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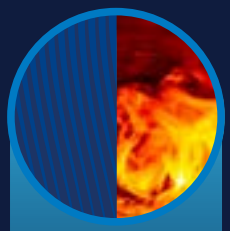
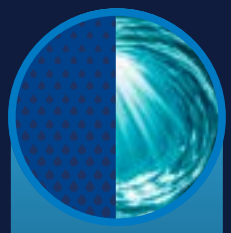
JUMO

Renewable Energy



Thermo-process Technology

Heat Meter (Metering)



Water & Wastewater

SYSTEMS + SOLUTIONS

Safety

Heating, Ventilation, Air Conditioning

Transportation

Food & Beverage

Distribution

CLEAR FOCUS ON THE INDUSTRIES

FOR THE BENEFIT OF THE CUSTOMER

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JUMO

MORE THAN SENSORS AND AUTOMATION

TECHNOLOGY I PRODUCTS

APPLICATIONS I KNOWLEDGE

COMPANY I SERVICES

To improve readability, gender-neutral language has been used throughout this text. These terms shall generally apply to all genders in order to be non-discriminatory. This abbreviated language is only used for editorial purposes and is not intended to suggest value judgment.

Dear Reader,

"Clear Focus on the Industries – for the Benefit of the Customer". That is the cover story of this edition of our magazine. This motto illustrates how JUMO is consistently enhancing its strategic orientation as a leading system and solution provider. Thanks to our clear focus on the industries, we offer our customers more than just innovative products. We also provide tailored solutions that overcome specific challenges and create true added value.

The benefits of our solutions emerge when they are applied in practice. Together with FESSMANN, we developed an innovative technology used to produce dry pet food. Our project with Blizzard is equally exciting. For this project we created an automation system for manufacturing high-performance skis – an area that requires precision and efficiency.

Beyond that, we examine how our H_2 fuel cell technology is used in ships and why it is a critical step towards sustainable mobility. In the area of cultural heritage, our climate control technology ensures that valuable display items are optimally protected and remain preserved for future generations.

Our strength lies in the connection between technical innovation and practical application – and in the close cooperation with you, our customers. These partnerships are the key to overcoming challenges and creating viable solutions for the future.

Let this edition inspire you. Discover how JUMO can also optimize your processes – with products, systems and solutions that are exactly customized to your requirements.

Happy reading!

Dimitrios Charisiadis

Dimitrios Charisiadis
Chief Executive Officer

Steffen Hoßfeld

Dr. Steffen Hoßfeld
Chief Operating Officer

INDUSTRY FOCUS TAKES CUSTOMER FOCUS TO A NEW LEVEL

How JUMO is redefining innovation and customer focus

In a constantly changing world, where megatrends like digitalization, sustainability, and resource efficiency are setting new standards, JUMO is taking cooperation with customers to a new level with its clear focus on industry. The transition to a system and solution provider with a clear focus on the industries does more than just strengthen JUMO's competitive position. It also offers customers tangible benefits in the defined focus industries.

Strategic industry focus: Solutions instead of products

"JUMO is setting a clear course with its decision to focus on specific industries. Customers aren't looking for off-the-shelf products, they want integrated systems and applications that are exactly tailored to their requirements," emphasized Guy Beaho, Head of Global Industry Management at JUMO.

Defining focus industries like food and beverage, water and wastewater, or thermoprocess technology allows JUMO to concentrate closely on markets with outstanding growth potential. *"This is our strength: customized solutions that not only meet current requirements but that are also sustainable,"* emphasizes Beaho.

JUMO relies on a clear distinction between Product Management and Industry Management. While product managers are responsible for further developing individual products, industry managers have the task of developing applications and identifying application gaps in the portfolio. This specific focus creates the foundation for implementing customer-specific solutions faster and more efficiently.

The strategic industry focus is further solidified by defining focus, target, and local industries. This structure enables JUMO to react flexibly to market requirements and combine global trends with specific local factors in the process.

- In the focus industries – including water and wastewater, thermoprocess technology, and transportation – JUMO is targeting specific solutions that meet the special challenges of these markets. This results in innovations that not only increase customers' efficiency and productivity, but also support their sustainability goals.
- With target industries – like hydrogen, aquaculture, or pharmaceuticals – JUMO is targeting markets that have enormous potential in the short or long term. This is where marketing campaigns and targeted development projects are used to gain a foothold early on.
- Local industries – one particular advantage is the flexibility to also address regional markets. Industries that are particularly relevant in certain countries can be developed independently of the central corporate strategy. This strengthens global competitiveness and customer loyalty.

Focus is placed on specific industries

The Industry Management team has clear goals and objectives for 2025

Advantages for JUMO customers: Efficiency, innovation, and service quality

The industry focus is not an end unto itself – its goal is to place focus on the customer and create true added value.

- Specialization for more efficiency:
  The close cooperation between developers, product managers, and industry experts enables solutions to be brought to market faster and adapted to specific requirements. Sales strategies are more targeted, and customer service is strengthened.
- Innovative solutions and fast response times:
  Thanks to specialization, JUMO can quickly react to industry-specific trends and challenges. This not only leads to accelerated development and implementation processes, but also to innovations that align precisely with customer needs.
- Long-term partnerships through quality and service:
  By continuously adapting to changing customer needs and providing high-quality support, JUMO creates the foundation for stable and long-term business relationships. This not only ensures the customer's success, but also strengthens JUMO's own market position.

By using a clear industry orientation, JUMO has chosen a direction that aligns with the requirements of a dynamic market environment. Focusing on specific industries makes it possible to drive innovation, precisely address customer needs, and strengthen the competitive position in the long term.

Conclusion

What this means for customers: customized solutions that are tailored to the individual requirements of their industry, combined with service and support that meet the highest standards. JUMO shows that the road to the future leads to specialization, partnership, and innovation – true to the motto: "Clear focus on the industries for the benefit of the customer!"

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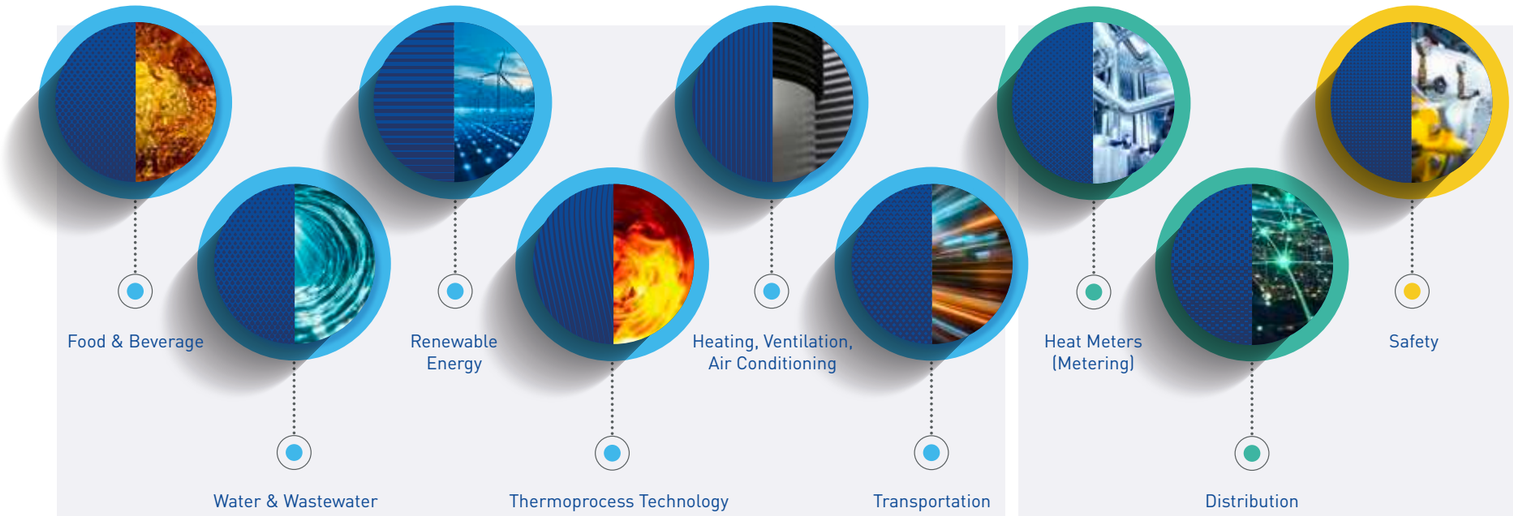


"WE ARE MORE JUMO THAN EVER. AND OUR CUSTOMERS APPRECIATE THAT."

Interview with Guy Beaho,
Head of Global Industry Management at JUMO

"How is JUMO's approach different from other providers in the focus industries?"

Guy Beaho: "The key difference is in the depth of our cooperation with customers. At JUMO we do more than deliver products, systems, or finished solutions. We see ourselves as a partner who begins working closely together with customers as early as the design phase. Our industry managers have solid application expertise and are able to serve both current needs and foresee future requirements. This proactive approach clearly differentiates us from some of our competitors who often operate in ways that are aligned solely with production." //

"What role does technical support play in this new direction?"

Guy Beaho: "Technical support has taken on a whole new level of significance. Thanks to our industry focus, we can now train our service team for specific industries. This makes it possible for our customers to not only receive fast replies to technical questions, but also solutions that are adapted to their specific industry. In addition, our support and development departments cooperate more closely, which means that feedback from our customers' everyday experiences can flow directly into further development of our systems. That creates a dynamic feedback loop that continuously improves our solutions. We use this fine-tuning of our market position to remain true to our core DNA. We are more JUMO than ever. And our customers appreciate that."//

"How do customers specifically benefit from the distinction between Product Management and Industry Management?"

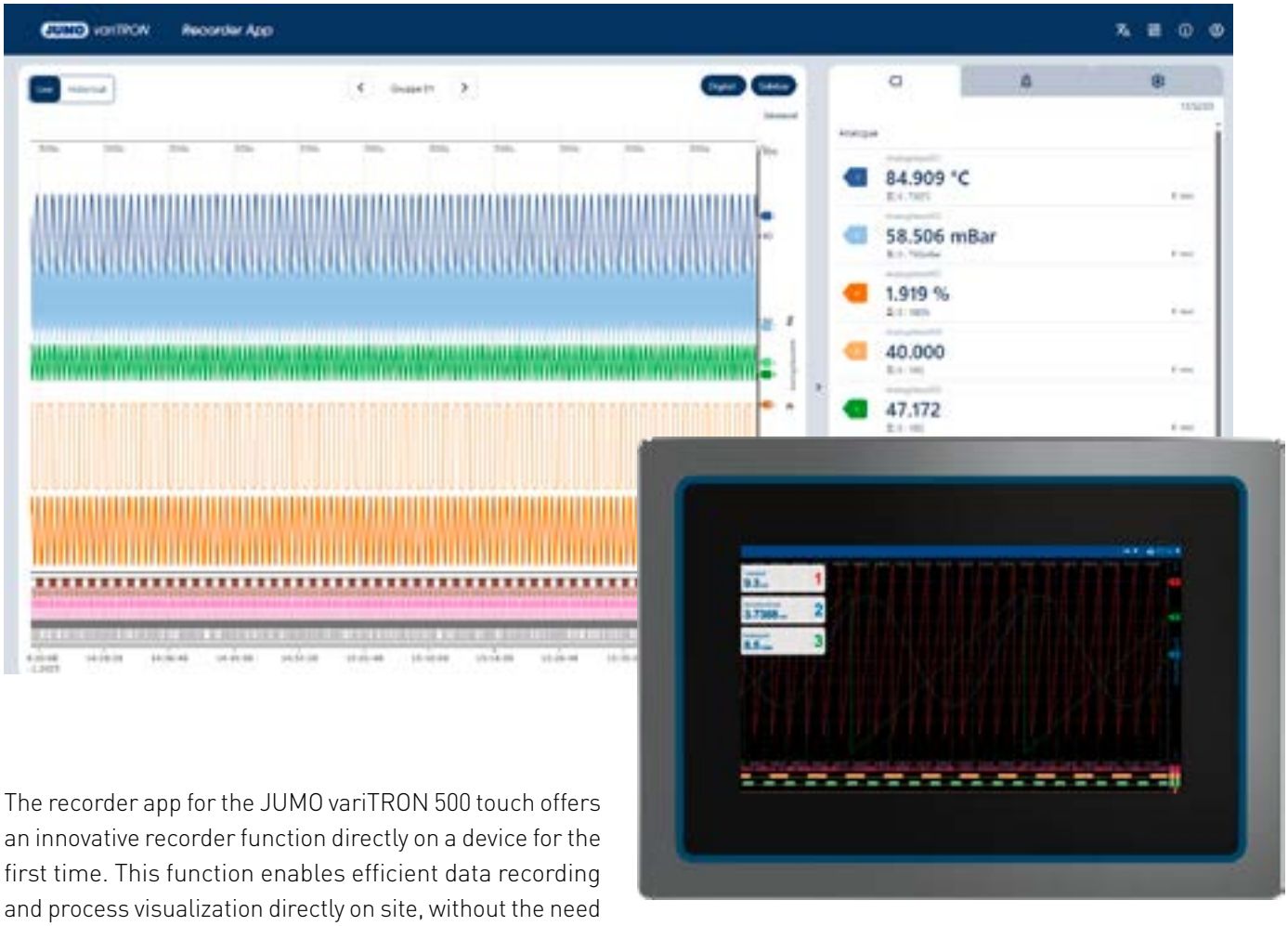
Guy Beaho: "The distinction allows us to create awareness in two ways. While product managers solely concentrate on further development and technical perfection, industry managers have the freedom to strategically shape their respective industries. They can take a more in-depth look at the challenges and trends of their industries, which leads to practically-oriented applications. As a result, customers receive products that are perfectly integrated into their systems and solutions that cover both current and future requirements – a combination that ensures reliability and innovation in equal measure."//

"Our industry managers have the freedom to strategically shape their respective industries."
Guy Beaho

INNOVATIVE APP FOR THE CONTROLLER FAMILY JUMO VARITRON

Classic paperless recorder is no longer needed

JUMO is introducing 2 significant innovations to considerably increase efficiency and flexibility in industrial automation with the latest system version for the JUMO variTRON controller family. On the one hand, customers can look forward to a unique selling point with the recorder app for the JUMO variTRON controller family, since the function of a paperless recorder is moving to the PLC. On the other hand, the new JUMO I/O system for the JUMO variTRON PLC family offers users a module family that is "state of the art".



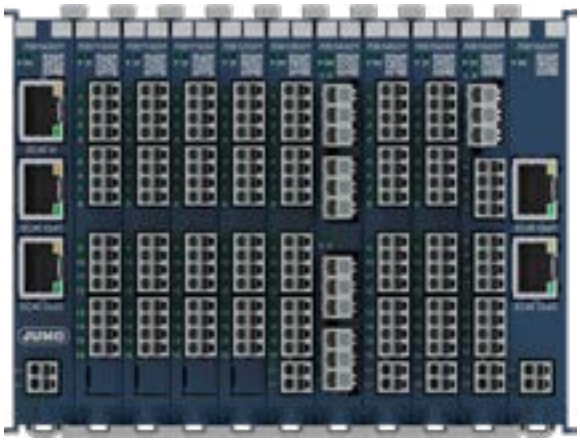
The recorder app for the JUMO variTRON 500 touch offers an innovative recorder function directly on a device for the first time. This function enables efficient data recording and process visualization directly on site, without the need for additional hardware or software. This functionality is available on the web for the DIN rail devices JUMO variTRON 500, which makes flexible use from any location possible. JUMO offers its customers a USP because they can dispense with a complete device in the form of a classic paperless recorder.

The recorder app that is integrated into the JUMO variTRON family distinguishes itself through its high degree of efficiency in data recording and process visualization. It enables users to acquire and analyze process-relevant data in real time. →

This makes JUMO PLC systems unique on the market. The functionality is particularly useful for applications that require precise monitoring and process control.
Process-relevant data is evaluated using a browser and the JUMO smartWARE Evaluation software. The backup of critical process data is becoming increasingly important in a wide range of industries. JUMO smartWARE Evaluation enables the archiving and visualization of process data recorded by the JUMO variTRON system.
Customizable dashboards allow for quick and effective analysis of the recorded measurement data. Batches spanning multiple plants and the option of automated, customer-specific reports round off the flexible use of JUMO smartWARE Evaluation.

New I/O modules for the JUMO variTRON PLC family

The new I/O modules for the JUMO variTRON PLC family are characterized by a slim design and high channel density. The modules have been designed in a way that maximizes the number of inputs and outputs in the smallest possible space. This facilitates efficient use of the available space in the control cabinet. Their reaction time has been optimized, which means that they react quickly to input and thereby allow precise process control.
JUMO offers both digital and analog modules. The digital modules are available during the initial release while the analog modules will follow at a later time. These modules have been designed in such a way that they cover a wide range of applications – from simple digital input and output operations to complex analog signal processing.
Thanks to a smart adapter, the existing modules of the JUMO variTRON family can be operated at the same time as the new modules of the JUMO I/O system. This adapter allows the new modules to be integrated seamlessly into existing systems without requiring extensive changes to the available infrastructure. The reaction speed of the new modules has been optimized and adjusted to the requirements of the applications in the focus industries. This ensures that the new modules can be used in a variety of applications ranging from simple machine control to complex process control.
The JUMO I/O system has been especially developed for users who require a high degree of flexibility and scalability in their systems without compromising accuracy and reliability. Numerous input and output modules provide a cost-effective and innovative platform for industrial automation requirements. This enables tailored configuration and optimal control processes that are precisely tailored to the specific requirements of the user.
Its modular design enables the system to be expanded as required. This means that users can adjust and augment the system as required without the need for extensive changes to existing infrastructure. ■



Conclusion

In summary, the new I/O modules for the JUMO variTRON family offer a wide range of benefits and innovations that significantly increase efficiency and flexibility in industrial automation. They facilitate precise process monitoring and control, offer a high degree of data reliability, and can be flexibly adjusted to the specific requirements of the user.

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JUMO GETS ELECTRONIC THERMOSTATS ON DIN RAILS

A wide functional range in small housing

Reliable temperature monitoring in trains is also possible.

The electronic thermostat for DIN-rail mounting – the JUMO eTRON T100 – was especially designed for temperature control and monitoring. As an option to the thermostatic function, it can also be used for more demanding control processes. When using the PID two-state controller with autotuning version it delivers a significantly higher control quality.

The JUMO eTRON T100 sets itself apart with its compact size and large functional range, including – among other things – an integrated timer, data logger, service and operating hours counter, PhotoMOS output for additional limit value signaling, and digital input. Digital control signals can be used to create logical connections (AND, OR, XOR), which are processed internally.

In addition to the input signals for RTD temperature probes and thermocouples a 0(4) to 20 mA measurement input is available for connecting other process variables. The device has UL certification and also meets the railway industry standards for category 1B. Relevant measurement inputs, such as the Ni1000, have been integrated specifically to meet the requirements of this industry.

The JUMO eTRON T100 has a user-configurable dot-matrix display on which process values, parameters, switching statuses, and the electric connection diagram can be viewed.

A clearly-structured operating concept supported by additional texts (4 languages are already available in the device) as well as practical and quick wiring via vibration-proof PUSH IN terminals enable a fast and easy startup. Alternatively, the device can also be configured via a setup program and the micro USB interface, which is built in as a standard feature.

Its compact design type allows the JUMO eTRON T100 to be integrated with ease into control cabinets and sub-distribution units. ■

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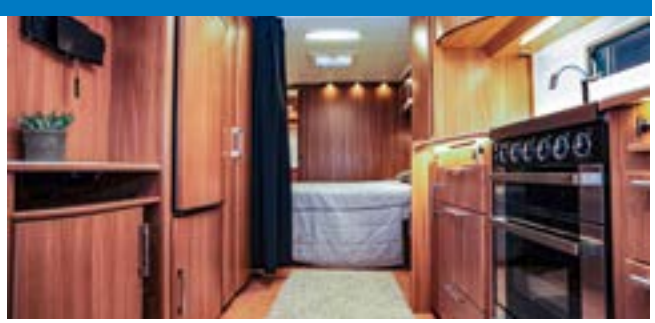
ATMOS RELIES ON JUMO AS A SYSTEM AND SOLUTION PROVIDER

Unique intricate items made from leather and veneer in yachts and planes

The company ATMOS Vakuumpressen GmbH is a recognized specialist for vacuum presses, pre-heating stations, and specialized machines located in Hof, Germany. They made a name for themselves by using atmospheric pressure to manufacture high-quality products. The name ATMOS is directly derived from the word "atmosphere", which was the inspiration for the company's innovative technology.

Applications in areas like the automotive or caravan industries



Under the management of Chief Executive Officer Stefan Katzer, ATMOS is following a clear business philosophy: *"When customer satisfaction is the priority, and we do what we love, success happens on its own."* This philosophy is reflected in the enthusiasm that Stefan Katzer and his Head of Service, Bernd Ludwig, see in customers eyes when they experience the tailored solutions from ATMOS.

A wide range of industrial applications

ATMOS places the main focus on woodworking and carpentry. As a result, installations from ATMOS have been broadly applied in 8 areas. These mainly include the automotive, caravan, yacht, and aviation industries. The ATMOS membrane press in particular plays a vital role in manufacturing high-quality interiors in vehicles. It ensures safe processes when lining with leather, fabric, or veneer, which is appreciated by well-known brands like Rolls-Royce and Bentley. The laminated components are also used in private jets.

In addition, mineral materials and plastics can be perfectly shaped in the vacuum press. *"The gentle warming process is the key to success here,"* explains Stefan Katzer, based on many years of experience. When building furniture or shop fitting, form and surface are key to creating a unique intricate item for the customer. *"Our expertise in laminating surfaces and shapes in the area of woodworking is in demand,"* adds Stefan Katzer.

Close cooperation with JUMO

ATMOS has been closely working together with JUMO for several years. Support from JUMO employees Jörg Bauer, Christopher Kiesler, and Martin Müller as well as the engineering team made it possible to develop optimal and consistent solutions that meet the specific requirements of ATMOS. This cooperation highlights JUMO's expertise as a system and solution provider.

An example of successful cooperation between vacuum presses in different variants is explained by Jörg Bauer, sales representative at JUMO: *"Classic vacuum presses are controlled with the JUMO meroTRON compact controller and the JUMO MIDAS pressure transmitter. In more complex plants like the 3D-SUB Machine, for example, the JUMO variTRON 500 PLC control is used in conjunction with the JUMO TYA 202 thyristor power controller. In this configuration, infrared radiant heaters are precisely controlled for sublimation."*

Complex requirements and tailored solutions

To create the control technology for the movable vacuum press (with a length of 15 m) for laminating wood veneer, the JUMO variTRON 500 PLC control was used. The JUMO variTRON system controls the movement of the work table in conjunction with a SEW frequency converter as well as the operation of the portal axis by controlling the electrical cylinder made by Phoenix Mecano. SICK distance sensors in combination with the JUMO STB/STW were used to monitor the portal axis for jamming. Further process sequences, such as vacuuming and ventilating the machine, are also a component of the PLC logic.

Similar requirements apply for the ATMOS 3D-SUB machine. Here, JUMO Engineering once again worked closely with Stefan Katzer to develop a tailored solution for ATMOS. The JUMO variTRON 500 PLC control unit was also selected for control-technology-related tasks. These consisted of the heating mantle and sublimation process (heating and vacuuming). Here, the JUMO variTRON 500 device communicates as a PROFINET controller with the SEW frequency converter to move the heating mantle. The heating process with the infrared radiant heater is controlled using the JUMO TYA thyristor power controller and the multichannel controller module of the JUMO variTRON system. Furthermore, the vacuum pump and solenoid valves for the vacuuming process were controlled via the PLC logic.

Versatility and expertise as the key to success

Various materials are used in the 8 areas in which ATMOS is active. Individual requirements apply to the technology, handling, and the degree of automation of the membrane presses, pre-heating stations, and heating mantle. *"In cases like this, it is vital to have a skilled all-rounder like JUMO at your side – a partner you can communicate with at eye level,"* said Stefan Katzer.

"Working with ATMOS was incredibly fun because our JUMO Engineering team was able to contribute our expertise as a system and solution provider," highlights Martin Müller. The JUMO applications needed to work with products from other manufacturers. Everything went smoothly because, at the end of the day, the only thing that counts is seeing the sparkle in the eyes of our customer – ATMOS. ■

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FROM THE SENSOR TO THE CLOUD

JUMO and Weidmüller make greenhouses fit for the future

Agriculture is facing major challenges in today's world. Climate change, increasing sustainability requirements, and the pressure to increase yields while using fewer resources all require innovative solutions. In this context, greenhouses provide a controllable environment that can be designed even more efficiently using technological advances like the Industrial Internet of Things (IIoT).

JUMO and Weidmüller GmbH & Co. KG demonstrate how smart sensor technology and Single Pair Ethernet (SPE) not only simplify monitoring and controlling in greenhouses, but also optimize resource use and increase yields.

Smart farming: sensor technology as the key to success

The basic principles behind every successful greenhouse operation is precise monitoring of environmental influences. Innovative JUMO hydroTRANS sensors make this possible. The sensors acquire essential parameters like temperature, humidity, and CO_2 content. These values are vital for optimal plant growth.

One special feature of the JUMO solutions is the integration of Single Pair Ethernet technology. SPE facilitates direct and loss-free data transmission from the sensor to the cloud – without complex intermediate systems like edge gateways. Using the JUMO flowTRANS MAG H20, an electromagnetic flowmeter with an SPE interface, liquid fertilizer can also be monitored, which increases efficiency of its use and minimizes waste.

The SPE switch connects SPE sensors at distances of up to 1000 m and facilitates Ethernet-based transmission of the sensor values to the cloud

SPE: the technological foundation

Single Pair Ethernet is a future-oriented transmission method that was developed specifically for industrial applications.

Key benefits

- **Increased range:** with up to 1000 m of range using just one copper pair, SPE far outperforms classic Ethernet. This is particularly significant in large-scale greenhouse complexes.
- **Direct data transmission:** data is transmitted directly from the sensor to the cloud without intermediate steps, which reduces installation work and increases data integrity.
- **PoDL functionality (Power over Data Line):** in addition to data transmission, SPE also provides the sensors' energy supply using the same cable. This makes additional energy cables redundant – a clear benefit in the warm and humid environment of a greenhouse.

Cloud-based solutions for maximum efficiency

The data acquired by the sensors is directly transmitted to the JUMO Cloud via SPE. That is where greenhouse operators have access to intuitive visualization and analysis tools. They facilitate both real-time monitoring and predictive control. For example, irrigation and fertilizer plans can be adjusted based on the current health of the plants and the environmental influences.

Weidmüller supports this process with its SPE switches. These facilitate seamless connections between sensors and the cloud. Weidmüller's "unmanaged switches" switches in particular make installation and integration simple, even for users without in-depth IT knowledge.

Higher yields with targeted automation

The cooperation between JUMO and Weidmüller is an impressive example of how IIoT solutions can do more than just improve efficiency – they can also contribute to more sustainable agriculture. Precise control over water and fertilizer resources minimizes waste and simultaneously ensures better harvests.

"These intelligent solutions are revolutionizing the way greenhouses work. They are making it possible to conserve resources while increasing productivity at the same time," explains Dr. Thomas Bürger, Head of Division Automation Products and Solutions at Weidmüller.

In practice, integrating SPE and sensor technology means that, if water levels are too low or CO_2 levels are too high, these factors can be immediately recognized and adjusted. The precise dosage of water and nutrients ensures that plants only receive what they really need. This creates optimal growth conditions that are directly reflected in higher yields. ■

Conclusion

The future of agriculture is smart!

Combining modern sensor technology and Single Pair Ethernet is setting new standards for efficiency and sustainability in agriculture. JUMO and Weidmüller have shown how innovative technologies can make greenhouses sustainable. With solutions that no only increase yields but also conserve resources, they make an important contribution to the agriculture of tomorrow.

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"SHAKE PAWS ON IT"

Crunchy dry dog food ensures a bow-wow effect

The industrial manufacturing of dog food is a highly complex process that requires specialized technical knowledge, precise controls, and attention to market requirements. Drying the products is at the core of this process as it plays a vital role both in the quality and profitability. FESSMANN has mastered proficiency of these processes. FESSMANN and JUMO have been working together in a close and trusted partnership for years. Today, FESSMANN primarily uses the JUMO variTRON 500 as a control component as well as RTD temperature probes and thermocouples to operate their own ovens at optimal levels.

Controlling the drying process when manufacturing pet food

Compared to other food segments like sausage production, drying pet food is fundamentally different. In sausage production, drying the surface is the primary focus. In pet food, consistent and even drying – inside and out – is key. This is a vital factor that ensures high product quality, especially for products that need to be visually appealing for end customers.

Developing technical and scientific expertise in this process is essential. *"It's about facilitating an even drying process that ensures both the shelf life of the product as well as its sensory quality. Pet food manufacturers invest significantly in this area to meet requirements of the market,"* says FESSMANN General Partner Uli Fessmann.

Controlling the drying process is a technical aspect that requires precise monitoring. Important factors in this process are exact temperature control, even air supply, and humidity control. Each of these parameters needs to be accurately monitored to achieve even drying.

Quality assurance plays just as meaningful a role as the manufacturing of food for human consumption. The drying process needs to be designed in a reproducible way that is precisely adjusted to the specific formulation of the pet food.

"Since every formulation places different demands on the drying process and requires higher heating than conventional goods, a separate process must be developed for each product," says Denis Gabriel, Chief Executive Officer of FESSMANN. This makes pet food manufacturing development" empirical and very exciting".

Challenges in pet food manufacturing

Manufacturing dog food comprises a broad product range ranging from snacks and treats to dry food and wet food. *"The days when people used to feed food scraps or slaughterhouse waste to dogs are long gone,"* Gabriel continues. This variety presents FESSMANN's facilities with special challenges because each product variant has different requirements for the production process. The equipment needs to be configured and monitored differently for each product, particularly for the drying process.

In addition, the position of the products during the drying process complicates matters. This makes detailed control of the drying process crucial to achieving even drying and ensuring high product quality.

A further challenge lies in conserving resources. Sustainability is a core topic in modern manufacturing of pet food. Attention is increasingly being paid to designing processes so that they use resources economically and efficiently without adversely affecting the product quality. As soon as the snacks have left the FESSMANN ovens, they are sent to distributors of varying sizes. They in turn deliver the snacks according to their respective sales concept to retailers or directly to the OEM market.

Market development and special features

North America is the largest sales market for pet food. The market for pet food differs significantly from traditional food manufacturing. In addition to the nutritional value of the products, their appearance also plays a central role. The products need to be visually appealing and attractive for customers, who demand increasingly high-quality food for their pets.

The surface texture of pet food products is also different than food for humans. When manufacturing pet food, attention must be paid to the fact that the products need to be easy for animals to eat. *"One bite and the treat is basically already in the belly,"* says Gabriel.

A decisive quality factor in pet food manufacturing is known as the aw value (water activity). This value indicates how much water is available within the product, which directly influences its shelf life and microbiological safety. *"The aw value is subject to strict regulations and must be precisely monitored during the manufacturing process to achieve the specified quality requirements,"* adds Gabriel.

Manufacturing dog food is a technological challenge that is overcome by using modern equipment and developing tailored processes. The even drying of products, the control of temperature, air supply, and moisture, as well as compliance with high quality standards are key factors. ■

Chicken roll on the cart

Denis Gabriel sums it up:

"Dogs are man's best friend. And ultimately, they need irresistible snacks. That's something we can shift into high gear for. Shake paws on it!"

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AUTOMATION SYSTEM ENSURES FASTER SKIS

Easy operation makes an impression on Blizzard Sport

The company Blizzard Sport GmbH is the Ski Excellence Center for Tecnica Group and one of the best-known manufacturers of winter sports equipment. For over 70 years, skis from Mittersill, Austria are a guarantee for the highest quality and unparalleled mountain moments. Blizzard relies on JUMO technology to manufacture its internationally sought-after products.

Modern skis are high-tech products that hardly have anything in common with the straightforward "boards" from years past. High-quality sports equipment is made from materials such as wood, Titanal, carbon, and fiber fabrics in a sandwich procedure. Each ski consist of several layers. The production process begins with a form corresponding to ski geometry.

The individual components are assembled by hand from the bottom up. After the running surface and steel edges, diverse layers of fleece, fibers, polyester, or carbon are used, depending on the type of ski. The heart of the ski is still a wooden core with sidepieces which can be used to place further components to stiffen the ski or distribute force as required. Construction is completed with a printed surface. All elements are set in the form and glued using epoxy resin under heat and pressure in a press.

The materials used for construction must withstand extreme conditions. This is where innovative hot melt adhesives and duroplastic adhesives made of such materials as polyurethane come into play. These can withstand the icy cold, constantly wet conditions, and extreme vibrations. A ski like this may well consist of more than 30 components.

JUMO variTRON system in use

Gluing the skis, a process referred to as "baking," is particularly important for the quality of the final product. This is a very precisely coordinated process in which the measurands temperature and pressure must be continually monitored and controlled. Blizzard Sport chose the JUMO variTRON 500 automation solution for this task. The modular system with its universal input and output modules, flexible connection technology, and comprehensive communication/evaluation/automation software can be used in a vast range of industries.

At the heart of the JUMO variTRON system is the central processing unit with a process map for up to 30 input/output modules. The CPU has superordinate communication interfaces including a web server. For individual control applications, the system has a PLC (CODESYS V3), program generator, and limit value monitoring functions as well as math and logic modules. The available input and output modules include a multichannel controller module, analog input modules with 4 and 8 channels, a 4-channel version relay module, and the user configurable digital input/output module with 12 channels.

Above all, the executives at Blizzard Sport were most impressed by the system's easy operation. After only completing a 5-hour training program, an employee programmed and successfully implemented the entire project. In the future, additional ski presses will be equipped with the JUMO variTRON 500 system. ■

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FUEL CELLS ON SHIPS

On course for a green future

The shipping industry is reducing CO_2 emissions through various approaches to lessen its environmental footprint and to meet international climate goals. Key strategies here include efficiency improvements in design and construction, the use of alternative drives (such as fuel cells), the integration of renewable energy, operational measures, increased international regulation, harmonization, and research collaboration.

Combining the various approaches can significantly reduce the industry's CO_2 emissions. The fuel cell is one of several technologies that will become increasingly relevant for the shipping industry to achieve the net-zero goal.

Using fuel cells as a means of propulsion in ships is still largely limited to pilot projects like those in inland shipping. However, the first luxury yacht manufacturers are also using fuel cell propulsion. PEM (proton exchange membrane) fuel cells with a total output of almost 1 MW are used here. The research and development of greenhouse gas neutral technologies is promoted by the Mannheim Declaration 2018, which was adopted by the member states of the Central Commission for the Navigation of the Rhine. These states have agreed to largely eliminate greenhouse gases and other pollutants by 2050.

A question of technology

Various fuel cell technologies are available that can use natural gas or methanol as fuel in addition to hydrogen. However, hydrogen is the most commonly used fuel today due to its high energy density and clean combustion without emitting CO_2 or other greenhouse gases. PEM fuel cell technology has become established for mobile applications even though every fuel cell technology has its specific advantages and disadvantages.

In maritime shipping, which usually has longer distances and deploys larger ships, solid oxide fuel cells (SOFC) are also used. The German Aerospace Center's (DLR) Institute for Maritime Energy Systems is using the HELENUS research project to test a 500 kW SOFC on an MSC World Europe-class cruise ship to generate both current and heat, which leads to a reduction in the use of conventional fuel.

One frequently recurring question is about the origin of the hydrogen. Green hydrogen – which is hydrogen that is generated using renewable energy – is needed for completely carbon-neutral operation. The majority of hydrogen used today is not yet produced in a climate-neutral manner. In this context, it quickly becomes clear that the transformation of our energy industry must be interlinked in numerous places and that holistic modeling is needed. Another question being discussed is the ideal form of hydrogen transportation. For example, it can be transported very efficiently in its bound form as methanol. Before use in the fuel cell, methanol must first be converted back into hydrogen (abbreviated to M2H2). This process can be climate-neutral if the methanol was produced using renewable energy.

Measurement and control technology for the fuel cell

The fuel cell as well as the necessary measurement and control technology for it are already available. Fuel cell technology itself can be considered fully developed, although further research and development initiatives are expected to lead to improvements and technological advances. Figure 1 shows a simplified representation of a fuel cell's function principle. Hydrogen reacts with oxygen from the ambient air to form water. This chemical reaction creates electrical voltage in the fuel cell, which can be utilized as current. A cooling circuit dissipates the heat generated by the chemical reaction.

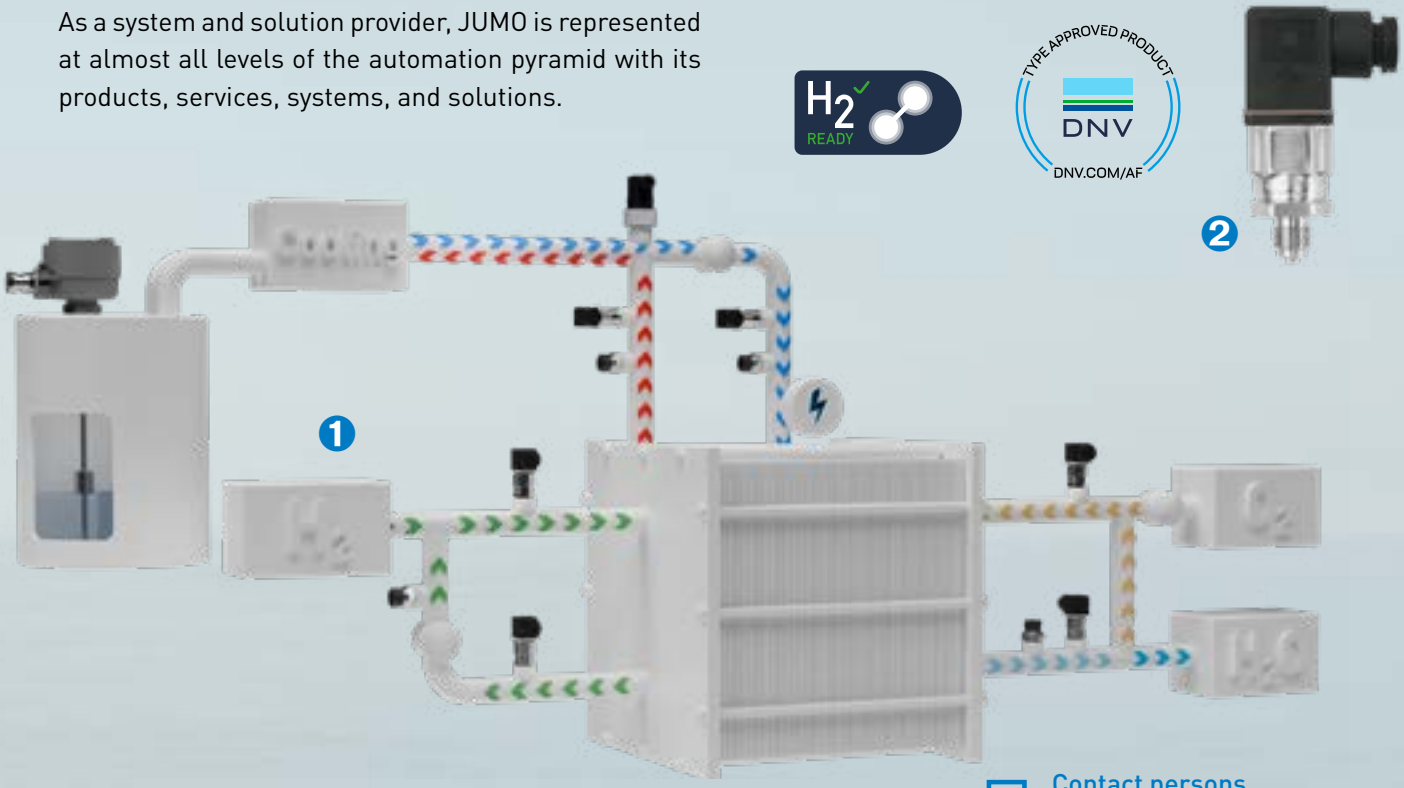
JUMO products can help with monitoring, controlling, and evaluating the input as well as output variables. Typical measurands required for the fuel cell and its peripherals are pressure, temperature, and level. Many JUMO products are certified specifically for maritime use. For example, the JUMO MIDAS S07 MA pressure transmitter (see figure 2) can be used to monitor the pressure of the hydrogen circuit.

As a system and solution provider, JUMO is represented at almost all levels of the automation pyramid with its products, services, systems, and solutions.

The sails have been hoisted

Shipping is responsible for about 3 to 4 % of human-induced CO_2 equivalents worldwide. At the same time, CO_2 emissions per transported metric ton are significantly lower compared to road and air transport. Only a rail-based system can achieve an even better ecological balance here. The International Maritime Organization (IMO) has taken several measures to reduce CO_2 emissions by 40 % by 2030 and 70 % by 2050 compared to 2008.

International shipping has considerable potential for becoming more climate-friendly. Assuming that rail and ship will grow more strongly than road and air traffic due to their lower CO_2 emissions, these cost savings will be even more significant. Fuel cell technology will find its place between purely battery-electric drives and synthetic fuels. The application is what counts. This is how we make the future green. ■



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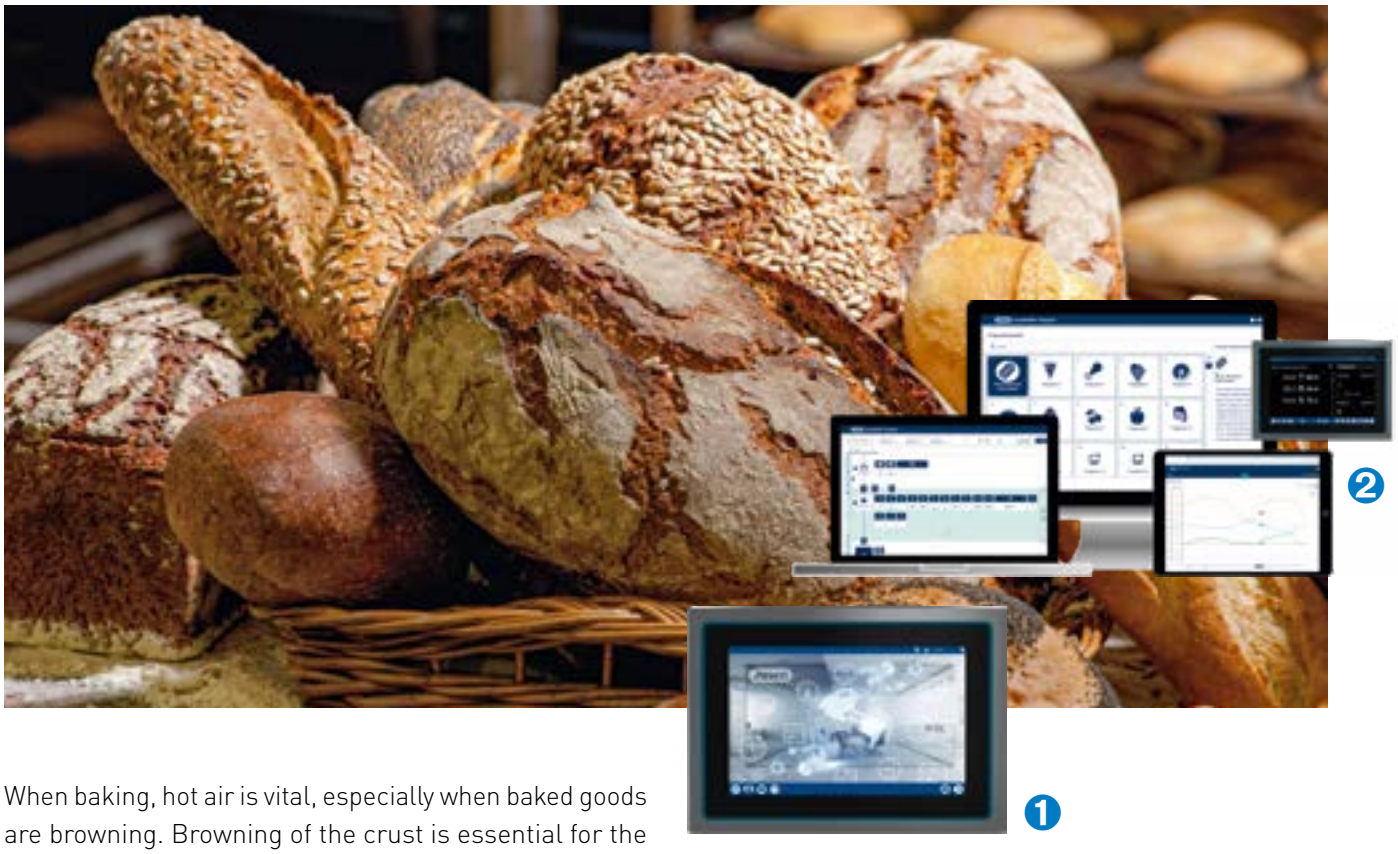
OPTIMAL BAKING PROCESS

Process monitoring with JUMO technology – until the crust is golden and crisp

Nowadays it's not enough to optimize all the processes for dough preparation. The baking phase in the oven is critical for the quality of baked goods. JUMO measurement technology ensures reliable and consistent baking results with innovative solutions.



When baking, hot air is vital, especially when baked goods are browning. Browning of the crust is essential for the taste and quality. Baking temperatures are between 100 and 250 °C depending on the product. Fresh from the proofing chamber (36 °C, 80 % RH), the pieces of dough experience a sudden temperature rise of up to 240 °C. Water vapor is deliberately added to keep the surface flexible while the crust and crumb form. This process requires precise temperature and humidity controls.

Sustainable overall solutions

In addition to the selection of individual components, JUMO's comprehensive solutions offer bakery oven controls. The JUMO variTRON modular automation system allows all process parameters to be centrally monitored and controlled. It combines control, data acquisition, and visualization in one system and is designed for Industry 4.0 applications.

The innovative options of the JUMO automation world also include the JUMO smartWARE Program sequence control as well as the energy management solution using the JUMO Cloud or JUMO smartWARE SCADA.

The sequence control system enables the seamless and error-free coordination of different processes, tasks, and workflows in the baking industry. This saves time, resources, and often nerves. It facilitates the automation of process engineering procedures, the linking of process steps, and the use of machines. This is based on its modular structure, browser-based technology, and a customizable process editor.

JUMO offers products for the baking process that control with precision

❶ **JUMO variTRON 500 touch:** the JUMO variTRON 500 touch enables clear process and plant visualizations as well as user interfaces.
Full connectivity to systems and components is provided due to support for numerous fieldbus systems (such as PROFINET IO-Controller and EtherCAT master) as well as modern communication protocols like OPC UA.

❷ **JUMO smartWARE SCADA:** the JUMO smartWARE SCADA software provides easy access to measurement data using conventional web browsers. It offers functions for process visualization as well as for evaluation and archiving the acquired data. In addition, JUMO smartWARE SCADA supports manufacturing and work processes with valuable monitoring, alarm, and planning functions.

JUMO also has offers for safety

❸ **JUMO safetyM STB/STW:** these safety temperature limiters and monitors provide protection from overheating and ensure that bakery ovens switch off in the event of a malfunction. They are an integral component of any security strategy.

❹ **JUMO heatTHERM P:** electromechanical safety temperature limiters provide excellent excess temperature protection in industrial bakery ovens. They function maintenance-free, and their robust construction offers a high degree of operational safety.

Energy efficiency through heat recovery

In view of increasing energy costs, efficiency of bakery ovens plays a key role. The combination of heat exchangers and intelligent measurement technology facilitates energy conservation.

❺ **JUMO MIDAS:** these pressure sensors monitor steam pressure for heat recovery.

Intelligent sensor technology for regulating air humidity can also be used

❻ **JUMO hydroTRANS:** combined humidity and temperature probes ensure precise control of humidity in the proofing chamber.

❼ **JUMO thermocouples:** these temperature sensors with high measuring accuracy are robust and have flexible applications. ■

Conclusion

JUMO offers a broad palette of innovative systems for monitoring and controlling bakery processes. High-precision controllers, reliable excess temperature protection technology, and energy-efficient solutions from JUMO make a decisive contribution to a consistent and economical baking process.
Whether using the most modern electronics or proven mechanical engineering: JUMO technology guarantees that quality and efficiency in the baking process are always the first priority so that fresh, crispy bread rolls are naturally ensured.
Bon appétit.

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JUMO hydroTRANS SECURES CULTURAL HERITAGE

Preserving historical documents and works of art

Preserving one-of-a-kind historical items and valuable documents is one of the greatest challenges for museums and archives. To prevent mold growth, rot, and other climate-induced damages, precise climate monitoring is essential. This is where the JUMO hydroTRANS series comes into its own. These innovative humidity and temperature transmitters include optional CO_2 modules and ensure stable environmental influences. That way, they make a vital contribution to preserving cultural treasures.

Technology to protect history

The JUMO hydroTRANS series features easy installation, robustness, and precise sensor technology. It is available in different variants: as a wall, duct, rod, or indoor version. This allows flexible adjustment for individual requirements from museums, archives, storage rooms, or production halls. The measurement range from 0 to 100 % RH with an accuracy of 2 % RH (at 23 °C) as well as a temperature range from -40 to +80 °C make the series the ideal solution for diverse application areas.

The proven technology is ideal for historical buildings and nationally significant institutions. It is not just for preservation, but also to protect documents that are indispensable for historiography. Experts know the significance of the technology to optimally protect sensitive documents and unique records.

Precision with a lasting effect

The JUMO hydroTRANS series can be used in more than just commercial and industrial buildings. It can also be applied in museums that display valuable works of art and antique objects. These objects are often sensitive to fluctuations in temperature and humidity. Monitoring and controlling these parameters effectively prevents damage such as cracks, discoloration, or even material disintegration.

Sustainable communication

The rod version of the JUMO hydroTRANS series is particularly suitable for difficult to access areas and ventilation ducts, while protection types IP20 and IP65 enable application under various conditions. *"The national archives can use this to ensure that important documents such as the Stasi files or records from the National Socialist period remain preserved over the long term,"* explains Justin Heinrici, project manager at JUMO.

An outstanding feature of the JUMO hydroTRANS series is the innovative Single Pair Ethernet (SPE) interface with Power over Data Line (PoDL). This technology enables simplified JUMO Cloud connection and ensures continuous Ethernet communication from the field level to automation. The result is seamless integration into modern building automation systems and continuous monitoring.

This functionality is invaluable, especially for museums and archives. Real-time monitoring of environmental influences ensures that countermeasures can be taken if any deviations occur. This effectively protects history's irreplaceable treasures from unexpected climatic changes.

An essential tool for cultural protection

One specific example is the exhibition of delicate parchments and manuscripts, which can suffer fatal damage from even minimal variations in temperature or humidity. JUMO hydroTRANS devices offer curators and archivists the option of providing even the most sensitive objects with the best possible protection. This guarantees not only the preservation of these items, but also gives researchers and the public access to these priceless resources.

"The JUMO hydroTRANS is more than a technical device. It can be a key to preserving history," states Heinrici. Thanks to the precision, flexibility, and cutting-edge technology, it ensures that documents and artifacts remain preserved today, but also for future generations. *"It therefore offers museums and archives a solution that achieves a balance between tradition and innovation."* ■

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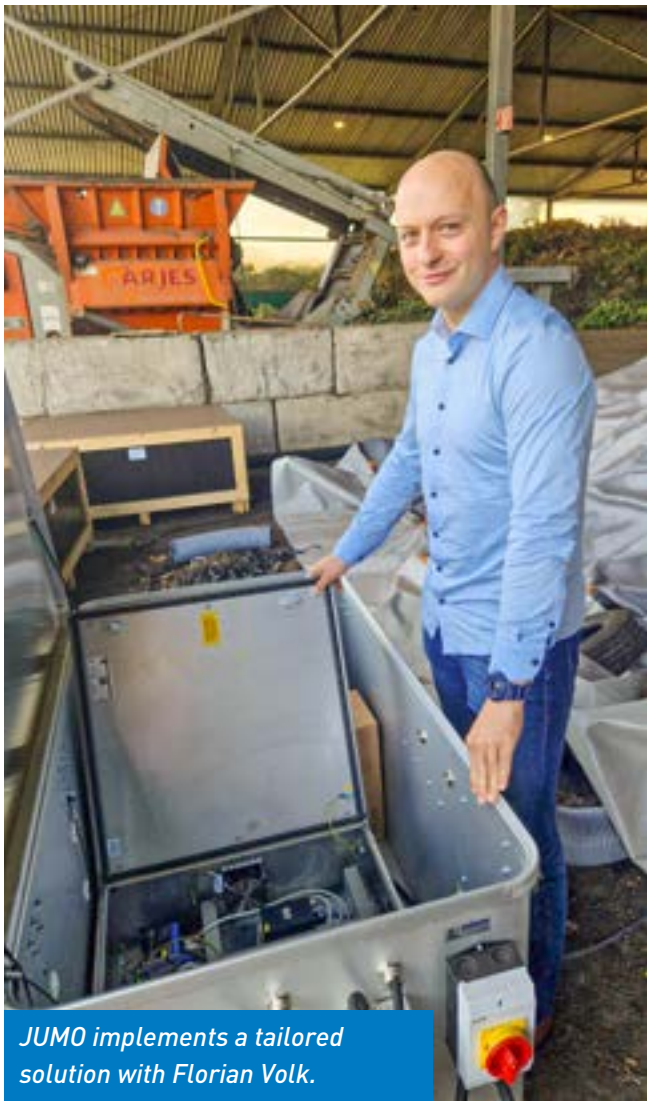
JUMO software makes monitoring the processes easy

FROM WASTE TO VALUABLE COMPOST

A.C.T. makes organic waste sustainable

The company Advanced Composting Technologies (A.C.T.) based in Heppenheim, Germany is forging new paths in waste management with progressive technologies for composting, stabilizing municipal waste, and sewage sludge treatment. The innovative system of compressed air aeration and a semipermeable membrane developed by A.C.T. GmbH is an efficient, cost-effective, environmentally friendly, and therefore "clean" solution for organic waste treatment.



JUMO implements a tailored solution with Florian Volk.

"The heart of A.C.T. technology is the ability to generate consistently high temperatures that are required for reliable hygienization," explains Florian Volk, Chief Executive Officer of A.C.T. GmbH. Microorganisms that exist in all organic waste generate this heat as long as enough oxygen and moisture is available. A.C.T. uses its process management to ensure that these conditions are fulfilled optimally.

Organic stabilization of mixed municipal waste

In organic stabilization, mixed waste is treated before sorting or depositing. Breaking down organic components reduces the organic activity, which leads to significantly fewer gases from fermentation in landfill bodies. High temperatures dry the material mixture, which makes sorting easier and reduces weight-related costs for depositing the waste.

Treating sewage sludge with A.C.T. systems is particularly effective because the high temperatures guarantee reliable hygienization. Depending on the levels of heavy metals, the treated sewage sludge can be used as high-quality fertilizer.

Complete solution from JUMO

However, the core business is composting. A central feature of A.C.T. technology is the compressed air aeration, which prevents anaerobic zones and the formation of methane as well as ammonia in the process. The semipermeable membrane ensures that the air escapes slowly. If humid air comes into contact with this membrane, a water film that absorbs harmful emissions will form. The temperatures of up to 85 °C accelerate the organic decay and increase the efficiency as well as capacity of the system. *"JUMO, as a leading system and solution provider, offered a comprehensive solution for this purpose. It ranges from sensor technology to temperature monitoring*

through to controlling and real time data processing," says Christopher Berndt, sales representative at JUMO.

Composting process

The composting process begins by collecting the organic materials, which are then mechanically processed. That means the correct grit size is set. At the same time, impurities can be discharged. The processed material is placed into heaps and covered with the membrane described above. Using a ventilation system, air is pressed into the heap, which creates optimal conditions for microorganisms that generate heat.

The organic waste regulations in Germany define strict requirements for hygienization, which A.C.T. easily meets. During the first intensive rotting, temperatures of up to 85 °C are reached, followed by a second intensive rotting with temperatures of up to 75 °C. These high temperatures ensure the destruction of pathogenic germs and seeds. After the intensive rotting process, an optional aging process takes place to achieve the highest quality standard for compost. *"The customer determines how long the rotting process lasts and thereby the quality of the compost. Fresh or finished compost can be produced within a short time,"* Volk continues.

Flexibility and efficiency

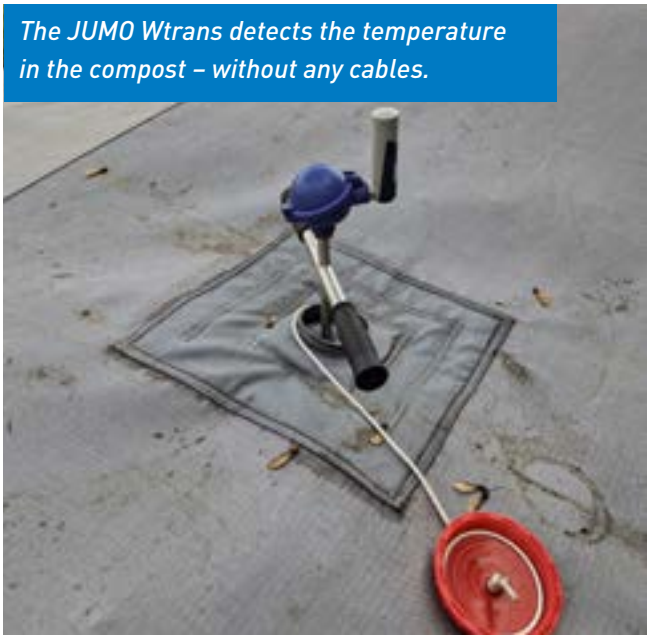
A.C.T. plants are modular in design, which allows for flexible capacity adjustment. The operating costs are low because the machinery is kept at a minimum. The short uptime of the machines also reduces the maintenance costs. *"The JUMO software for system control enables easy monitoring and administration of the processes, which also minimizes personnel requirements,"* explains Berndt.

As described above, the A.C.T. system is also suitable for stabilizing mixed municipal waste. This waste is often unsorted when it is collected and contains a high amount of organic materials. This can be utilized in the composting process. The resulting organically stabilized output can, depending on the regional requirements, be used as CLO (compost-like output) or safely deposited in a landfill, whereby the environmental pollution is significantly reduced.

Benefits of compost in agriculture

Compost offers numerous benefits when compared to artificial fertilizers. *"It improves soil structure, increases nutrient and water storage capacity, and promotes humus formation. This makes soil more resilient against erosion and extreme weather events, which is particularly important in times of progressing climate change,"* underlines Volk.

The JUMO Wtrans detects the temperature in the compost – without any cables.



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Conclusion

A.C.T. technologies offer comprehensive and flexible solutions for treating organic waste that are not just efficient and affordable – they are also environmentally friendly. The ability to treat various waste streams and generate high-quality products enables A.C.T. GmbH to make a significant contribution to sustainable waste management while also supporting agriculture in the fight against climate change.

THE SENSOR TECHNOLOGY OF TOMORROW COMMUNICATES CONTINUOUSLY

Single Pair Ethernet: lean communication for the last mile of the automation process

What the e-bike is to mobility, two-wire Ethernet is to automation. Both have what it takes to make last mile connections more sustainable and smarter. JUMO relies on Single Pair Ethernet (SPE) as a sustainable communication medium for its measurement technology for good reason. The connection technology required for this comes from Phoenix Contact – and it is the result of close cooperation at the project level.

Single Pair Ethernet
System Alliance

Manfred Walter, SPE Product Manager at JUMO, in front of the display

The JUMO hydroTRANS monitors moisture, temperature, and CO_2 content during production at JUMO

"We can improve the use our intelligent sensors with Single Pair Ethernet," says Manfred Walter, product manager at JUMO. *"Using SPE to transfer more sensor data truly gives me added value."* More data create a basis for gaining profitable information. This option is not possible if a 4 to 20 mA sensor only transmits the pure current value – for example as equivalent for a temperature.

The product manager is particularly enthusiastic about how the SPE connection finally allows sensor information to be distributed seamlessly throughout a system. Here, Manfred Walter is referring to the seemingly insurmountable barriers between the different levels within the automation pyramid.

"We at JUMO view consistency across all levels as a major strength. In addition, we also save on cables because data and energy are transmitted over the 2 wires using a Power over Data Line (PoDL)." SPE basically offers the opportunity for continuous communication from the ERP level down to the sensor technology and actuators at the field level. *"And it all works without any media disruptions,"* underlines Walter. As a result, the sensor communicates consistently at all levels based on Ethernet protocols.

> *The SPE connection finally allows sensor information to be distributed seamlessly throughout a system*

OEE is a basis for investment

The protagonists in favor of Single Pair Ethernet at JUMO and Phoenix Contact view the continuity of Ethernet as essential for increasing sustainability in manufacturing. This is particularly useful for simplifying troubleshooting and collecting status information to enable condition-based maintenance. It all leads to a multitude of benefits that, at the end of the day, improve the OEE (Overall Equipment Effectiveness) – in other words, the overall system availability. It also facilitates the connection to cloud-based services. ➜

SPE against media disruptions in industrial communication: does this benefit lead to a rethinking of how we select connection technology at the sensor-level? Based on Manfred Walter's experience, customer expectations of mechanical engineering and plant construction are still tangibly driven by prices. The budget for measuring chains is strictly limited during project planning. *"The question is: what is a measuring chain allowed to cost, and how high is the extra cost for the SPE connection."* The decisive arguments for the continuous Ethernet architecture are difficult to present, especially in standardized tendering procedures. As a result, direct contact is the best way to present arguments about the positive impacts on the OEE as an important key figure for investment decisions.

Convergent networks are in demand

For Martin Müller, one of Phoenix Contacts most experienced fieldbus experts, transmission technology with SPE presents an important step on the way toward convergent networks. While, for example, the Time Sensitive Network (TSN) is primarily designed for urgent tasks in the disciplines of functional safety or motion control, 5G is used for applications that require mobile communications. Wi-Fi 6 and 7 are comparable in the area of license-free wireless transmission technology. Single Pair Ethernet *"on the other hand, is very suitable for last mile communication", says Müller.*

The staple for all technologies is the convergent Ethernet network – the universal system for industrial communication. If the actors in automation, electrical engineering, and system and mechanical engineering are able to agree to this path in the medium term, then fieldbus wars with their industry-specific developments will finally be a thing of the past.

1000 m with 10 Mbit

The chances of this happening are good. The whole thing is supported by the general transmission performance of standard communication in the consumer market. For example, as a medium, SPE achieves a transfer rate of 10 Mbit/s with cable lengths of up to 1000 m for spatially limited machine levels. In comparison, an IO-Link with a maximum cable length of 20 m achieves just 230.4 kbit/s. Even though IO-Link undoubtedly simplifies the connection of sensors, Manfred Walter believes that the data transmission will no longer be sufficient for future tasks within coupled sectors.

Speaking of the future: Phoenix Contact and JUMO see clear orientation towards convergent Ethernet networks, particularly when it comes to younger generations of experts. *"When stated provocatively: based on their impressions and history, digital natives have less understanding for why we, in industrial automation, operate so many different systems,"* explains Martin Müller. The goal must be to ask the question of what a sensor can do and what it can do above and beyond its own measuring range for efficient and resource-saving plant operation. *"We see a tremendous future here,"* Manfred Walter also emphasizes.

Single Pair Ethernet (SPE) has what it takes to make last mile connections more sustainable and smarter. There is a good reason why JUMO relies on SPE as a future-oriented communication medium for its measurement technology.

Current data can be retrieved at any time and also be read on a smartphone

It is also easier to link to cloud-based services

Plug solution that is hygienic in IP67

Install, connect – done: with SPE connectivity, installing a JUMO sensor is child's play and, thanks to the Ethernet layer, works without gateways or complex programming of interfaces. The M12 connection developed by Phoenix Contact was designed with the goal of achieving the transmission distance for Single Pair Ethernet of 1000 m in practical applications without limiting attenuation. *"In the M8 version, there wasn't enough space for connecting a 2-wire data cable in AWG18, which is used for distances of 1000 m,"* explains Walter.

The connection version itself is streamlined for maximum robustness and hygiene. Flow and pressure sensors from the JUMO flowTRANS MAG H20 and JUMO DELOS S02 series are often used in the pharmaceutical and food industries. A high degree of operational reliability over long distances can only be achieved if the connections display resilience during demanding production processes or CIP cleaning (Clean in Place). The Phoenix Contact solution features hygienic design and achieves protection type IP67. ■

Conclusion

Connecting the sensors with SPE paves the way to integrating additional measurands into communication. Moreover, new options become available to directly connect sensors to the cloud because the devices already functionally have a gateway and, as a result, do not need an additional one. That saves components and money. Typical application areas for the JUMO hydroTRANS S20 SPE multisensor for temperature, humidity, and CO_2 include monitoring sensitive storage rooms, general monitoring tasks, and demanding tasks related to operational and employee safety.

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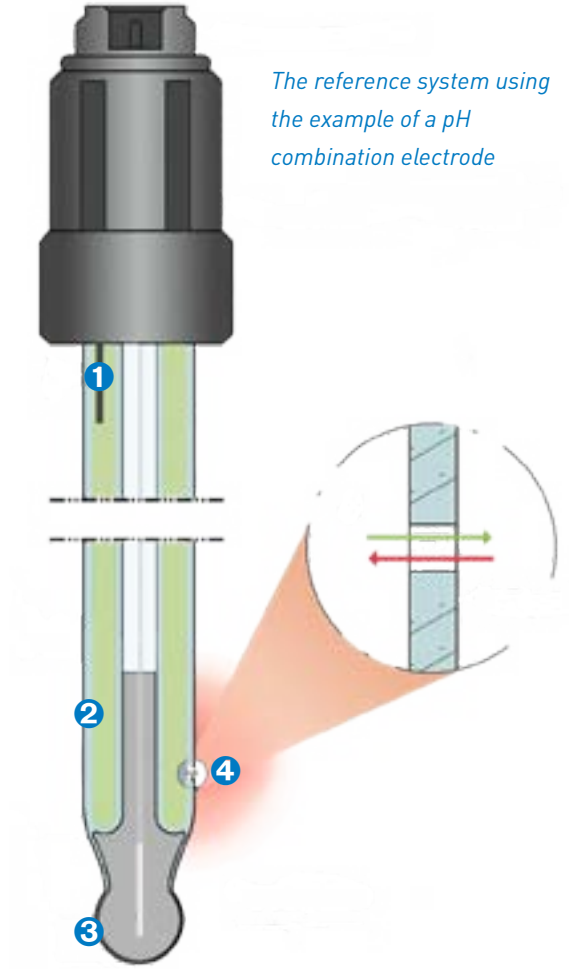
HOW TO CORRECTLY STORE, CLEAN, AND CALIBRATE COMBINATION ELECTRODES

Correctly handling sensors

Combination electrodes are used to measure pH values and redox potentials. The sensors consist of a measuring system and a reference system.



The reference system using the example of a pH combination electrode

1. *Reference drainage system (cartridges)*
2. *Reference electrolyte, saturated potassium chloride solution*
3. *Glass membrane*
4. *Diaphragm*

Storage

Both measuring chains have a reference system that contains potassium chloride (yellow in the drawing). The ions dissolved in the electrolyte migrate into the process medium through the diaphragm, which causes salt to precipitate from the electrolyte. To prevent this salting out during storage, the electrodes are delivered with a wet cap that is filled with potassium chloride ❺. The electrodes should never be stored in a dry state, as they may be damaged. If electrodes are put back into storage, they need to be covered with a wet cap that is filled with potassium chloride again.

After the electrodes are placed in the wet cap to keep them from drying out, salt crystals usually form at the top of the cap after a while ❻. This happens because the ions escape through the slightest opening and crystallize in the ambient air.

As a result, potassium chloride builds up in the wet cap that keeps the electrodes from drying out. So the covers need to be inspected if they have been stored for longer periods of time to check if potassium chloride has formed on the cap. If it has been discovered that a combination electrode has dried out, it must be conditioned before measurement. For this purpose it is submerged in a potassium chloride solution for about 24 hours ❾.

Generally, the electrodes age, which is why they should be used no later than 6 months after the production date. At JUMO, the calendar week and year of manufacture is printed on electrode head – for example calendar week 13, year 2024 ❿.

Electrodes with a salt reserve are used to keep the reference electrolyte saturated for as long as possible ❼. It comes in the form of a salt ring in the reference electrolyte. The salt rings break down during the period in which the electrodes are used. If the salt rings completely disintegrate, the electrode can no longer be used.

For electrodes with salt reserves, more salt can be added to the solution at higher temperatures (the electrolyte can then dissolve more salt). If the temperature decreases, the salt ions crystallize at random points in the reference system ❽.

Usually crystallization does not have any significant impact on functionality. However, in the worst case scenario, they form around the reference system or on the diaphragm – due to the insulating effect, the reaction potential is no longer available at the contact plug of the electrode and it ceases to function. In extreme cases like this, the electrode can be heated in an attempt to dissolve the crystallization. If this does not work, the electrode is unusable. Crystallization occurs when large temperature fluctuations occur – during operation and also during storage. For this reason, JUMO's admissible storage and transport temperature range for most combination electrodes is -5 bis +30 °C.

Cleaning

Combination electrodes must be kept clean. Glass cleaner can be used as a cleaning agent.

pH or redox potential measurements are delayed. If changed process values are displayed correctly after 20 seconds, this should be considered normal. If a changed measured value is slower, this is usually due to pollutants blocking the diaphragm. The diaphragm can be cleaned mechanically using a cloth or brush. Blockages can also develop due to protein or calcium deposits – in these cases, a pepsin-hydrochloric acid solution can be used for cleaning. When cleaning the pH electrodes, care must be taken to avoid damage to the glass membrane (prevent scratches or even breakage).

For electrodes used to measure redox potential, in some cases, the measured value can also be set too slowly because the surface of the gold or platinum tip has been passivized. This passivation can be removed, for example, by treatment with steel wool.

Calibration

The combination electrodes change their output signal over time. This altered performance can be offset using a transmitter after successful calibration. Buffer and test solutions are used for calibration. These are solutions with a defined pH value or redox potential. Calibration of the transmitter can only be successfully completed if the electrodes do not deviate too much from their ideal performance. ■

❺ *Wet cover to prevent drying, filled with potassium chloride*

❻ *Formation of salt crystals due to the potassium chloride solution*

❼ *Redox combination electrode with a salt reserve*

❽ *Crystallization in a pH combination electrode*

❾ *Potassium chloride solution for storing pH combination electrodes*

❿ *Combination electrode production date*

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FURTHER TRAINING FOR SUCCESS

OUR WEBINARS

Boiler room control system in the spotlight: Innovative approaches for hospitals, universities, and industrial facilities

May 08, 2025, 3:00 PM in German
May 08, 2025, 6:00 PM in English

Together with our speaker Jörg Bollgen, Chief Executive Officer of Intelligent Combustion Control Technology from Texas (USA), we will discuss the opportunities of using boiler room control systems in various application areas. Our focus here will be on hospitals, universities, and industrial companies. Be a part of it. We will be happy to answer your questions afterwards.

Speaker: Jörg Bollgen, Chief Executive Officer of Intelligent Combustion Control (IC²T)

WORLD PREMIERE:

First controller with integrated recorder screen

May 15, 2025, 10:00 AM in German
May 15, 2025, 3:00 PM in English

Discover the world premiere:
The JUMO variTRON controller integrates a recorder screen directly into the PLC for the first time. Use the recorder app for unparalleled data recording and the new JUMO I/O system for maximum modularity. Increase the efficiency and flexibility of your automation!

JUMO variTRON 500 and JUMO variTRON 500 touch:

Setup and application of the recording app and use in the JUMO smartWARE Evaluation software

June 24, 2025, 10:00 AM in German
June 24, 2025, 3:00 PM in English

Further information

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OUR TRAINING COURSES – Appointments upon request

JUMO automation systems variTRON 500 and variTRON 300

Learn more about JUMO variTRON systems, JUMO variTRON tools, and how you can optimally use them for your applications.

Configuration and operation of JUMO compact controllers

After the seminar the participants will know the most important functions of the controllers, will be able to operate the devices, and can set up typical configurations.

Control parameters and optimization of controllers

The seminar provides compact and concise information about the operation mode of the controller components P, I, and D. The participants learn how to classify applications as well as processes and to determine suitable parameters.

Control technology for practitioners

You will learn practically-oriented basic principles of control technology so that you can select a controller that suits your control process and configure, operate, and optimize this controller.

Analytical measurement technology for practitioners

The seminar provides important information on measurement parameters in analytical measurement technology. Concrete examples are used to set up measuring chains and start them up. The parameters pH value, redox potential, and electrolytic conductivity are covered.

SENSILO

The move is underway!

After the groundbreaking ceremony in March 2023, preparations are now being made for the official opening in early summer. A major event is planned: in addition to representatives from politics, business, and administrative bodies, JUMO General Partners Bernhard and Michael Juchheim as well as both JUMO Chief Executive Officers Dimitrios Charisiadis and Dr. Steffen Hoßfeld will welcome numerous customers along with the Managing Directors from JUMO's international subsidiaries.

JUMO gets it done

By the end of 2024, the first pressure sensors could be produced on the machines and equipment that had been moved to the new plant. The move had begun in stages a few weeks earlier. This logistical feat was the result of close cooperation between the participating departments, specialized moving companies, and the equipment manufacturers.

The first step of the move took place in mid-November 2024 when the relocation of a complex, interlinked production line for pressure sensors began. Within the framework of the move, the capacity of the equipment was upgraded to meet increasing market demand.

Packing the equipment

Panoramic view of the new plant

Further information
https://en.jumo.de/web/about-us/news/new-plant

Every detail was precisely planned

Relocating machinery is a highly complex undertaking. Every detail – from the specific climate control and humidity requirements of the facilities to the coordination with the simultaneous production process – was precisely planned.

To ensure delivery capacity for JUMO customers from various industries at all times, pre-production and necessary downtimes were exactly planned and timed. But it was just as vital to ensure a seamless transition and smooth start in the new plant for employees.

Furthermore, quality control played a key role: it was part of the entire moving process to ensure the highest production standards before and after the machines started up. At the same time work continues in the new SENSILO plant, including building the cleanroom and installation of the building infrastructure.

"The smooth start of the move shows how well our team and our partners work together. Despite challenges like the volatile weather conditions, we remain on schedule and optimistic that the final measures will also be just as successful," emphasizes Maximilian Hahn, who is responsible as the project manager for production planning and the move to the new plant. ■

Installing the cleanroom walls

The new SENSILO plant ...

... will offer state-of-the-art and versatile production conditions in the future to generate further growth and strengthen our market position.

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MORE THAN SENSORS AND AUTOMATION

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