valve and damper control, the Blueline offers the strength of Kinetrol's proven pneumatic rotary actuator design with a proprietary, ultra-durable, non-stick food-grade finish that prevents contamination and simplifies cleaning—ideal for applications where sanitation is non-negotiable.

What is the Kinetrol Blueline Actuator?

The Kinetrol Blueline is a specialized food processing actuator built for environments requiring both precise motion control and the highest levels of hygiene.

Using the exact rugged, vane-type mechanism that made Kinetrol famous, the Blueline series adds a uniquely compliant coating designed for food industry use—its external surfaces are finished with a BELGAQUA certified, FDA compliant polymer that resists buildup, withstands caustic washdowns, and maintains integrity even in salt-laden or humid processing areas.

Why Choose Food-Grade Actuators for Food Processing?

In food and beverage automation, standard actuators can corrode, chip, or harbour bacteria under repeated cleaning.

The Kinetrol Blueline actuator eliminates these concerns. Its sanitary actuator design ensures compliance with strict food safety standards while reducing downtime due to cleaning and maintenance.

By choosing a food-grade actuator, facilities can prevent cross-contamination, improve product integrity, and maintain continuous, hygienic production operations.

What are the Benefits of the Blueline Finish?

At the heart of the Blueline's advantage is its caustic resistant actuator coating—a smooth, non-stick polymer surface that resists residue adhesion, flaking, and degradation.

This proprietary finish outperforms painted or anodized alternatives by withstanding high-pH cleaning chemicals and repeated caustic washdown cycles without compromising performance or safety.

It also maintains its attractive, uniform blue surface without chipping, helping plants meet visual cleanliness standards.

How Does It Resist Caustic Washdown?

Through a combination of material science and design innovation, the Blueline's surface finish and corrosion-resistant hardware form a seamless barrier against harsh sanitation chemicals.

This caustic resistant actuator is fully sealed, preventing moisture ingress while its surface actively repels contaminants.

The result is a hygienic actuator that remains fully operational even after thousands of high-pressure cleaning cycles—a key advantage for 24/7 food processing facilities.

What Certifications Does It Have?

The Kinetrol Blueline actuator meets both FDA and BELGAQUA specifications for materials suitable for use in food processing environments and potable water systems.

These certifications confirm its suitability as an FDA compliant actuator for food industry applications and a BELGAQUA certified actuator for beverage and dairy processing.

Industries and Benefits

Ideal for food processing, dairy, pharmaceutical, and beverage production, the Blueline delivers long-term operational reliability with minimal maintenance.

Users benefit from assured hygiene compliance, exceptional corrosion resistance, reduced cleaning time, and consistent performance in extreme conditions.

In short, the Kinetrol Blueline actuator sets the new benchmark for clean, durable, and compliant pneumatic automation in sanitary industries—engineered to perform, built to last, and designed for the world's most challenging washdown environments.

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Exceptionally unique: Customer-specific panel PCs and control panels



The adaption options are endless: custom push button extensions can be supplied from a minimum order quantity of 1.



Start configuring
yours today!

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As a specialist in PC-based control technology, Beckhoff offers a wide range of high-quality panel PCs and control panels that are also available as customer-specific solutions. The spectrum ranges from visual adaptations and logos in the customer's corporate design to individual equipment with special buttons such as emergency stops, scanners, and RFID readers through to fully customized housing designs. The outstanding operational availability and reliability of these devices are a result of meticulous development and integration of electronic components, displays, and touch screens. Beckhoff Panel PCs and Control Panels can be operated in stand-alone mode, as DVI/USB Extended control panels, or via CP-Link 4.

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New Automation Technology **BECKHOFF**

Revolutionise Fault Location, Maximise Solar Production



The Fluke GFL-1500 Solar Ground Fault Locator is a frontline troubleshooting tool that helps technicians quickly pinpoint active ground faults in solar photovoltaic (PV) systems.

It works by producing a traceable signal in the array, allowing for fast, intuitive, non-contact tracing directly to the fault location.

This innovative approach eliminates the frustration of time-consuming, brute-force troubleshooting and reduces unnecessary exposure to electrical hazards.

In addition to improving safety and reducing downtime, this innovative solution redefines how technicians locate active ground faults in solar PV systems.

By replacing complex, manual diagnostics with an easy-to-follow trace signal, the GFL-1500 streamlines fault isolation, helping teams restore system operation quickly and effectively.

The GFL-1500 Ground Fault Locator is a three-piece troubleshooting system designed to optimise technician workflow in the field, enabling faster and more confident fault resolution.

This gives site managers greater assurance in system performance and uptime.

The GFL-1500 system consists of the GFL-1500 Transmitter, GFL-1500 Receiver, and GFL-1500 Signal Tracing Clamp.

FaultTrack™ Technology — Solar Ground Fault Detection

The GFL-1500 utilises FaultTrack™ Technology to detect active faults and generate a traceable signal through the fault path, enabling technicians to follow that signal from the transmitter through the faulted path to the precise point of failure.

Pinpointing the exact location of an active fault used to be a challenge—with FaultTrack™ Technology, that work is easier than ever. In large-scale solar arrays, the challenge of finding active faults is often exacerbated by the difficulty of identifying string layouts with incomplete or outdated documentation.

With a general understanding of your site's configuration, just a few connections, and non-contact tracing, the GFL-1500 enables technicians to identify the faulted branch and pinpoint the fault location within a string—without relying on detailed site maps or time-consuming test procedures.

By combining multiple diagnostic functions into a single, easy-

to-use system, the GFL-1500 delivers an unmatched ability to locate faults with non-contact signal tracing, making it an essential tool for high-efficiency solar maintenance and troubleshooting.

Ease-of-Use and Time Savings

The GFL-1500 is built to simplify solar ground fault detection in the field.

From a central test location, technicians can begin tracing the fault path without repeatedly disconnecting conductors and brute-force testing each string. This streamlined approach saves valuable time and increases troubleshooting safety, enabling your team to solve problems quickly and confidently.

The GFL-1500 system comprises both a signal tracing receiver and a clamp, each designed for different stages of the diagnostic process. The clamp is handy for identifying the faulted combiner or string without making disconnections, even in noisy environments where signal clarity may be reduced.

Once the affected solar string is determined, the signal tracing receiver or clamp can be used to precisely follow the fault path and pinpoint the issue within the string.

Designed for real-world conditions, the GFL-1500 is intuitive to operate, quick to deploy, and built for harsh environments, delivering an end-to-end troubleshooting solution that enables technicians to move efficiently from problem to resolution.

Safety and Compliance

As utility-scale PV systems increasingly adopt 1500 V DC architectures, the demand for safe, accurate, higher voltage-rated diagnostic tools continues to grow.

High-voltage DC systems offer greater efficiency through longer strings and fewer components, but they also operate at voltages that require heightened safety awareness and specialised equipment for troubleshooting.

The Fluke GFL-1500 system includes:

- **Transmitter:** CAT III 1500 V DC, CAT IV 600 V, meets the rigorous safety standards outlined in IEC 61010-1 and 61010-2-030.
- **Receiver:** CAT III 1500 V DC, CAT IV 600 V, meets IEC standard 61010-1.
- **Signal Tracing Clamp:** Rated for use on insulated conductors up to 1500 V.

Whether you're working at the inverter, combiner, or module level, the GFL-1500 Ground Fault Locator has been rigorously tested for safety and durability to provide a rugged, safe, fast, and reliable solution for identifying ground faults in high-voltage environments—empowering technicians to work confidently and efficiently in the field.

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See the video here:

https://www.youtube.com/watch?v=izH2rP9tAho&utm_source=PressVideo-WNIP&utm_medium=Fluke&utm_campaign=FLK-GFL-1500-Locate-Solar-Ground-Faults-in-Minutes-Not-Hours

Mass Flow Measurement of Bulk Solids



The DYNAchute is a chute weigher that combines proven and highly accurate velocity measurement and weighing technology to determine the mass flow rate of bulk solids.

In the robust system controller both these absolute values (without calibration) will be used to calculate the mass flow rate which will be given in analogue or digital form.

A totaliser and a dose function make it possible beside the use of continuous dose measurement (kg/h) and the weighing of charges (kg).

In addition to the high accuracy in the range of per mill DYNAchute is featured by metering not influenced by solids properties and gives free flow through also when it's switched off.

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Intuitive CNC HMIs with Simulation Functionality



With CNC HMI Base (TF5310) and CNC HMI Simulation Server (TF5320), the TwinCAT 3 automation software from Beckhoff offers two new function libraries for CNC-specific user interfaces.

These were used to create an advanced, intuitive HMI application specifically for CNC purposes and to simulate part machining using real-time data.

The TwinCAT 3 CNC HMI Base software package is based entirely on the tried-and-tested TwinCAT 3 HMI Server (TF2000) and therefore integrates seamlessly into the TwinCAT HMI product family.

An extensive choice of technology-specific control elements is included, such as axis display, spindle and speed override, functions, a contour editor, plus a tool data and zero offset table.

The G-Code editor that is included supports cycle-based CNC

programming in conjunction with the TwinCAT cycle products CNC Measurement (TF5225), CNC Kinematic Optimization, (TF5245) and CNC Milling Base (TF5293).

The package also includes a soft keypad (MCP) that can be configured during runtime. Integration into real time is achieved via a dedicated TwinCAT HMI server extension.

This aggregates data from TwinCAT PLC and CNC into a common data model and makes it available to the client components.

TwinCAT 3 CNC HMI Base allows user interfaces to be designed freely, taking customer-specific design rules into account. Ready-to-use templates are also available to facilitate the engineering process.

The TwinCAT 3 CNC HMI Simulation Server integrates the 3D simulation control element, which is included in the TwinCAT 3 CNC HMI Base package, into the real-time data from TwinCAT CNC. The current tool's data and the blank definition stored in the NC program are accessed.

The simulation runs either in sync with real machining (real time simulation) or in fast forward (without real axis movement using the contour visualization modes available in TwinCAT CNC).

This allows the NC program to be checked visually in advance. 3- and 5-axis milling processes are currently supported, with additional technologies in the pipeline.

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Reliable Pressure Measurement



In the petrochemical and speciality chemical sectors, reliable pressure measurement isn't just a nice-to-have—it's essential for maintaining process efficiency and product quality.

When you're operating in harsh environments like remote processing plants across Africa, where temperatures can swing dramatically between hot days and cold nights, your equipment must perform consistently.

This was exactly the challenge faced by a petrochemical plant with a critical pressure measuring point operating in a hazardous area. Temperatures at the site varied from +20°C to +200°C, and pressures fluctuated between 1.5 and 200 kPa absolute.

This measurement was key to controlling an automated process, where even small measurement errors could impact both energy consumption and product quality.

Why Traditional Pressure Setups Fail

The plant originally used a conventional differential pressure system with an oil-filled capillary. In hot climates like ours, this type of system quickly runs into problems.

Temperature changes during the day cause the oil in the capillary tube to expand and contract, creating measurement drift that can't easily be corrected.

Over time, high process temperatures and vacuum conditions cause the oil to outgas, forming air bubbles that further destabilise readings. These kinds of inconsistencies can lead to unnecessary downtime and increased operational costs.

The VEGA Solution: Reliable Readings, Even in Extreme Conditions

To overcome these challenges, the plant switched to VEGA's electronic differential pressure system using two VEGABAR Series 80 pressure transmitters. This setup not only eliminated the issues caused by capillaries but also provided stable, accurate measurements, critical for efficient and safe process control.



The VEGABAR 83 pressure transmitters were specifically selected for this application. They are designed to handle extreme temperatures and pressure ranges, from as low as 0 to 25 mbar to as high as 1,000 bar, and process temperatures up to +400°C.

Thanks to VEGA's METEC® measuring cell technology, these sensors can handle thermal shock, resist vacuum, and stay stable even when the environment changes rapidly. Unlike traditional sensors, the METEC® cell is built without elastomers and features self-compensating materials that prevent temperature-related measurement drift.

A key benefit for the plant was the ability to use smaller process connections—just 1½-inch fittings instead of the 3-inch size usually needed for this type of application. This meant easier installation, cost savings, and reduced equipment footprint.

A Practical Fit for African Industry

In regions like sub-Saharan Africa, where many plants face wide temperature swings and tough operating environments, the reliability of VEGABAR's electronic differential pressure system is a game-changer. These systems are also easy to integrate and can be connected using smart software with no need for complicated setups or large fittings.

The plant's engineering team was so impressed with the stable, repeatable results that they now plan to roll out VEGABAR's electronic differential pressure solution across other critical measuring points.

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New Multifunction Installation Tester Speeds Up Testing by 30% and Cuts Reporting Times in Half

Comtest, local representative of Fluke, has launched the new Fluke 1670 Series Multifunction Installation Tester, which can cut, by up to 50%, the amount of time electricians and maintenance technicians spend producing reports.

Designed by Fluke to represent the future of installation testing and become "the most important tool in an electrician's toolbelt", the innovative Multifunction Installation Tester also enable tests to be carried out up to 30% faster.

Available in three models – ideally suited to the needs of residential, commercial, and industrial applications – the tools boost productivity through a user-programmable AutoTest function that enables electricians to run an entire automatic installation test sequence at the touch of a button.

Measurement data and metadata from the field are quickly stored, managed and shared using Fluke Connect software, while Fluke's TruTest software simplifies the process of generating documentation.

A single click enables inspection reports to be previewed in the field and certificates generated while on-site. Even inspection invoices can be created at the same time.

This ability to set up, test, upload and report in an easy, single operation is unique to the Fluke 1670 Series.

Eliminating data double-entry

Whether working in residential, commercial or industrial installation commissioning, electricians will welcome being able to eliminate time-consuming double-entry of data.

Results will no longer need to be recorded during testing and then entered manually to a computer, a method that is prone to errors and delays.

Wireless Bluetooth connectivity on the Fluke 1670 Series solves this problem by automatically linking test results to the circuit or point under test.



Electricians will also save time by not having to return to a site because key measurements have not been taken or results are found to be incorrect. The error-proof Fluke 1670 Series Multifunction Installation Tester show the operator instantly on-site if any tests have been missed.

At the same time, automatic measurement validation compares installation test results to an integrated standards reference, delivering an immediate visual indication of pass or fail on the device's integrated full-colour touchscreen.

The clear display includes a full keyboard, eliminating the need for an additional device or laptop to enter notes or edit details.

Jit Patel, Fluke Product Manager for installation testers, states, "Electricians can spend a minimum of 25% of their time processing data and creating reports, and the Fluke 1670 Series Multifunction Installation Tester simply takes this headache away.

"As a best-in-class electrical installation inspection solution, this device represents a genuine evolution in documenting. Because it simplifies inspection results and reporting, boosts productivity and increases testing accuracy, we expect the Fluke 1670 Series to become the most important tool in an electrician's toolbelt."

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Video: https://www.youtube.com/watch?v=U9fj-fkyxfi&utm_source=PressVideo-WNIP&utm_medium=Fluke&utm_campaign=FLK-1670s-Multifunction-Installation-Testers-Speed-Up-Your-Electrical-Inspections



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BMG and Danfoss Drives Reaffirm Their Long-Standing Partnership



BMG and Danfoss Drives celebrate a decade of close collaboration since signing a strategic alliance agreement in 2015. This formal partnership agreement has strengthened BMG's original distribution agreement for Danfoss variable speed drives and the soft starter range, which has been in place since 2007.

"BMG and Danfoss Drives share a commitment to innovation, sustainability and integrity. The teams work closely with industry in Africa to create a more efficient and sustainable environment and a highly productive and globally competitive region," says Sean McCree, Business Unit Manager: Electronics, BMG.

"Through the supply and support of a wide range of Danfoss variable speed drives and soft starter systems, our customers have seen improved productivity, optimised process control and reduced energy consumption in their operations.

"Typical applications for these systems are in food and beverage, HVAC, mining and minerals, marine, water and wastewater, as well as chemical, oil and gas.

"The BMG team's technical expertise is enhanced by the company's extensive branch network offering short lead times, flexible pricing, a dependable 24 hour after-sales support and valuable stock-holding capabilities."

BMG was appointed by Danfoss Drives in 2019 as the first authorised Danfoss DrivePro® service partner in Africa and this official certification has been renewed each year.

This prestigious appointment gives customers the assurance that BMG meets stringent requirements to offer customised support and technical assistance for Danfoss VLT®, iCX and VACON® frequency converters.

Danfoss DrivePro® services, which cover the entire lifecycle of Danfoss and VACON® AC drives, are designed to improve productivity and performance, minimising downtime and giving peace of mind to every user.

BMG has made a significant investment in distribution, engineering facilities and technical skills. Dedicated Variable Speed Drives (VSDs) workshops in Cape Town, Gauteng and KwaZulu-Natal are approved warranty centres for Danfoss/Vacon and Synergy VSD products.

These electromechanical facilities are manned by globally trained experts, offering specialist services, including repairs,

maintenance, option fitment, pre-commissioning, telephonic support, software loading/upgrades and testing applications, as well as small panel manufacturing.

The BMG Electronics team, with in-depth VSD experience, provides expertise in specialist areas, including energy efficiency, mitigation of harmonic distortion related to low voltage drives, application of solar VSDs, as well as condition-based monitoring using variable speed drives.

Many customers insist on official OEM certifications before services can be conducted and with BMG's extensive experience and specialised training, the team is well-positioned to meet these requirements.

The BMG Electronics workshop service and field service departments are supported by ISO9001 Quality Management System, 14001 Environmental Management System and 45001 Occupational Health and Safety compliant systems.

At BMG safety is not just compliance, it is a culture throughout the organisation. The team offers scheduled and specialised VSD training to customers and shares expert knowledge about advanced VSD technology that enhances plant productivity.

BMG's range of Danfoss electronic, mechanical and intelligent 'mechatronic' devices are designed to optimise automation processes and reduce energy consumption.

The VLT® Automation Drive, which has received global awards for innovation and user-friendly features, optimises project costs, ensures the lowest possible cost of ownership and maintains high efficiency processes.

BMG has also adopted the release of the iC7 Series Drives, which feature a six sigma design approach, embedded crypto chip cyber security, integrated fieldbus and excellent motor shaft performance. These drives are suitable for induction and synchronous motors, as well as grid monitoring (THDv).

Recent successes for BMG and Danfoss include a pump upgrade project, and reduced system costs and improved plant security at a chemical facility.

The refurbishment of an ageing, unreliable elevator involved the installation of a VLT lift drive, which has resulted in quiet, comfortable and stable elevator operation.

Through the supply and installation of Danfoss Drives, BMG's agricultural team has assisted local farmers to accelerate tobacco drying processes, reduce the costs of irrigation and expand crop production.

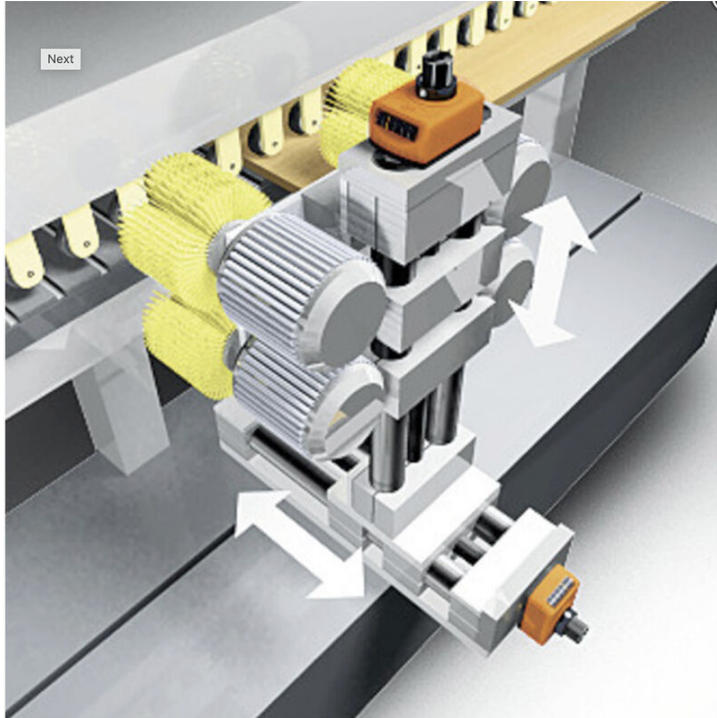
The BMG team is also committed to preventing unnecessary breakdowns, which is why reliability is the primary focus when designing drive systems for new and upgraded facilities. All BMG components are precisely matched to each other and to specific application requirements, to ensure high productivity, sustainability smooth operation and long service-life.

Sean McCree

BMG

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Safeguard Your Plant and Improve Operational Reliability



Unplanned downtime can cost your plant millions — but it doesn't have to.

For engineers and maintenance teams, accurate position measurement is key to preventing equipment failures before they disrupt operations.

The SIKO-global Digital Position Indicator – Basic Device with 5 Decades provides precise, reliable readings that help operators stay ahead of potential issues.

Why it makes a difference:

- 5-decade counter with fine readings and optional mm/inch display
- Magnifying function for easy readability in all conditions
- Slim design with hollow shaft (up to Ø 20 mm) for easy integration

- Dustproof and splash-proof operation, optional stainless-steel driving shaft
- Versatile clamping options and robust housing for harsh industrial environments

By giving operators early, accurate information, the Siko Digital Position Indicator helps plan maintenance proactively, avoid costly downtime, and ensure production keeps running smoothly.

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Magnetic-Inductive Flow Meter



The FMQ flow meter-magnetic inductive flow and volume measurement of media with a minimum conductivity $>5 \mu\text{S/cm}$, with IO-Link

- For liquids, mash and pastes with solids content $< 5\%$
- Very high accuracy $\pm 0,5 \%$ $\pm 2 \text{ mm/s}$ and reproducibility also with low flow rate, ideal for dosing and filling applications

- Large selection of process adapters (optional)
- Includes optical status indicator, optional display

- Includes material certificate for pharmaceutical version
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- Compact electronics with housing in stainless steel
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Transforming Perfume Production with Advanced Mass Flow Sensors



Microcaps is a leader in ethanol-free fine fragrance perfumes, based in Stadt Schlieren (CH). Their commitment to excellence drives continuous process improvements. The innovative Bronkhorst volume flow sensors are key to their production process, ensuring precision and reliability.

The need for precision

In microencapsulation, precision is crucial. Microcaps operates with low flows and velocities (ml/min) and needs high accuracy. Some devices must also withstand highly corrosive agents, adding extra complexity to their production process.

Innovative solutions with Bronkhorst mass flow controllers

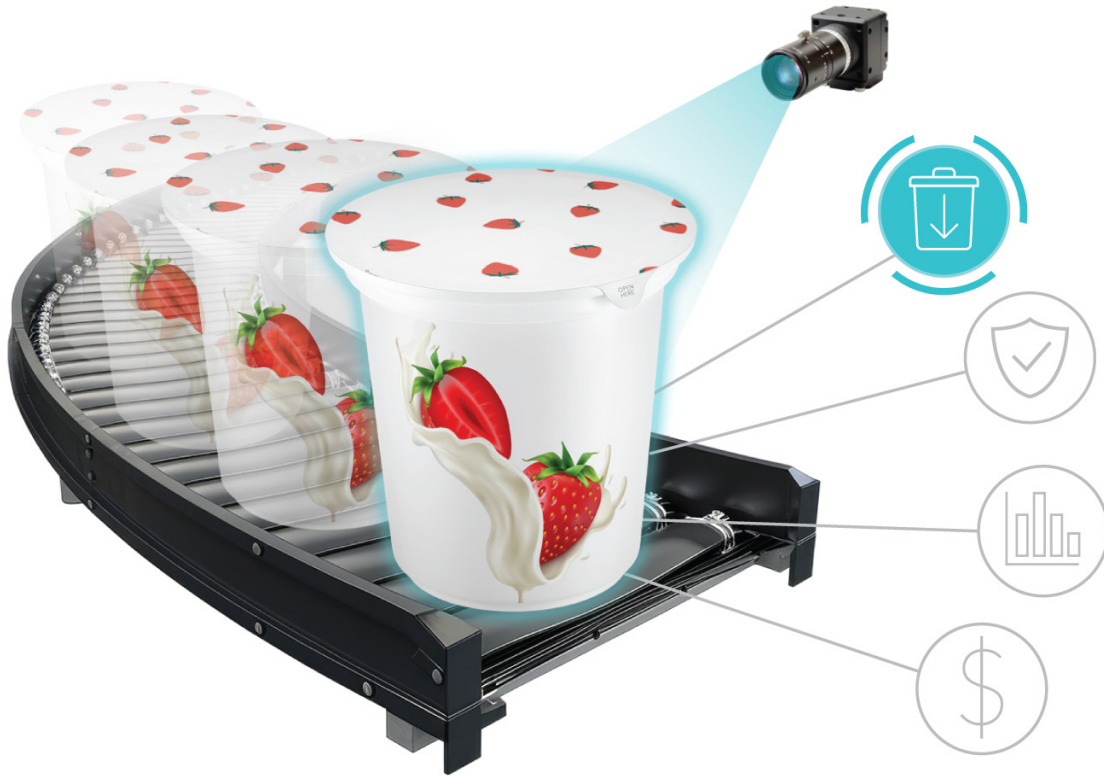
To meet these challenges, Microcaps uses Bronkhorst mass flow sensors. After successful trials in their pilot plant in Schlieren, they scaled up and commercialized these solutions in their new production lines in Burgergemeinde Worben (CH).

"If you are aiming at the highest precision in microencapsulation, you need the most accurate and reliable measuring equipment. If on top, it can also withstand the toughest process conditions – it's a deal", Martin Steiner Head of Process Engineering at Microcaps.

Using different Bronkhorst Ultrasonic ES-FLOW volume flow controllers for various flow phases and Coriolis mass flow sensors for handling corrosive agents has improved their accuracy, reduced waste, and enhanced reliability.

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Advanced Watermarking and Automation Solution



Digimarc and OMRON have joined forces to introduce a cutting-edge solution that combines digital watermarking technology with industrial automation.

By integrating Digimarc's imperceptible watermarking expertise with the advanced capabilities of OMRON's FH Vision System and FHV7 Smart Camera, this collaboration enables precise, high-speed detection and traceability in demanding manufacturing environments.

In today's manufacturing landscape, accuracy, quality, and sustainability are essential. Traditional product codes like QR and DataMatrix are often limited by visibility and orientation.

Digital watermarks offer a powerful alternative—embedding machine-readable data invisibly across packaging surfaces without compromising design.

These watermarks can be detected on complex materials such as cylindrical bottles and transparent films, ensuring consistent readability even at high speeds.

Digital watermarks significantly enhance automated quality control by reducing reliance on manual inspections. They ensure that the correct product matches its packaging, helping manufacturers avoid costly recalls and regulatory issues, particularly in sensitive applications like allergen labelling.

Systems powered by OMRON's vision technology detect and decode these watermarks with high precision, maintaining production integrity.

Beyond quality control, digital watermarks also contribute to more sustainable packaging solutions. By eliminating the need for additional labelling materials, such as plastic shrink sleeves, manufacturers can reduce both waste and carbon emissions.

In one practical example, a food manufacturer replaced plastic sleeves with foil lids embedded with digital watermarks, cutting eight tons of single-use plastic annually.

This technology also plays a vital role in improving order fulfilment and distribution. Watermarks remain reliably readable at high speeds, enabling more efficient sorting, packing, and shipping operations.

Added to that, watermarks support post-consumer recycling by helping facilities identify packaging materials, even when broken or soiled, advancing circular economy goals.

The benefits extend to data collection as well. Real-time insights derived from watermark scanning enable smarter decision-making across the production process, from inventory and quality assurance to production planning. This helps reduce downtime, prevent overproduction, and ensure full traceability.

In practice, OMRON's FH Vision System, outfitted with colour cameras, was used by a manufacturer to detect watermarks on foil lids while simultaneously inspecting date codes, checking lid concentricity, and confirming proper alignment.

Operating at a speed of 800 parts per minute, the system delivered consistent performance and integrated seamlessly into the production line.

By combining Digimarc's digital watermarking technology with OMRON's trusted automation systems, manufacturers gain a powerful tool to boost traceability, reduce waste, improve environmental performance, and drive efficiency, paving the way for smarter, more sustainable production.

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A Vision-Based, AI-Supported System for Shining Rings

PC-based control in a ring sawing machine for the watch and jewellery industry

The mySaw automated ring sawing machine from Carl Benzinger proves that even small systems – which make even smaller end products – can be full of high-tech features.

The end-to-end control system from Beckhoff not only provides the high level of system flexibility required in the jewellery sector but also integrates powerful quality inspection with the seamlessly integrated vision and machine learning solutions.

Carl Benzinger GmbH specializes in highly precise, automated CNC turning and milling machines and produces them entirely at its German headquarters in Pforzheim.

Lathes for the automotive, precision mechanics, optics, watches and jewellery, and aerospace sectors make up the majority of the machines.

Sascha Jentner, Application Technology and Technical Sales Jewellery Machines, explains: “Industrial machines are usually complex and automated to produce specific components. In the jewellery sector, it is more about a particular product, such as a ring, which will be manufactured in an extremely wide range of variants – depending on the ring size and width or material or alloy type. This diversity makes jewellery machines highly individual and sophisticated.”

According to Sascha Jentner, there is currently no machine for ring blanks on the market that is comparable to mySaw: Up to 54 tubes made of materials such as platinum, gold, or silver can be stored as raw material in a tube magazine.

A tube that is selected to optimally suit the order in terms of material and offcut is taken from the magazine and the ring is then sawn to the required width, widened to the individual ring size or inner ring circumference and passed on to the next processing machine via an unloading bar.

In this way, the entire process of blank preparation is automated, significantly reducing the time and costs involved as well as the loss of material – because very thin saw cuts are made and the resulting chips are collected.

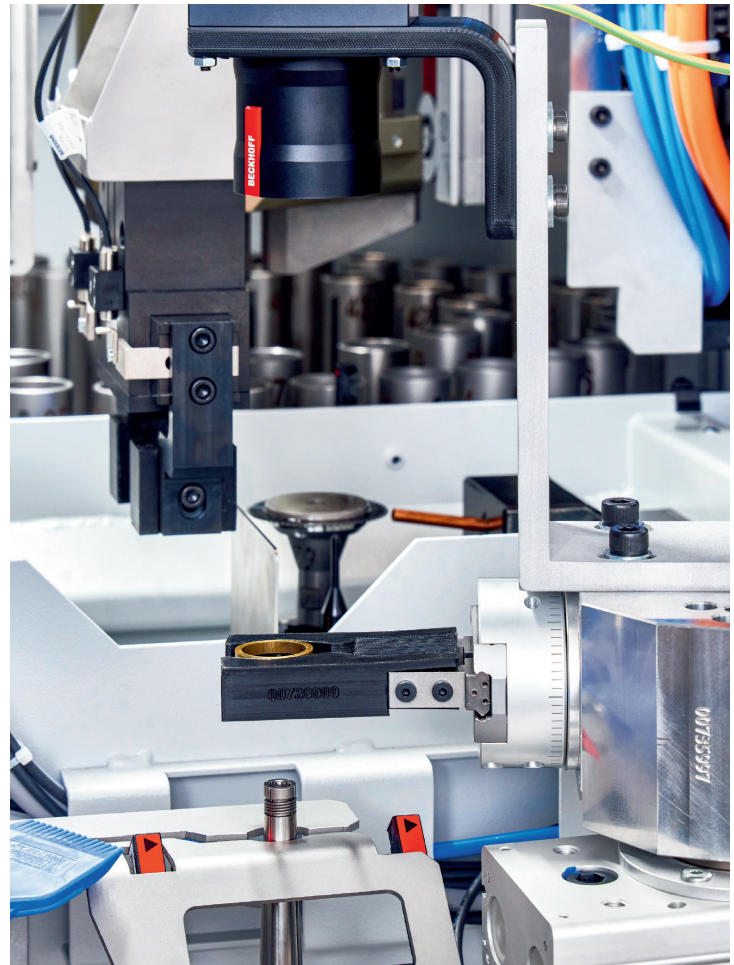
The comprehensive integration of functions is also confirmed by Christian Spieler, Head of Electrical Design and Software at Carl Benzinger: “Originally, mySaw was designed purely as a sawing machine. The ring widening device was integrated as an addition in order to meet customer requirements as effectively as possible.

“The implementation of a ring scale as well as AI- and vision-based quality assurance has also made a crucial contribution to the high functionality and efficiency of the system.”

Numerous movements implemented precisely

The numerous precise motion functions within the sawing machine are crucial for an efficient process flow. First, the rotary indexing tube magazine is moved into the correct position based on the raw material selected for the order.

A gripper then removes the tube and guides it past a light barrier – to check the gripper position and dimensions – to the sawing unit, which cuts the ring blank to the desired width.



Beckhoff VCS2000 area scan camera with VOS3000 lens for vision- and AI-based quality control of ring blanks

After sawing, the blank falls onto an unloading mandrel and the gripper takes the tube back to the magazine and removes the next piece of raw material. At the same time, the sawn-off blank is transported to the removal unit either directly or via the integrated ring widening device.

The motion functions for product handling and the sawing unit are implemented via the AX8000 multi-axis servo system and AM8000 servomotors from Beckhoff.

In addition, the ring widening device features an AA8033 electric cylinder as a direct drive and an AM8112 servomotor controlled via the EL7211-9014 servomotor EtherCAT Terminal to move a small platform that serves as a ring size target.

TwinCAT PLC/NC PTP 10 is used on the software side, installed on the extremely compact CX5240 Embedded PC.

Mike Gutekunst, software developer at Carl Benzinger, explains: “All of the engineering is installed on the embedded PC, and very little training and engineering work is required on our part.

“Another major advantage is TwinCAT’s comprehensive simulation capability, which makes it easy to set up a project step

by step. This makes our work much easier, especially since TwinCAT Drive Manager 2 allows us to implement all motion systems – from the compact drive technology to the electric cylinder and AX8000 – in a single tool.”

Christian Spieler cites further advantages of the Beckhoff drive technology: “We chose the AX8000 multi-axis servo system in particular because of its compact design. Added to this are the advantages of the One Cable Technology (OCT), i.e., space and material savings as well as the electronic nameplate.

“For example, the different tube magazines can be recognized via the nameplate of the respective servomotor and assigned to the appropriate material database.”

The project was also made much easier by the EtherCAT industrial Ethernet system with its automatic recognition of all network participants.

Furthermore, the openness of EtherCAT makes a wide range of third-party components available and allows them to be easily integrated into the control technology.

PC-based system openness and IT integration

It is not just EtherCAT which simplifies project implementation due to its openness, but also the PC-based control technology from Beckhoff as a whole.

Mike Gutekunst adds: “It is an immense advantage that TwinCAT provides an end-to-end platform in engineering as well as in runtime, right through to visualization with TwinCAT HMI. And since the engineering is also installed on the mySaw target system, it is very easy to access the machine worldwide via remote maintenance and carry out diagnostics or troubleshooting if necessary.

“For us, however, openness also means the modularity and scalability of TwinCAT, which makes it extremely easy to integrate new functions and machine developments such as the ring widening device.

“The integration into Visual Studio is another bonus for me as a software developer.”

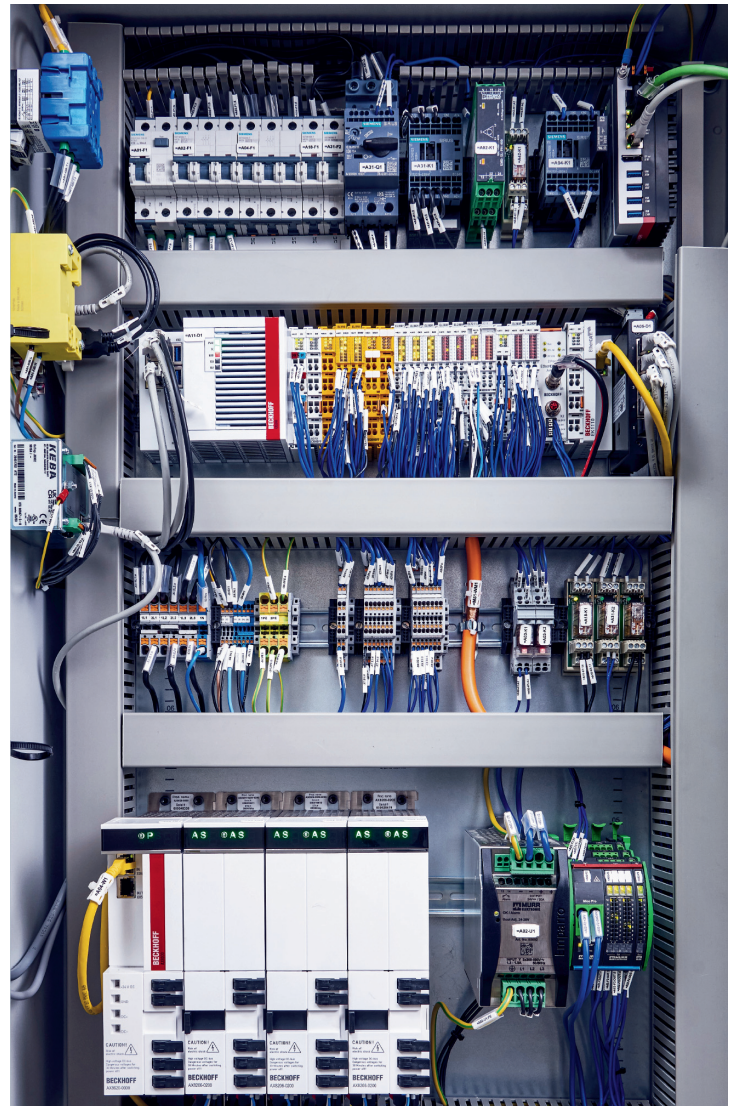
For Christian Spieler, openness is also demonstrated by the ease with which a connection can be established to higher-level IT systems: “This is very important with mySaw, especially with a view to fully automated production. Essentially, there is only a data transmission line to the machine.

“The end customer orders the ring they want via a configurator and this triggers an order in our customer’s ERP or MES system, which is transmitted to mySaw as a data set. Simple IT integration of PC-based control is therefore crucial.

“With TwinCAT Connectivity, we are also well equipped for future customer requirements such as communication via OPC UA – the keyword here is simple scalability.”

AI and vision seamlessly integrated into control technology

In conjunction with the ring widening device, the mySaw sawing machine also offers AI quality control for the finished ring blanks.



Control cabinet of the mySaw ring sawing machine with the CX5240 Embedded PC and the connected EtherCAT and TwinSAFE Terminals (top) and the AX8000 multi-axis servo system (bottom)

Sascha Jentner explains the importance of this: “With the integrated ring widening device, the number of raw material tubes can be minimized despite the extremely high end product variance.

“Due to the numerous parameters that influence the widening process, such as material properties and quality, ring width and thickness, and the turning of the ring during the process, it is not possible to predict exactly to what extent the ring can be widened or when the material will give way and break.

“Without AI or machine learning, the machine is therefore unable to determine whether a ring blank is cracked or not – especially as different defect patterns occur depending on the material and because chips or coolant residues can make it more difficult to detect cracks.

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"In the worst-case scenario, a faulty ring goes through the entire machining process in the downstream machine, which would mean unnecessary time and expense."

The most important thing when it comes to successful industrial ring production, however, is ensuring that a faulty product does not reach the end customer, which is why a solution for reliable inline quality control had to be found.

Mike Gutekunst explains: "The high functionality and integration of Beckhoff control technology meant that we had various options.

"First, we checked the extent to which the current consumption of the electric cylinder of the ring widening device could be used for inspections.

"However, with the seamless integration of machine learning and vision in TwinCAT, we ultimately opted for a final optical inspection. An AI model was developed for this purpose and – supported by Nicolas Camargo Torres from TwinCAT Product Management – it was trained with TwinCAT Machine Learning Creator using only around 200 images of good and bad parts, despite the large number of potential sources of error.

"Overall, this automated training helps us significantly, not least in view of the limited development capacities and the data scientist expertise that would otherwise be required."

TwinCAT Machine Learning Creator supports the development of the AI model with extensive analysis functionality. According to Mike Gutekunst, this is very important in order to identify whether the reliability of the error detection is sufficient for more intensive training or whether something still needs to be adjusted in the upstream process.

The trained AI model then runs directly and in real time in the controller with TwinCAT Vision Neural Network, as easily as any other TwinCAT function and without expert AI knowledge.

Carl Benzinger also benefits from seamless integration, openness, and scalability with respect to machine vision, which runs on a C6025 ultra-compact Industrial PC – together with the AI extension – for a consistently modular machine design.

The PC communicates bidirectionally via ADS with the CX5240 as the machine's main controller through a TwinCAT PLC application for vision and AI and carries out the data transfer and handshake between the two controllers.

With TwinCAT Vision, both Beckhoff vision hardware and GigE vision cameras from third-party suppliers can be easily integrated into the control technology.

Christian Spieler sees the advantages of the Beckhoff vision solution, with its integrated hardware and software design, as follows: "EtherCAT enables us to integrate the cameras easily and transmit the trigger signals reliably and precisely.

"The plug-and-play capability, minimized wiring work, and industrial-grade hardware design are all added benefits. In addition, the Beckhoff solution has a very good price/performance ratio overall."

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- Front-flush sensor: Simplified pipe cleaning (pigging possible) ideal for media with adhesive fibres or particles
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- No colour dependency (wavelength 860 nm)
- High reproducibility and fast response time
- Selectable output value (%TU, NTU, EBC)
- Extended measurement range: 200...300.000 NTU equivalent

Application examples

- Phase separation products (whey-cream-milk)
- Separator control
- CIP-return line (monitoring of pre-rinse water to product leftovers)
- Automation of the yeast harvest and the separator monitoring in breweries
- Quality control
- Leakage control of filters, gasket, valves.

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Take Control of the pH in your Plating Bath

Maintain uniformity with Hanna instruments Proportional Dosing pH Controller, with Built-In Chemical Dosing Pump



Surface finishing is the process of applying a paint or metal coating to a product. There are various forms of surface finishing and reason to coat a product. The two most common ways to plate a product are by electroplating, in which current from a rectifier is used to draw metals onto a product, and electroless, which is plating without current.

The purpose of applying a coating to a product can be decorative, protective or functional.

The painting of cars by e-coating is an excellent example of a decorative finish that offers superior protection against the elements. Chrome plating of plumbing fixtures is done to provide a decorative finish. The plating of a circuit board with copper is functional in the ability to provide an electrical pathway between resistors, capacitors and IC's that are soldered to it. The application of a zinc finish to an iron bolt, nut, or screw can provide an extremely protective finish that will prevent corrosion.



- In all these processes, pH plays an important role in one way or another.
- In plating, the pH can affect both the finish produced & the amount of metal deposited.
- Controlling the pH of a bath helps in maintaining uniformity.

For example: it is possible to maintain the pH of a single bath in an acid plating line. As zinc is plated, it is expected that the pH of tank would rise. To maintain the pH at its optimal level, sulfuric acid would need to be added to the bath. It is undesirable to periodically add sulfuric acid to try and maintain the bath, as the pH would have a wide swing.

Maintain a more consistent pH level in your tank, with Hanna Instruments Proportional Dosing Process Controller, with built-in Chemical Feed Pump, (**BL7916-02**). The default band by a 10K resistor is 1.5pH. When the reading is within the band, the dosing frequency is based on how far the reading is from the set point.

The closer the reading is to the set point, the slower the pump operates. With smaller doses, there is more reaction time of the acid in the bath, which prevents overshooting of the set-point!

Our dosing pump is made from chemical resistant materials, an excellent chemical compatibility to the Sulfuric Acid concentration that is being used.

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Features of the BL7916-02:

- All-In-One Compact Design
- Two advanced instruments in one compact unit
- Convenient installation with all controls on front panel
- Can be mounted right above the plating tank
- Easy to operate (manual timers for calibration & setting the Set-Point)
- Ideal for a plating company (*take control the pH, at a desired Set-Point in a single bath*)
- Isolated Recorder Output (4-20mA Analog Output)
- Used in combination with an HI1001 pH electrode for Process Control and Monitoring
- **Supplied with:** Discharge & suction valves, LDPE tubing, 7m, power cord, & manual

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VEGA develops all core technologies in-house and manufactures the main components of its measuring instruments. This also applies to the ceramic capacitive CERTEC® and the metallic METEC® measuring cells.

They are produced under "Clean Room Class 100" conditions to ensure that they deliver unrivalled precision.

Each one is calibrated on DKD-certified test benches – the calibration certificate is an integral part of the scope of delivery.

Ceramic Measuring Cell CERTEC®

The ceramic measuring cell CERTEC® features a sensor element with a flush-mounted, abrasion-resistant ceramic diaphragm.

It is engineered to handle measuring ranges from -1 up to +100 bar, and it is also available in a compact version capable of detecting pressures as low as 25 mbar.

Designed for versatility, it operates reliably in temperatures between -40 and +150 °C.

As a dry measuring cell, it offers excellent long-term stability and is highly resistant to both overload and abrasion.

Its design ensures it is completely front flush, and it provides front-flush temperature measurement as well as integrated diaphragm rupture detection, enhancing both the safety and accuracy of measurement operations.

Metallic Measuring Cells

Among the types of metallic measuring cells available are the Metallic METEC® measuring cell, the piezoresistive metallic measuring cell, and the metallic thin-film measuring cell.

Each variant offers specific advantages suited to different measurement applications and operational requirements.

The measuring system offers a wide range, spanning from -1 to +1000 bar, and is capable of operating within a temperature range of -40 to +200 °C.

Designed without any elastomers, it is completely vacuum-proof and demonstrates excellent thermal shock resistance.

The system is unaffected by condensation and remains highly resistant to both vibration and shock, ensuring reliable performance even in demanding environments.



Chemical Seal

Chemical seal systems consist of a separated process diaphragm and an intermediate transmission fluid.

These systems offer a measuring range from -1 to +1,000 bar and can operate within a broad temperature span, from -90 to +400 °C.

The wetted parts are typically made from high-grade materials such as stainless

steel 316L, tantalum, or Hastelloy, while the diaphragms themselves can be coated with materials like polyamide (PA), polypropylene (PP), or gold to meet specific application requirements.

Differential Pressure Measuring Cell

The differential pressure measuring cell utilises a piezoresistive metallic measuring cell that features an integrated overload diaphragm.

This advanced design supports measuring ranges from as low as 0.01 bar up to 40 bar, while operating reliably within a temperature span of -40 to +105 °C.

Notably, the measuring cell is dynamically overload-proof up to +400 bar, ensuring excellent durability even under extreme conditions.

Additionally, the system allows for the attachment of a chemical seal, further enhancing its versatility for various industrial applications.

Getting it Right from Plant to Pipeline

These sensors set the standard for accuracy, broad pressure ranges, and certified hygiene, remaining steadfast even under the harshest conditions—whether facing wear, aggressive chemicals, soaring temperatures, humidity, or diffusion.

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Computing Power and Integrated Stepper Motor Drives

Comprehensive retrofit of a tufting machine for carpet production



During the retrofit of the tufting machine, all of the control and drive technology was exchanged and the previous yarn feed roller was replaced with 424 compact ASI8114 stepper motor drives with integrated output stage.

When the electronics started to fail more and more often, Vetex – based in Herzebrock – realized it was time to retrofit one of its tufting machines and migrate to PC-based control.

The compact drive technology from Beckhoff enabled a new type of yarn infeed: 424 integrated ASI8114 stepper motor drives replace the usual yarn feed rollers and feed the system with around 1,700 yarn threads – complete with individual and very fast control of the thread length and monitoring of the thread tension.

Herzebrock-based carpet specialist Vetex offers carpets in a wide variety of patterns, colours, and dimensions. The spectrum of products marketed worldwide under the Infloor-Girloon brand is large and encompasses standard commercial products in several quality levels from 500 g/m² to over 2,000 g/m² pile weight.

“Other highlights include carpets with individually printed motifs and our self-adhesive carpet tiles, which can be laid directly on dust-free, smooth subfloors and removed again at any time without leaving any residue,” says Josef Röttgers, Head of Production and Product Management at Vetex.

The most commonly used process for carpets worldwide is tufting, a technique between sewing and embroidery. Needles

threaded with the pile yarn (tufting yarn) pierce the backing material, which is moved synchronously to the machine cycle by a feed roller and a take-off roller.

The vertical needles are arranged across the entire width of the tufting machine – in the case of the Vetex machine, exactly 1,696 needles across a width of 4.29 meters.

“That corresponds to ten needles per inch of carpet width,” explains Ralf Bosch, production manager for the Vetex tufting and weaving division.

Grippers form the pile thread loops on the back of the pierced backing layer and fix their height. If these grippers are also equipped with blades, the loops can be cut open so that the pile loop fabric becomes a velour carpet.

For Infloor-Girloon’s target markets – hotel chains, offices, insurance companies, specialist retailers, and the construction industry – quality and durability are extremely important, as is the ability to create customized carpet designs with regard to colouring, texture, and pattern.

“It is essential that the production process is as smooth and precise as possible, which was no longer possible with the previous control technology,” says Ralf Bosch, emphasizing the necessity of the retrofit implemented by Beckhoff and machine builder Gierecker & Brökelmann in Rheda-Wiedenbrück.

Increase Quality and Availability

For this reason, the tufting machine's electronics, which had become increasingly susceptible to faults, were completely replaced with powerful and flexible control and drive technology – PC-based control.

"We have been using PC-based control technology from Beckhoff for about seven years and are modernizing our machines with it step by step," says Josef Röttgers.

Yarn feed with over 400 compact stepper motor drives

During the retrofit of the tufting machine, the previous drive technology was replaced with various AM8000 synchronous servomotors and AX5000 compact servo drives, which control aspects such as the needle stroke, the feed of the tufting fabric, the press foot, and the lifting table.

"For the most important part of the retrofit – the precise yarn feed and thread tension – Vetex relies on a new concept that could only be implemented in this form with the compact integrated ASI8114 stepper motor drives," explains Jens Hülsebusch, project manager and programmer of the retrofit at Beckhoff.

A total of 424 stepper motors with integrated amplifiers each pull four threads from the creel via corresponding shafts and make them available to the machine via scramble box and puller rolls. The speeds of the yarn drives can change up to ten times per second.

"Due to their compact dimensions, the flange dimension of 42 mm, and the low power consumption, the stepper motor drives could be mounted very closely," adds Christian Mische, Senior Product Manager Drive Technology at Beckhoff.

"Compared to other solutions, the design effort required for the infeed of the 1,696 individual yarns is therefore much lower and more precise," confirms Ralf Bosch.

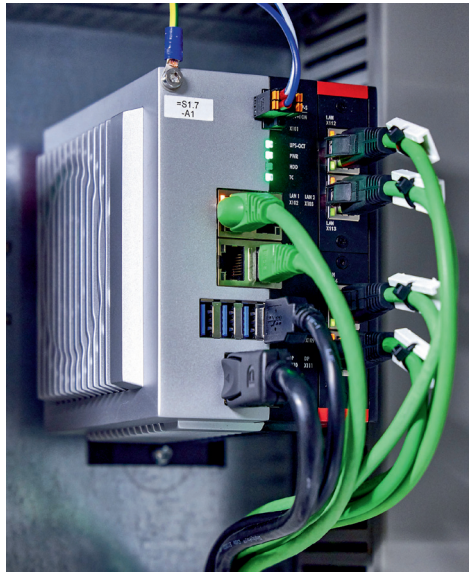
The compact drive technology with 48 V DC supply voltage saves valuable installation space – but that's not all. Its internal feedback system turns the stepper motors into a precise servo drive with field-oriented control.

Compared to traditional stepper motors, this means that energy consumption and heat generation are much lower, reducing the power consumption from just under 8 kW for a conventional machine to around 4 kW after the retrofit.

"With 2-shift operation and several machines, this is definitely noticeable in terms of energy consumption and the CO2 balance," says Ralf Bosch. The necessary power for the stepper motor drives is provided by 19 PS3000 power supplies.

PC-based control regulates the thread tension via the motor current or the resulting torque and detects whether the tension is too high or a thread is broken.

"Both have a direct effect on the quality of the carpet," says Josef Röttgers. The thread tensions are displayed to the machine operator on the CP2918 Control Panel via a dot matrix. The operator can immediately see from the colours where the thread infeed is hooked and can intervene if necessary," says Jens Hülsebusch.



A C6032 ultra-compact Industrial PC with eight CPU cores controls the entire system; in order to maintain the required cycle time of 1 ms, the drives and the I/O level were integrated via a total of five EtherCAT segments.



The thread tension is displayed synchronously to the cycle via the torque of the stepper motor drives in the visualization created with TwinCAT 3 PLC HMI; each dot in the matrix above the thread infeed represents one of the 424 stepper motor drives.

To ensure that this display works synchronously with the machine cycle, the visualization was created with the TwinCAT 3 PLC HMI (TF1800).

Eight processor cores for short cycle times

TwinCAT calculates the motor current or torque for the required thread tension with a cycle time of 1 ms.

"To ensure this short cycle, the many stepper motors and other tasks were divided between the eight CPU cores of the C6032 ultra-compact Industrial PC and several EtherCAT segments," explains Jens Hülsebusch.

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One Ethernet interface connects 100 of the stepper motor drives to the industrial PC in each case. A fifth junction connects the remaining EtherCAT Terminals and EP box modules as well as the AX5000 compact servo drives for the other drives of the tufting machine.

The NC part, the visualization, and the slow and fast processes are each assigned to a further CPU core.

"In this application, we make full use of the flexibility of PC-based control and the performance of the industrial PC," says Jens Hülsebusch.

Josef Röttgers confirms this: "The retrofit of the machine was the most complicated conversion at Vetex to date, but thanks to the excellent preparation and expertise of Beckhoff systems engineering, it went off without a hitch."

Some of the challenges included the individual control of the many drives depending on the carpet design, and the interpretation and handling of the bitmap of a pattern in the control system.

"The individual patterns are created when the threads are stitched through the base fabric at different lengths," says Ralf Bosch.

To do this, TwinCAT must translate the pattern planned by a graphic designer pixel by pixel into position setpoints and yarn

lengths for each of the 424 stepper motor drives and generate the motion profiles.

PC-based control can make full use of its strengths here, as the C6032 ultra-compact Industrial PC – in conjunction with TwinCAT 3 – provides sufficient real-time memory to read and process the approximately 10 MB files.

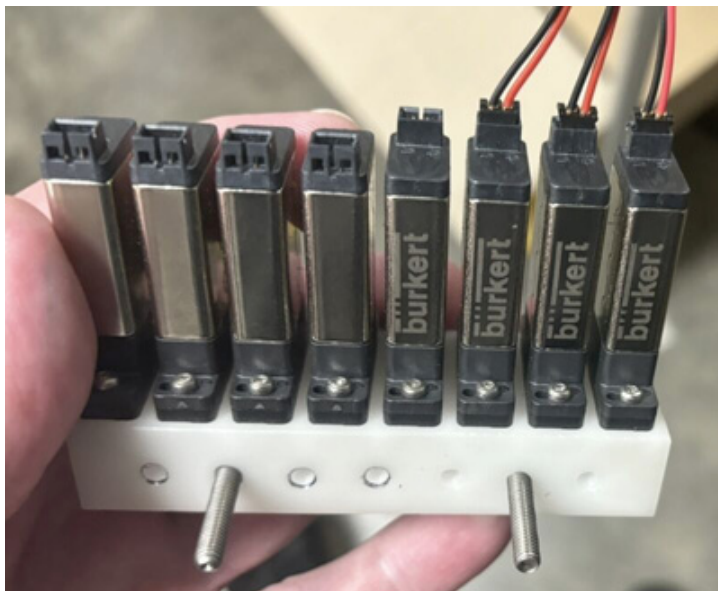
The connection between the controller and the design department or order planning is established via TwinCAT 3 XML Server (TF6421).

The demanding motion sequences were implemented with TwinCAT 3 PLC/NC PTP (TC1250) and NC Camming (TF5050).

Following the extremely positive experience, Vetex is getting ready for further modernizations: In addition to the conversion of a cutting system for the self-adhesive carpet tiles, Josef Röttgers is already planning the retrofit of another tufting machine for next year.

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The Micro Solenoid Valve That Punches Well Above its Weight



Many fluidic processes moving closer to where they are actually required. In the field of medical devices, for example, treatments such as dialysis can be provided to patients in convenient surroundings at home.

Washing units in analytical equipment are positioned on the pipetting arm or directly on the print head in printing applications. This imposes different requirements on the components used.

Solenoid valves must be able to switch without being heard. They need to be smaller and lighter to be used in mobile devices. However, their ability to achieve a long service life and excellent switching characteristics is every bit as important.

The Whisper Valve Type 6724 combines all these traits and, thanks to its modular structure and range of available material variants, this valve is universally applicable.

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Securing a Battery-Powered Future Through Automated Recycling



As the world accelerates its transition to renewable energy and electrified transport, batteries are taking centre stage. Their role in storing energy and powering electric vehicles is vital to meeting the sustainability goals set out at COP28.

Two sectors, namely power and transport, are leading the demand for batteries.

According to the International Energy Agency (IEA), battery deployment in the energy sector alone increased by over 130% in 2023, adding 42 gigawatts to global electricity systems.

Electric cars, bikes, buses and more have become symbols of a cleaner future, but their rise has also exposed challenges in securing raw materials like lithium, cobalt, copper, and nickel.

Raw Material Risks and Recycling Roadblocks

China currently dominates global battery production and controls the majority of raw material supply. While Europe has its reserves, these remain largely untapped due to long lead times to open new mines.

An alternative route is recycling used batteries, but this is more complex than it appears.

The main challenge is the lack of standardisation in battery chemistry and construction. Batteries degrade over time, changing structurally and chemically, which makes it difficult for recyclers to know what they're dealing with, even if databases exist.

Changes in suppliers or internal damage can also affect composition and safety.

Recycling also requires very high levels of purity. Lithium, for example, must be 100% pure to be reused. Any contamination during recovery renders it unfit.

Additionally, batteries are not always returned in good condition, and hidden damage from accidents or misuse further complicates recycling.

Second-Life Potential and Practical Limitations

Not all end-of-life batteries need to be dismantled. If their capacity remains above 80%, they can potentially be reused in stationary energy storage systems.

However, assessing second-life potential is a lengthy process, and a consistent supply of identical battery types is required for

large-scale storage, as mixing different batteries is not feasible.

Manual Dismantling: Slow and Risky

Battery dismantling remains largely manual. It's a dangerous and slow process requiring careful discharge and separation of components.

Workers are at risk of electric shock and exposure to toxic substances like solvents and electrolytes.

The current recycling process is not scalable or safe without significant intervention.

Regulations Bring Hope—but Also Delay

The EU Batteries Regulation is a major step towards circularity. It introduces efficiency targets, mandates recyclability, and, crucially, requires batteries in vehicles and electronics to be removable.

From 2027, large batteries sold in the EU will also require a digital "battery passport" accessible via QR code, helping recyclers understand their composition.

Unfortunately, there is a long wait before this has a real impact.

With most batteries lasting 8–15 years, those with digital passports won't enter the recycling stream until 2035 or later.

Until then, smarter testing and identification tools are urgently needed.

The Role of Automation

Automation offers a transformative solution. Combining vision and sensing with AI and robotics allows for safe, efficient battery identification and dismantling. Robots can perform high-risk tasks, while digital tools can improve material separation and reduce human error.

OMRON is contributing its automation expertise to Germany's DiLiRec research project, which is developing sustainable recycling methods for lithium iron phosphate (LFP) batteries.

Efficient sorting, dismantling and electrode stripping, along with improved data collection, are key focus areas.

OMRON's contributions in robotics, data analytics, and AI are helping to accelerate progress toward a circular battery economy.

Europe's reliance on imported raw materials threatens the long-term growth of its energy and transport sectors. Investing in battery recycling infrastructure and automating it is crucial.

By helping unlock safe, efficient, and circular battery recycling, OMRON is proud to be part of the solution driving a more sustainable, battery-powered future.

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