GEMÜ news
MAGAZINE FOR THE CUSTOMERS, PARTNERS AND FRIENDS OF THE GEMÜ GROUP
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60 YEARS OF GEMÜ
60 YEARS OF THE FUTURE
1964 TO 2024

This year, GEMÜ is celebrating its 60th anniversary. Since its foundation in 1964, the company has developed into a leading world-wide manufacturer of valves, measurement and control systems. GEMÜ is also a global market leader when it comes to solutions for sterile applications.

It all began in 1963 with the invention of the first PVC process valve. Fritz Müller, who made history with his invention and the foundation of GEMÜ in 1964, designed the first valves in his garage. Even in the early years, the company grew quickly and consistently, with GEMÜ's first production building being constructed in Ingelfingen-Criesbach in 1968. From here, GEMÜ very soon expanded internationally and founded subsidiaries worldwide. GEMÜ now has 27 subsidiaries worldwide, including eight manufacturing sites. Despite its very cosmopolitan outlook, GEMÜ has remained a family-run company and has stayed true to its roots. This year, GEMÜ opened its new headquarters in the Hohenlohe business park. A modern office building for around 300 employees has been built over an area of approximately 14,000 m^2. In addition to workstations, the new headquarters also includes an impressive area for customer visits, as well as a modern company restaurant and a stylish coffee bar for GEMÜ members of staff.

The anniversary is an occasion to look back on the GEMÜ Group's history of success, while also looking to the future. "We're proud of our traditions and innovative capacity. The 60th anniversary is an opportunity to thank our employees, customers and business partners for their loyalty and support. We look forward to the future and many more successful years," says Gert Müller, Managing Partner of the GEMÜ Group.

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GEMÜ headqauarters

GEMÜ Tradional Head Office 2024

GEMÜ trade fair booth 2024


GEMÜ building in Criesbach, 1970s

GEMÜ trade fair booth from the 1970s


Production in Criesbach, 1970s

Production in Criesbach, today

DEAR READERS,

2024 is a very special year for us. We are celebrating our 60th anniversary.

Over this time, we have continuously grown together with you. For us, this period was defined by constantly forging new paths and sparking a passion for technology, innovations and perfection. In doing so, customer orientation takes on particular significance at GEMÜ. This is because we know that this success story would not have been possible without your loyalty and your trust. We would like to sincerely thank you for this.

We are proud to present you a new product generation in this special year. With our platformized, modular solutions, we are setting the standard again as a pioneering valve specialist. For you, this means that we can meet your requirements more quickly and more precisely than ever before.

The opening of our new GEMÜ headquarters at the Hohenlohe business park is another highlight of our anniversary year. In this ground-breaking new building, visitors and staff are welcomed into a bright atrium with a unique digital art installation. Meeting rooms, which promise inspiring discussions from their design alone, are available for customer visits. And that's not all – there are workshops on every floor, where we can talk about your requirements and develop ideas using an actual product. Our barista coffee bar and company restaurant with its sophisticated atmosphere cater to every taste.

The new GEMÜ headquarters mark a milestone in our 60-year history and point the way to the future. New forms of working as part of the new work concept encourage creativity and give our staff inspiration. We are convinced that employee satisfaction has a direct impact on the quality of customer solutions.

Our members of staff are a key success factor in our 60-year company history. Our success is founded on their passion for innovation, their commitment and their customer orientation.

We are ready to take a leap into the future and invite you to join us. We look forward to many more successful years working together!

Gert Müller
Managing Partner
of the GEMÜ Group

Stephan Müller
Managing Director
of the GEMÜ Group

WELCOME TO THE NEW HEADQUARTERS
SPACE FOR INNOVATIONS

GEMÜ commissioned its new, prestigious headquarters in the Hohenlohe business park in June 2024 – a location where continuity and innovation come together to offer customers a unique experience.

The new headquarters not only stands for impressive architecture, but above all for the benefits that GEMÜ offers its customers.
Experts from various business units come together in the modern premises to work together on solutions. This close collaboration creates synergies that are directly reflected in the GEMÜ products and services.

Customers are received in an impressive location, and can be invited to creative workshops in the modern meeting rooms. In addition to the meeting rooms, other areas such as the stylish barista coffee bar offer the opportunity for more in-depth communication.

In the integrated workshops at the headquarters, GEMÜ gives its customers insights into product functions and offers the option of testing products. The new building is not just a workplace but a space for creativity and innovation. The open working culture and flexible design of the premises promote the exchange of ideas and inspire new, innovative solutions.

The proximity of the new headquarters to the Production and Logistics Centre and the surface technology centre enables a significant centralization of specialists. For day-to-day sales, this means more efficient utilization of visits, with both an interesting production tour and a meeting in a modern space being able to take place within a few hours. This enables us both to present our performance capability and our expertise during a customer visit and to discuss individual requirements.

In addition, specialists from other areas can be called in more easily to customer meetings to find solutions for complex applications. This centralization supports efficient collaboration and contributes to increased customer satisfaction.

The new headquarters reflects the GEMÜ spirit – modern, dynamic and state-of-the-art. Furthermore, it is not only a symbol of the future, but also a driver of digitalization and new ways of working. This is where the solutions of tomorrow that offer genuine added value are developed.

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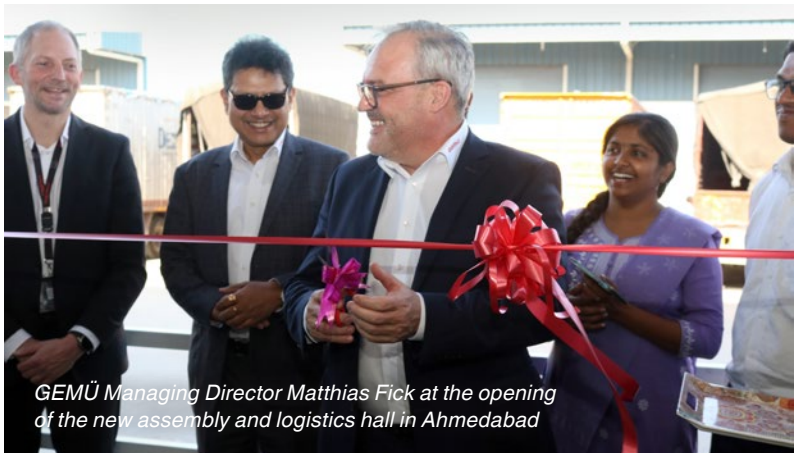
GEMÜ INDIA
OPENING OF NEW ASSEMBLY AND LOGISTICS FACTORY

GEMÜ has been active in the Indian market for over 25 years, and has been subject to continuous further development. Starting with a distributor network, GEMÜ founded its own sales office in Ahmedabad in 2006, which was later followed by further External Sales offices in other regions. In the last ten years, the pharmaceutical and biotech industry in India has experienced an enormous upswing, from which GEMÜ has also benefited.

Project Manager Germany Manuel Schneider, Managing Director Matthias Fick, Managing Director GEMÜ India Kuntal Sen with colleagues from GEMÜ Germany and GEMÜ India.

A strategy check was carried out on the basis of the five-year plan, and we worked out together how to meet the increasing requirements of the Indian market. The result was the approval of the 'India 3.0' project in June 2023, followed just nine months later by the opening of a new assembly and logistics factory, which was ceremoniously opened on 19th March 2024.



GEMÜ Managing Director Matthias Fick at the opening of the new assembly and logistics hall in Ahmedabad

"It was primarily good teamwork that enabled the fast and efficient implementation of the project. A variety of employees were involved and everyone provided outstanding services," emphasizes Manuel Schneider, Senior Head of Department for Global SCM and Industry 4.0, and project manager at the German site.

The new assembly and logistics hall at the Ahmedabad factory is a logical step in line with GEMÜ's local-for-local strategy. It offers the option of assembling various valve types and covering local spare part requirements so as to be able to react flexibly to customer requirements. "Many thanks to our global management team for the installation of the new hall in India. We are now in a position to satisfy the stringent requirements of our customers in terms of delivery time and service," says Kuntal Sen, Managing Director of GEMÜ India and local project manager.

Production in the factory has been designed so that it complies with global GEMÜ standards, while simultaneously taking into account local conditions, for example in relation to design and equipment. "With an awareness of global standards, we were able to respond to local conditions in the best possible way within a very short space of time, enabling local and global cultures to grow together optimally and in harmony," explains Manuel Schneider.

With the installation of the logistics and assembly hall in India, the prerequisites are now in place to consistently open up the market further.

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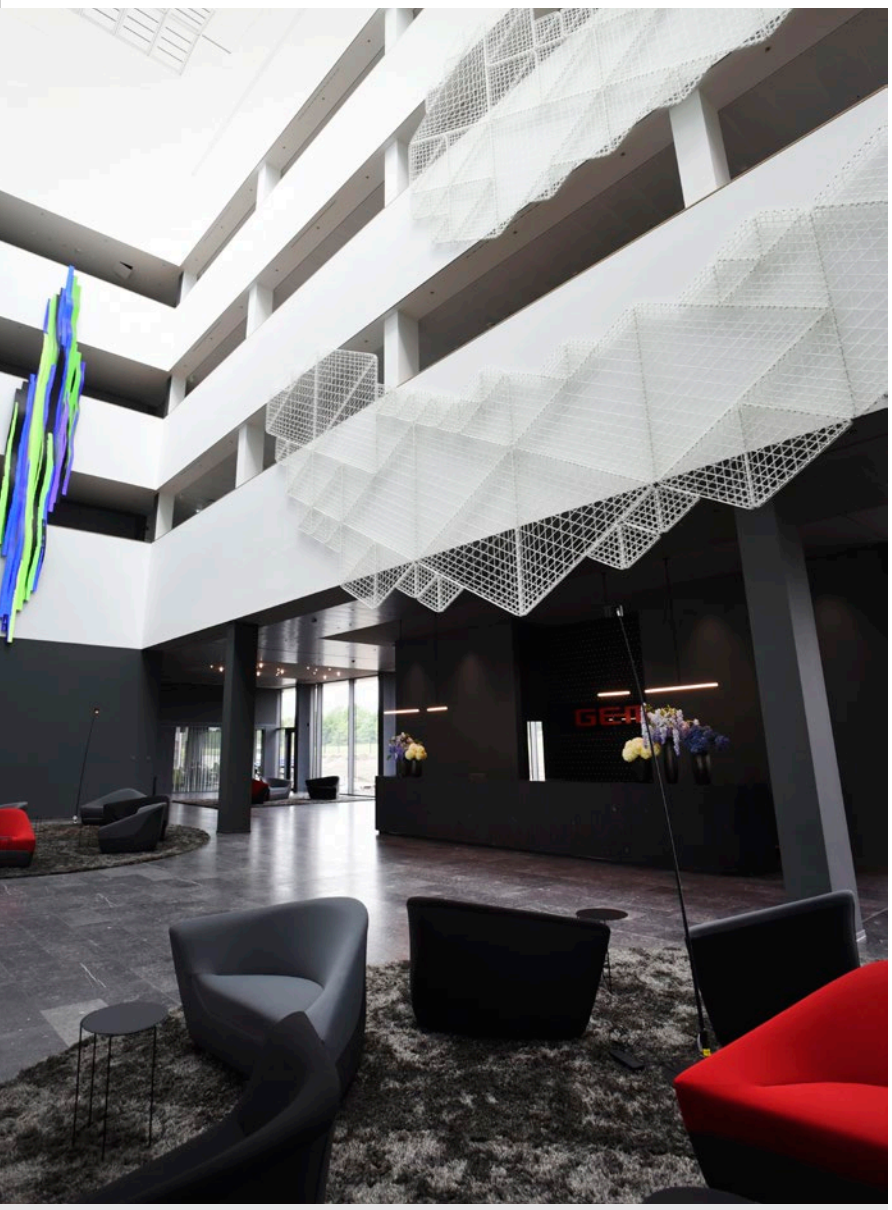

GEMÜ AWARD
„DIGITAL CHAMPION 2024“

GEMÜ has been named a "Digital Champion" by Focus Money and Deutschland Test for the third time running. GEMÜ was awarded a ranking of second place among companies recognized in the "machinery and plant construction" sector.

Digitalization is progressing at rapid pace, meaning that companies have to seize the opportunities afforded by digitalization in order to remain competitive and able to act, and to be among the winners of their sector. In order to identify these businesses, the study by the IMWF (a German management and economic research institute) thoroughly analyzed 12,300 companies in the categories of digitalization, technology and innovation.

The IMWF collected the findings of the study using the established "two pillars" test procedure. The first pillar is based on the social listening methodology. For the social listening element, approximately 1.5 million entries on the companies being researched were found online and analyzed with the help of artificial intelligence (AI). The second pillar involves carrying out surveys within companies using questionnaires. The businesses were asked about their digitalization measures in different thematic blocks. The findings were evaluated using a points system, which then determined the "Digital Champions 2024". In the "machinery and plant construction" sector, valve specialist GEMÜ achieved a rating of 98.3 out of 100 possible points and came second among the companies recognized in this category.

"Digitalization is and will continue to be the driving force behind companies which want to keep setting trends in the future. I'm certain that our global digitalization measures will help the GEMÜ Group to further expand its position as a technological pioneer in the long term," comments Gert Müller, Managing Partner of the GEMÜ Group on being named a Digital Champion 2024.

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LEAP INTO THE FUTURE

THE FUTURE HAS BEGUN

On the way to the future of valve designs: GEMÜ has introduced the pioneers of an entirely newly developed product generation at the ACHEMA 2024 trade fair. Their launch represents a great leap forwards (#LEAP). LEAP means 'Lean. Effective. Agile. Platformized.' and stands both for trailblazing products in a modular design and for a progressive manufacturing strategy.

Ever since GEMÜ was founded in 1964, not only have we been passionately dedicated to innovation and product quality, but we have also been committed to achieving the highest level of customer satisfaction. So as to overcome future challenges as well and to be able to satisfy customer needs to an even greater extent, we are consistently relying on the electrification and digitalization of our products as well as creating value. We have now taken more than just one important step in this process to mark GEMÜ's 60th anniversary. In fact, it was a bold leap with which we have set the course for the future.

Raising the curtain on the new platform generation

With the introduction of a new product generation at the ACHEMA 2024 trade fair, GEMÜ has heralded a future that is electrified, intelligent and networked. To achieve this objective, we are relying on a platform strategy and thus on a comprehensive approach to product development, manufacture and global logistics, in order to increase our response speed at various levels.

This is made possible by expanding the modularity of the products. GEMÜ is increasingly using standardized interfaces and uniformly coordinated modules, enabling customer needs to be met even faster and more accurately. The key to this is efficiently manufacturable, flexible products that offer numerous digitalization and automation options. The new platform generation marks the starting point of the new path towards even more intelligent solutions.

The key benefits at a glance

Thanks to the platform strategy, you benefit immediately from:

⇒ Products that are always state of the art, as well as complying with uniform and high standards of quality
⇒ Customized products with reduced space and energy demands
⇒ Improved international response speed
⇒ More precise configuration to the operating data for specific applications
⇒ Digital support for product selection
⇒ Uniform operating philosophy across all products
⇒ Simplified maintenance.

Lean. Effective. Agile. Platformized.

Our innovative products have been designed to be capable of use even for specialized requirements and in the most sophisticated processes. They are simultaneously an expression of our new production strategy.

LEAN

More streamlined and faster: We can develop and produce products for different applications more efficiently on a uniform basis. Thanks to cleverly designed modules, they can be used in an identical form for a multitude of different product categories. In this way, GEMÜ achieves uniform operation and enables you to familiarize yourself with the products more quickly, and to commission or maintain them more easily.

EFFECTIVE

Modular and flexible: The modular design of the new product generation enables us to react faster and more precisely to changed market requirements or individual wishes. Thanks to the versatile configuration options, we can react optimally to your needs.

AGILE

Maximum freedom of movement and response speed: Item information such as prices and availabilities can be downloaded directly. This allows products to be ordered and manufactured faster than ever before, in particular for specialized processes and unusual requirements.

PLATFORMIZED

Always up-to-date: The platform-based design allows us to reuse functional modules and components extensively and in a technically advisable way, to reduce internal complexity and to configure our products according to clear rules. This enables faster conformity adjustments and upgrades across the range.

Presentation of the first products

GEMÜ has used the ACHEMA 2024 trade fair to exclusively introduce the pioneers of the new product generation. These are completely redesigned valves with actuator modules on platform architecture and a compatible electrical position indicator offering users a variety of advantages – in particular, increased cost efficiency, sustainability, time and space savings and simple automation capability.

GEMÜ D40 ⇒ Pneumatically operated diaphragm valve
GEMÜ D41 ⇒ Pneumatically operated diaphragm valve with EasyLock technology
GEMÜ S40 ⇒ Pneumatically operated angle seat and straight seat valve
GEMÜ P40 ⇒ Pneumatically operated tank bottom valve
GEMÜ 12A0 ⇒ Electrical position indicator

We have listened to our customers' suggestions and geared ourselves towards their needs. The launch of the new platform generation is a direct result of this. It puts us in the position to serve future customers even faster and more accurately than ever before, to comply precisely with their individual requirements and to support them efficiently in sustainably optimizing their processes.

We invite you to continue to accompany GEMÜ on its journey. And, together with us, to discover a future of innovative, smart product solutions with an integrated sensor system.

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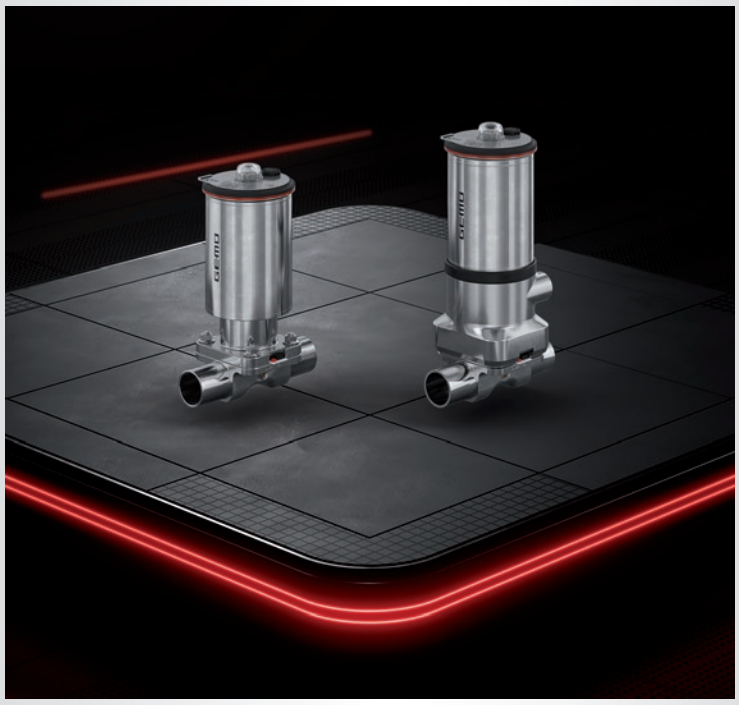
GET TO KNOW:
GEMÜ D40 AND GEMÜ D41

The pneumatically operated GEMÜ D40 and GEMÜ D41 diaphragm valves are designed for use in aseptic manufacturing processes. The sealing concept of the valves is based on the newly developed GEMÜ diaphragm, through which the actuator is still hermetically separated from the medium and an improved service life has also been achieved through design changes. All actuator parts (except the seals and design elements) are made from stainless steel. The "Normally closed", "Normally open" and "Double acting" control functions are available. The valves have an optical position indicator including a transparent cap as standard.



The difference between the GEMÜ D40 and GEMÜ D41 valves is in the type of valve assembly – the GEMÜ D40 is assembled via four collar nuts, and the GEMÜ D41 with EasyLock technology is assembled entirely without loose components using a central gearbox.

Targeted valve configuration
The valves can be configured for specific applications, which increases flexibility and expands the area of use. In addition to the range of nominal sizes up to DN 65, different connection options and connection standards can be offered in customized designs.

High flow rates
The new and optimized seat geometry of the valves ensures a high flow and homogeneous flow characteristics. Thanks to the improved efficiency, smaller valves can be used, and systems and machinery can be planned and designed more compactly.

Innovative diaphragm technology
The perfectly tuned components of the new sealing technology enable low-maintenance valve operation. It is not necessary to restore the pretension of the diaphragms over the diaphragm service life by retightening.

Defined mounting
The defined union of the actuators on the block and the diaphragm design with bayonet pin enable fast, safe and simple actuator and diaphragm mounting. The ease of installation and functional reliability of the GEMÜ D41 design are additionally increased by the EasyLock technology.

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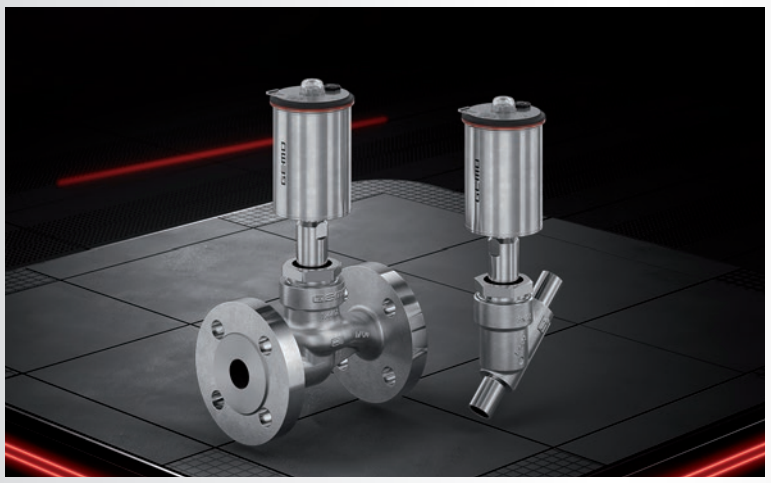
GET TO KNOW: GEMÜ S40



The GEMÜ S40 pneumatically operated 2/2-way globe valve is designed for use in pharmaceutical and industrial areas of application. As standard, the GEMÜ S40 globe valve is designed for use in a wide media and ambient temperature range, and is equipped with the tried-and-tested GEMÜ globe valve sealing concept and innovative modular linear actuator. The GEMÜ S40 is available as an angle seat or a straight seat design, and is compatible with all existing 2/2-way globe valve bodies.

Optical position indicator and transparent cap as standard
This enables optical checking of the position of the valve, and protects the actuator from moisture, dust and dirt.

Simple adaption of automation modules
Adaption is possible thanks to simple installation via an Allen key and a uniform interface with an internal air supply without additional mounting kits

Use of a piston sleeve made from PPS
Improved sliding properties of the piston lip ring on the piston sleeve lead to improved control characteristics and a lower level of wear.

Replaceable spindle seal
All wearing parts can be replaced according to the modular design principle. With the GEMÜ S40, the system can be operated more sustainably, as the essential components can be used for longer.

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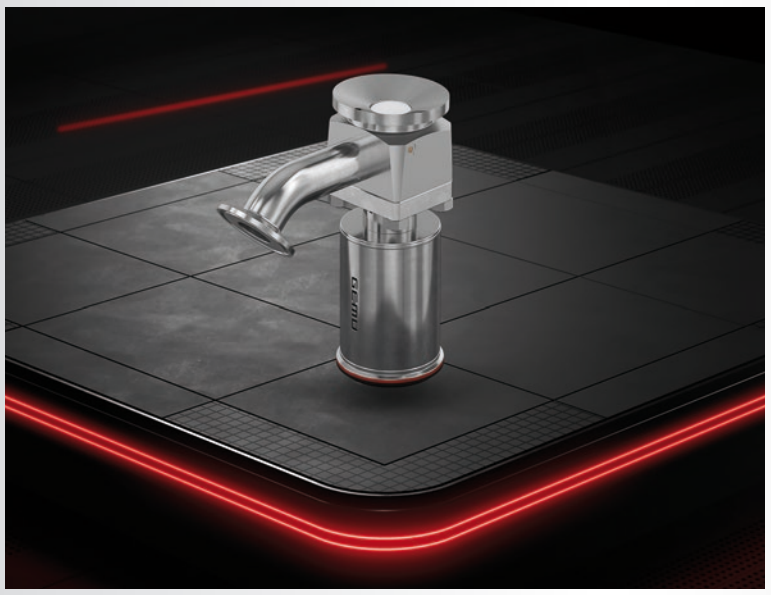
GET TO KNOW: GEMÜ P40



The pneumatically operated GEMÜ P40 PD tank bottom valve is designed for use in sterile applications. The sealing concept of the valve is based on the GEMÜ PD (plug diaphragm) technology, which hermetically separates the actuator and the environment from the medium. All actuator parts (except the seals and design elements) are made from stainless steel. The "Normally closed", "Normally open" and "Double acting" control functions are available. The valve has an optical position indicator with a transparent cap as standard.

Targeted valve configuration
With the GEMÜ P40, solutions adapted to fit the application can be implemented. This increases flexibility and extends the area of use. In addition to the range of nominal sizes up to DN 65, different connection options and connection standards can be offered in customized designs.

Innovative sealing concept
The GEMÜ P40 tank bottom valve is sealed by a patented plug diaphragm developed specifically for tank bottom valves. The dynamic pretension of the seal ensures low-maintenance operation and long-term valve sealing over the complete service life of the PD.

Functional design
Potential sediment deposits are prevented by the synchronized design of the PD and the valve body; the design also creates the prerequisites for optimal draining.

Defined mounting
Installation on the block enables fast, safe and simple actuator mounting with just four nuts, which saves time and increases safety.

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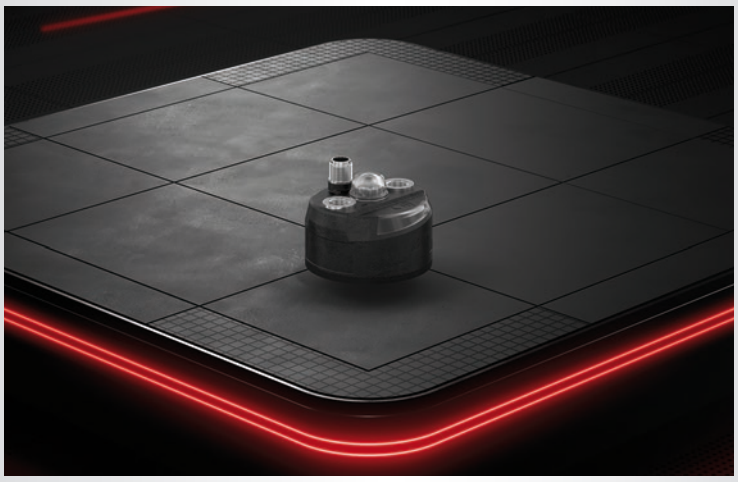
GET TO KNOW:
GEMÜ 12A0



The GEMÜ 12A0 electrical position indicator, as an automation module, is compatible with all pneumatically operated process valves with linear actuator, regardless of the actuator size and control function. Contactless position detection determines the valve position precisely, reliably and without being subject to wear. The current valve position is displayed via high visibility LEDs, and fed back via electrical signals. In addition to this, there is an integrated mechanical position indicator. Modern communication interfaces, an integrated sensor system and the option of operation via the GEMÜ app are all features that characterize the innovative electrical position indicator.

IO-Link and ASi-5 communication and parameterization interface
The modern IO-Link and ASi-5 communication interfaces enable trouble-free integration into an existing automation concept.

Condition monitoring via an integrated sensor system
The integrated condition monitoring sensors pave the way for predictive maintenance. This allows maintenance work to be planned proactively and system downtimes to be avoided.

Local configuration and status diagnostics via the GEMÜ app
The GEMÜ app offers the option of local configuration and status diagnostics with error diagnosis and appropriate recommended actions.

Self-initialization function through autonomous detection of end positions
The self-initialization function with autonomous detection of end positions not only allows time to be saved, but also allows the error rate to be minimized.

Fitting to the actuator is done without a specific mounting kit
Uniform and compatible mounting parts minimize susceptibility to errors and ensure seamless integration.

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NEW PLATFORM GENERATION
GEMÜ RELIES ON CENTRALIZED TECHNOLOGIES

GEMÜ relies on technological development and strategic innovation. Maximilian Barghoorn, Head of the Global Technics Division, speaks in an interview about the importance of modular product platforms, the use of sensor and data technologies, and the future-oriented marketing campaign 'LEAP INTO THE FUTURE'.

GEMÜnews: *Mr Barghoorn, as Divisional Manager of Global Technics at GEMÜ, you are in charge of some exciting developments. What technologies or strategies is Global Technics currently working on?*

We are facing exciting challenges that require all of our technical expertise and capacity to innovate. One main focus is on the development of modern product platforms that are modular and scalable and can be easily integrated into customer systems. We are also improving our sensor and data technologies in order to optimize data capture and analysis. This enables more precise control and monitoring functions, which are crucial for offering Industry 4.0-compatible solutions for networked and automated production processes. We are also continuously optimizing our processes with regard to environmental aspects, in order to reduce energy consumption and CO2 emissions. These measures strengthen our competitive ability and enable us to offer our customers innovative, future-proof products.

GEMÜnews: *These are undoubtedly fascinating and ground-breaking topics for the future. Do you deliberately align your product portfolio with market trends?*

At GEMÜ, we focus on serving a wide range of market segments globally, including the chemical, pharmaceutical, foodstuffs, water treatment and semiconductor production industries. Our adaptable solutions comply with specific local conditions and global regulatory standards. By using modular product platforms, we offer a wide variety of configuration options to precisely meet the needs of our customers. Our close collaboration with customers and international sites enables us to develop technically advanced, efficient and sustainable solutions. This customer-orientated strategy strengthens our business relationships and consolidates our position as an innovative partner in the processing industry.

GEMÜnews: *You talk about product platforms and strategy, what do you mean by that?*

The platform strategy describes the development of a standardized basis for our products that enables flexible and efficient customization. This strategy offers our customers considerable advantages:

⇒ **Flexibility:** Modular components allow products to be easily customized to individual requirements.
⇒ **Reliability and quality:** Standardized platforms guarantee high standards by building on tried-and-tested components.
⇒ **Faster availability:** New products can be developed and brought to market faster.

To summarize, our platform strategy makes a significant contribution to improving the ability of our products to adapt to specific customer needs worldwide, increasing efficiency and enhancing customer satisfaction.

GEMÜnews: *In connection with the product platforms, GEMÜ's new marketing campaign has the motto 'LEAP INTO THE FUTURE'. What does Global Technics associate with this, and what does it mean for GEMÜ?*

The new advertising campaign presents the GEMÜ brand as trailblazing and innovative. A central visual element is the dynamic leap onto a platform with futuristic lighting. This symbolizes GEMÜ's decisive venture into new areas of technology. The marketing campaign introduces a new generation of products based on a platform strategy and characterized by modularity, intelligent networking and an integrated sensor system.

The new platform generation increases efficiency in manufacture and enables a faster and more precise response to customer needs and current market trends. The clear advantage for customers lies in the improved functionality and performance of the products, which is made possible by advanced technologies.

GEMÜ aims both to win over existing customers and to tap into new target groups. The campaign invites customers to boldly leap into the future alongside GEMÜ and experience the advantages of new technologies, and emphasizes GEMÜ's ability to innovate and adapt quickly.

GEMÜnews: *The new platform generation was presented at this year's ACHEMA trade fair. What technological features characterize these new products?*

We are focusing our product development on six core areas in order to create modern and competitive solutions:

⇒ **Electrified:** Integration of electrification modules in all main products to increase efficiency and functionality, supported by advanced sensor systems.
⇒ **Sensor-based:** Use of sensors that provide valuable data for process optimization and help to extend the service life of the devices.
⇒ **Connected Link:** Networked devices that interact efficiently with modern fieldbus systems and ensure seamless integration.
⇒ **Intuitive Design:** Products with an elegant, purposeful design for intuitive usability and visible quality.
⇒ **Smart Action:** Connection to smart device applications and our own apps that extend the functionality of our devices and underpin their 'smart' status.
⇒ **Performance Platform:** Modular platforms that allow flexible configuration and customization to meet all key performance requirements.

These six areas are the foundation of our strategy to offer innovative, reliable and high-quality solutions that meet global customer requirements.

GEMÜnews: *What does the future hold, and what new products can we look forward to?*

To date, we have focused on the development of a generation of stainless steel products with electrical automation modules and motorized actuators. In the next phase, we will review all relevant customer product segments and gradually introduce new expansions and completely new platform segments. One example is our plastic valves and actuators, which have been setting industry standards for decades. You can expect new series in this area. Visitors to our stand at the ACHEMA trade fair were given a first look at our extremely compact but high-performance new plastic block valves.

GEMÜnews: *What future technologies are you currently working on?*

At GEMÜ, we are focusing on key technologies that will become increasingly important in the future. Artificial intelligence (AI) in particular promises to fundamentally improve communication and interaction between people and technical systems. Our objective is to be a leader in this field by understanding our customers' expectations and integrating innovative technologies into our products in a targeted manner. We are facing a challenging but exciting time ahead, and are ready for our creative solutions to take us to the forefront of the technological revolution. We look forward to inspiring you again with exciting new features at the next ACHEMA!

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PRODUCT PLATFORMS AND MODULARITY
EFFECTIVE SOLUTIONS FOR THE FUTURE

In a world characterized by continuous change, products and services are becoming increasingly complex and versatile. Companies are faced with the challenge of reacting quickly to changing customer needs, remaining competitive when doing so, and recognizing and utilizing emerging macro trends at an early stage. Product platforms and modularity at product level offer an effective solution to comply with these requirements and simultaneously to generate advantages for customers.

The use of product platforms enables the implementation of a variety of products based on a common technological foundation. The platforms form the backbone for product development and make it possible to use resources more efficiently and shorten times to market. The use of a common platform enables the development of scalable and adaptable products that can be adapted to different market conditions and customer requirements in an agile manner.

Modularity, which is closely associated with the subject of a product platform, plays a decisive role here. A modular construction means that products are subdivided into individual modules or subassemblies that can be developed, tested and replaced independently of one another. This modular structure makes it possible to quickly adapt, expand or update products without having to redevelop the entire product. Customers can benefit from this flexibility by receiving customized solutions that precisely comply with their requirements.

Versatile customer benefits

The combination of product platforms and modularity at product level offers a variety of advantages. Firstly, it makes it possible to offer a wide range of products that are geared towards different customer needs and preferences. This gives customers the opportunity to choose from a variety of options, and consequently to receive products that precisely comply with their requirements. Secondly, faster further development of products means that innovative solutions and up-to-date technical standards can quickly be made available across all products. Furthermore, the modular structure of the products means that customers benefit from greater reliability and easier maintenance, as faulty or out-of-date components can be easily replaced without having to just replace the entire product.

Prospects for providers

The combination of platform-based products and modularity is crucial in terms of greater flexibility, efficiency and customer orientation. By offering a wide range of customized product solutions at the same time as shortened times to market, the competitive position is strengthened and customer benefits are simultaneously generated. In an increasingly dynamic business environment, product platforms and modularity are indispensable tools for meeting requirements that are continuously increasing and for supporting customers in the long term with products that have optimal operation characteristics for the targeted application. However, the changeover to a platform-based product architecture also poses challenges that can only be successfully overcome with committed employees, an agile organizational unit and discipline in compliance with clear guidelines.

GEMÜ is taking on these challenges, and has presented the first product ranges of the new platform generation at the ACHEMA 2024 trade fair – and on the occasion of the company's 60th anniversary. Further products will follow in the near future.

With this step, GEMÜ is taking a leap into the future and towards platform-based product solutions that are more tailored to the needs of customers and applications than ever before. The new platform generation makes it possible to consistently exploit the opportunities and advantages of new technologies, and to optimally adapt to the respective requirements. This is the contribution that GEMÜ is making to the future in order to make process plants more efficient and conserve important resources – thus supporting our environment and our climate.

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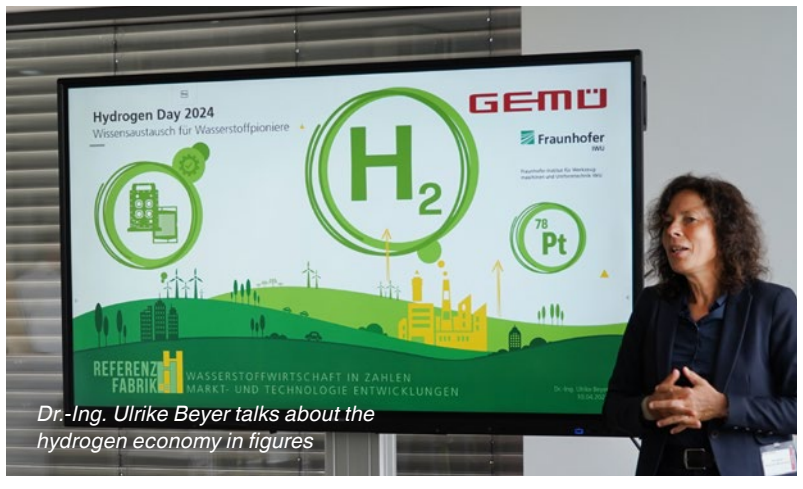
FOCUS ON HYDROGEN
REVIEW OF GEMÜ HYDROGEN DAY 2024

On 10th April 2024, GEMÜ opened its doors to dedicate itself entirely to the subject of hydrogen. Hydrogen experts from various sectors came together at GEMÜ Hydrogen Day to exchange knowledge. Participants were able to gain new insights during exciting specialist talks and an interactive factory tour, and discuss the pressing question of how the industrial sector can successfully start producing hydrogen systems and become economically viable in the process.

Matthias Fick, Managing Director at GEMÜ, emphasized the importance of hydrogen as the energy source of the future in his welcome speech. He pointed out that state subsidies alone are not enough to overcome the challenges of the energy transition. Rather, the industrial sector must become cost effective in order to create sustainable incentives for the development of the hydrogen industry. Furthermore, Matthias Fick stated that GEMÜ Systems can make a valuable contribution here to the industrialization of hydrogen production.

The participants of Hydrogen Day had clear expectations of the event. They wanted not only to expand their networks and learn about current market trends, but also to gain a deeper understanding of hydrogen technologies and their actual situation in Germany.

Factory tour – insight into the leak tests for hydrogen valves



Dr.-Ing. Ulrike Beyer talks about the hydrogen economy in figures

Dr.-Ing. Ulrike Beyer from Fraunhofer IWU Chemnitz presented the hydrogen economy in figures, introducing current market and technology trends in her keynote speech. She got right to the heart of the importance of hydrogen as an energy source in the energy transition at the beginning of her presentation: "Renewable energies are like fresh milk, and hydrogen is like cheese." Her analogy made it clear that hydrogen offers a way of storing and transporting energy so that it can be used when and where it is needed.

A central topic of the day was the discussion about the production targets for hydrogen in Germany by 2030, with Dr.-Ing. Ulrike Beyer presenting some impressive figures: 4.5 million tonnes of hydrogen as the production target for 2030 will require a considerable number of systems. To achieve this objective, around 12,500 electrolyzers with a performance of 2.1 MW and 8,500,000 electrolyzers with a performance of 2.4 kW are required. In addition, an 80% reduction in production costs is essential to ensure cost efficiency. One way of reducing production costs could be the series production of electrolyzers with standardized solutions. This approach could help drastically reduce costs and improve the scalability of hydrogen production, which in turn supports the achievement of ambitious production targets by 2030.

GEMÜ Hydrogen Day offered not only professional discussions and insights, but also a very good opportunity for networking and the exchange of ideas. The evening programme with a 'wine walk' and barbecue offered participants a relaxed atmosphere to get to know each other and to make new contacts.


In special valve construction – important aspects for hydrogen valves

The event underlined the importance of collaboration and dialogue to develop the future of hydrogen technologies. A big thank you to all participants and speakers who made this day a success.

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FLEXIBILITY AND COST CONTROL
PVDF INSERTS AND UNION NUTS FROM IN-HOUSE PRODUCTION

Starting from August, the Industry business unit will take over the in-house manufacturing of PVDF inserts in sizes DN 15 to 25 for connection code 7, DN 15 to 32 for connection code 78 and DN 15 to 25 for union nuts. With this decision, the business unit is utilizing its manufacturing capability to strengthen its independence from external suppliers and simultaneously to achieve cost advantages.

The PVDF inserts and union nuts are used in diaphragm valves, plastic solenoid valves and flowmeters. In the past, the shortage of raw materials on the market led to a high level of dependence on external suppliers. This dependence led not only to uncertainty but also to longer delivery times and higher purchase prices. In view of this tense situation, it was time to rethink the previous approach.

The make-or-buy decision:

As part of a make-or-buy decision, Product and Applications Management carefully analyzed whether it was advisable to manufacture the inserts and fittings made of PVDF in-house. The result was a resounding yes. In-house manufacturing provides GEMÜ with the following decisive advantages:

⇒ **Independence from suppliers:**
GEMÜ is no longer reliant on external providers to ensure stable production capacity utilization, reducing the risk posed by market fluctuations and delivery shortages.

⇒ **Shorter delivery times:**
In-house manufacture shortens delivery times, enabling an even more agile response to customer requirements.

⇒ **Cost efficiency:**
In-house manufacturing makes it possible to reduce procurement costs. More efficient production processes can be implemented, and control over cost development is ensured.

"We are proud to use our manufacturing capability to become even more flexible, independent and cost-efficient. This not only strengthens our competitive ability, but also ensures that we can continue to supply our customers with first-class products," reports Alexander Zentler, Product and Application Manager for BU IND.

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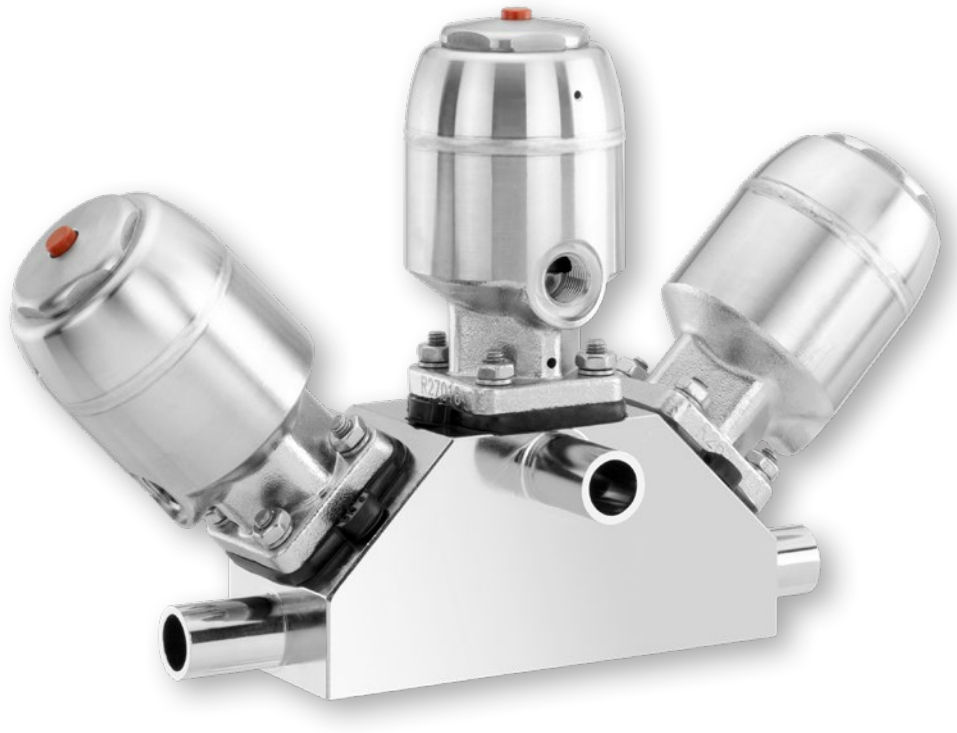
BLOCK-AND-BLEED SOLUTIONS
GEMÜ MULTI-PORT VALVES



In the pharmaceutical, food and biotechnology industries, GEMÜ multi-port valves are used when the most varied process requirements and functions need to be united in the smallest of spaces. GEMÜ's block-and-bleed solutions also make a valuable contribution to process reliability during maintenance and calibration work or to avoiding cross contamination, and make practical implementation far easier. Depending on the application, various configurations are available here for shutting off (block) and draining or venting (bleed) that differ in terms of construction. The complex piping system, for example with fittings and valves, is not required in this case.

The different design versions of the block-and-bleed functions can be categorized into the following groups:

SIMPLE BLOCK-AND-BLEED VALVES

In the simplest version, block-and-bleed valves have two valve seats (Figure 1: V1, V2) and are generally used to allow you to safely remove installed in-line measurement devices from the system for maintenance or calibration work. An additional valve (Vn) is required to provide the necessary pressure compensation. In this configuration, the valve is positioned separately at a suitable point in the subsequent piping, and is not integrated in the valve block.

The V1 shut-off valve and the separate Vn valve are closed before the measurement device is removed from the S4 connection spigot. The V2 draining or venting valve is then opened. Only when both steps have been completed can the measurement device be removed and reinstalled after the completion of the work. By subsequently closing the V2 valve and opening the V1 and Vn valves, the measurement device is integrated back into the system.

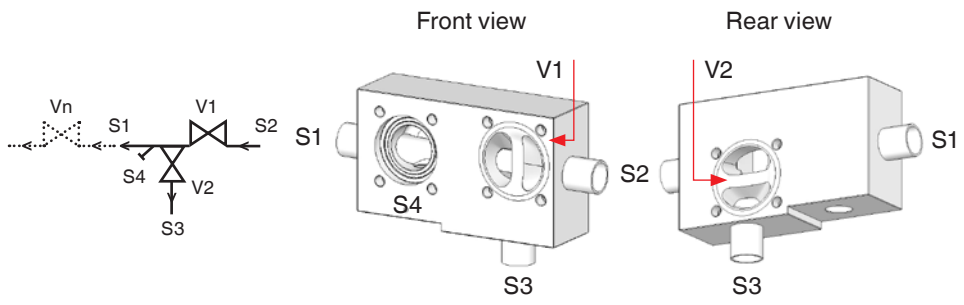


Figure 1: GEMÜ M600 03-02.SZ

A further developed M-block solution is shown in the following example. All the previously mentioned valves and process connections are combined in one block here. The incorporated seal contour for the measurement device and the additionally integrated valve (V3) lead to a significant reduction of dead spaces. In this case, the S3 venting connection is aligned vertically upwards:

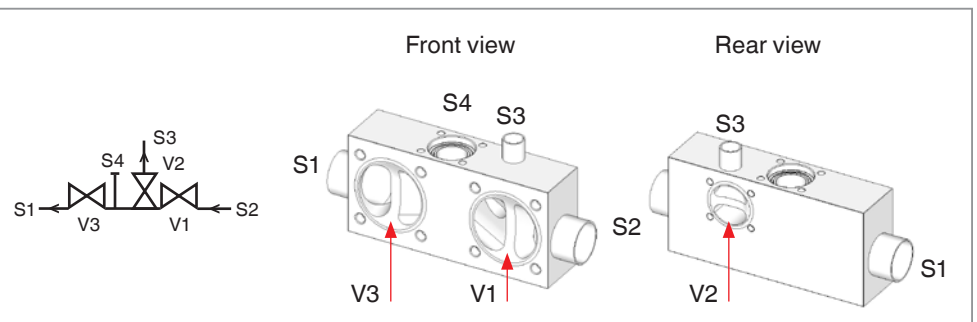


Figure 2: GEMÜ M600 04-03.N4

DOUBLE BLOCK-AND-BLEED VALVES

Double block-and-bleed valves with three integrated valve seats are generally used for critical process applications. In contrast to shutting off with only one valve seat, the double shut-off integrated in a valve body ensures reliable separation of media. This function for creating a redundant barrier between two incompatible media is used, for example, if the product to be processed is present on the side of the S1 connection and the cleaning medium is present on the side of the S2 connection. The two V1 and V2 valves are closed here, and the V3 valve is open.

This method of double shut-off is also described in ASME BPE in chapter SD-3.1.2.3 (b) as a measure to avoid cross contamination of product streams.

This means that if one of the two seals of the V1 or V2 valve fails, another seal is still available as a shut-off (double block). In addition, the simultaneously open V3 valve (bleed) ensures that no pressure can build up between V1 and V2. Cross contamination of the products that are present can therefore be prevented. In addition, it is possible to determine a leakage visually or by means of automated detection via the open V3 valve.

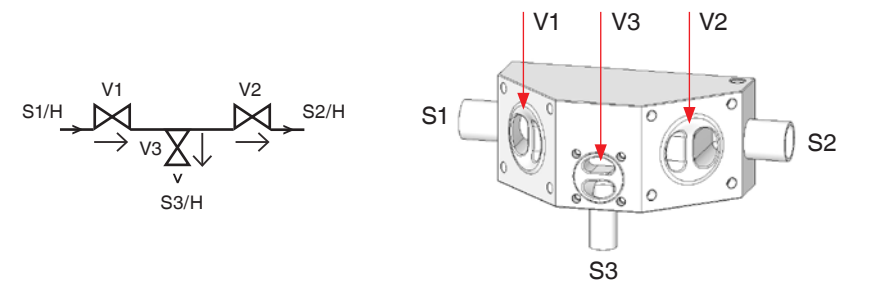


Figure 3: GEMÜ M600 03-03.N1

"STERILE CROSS" VALVES (STEAM BARRIER)

In comparison with double block-and-bleed valves, multi-port valve blocks used as a 'sterile cross' have an additional valve seat with a corresponding connection, meaning that this combination consists of a total of four valve seats and four connections. This construction enables a permanent moisture barrier between the two closed valve seats (V1 and V2) during operation, e.g. to prevent contamination of the respective media present. Steam is introduced here through the open V3 valve via the S3 connection, and flows out again as steam or condensate at the S4 connection via the common connection chamber at the V4 valve.

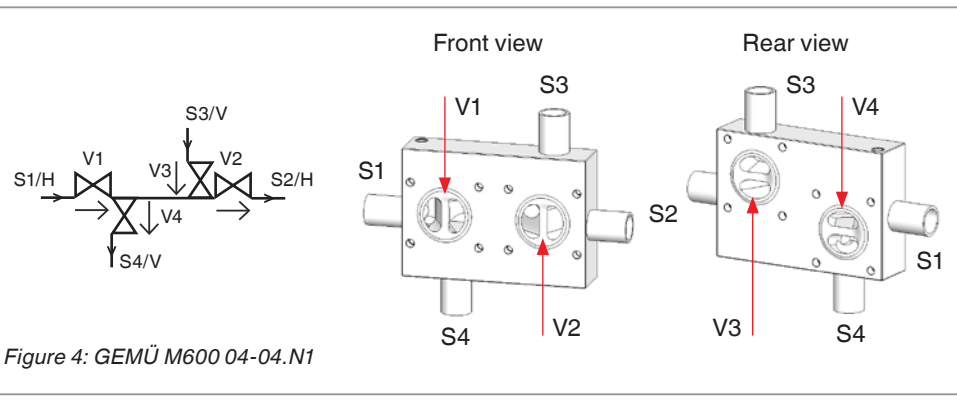


Figure 4: GEMÜ M600 04-04.N1

COMPLEX BLOCK-AND-BLEED VALVES

Based on the design of multi-port valves, complex block-and-bleed valves can be individually designed in accordance with the special process requirements and depending on the function requirement. The construction and the number of connections and valve seats will vary depending on the number of media to be combined so as to be mixproof. An example of this is 'crossover cleaning' with two double block-and-bleed functions. The two double block-and-bleed functions (V1/V2/V5 and V3/V4/V8) are required to prevent contamination of the product during upcoming CIP cleaning, and can be implemented either via three different multi-port valves or via a complex multi-port valve block (M600 06-08.N) as shown below.

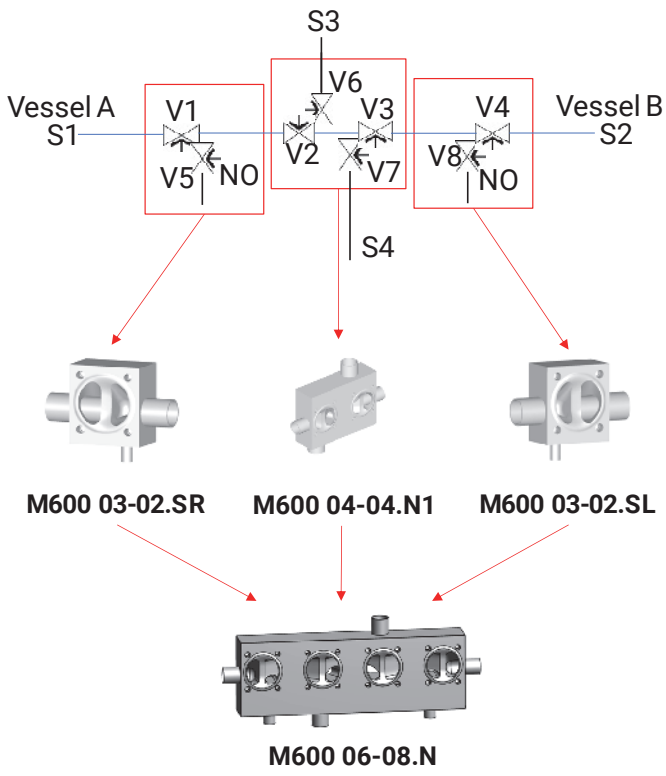


Figure 5:
Representation of 'crossover cleaning' including M-block solutions

This arrangement of the multi-port valves allows two different process paths to be cleaned via cleaning-in-place (CIP) (Figure 6, shown in red), with part of this route overlapping ('crossover'). Before the product is transferred from container A to container B, the cleaning medium is introduced via the S3 connection and the V6, V3 and V4 valves (CIP 1). The V1, V2, V7 and V8 valves are closed here. The open V5 valve allows the cleaning medium to run off if the V2 valve is leaking (pipe section shown in yellow), thus preventing contamination of the product found in container A (green). After the product has been transferred from container A to container B, the piping of container A can be cleaned via the S4 connection (CIP 2). The V3, V4 and V6 valves are closed here, and the V8 valve is open (yellow/green). In this case, the cleaning medium flows from container A, via the open V1, V2 and V7 valves and in the direction of S4. The V5 valve, which was previously still open, is now also closed.

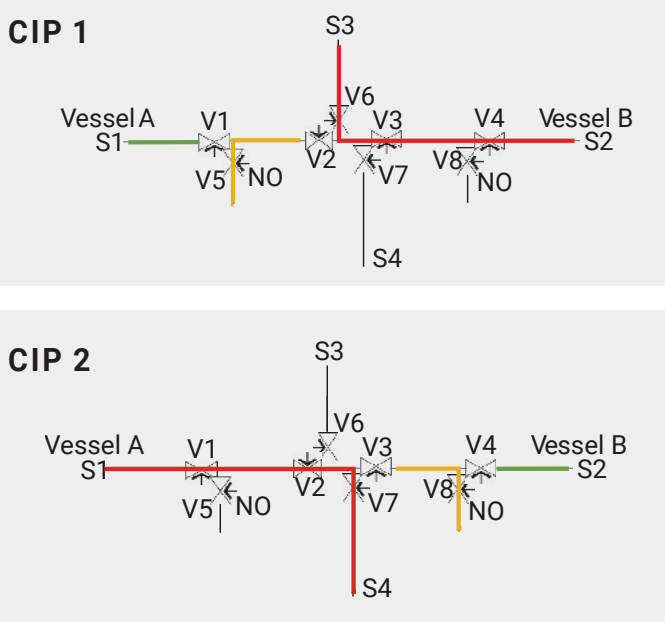


Figure 6:
Representation of the cleaning paths for 'crossover cleaning'

Customized solutions should definitely be presented in a block solution with minimal deadleg for all conceivable applications.

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SYSTEM SCREENING AT WDT
FIRST STEP FOR SUCCESSFUL MAINTENANCE

From 12th to 14th September 2023, a GEMÜ team carried out a system screening at a customer called WDT in Garbsen. Screening is used for analyzing and evaluating the system, as well as for checking and updating the parts lists of the installed parts.

Wirtschaftsgenossenschaft deutscher Tierärzte eG (WDT) is a veterinary pharmaceutical company in the Hanover area with a branch in Memsen. Production at WDT offers a very wide range of medicinal products for both the human and the veterinary sector at its GMP premises.

The GEMÜ team, comprising Roland Gebhardt and Thomas Lerach, was trained by Oliver Zweiniger and Stephan Munk from WDT. The briefing made it possible to access the systems via the lock without any trouble when wearing the specified protective clothing (including covering your hair and beard and wearing a coat and overshoes).

The main task of the screening was to examine and record the GEMÜ components installed in the cleanrooms, in particular the valves, diaphragms and clamp connections.
This revealed that the components could only be accessed with difficulty. What has already proven to be a challenge during screening is even more difficult during a maintenance task.

Details of the screening:

The system screening was carried out in accordance with the agreed protocols and standards. The GEMÜ team worked precisely and thoroughly to record and evaluate all relevant components. Collaboration with the WDT employees was good, and the team received all the required information and support to complete the task efficiently.

As it was not possible to access all system components, components were also identified based on pictures that were provided.
Checking of the GEMÜ components showed that they complied with the requirements and functioned properly. No significant faults or defects were determined. The screening enabled a comprehensive inventory of the installed components and provided important findings for the further servicing and maintenance of the systems at WDT.

Subsequent measure:

In February 2024, GEMÜ carried out a successful service job at WDT as a follow-up measure after the system screening. Components with integrated identification carriers (QR code, RFID) were used here to further optimize the systems and keep them state of the art. This allows the components to be clearly identified and simplifies future maintenance procedures.
This service job underlines the partnership-based collaboration between GEMÜ and WDT, as well as the commitment of both companies to the highest possible quality and efficiency in their processes.

Conclusion: The system screening at WDT in Garbsen was a successful and important step towards ensuring the operational readiness and efficiency of the systems. But it was also a further step in the direction of service expansion at GEMÜ. The collaboration between GEMÜ and WDT was professional and effective, and the results of the screening provided valuable findings for the further optimization of the systems. The GEMÜ team is proud to have contributed to the optimization of the systems and processes at WDT and is looking forward to further successful collaboration.

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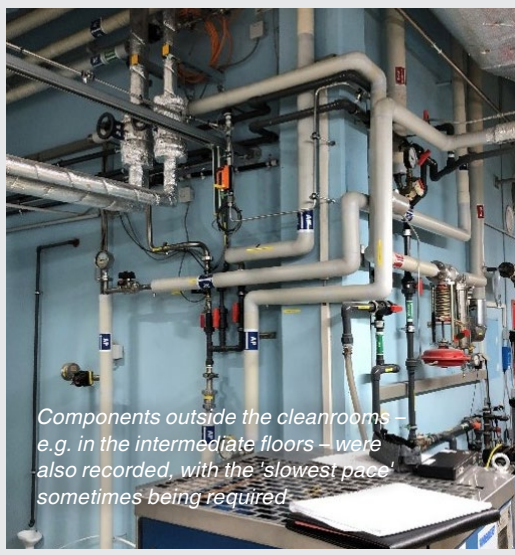
Access to the cleanroom is only granted in the designated protective clothing


Components outside the cleanrooms – e.g. in the intermediate floors – were also recorded, with the 'slowest pace' sometimes being required.

DIGITAL TWINS IN SEMICONDUCTOR PRODUCTION
IMPROVING EFFICIENCY THROUGH VIRTUAL MODELS

In order to cover the increasing demand for semiconductor components and achieve the predicted growth in the industrial sector, the semiconductor industry is also working intensively on the subject of digital twins.

Potential of AI, machine learning and IoT for the growth of the semiconductor production

Aspects such as AI, machine learning, IoT, etc. will most likely lead to the current growth forecasts even being exceeded. Through predictive models and other potentials for optimization, digital twins promise to make an immense contribution to growth in areas such as chip design, manufacturing processes, system maintenance and operational efficiency improvements. In December 2023, SEMI, the semiconductor industry's cross-company and cross-country trade association, invited semiconductor experts from around the world to a meeting in the USA. Various applications for digital twins were presented and discussed here. The Semiconductor business unit was represented at the event by two participants, in order to analyze the needs and requirements in relation to digital twins for high-purity products.

In four sessions, individual participants presented the subjects and solution approaches they are already working on with their teams to the specialist audience. The sessions were organized thematically, so as to be able to comprehensively cover all relevant aspects. In the first session, the speakers dealt with the perspective of manufacturers of processing devices with regard to the use of a digital twin. In the second part, application possibilities at process, operational and planning level were discussed. The third session focused on the point of view of fab operators. The fourth session concluded with a presentation of platforms and solutions for implementing and managing digital twins.

Wide range of applications for digital twins

The possible applications of digital twins are extremely versatile and cover many different areas of use. From a simple BIM model of the fab for planning installation and modifications to detailed models of individual process chambers or process steps, which are supplemented by physical models and allow conclusions to be drawn about the process result. A digital twin is an innovative tool for planning and controlling the optimal path of the wafer through the fab, including at production process levels.

Another key aspect, in particular in the area of process technology, is the ability to virtually develop new procedures in advance, so that only fine adjustments are made to the actual tool. Using training on a virtual model, personnel can be trained without losing valuable production time. In addition, a digital twin enables the analysis and optimization of processes and the selection of suitable process media from an ecological and sustainable perspective.

Challenges and future developments

The challenge that is evident worldwide lies in the different definitions of a digital twin that exist nowadays. Furthermore, isolated developments in relation to this concept can be observed everywhere. For future developments, it is crucial to establish uniform standards in order to standardize the various virtual representations. In addition, solutions must be developed to enable the exchange of data between the parties involved, where the IP protection of the companies involved must take centre stage. Data exchange is essential in order to exploit the full potential of virtual twin technology. Data quality is also a future challenge, as it is crucial for the accuracy of the virtual twins. In older factories and small and medium-sized companies in particular, the integration or development of digital representatives in the process area presents a challenge.

Long-term potential

None of this will stop the development and use of digital twins. The potential of this technology for the semiconductor industry is too great not to be expanded further. However, it is important to remember that this is a long-term process – similar to a marathon, not a sprint. The creation of a common understanding and the setting up of industry-wide standards and directives for handling IP-relevant data are the bases for further progress and stronger implementation of twin technology. As soon as this has been achieved, nothing more will stand in the way of the integral digital semiconductor factory of the future, so as to be able to meet the growing global demand for semiconductors in the most efficient way.

Current status and outlook

There is currently no immediate demand for digital twins for high-purity products. Nevertheless, the foundations have been laid for identifying development needs at an early stage and reacting accordingly. The experts at GEMÜ will continue to actively monitor the topic, so as to be prepared for a potential increase in demand and to always stay informed of current developments.

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GEMÜ PRODUCT NEWS

PRODUCT OPTIMISATIONS AND PRODUCT ENHANCEMENTS

GEMÜ 611

GEMÜ 617

Adaptation of the inserts and union nut made of PVDF for plastic diaphragm valves

In the future, the handwheels of the manually operated GEMÜ 611 and GEMÜ 617 diaphragm valves will be made partially from post-industrial PVDF material and from new PVDF material. At the GEMÜ Group, the post-industrial material is created in the form of sprues or start-up parts during regular production, and is consequently utilized further. Recycling protects the environment and reduces the carbon footprint.

GEMÜ R470 Tugela

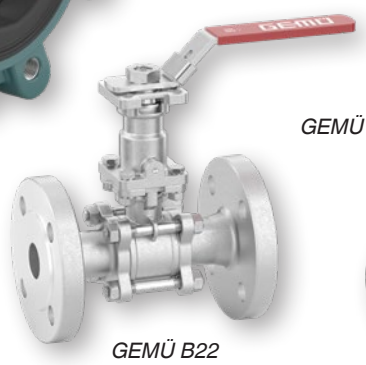
GEMÜ R470 Tugela housing expansion

GEMÜ has extended the double-eccentric GEMÜ R470 Tugela butterfly valve around the U section (double flange) and lug (thread) body configurations. The body configurations can be selected with the corresponding flange design and nominal sizes in the configurator, and are available with immediate effect.

GEMÜ R80

CRN approval for ball valves and butterfly valves

The BB02, B22, B42 and B52 ball valves and the GEMÜ R480, R481, R487 and R488 butterfly valves have received approval for the Canadian market, or CRN (Canadian Registration Number) for short. The design is checked here by the responsible provincial authority in each case.



GEMÜ B22

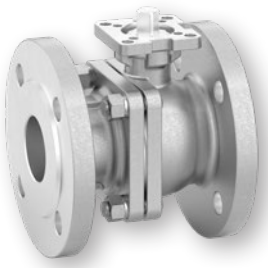
GEMÜ B42

GEMÜ B52

GEMÜ Q51

New GEMÜ Q51 pinch valve

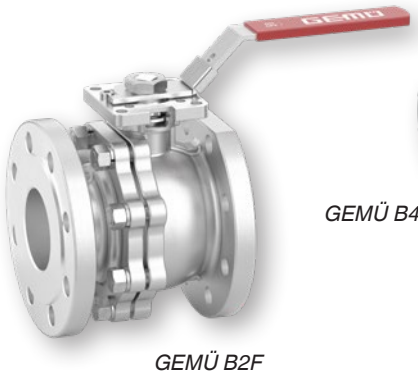
GEMÜ is expanding its product range in the area of single-use pinch valves with the GEMÜ Q51 motorized pinch valve in actuator size 0 for 1/8" and 1/4" internal hose diameters and 1/4", 3/8", 7/16" and 1/2" external hose diameters. Open/Closed configurations and an integrated positioner (4–20 mA) are available. What sets the GEMÜ Q51 pinch valve apart is its compact design, which means only a small footprint is required in the system.



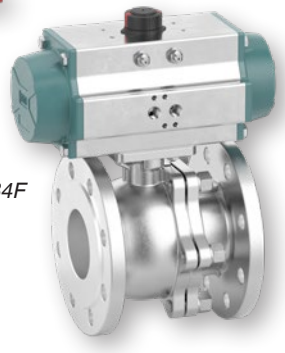
GEMÜ BB0F

Product launch of the two-piece GEMÜ BB0F, B2F, B4F and B5F flange ball valve

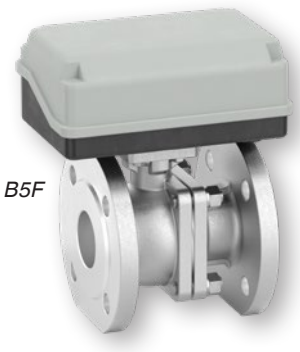
With the product launch of the two-piece flange ball valve, GEMÜ is rounding off its ball valve range. The GEMÜ BB0F series is best suited to chemical applications, as the ball valve has only one separation point in the housing and consequently has fewer leakage points. The product has also passed a fire-safe test in accordance with API 607 and ISO 10497.



GEMÜ B2F



GEMÜ B4F



GEMÜ B5F

TRADE FAIRS 2024 (INTER)NATIONAL

BIO Asia-Taiwan	25.07. – 28.07.	Taipei (TW)
ISPE Singapore Conf. & Exh.	01.08.	Singapur (SG)
IWA World Water Congr. & Exh.	11.08. – 15.08.	Toronto (CA)
Automation Taipei	21.08. – 23.08.	Taipei (TW)
Farmaforum Spain	25.09. – 26.09.	Madrid (ES)
WEFTEC USA	07.10. – 09.10.	New Orleans (US)
Processteknik Sweden	08.10. – 10.10.	Gothenburgh (SE)
Expo Lounges Wien	16.10. – 17.10.	Wien (AT)
Hydrogen Technology Expo	23.10. – 24.10.	Hamburg (DE)
CHINA Brew Beverage	28.10. – 31.10.	Shanghai (CN)
Semicon Europa	12.11. – 15.11.	München (DE)
Brau Beviale	26.11. – 28.11.	Nürnberg (DE)
CPHI	26.11. – 28.11.	Delhi (IN)

Subject to change!

INNOVATIVE PRESSURE GAUGE FOR PRECISE PROCESS MONITORING

GEMÜ C33 HYDRALINE

Industrial process measurement technology is constantly developing further. Requirements in the production of electronics and semiconductors are simultaneously increasing when it comes to fine structures and miniaturized components as well as ultra-thin coatings, which also increases the requirements for measurement devices. With the launch of the GEMÜ C33 HydraLine pressure gauge, GEMÜ has reached another milestone in providing its customers with the best possible support for their challenges. As the successor of the tried-and-tested GEMÜ C32 Hydra-Dry, the GEMÜ C33 HydraLine sets new standards when it comes to reliability and flexibility in the monitoring of pressure in demanding applications.

The centrepiece of the GEMÜ C33 is its new sealing concept, which is innovative and unique on the market. A ceramic sensor is used for this. Separation of media takes place without the use of transmission fluid as a transfer medium; this is designated as a dry system. The advantage here is that the process medium cannot become contaminated in the event of a leakage. Further advantages of a ceramic sensor are its resistance to chemicals, maximum precision and reliability, even under demanding conditions.
The most outstanding feature is the separation of the medium between the ceramic sensor and the process medium.

The standard procedure in accordance with the current state of the art involves compressing the diaphragm using an O-ring, with the O-ring coming into direct contact with the medium for some providers. GEMÜ has deliberately decided to deviate from this approach, as the thin diaphragm can be susceptible to diffusion, and the O-ring, depending on its material and the medium used, could be exposed to chemical attacks.

To offer customers an advantage over products currently available on the market, GEMÜ has developed a new sealing concept. Both the sensor and the electronic system are completely enclosed here by a sensor sheath made of PTFE (see Abbildung 1: Explosionszeichnung GEMÜ C33 HydraLine no. 1). In this design, the diaphragm is an integral component of the sensor sheath, so there is no separation point. This eliminates any risk of the process medium bypassing the sealing. There is no media-wetted O-ring and the thickness of the diaphragm delays diffusion.

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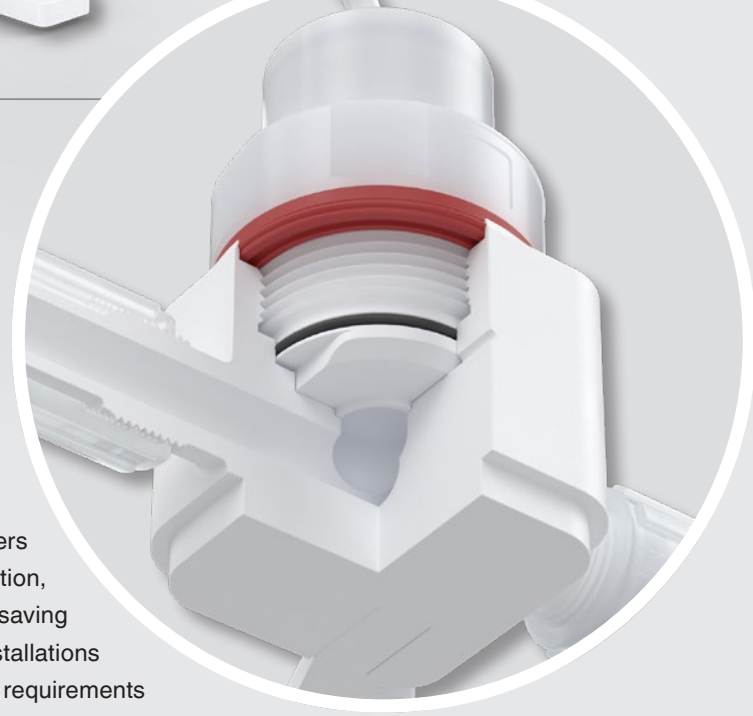

Figure 2: Detailed view of the GEMÜ C33 HydraLine sealing concept

The actual sealing is created by a ring on the sensor mounting bracket and its opposite contour in the body. Screwing down a union nut (see Figure 1) presses the ring into the contour, thereby creating the sealing (Figure 2).

A small leak detection hole allows users to easily identify a leakage. In addition, the compact design allows space-saving integration into a wide variety of installations and systems, which fulfils customer requirements regarding flexibility and efficiency. Furthermore, the GEMÜ C33 has a modular design, which enables space-saving use on valve blocks and facilitates future expansions.
To ensure that existing customers can easily replace the GEMÜ C32 with the new GEMÜ C33, compatibility has been taken into account.

Figure 1: GEMÜ C33 HydraLine exploded drawing

Users can choose between the in-line and dead-end installation versions, offering them various installation options. With the in-line version, the sensor can be easily installed in the piping without any trouble, without the risk of an air cushion that could lead to errors of measurement. The dead-end version allows customers to replace the pressure sensor during the ongoing process if it is installed in a drop cable and used in combination with a valve.

Overall, the GEMÜ C33 offers a first-class combination of precision, reliability and flexibility, making it an indispensable tool for process monitoring in a variety of applications. Known applications in the facility sector of a semiconductor fab include filter monitoring, back pressure control and measurement of the liquid level in a tank, as well as a variety of applications in the process area for precise pressure monitoring. The GEMÜ C33 is therefore not only an investment in the present, but also in the future of industrial process control. With its focus on innovation and advanced technology, the GEMÜ C33 sets a new standard for pressure measurement systems and supports companies in making their processes more efficient, safer and future-proof.

IMPRINT

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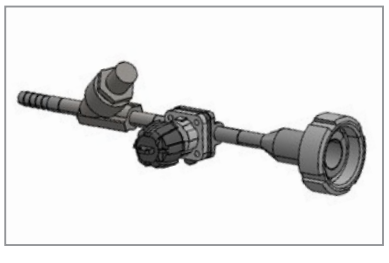
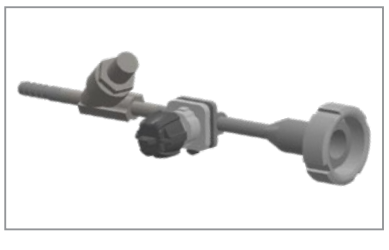
GEMÜ SYSTEMS SIMPLIFYING KOMBUCHA CARBONATION – EFFICIENT BEVERAGE PRODUCTION DUE TO A CUSTOMIZED SOLUTION

Since Erfrischerling has been using the welded assembly from GEMÜ Systems, the production method has been materially simplified.





Kombucha is a refreshing beverage with origins in Asia. It is assumed that fermented tea was already being drunk in East Asia in the third century BC. The beverage is produced by fermenting sweetened tea with a symbiotic culture of bacteria and yeasts (scoby). Most of the sugar is converted here into various organic acids and valuable ingredients. During the two-week fermentation process, small quantities of carbon dioxide are produced, which Erfrischerling supplements with slight carbonation to give the drink a fine perlage.

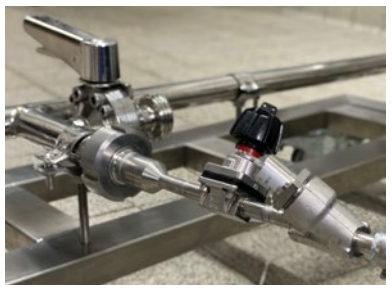
In the summer of 2022, Monique Heberling, founder of Erfrischerling, used NC kegs in her small kombucha factory to carbonate and bottle her beverage. She carried each of the 18 NC kegs out of her cold-storage room, connected it to a CO_2 bottle, shook it vigorously a few times and put it back. The trained food technologist repeated this every other day until the

kombucha featured the desired perlage. At this time, her brother Marius Fischer was employed in the start-up company as a working student. The trained brewing and beverage technologist could hardly bear to watch how hard his sister struggled to carry and carbonate the heavy NC kegs. He therefore designed his own carbonation unit, which makes it possible to conveniently add carbon dioxide to the kombucha when transferring it into a 10 hl pressure tank. He immediately thought of the valve manufacturer GEMÜ – which was already known to him from his student days in Weihenstephan – for the required check valve, so as to ensure that, even with an empty CO_2 bottle, no medium is pressed back into the carbonation unit. GEMÜ Systems has created a quotation for Erfrischerling with a 2D drawing and 3D STEP file for later drawing release in the event of an order. Beforehand, GEMÜ used a calculation program to check whether the desired gas volume can also pass through the welded assembly under the customer's existing pressure situation.

Since the end of 2022, the Erfrischerling brewery has been equipped with professional equipment. The young start-up company invests a lot of resources in researching kombucha, and is constantly optimizing the processes for manufacturing the beverage in order to offer its customers a high-quality taste experience.

Erfrischerling has its headquarters in the Swabian region near Aalen, and initially sold the beverage mainly in the greater Stuttgart/Ostalbkreis area. With Marius Fischer joining the company full-time, the two siblings now have a greater capacity to scale up operations at Erfrischerling. That's why the company also recently launched its own online shop, via which Erfrischerling kombucha is available throughout Germany.

As with Erfrischerling, the GEMÜ team is happy to provide a customized solution for individual requirements.



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Jens Große-Gehling
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SAFETY
IOL Safety

WIRELESS
Mioty
IOL wireless

INDUSTRY 4.0
Platform I40: Asset Administration Shell (AAS)
Open Industry 4.0 Alliance (OI4)
AutomationML (AML), PLCopen XML
Industrial Digital Twin Ass. (IDTA)
OMLOX: Real Time locating solutions

COMMUNICATION
IO-Link – Classic
Ethernet

PROGRAMMING SYSTEMS
CAE
CoDeSys, EPLAN

INNOVATION: THE FUTURE OF AUTOMATION
SO THAT DATA FLOWS OPENLY AND TRANSPARENTLY

The technology surrounding industrial data transmission and data analysis has changed dramatically. One new term follows the next. GenAI, data analytics, cloud ecosystems – to name just a few catchwords from the field of digitalization. It appears obvious that effectiveness can be increased if there is trouble-free access at all levels. Seamless access and trusted data are subjects that are of concern to users.

Seamless access and trusted data for the future of automation

What are the essential effects of seamless access in automation?

⇒ **Increase in efficiency:** Thanks to seamless access, automation systems can be operated more easily across different platforms so that users can interact with them effortlessly. This improves efficiency by reducing misinterpretations when accessing and using automated services.

⇒ **Simplification of connectivity:** Seamless access facilitates connectivity between different systems and devices so that they can work together harmoniously. The coupling of different automation and communication technologies is crucial for the construction of modern, integrated automation ecosystems.

⇒ **Improvement of the user experience and increased acceptance**: Automation becomes more user-optimized when users can seamlessly access different automation systems and interact with known and expected behaviour.

⇒ **Increase in scalability:** Seamless access via well-defined interfaces facilitates the scaling of automation solutions and platforms to comply with growing and changing requirements.

⇒ **Simplified data access:** Seamless access facilitates access to data so that users can call up and analyze information efficiently. This accessibility is decisive for easy and effective use of data-based findings to optimize processes.

What does trusted data mean for automation?

The term 'trusted data' refers to data that is reliable, accurate and secure, and complies with the relevant regulations and directives. In the context of automation, trusted data is essential to ensure the effectiveness, integrity and security of automated systems. Which essential features offer trusted data for automation is explained below:

Trusted data

⇒ …is reliable and correct, i.e. it can be relied upon to precisely reflect the condition of the automated system or the automated environment, consequently avoiding misinterpretation. The semantics of the data are clear, the data is accurate and free of errors or inconsistencies. Accuracy is crucial for automation systems to be able to make correct decisions and take appropriate measures based on the data they receive.

⇒ … is transparent, i.e. its sources, processing methods and significance are well-documented and accessible to all participants.

⇒ … is secure and protected against unauthorized access and tampering, and complies with the relevant data protection regulations and standards. Security measures such as encryption, access control and data integrity checks help to ensure that the data remains secure throughout the automation process and is protected against cyber threats and data breaches.

⇒ … is managed through sound data governance practices, with roles, responsibilities and processes for managing data throughout its lifecycle. Data governance contributes to ensuring that data remains trusted and accessible, and complies with company guidelines and standards.

IO-LINK AND GEMÜ:
GEMÜ uses IO-Link technology in automation products and supports the community through active collaboration in working groups.
The General Communications Architecture mentioned in the text is one of the results from the IO-Link Future WG, in which the author, Werner Flögel, is involved.

IO-Link device

PDF

human-readable

Datasheet

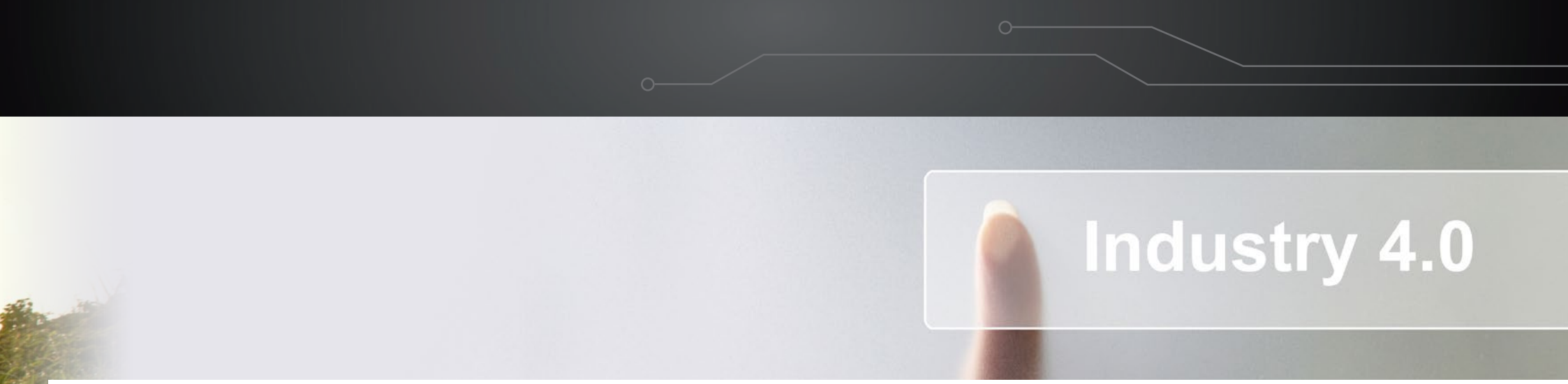
ZIP

human-readable

Device description

101100
10101101
IODD
Logo
PNG
PNG
PNG

★ IO – Device Description



In automation technology in particular, different communication systems are predominant. In addition to IO-Link, Ethernet-based systems such as Profinet, EthernetIP and Ethercat or communication technologies such as TCP/IP and Modbus have been established, to name just a few of the systems used in applications. Data transmission within one communication system is largely considered to have been mastered, and the *associated* protocols of *one* system are considered to have been known and established.

In modern systems, data interpretation and data representation have become significantly more complex due to the **combination of versatile and different systems** and protocols. Moreover, in addition to the control logic, IoT and IIoT interfaces are increasingly being integrated for cloud services.

The meaning and semantics of a data word at field level, on the sensor or actuator, should be unambiguous right up to the highest hierarchy level of the automation architecture.

What advantages does the IO-Link data model offer for the future of automation?

IO-Link is a worldwide standard with more than 25,000 devices in the product database and a strong community of 470 companies forming a global group. It is therefore open for all fieldbuses, controls and IoT interfaces.

With the **IODD (IO Device Description)**, it is possible for the IO-Link community to create a machine-readable device description **for all manufacturers**.

Fieldbus-independent, IoT-independent, technology-independent

Furthermore, the General Communications Architecture of IO-Link technology has made it possible to establish an open and universal concept with the IODD, where users benefit from the fact that different wired and wireless systems can be integrated equally easily into the automation solution. Even new lowest-power technologies like Mioty with completely different data structures can be mapped. Mioty's behaviour is similar to that of a black box. A user no longer needs to know the details of the communication. It is much more important to concentrate on the data of the field devices, such as sensors and actuators, as well as the clear definition and description of these points in the overarching IODD.

This makes automation effective and efficient for the future.

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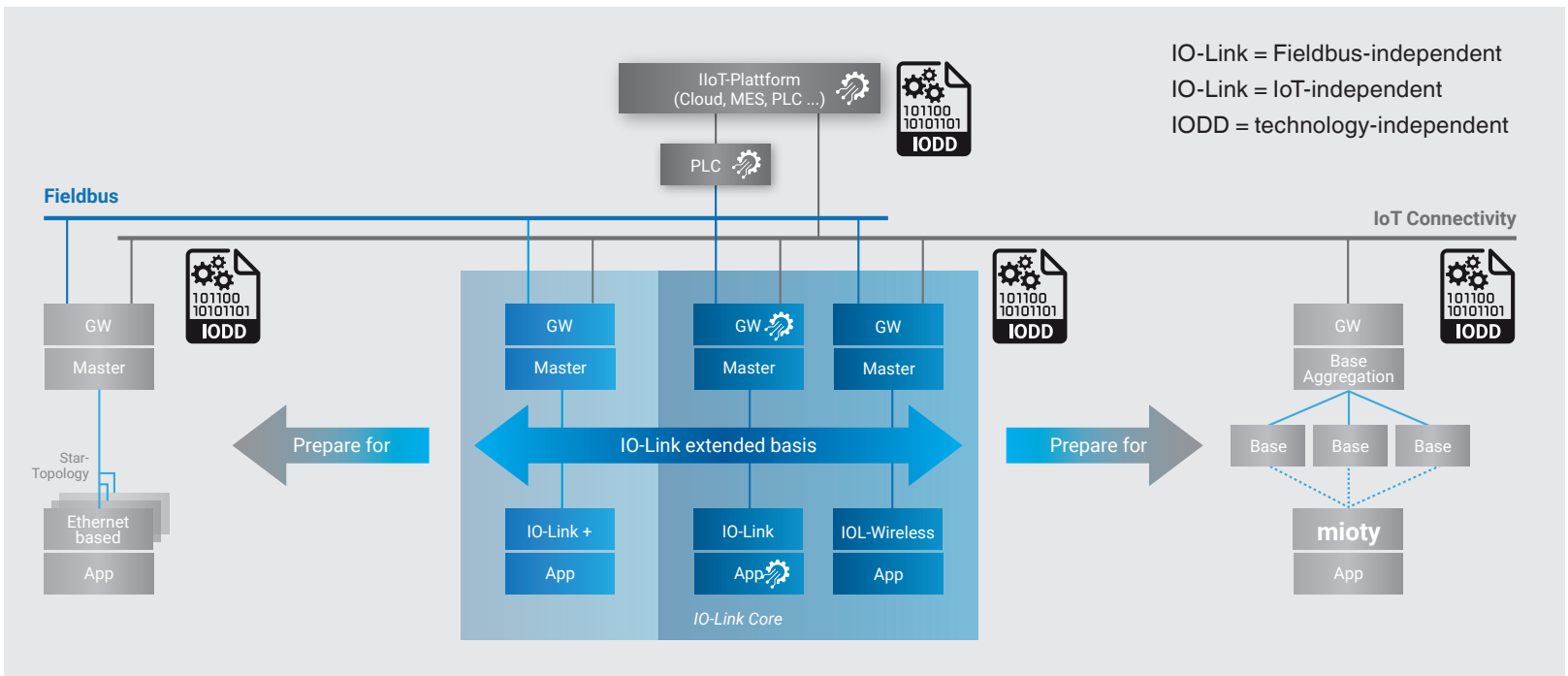
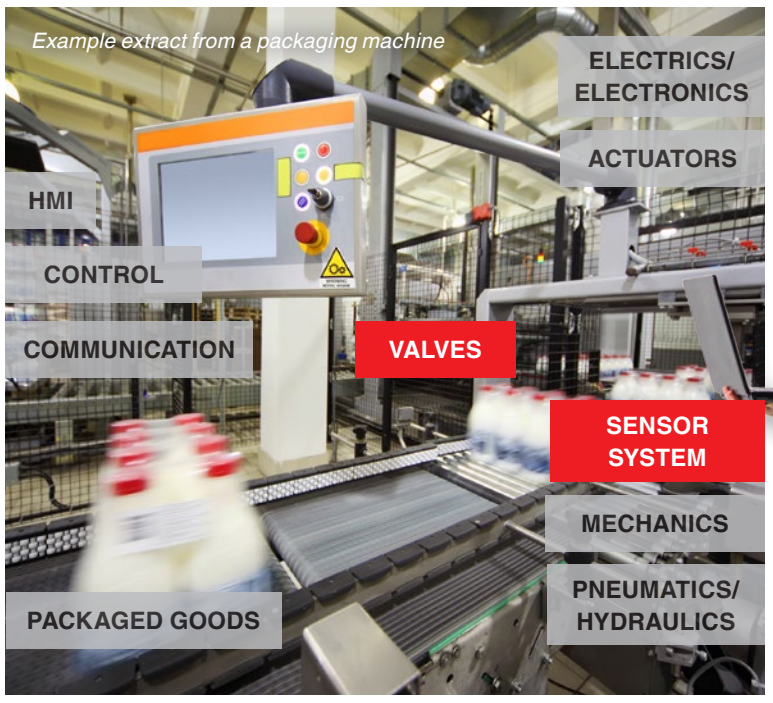


To summarize, the IO-Link data model offers the following benefits for the future of automation:

- ⇒ Data transparency
- ⇒ Fast software integration
- ⇒ Data recording (quality), with uniform format
- ⇒ Simple device replacement for sensors and actuators
- ⇒ Creation of your own service cockpits/dashboards
- ⇒ Online calculation of indicators
- ⇒ Less Babylon, more compatibility.

Incidentally: IO-Link technology comes from the PNO – Profibus Nutzerorganisation (Profibus user organization).

TYPICAL PROBLEMS DUE TO THE MOST VARIED INTERFACES



PROBLEM:

- ⇒ Different interfaces in the field, control and management level
- ⇒ Incomplete awareness of the problem
- ⇒ Incompatible protocols for data transmission
- ⇒ No clear semantics of data transmission
- ⇒ Heterogeneous

GEMÜ CHINA RECEIVES AN AWARD
NEW MILESTONE IN EMPLOYER BRANDING

The winners of the 'Employer Branding Creativity Awards 2023' were recently celebrated in China. This not only recognized the outstanding services of these leading employers, but also set an important milestone for Chinese companies on the international stage. GEMÜ China received the award for the 'Best Sustainable Development Program'.

The 'Employer Branding Creativity Awards' honour employer brands that are characterized by innovative thinking and creativity within an industrial sector. The judging panel for the competition comprises ten high-ranking experts in employer branding and corporate human resource management. A total of 1214 creative entries were submitted by 489 reputable national and international companies.

The competition is based on comprehensive indicators. These include: Content, creative design, communication strategy and user experience. In the end, 50 companies came out on top with 104 entries, winning a total of 17 awards in four main categories: Digital Creativity Award, Integrated Communication Award, ESG Practice Award and Brand Award.

As a global company, GEMÜ China invested a lot of energy and resources in building its employer brand in 2023. In order to deepen employees' understanding of the company's vision and strengthen their sense of belonging, a variety of activities were organized within the company to actively promote and convey the company's core values. At GEMÜ Family Day, the global purpose and values were integrated and transformed into five sources of energy. By freely exploring these five lively areas, the participants not only gained energy but also gave GEMÜ a new vitality, so that the future development of the company could be jointly promoted.

An art workshop was organized for new employees in order to establish a deep emotional connection between the company and the new employees. They were encouraged to express themselves creatively and discover interesting stories about GEMÜ. Using modelling clay, clip art and other creative forms, the new employees not only expressed their deep understanding and appreciation of GEMÜ's corporate culture, but also quickly integrated themselves into the team through collaboration and co-design. This unique experience made a deep impression on the new employees in terms of GEMÜ's corporate culture.

Furthermore, GEMÜ China regularly offers various internal training programmes and a wide range of development opportunities for local talent with great potential. The company firmly believes that continuous learning and exploration by employees is the key to the company's progress. Through these activities, GEMÜ China encourages its employees to continuously improve and create a better future with GEMÜ.

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About the award for the best programme for sustainable development

In recent years, GEMÜ China has made continuous efforts in the area of sustainable development and has committed itself to the concept of 'Green Production, Green Partner', which aims to permeate all aspects of the company and the value chain. This includes the concept of green product design, reduction of the carbon footprint throughout the product lifecycle, various environmentally friendly facilities such as combined heat and power plants, adiabatic cooling systems, electric vehicles and charging stations, raising employee awareness of environmental protection, participation in climate-neutral projects (such as the Jiangxi Le'an Carbon Neutral Forest Protection Project, which neutralized 2381 tonnes of CO_2 emissions in 2021) and joining the ESG Alliance of the German Chamber of Commerce. With the completion of the photovoltaic system, which was officially inaugurated in August 2023, GEMÜ China has actively responded to the national policy of green transformation and taken another concrete step towards the strategic objective of a climate-neutral company.

APPRENTICE POWER ON INSTAGRAM, ETC.
SOCIAL MEDIA TEAM OF APPRENTICES

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Laura Freda
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GEMÜ has had a social media training team since October 2022. Together, the apprentices and students organize, plan, film and edit various posts for Instagram and Facebook. A face-to-face meeting is held once a month to discuss all topics, innovations and ideas.

With this project, GEMÜ offers apprentices and students the opportunity to introduce some creativity and gain experience in the area of professional social media work alongside their everyday tasks.

"I think it's great that we apprentices and students can actively appear on GEMÜ's social media channels and introduce our ideas there. I particularly like the fact that we work well together as a team, and can implement creative ideas relating to our training professions and study programmes. This also promotes our specialist skills in relation to the production and editing of pictures and videos. As GEMÜ continues to grow and therefore needs more and more specialist technicians, I think it's great that we apprentices and students can support GEMÜ here with our contributions," reports Carolin Hirsch, a second-year business management industry student.

"I really like the social media project at GEMÜ. Everyone can introduce their creative ideas, no matter whether this is in front of or behind the camera. Over the filming days, you get to know the company and its employees better. We also go on excursions together, such as to the Christmas market in Schwäbisch Hall," says Lena Heßlinger, a third-year apprentice industrial management assistant.

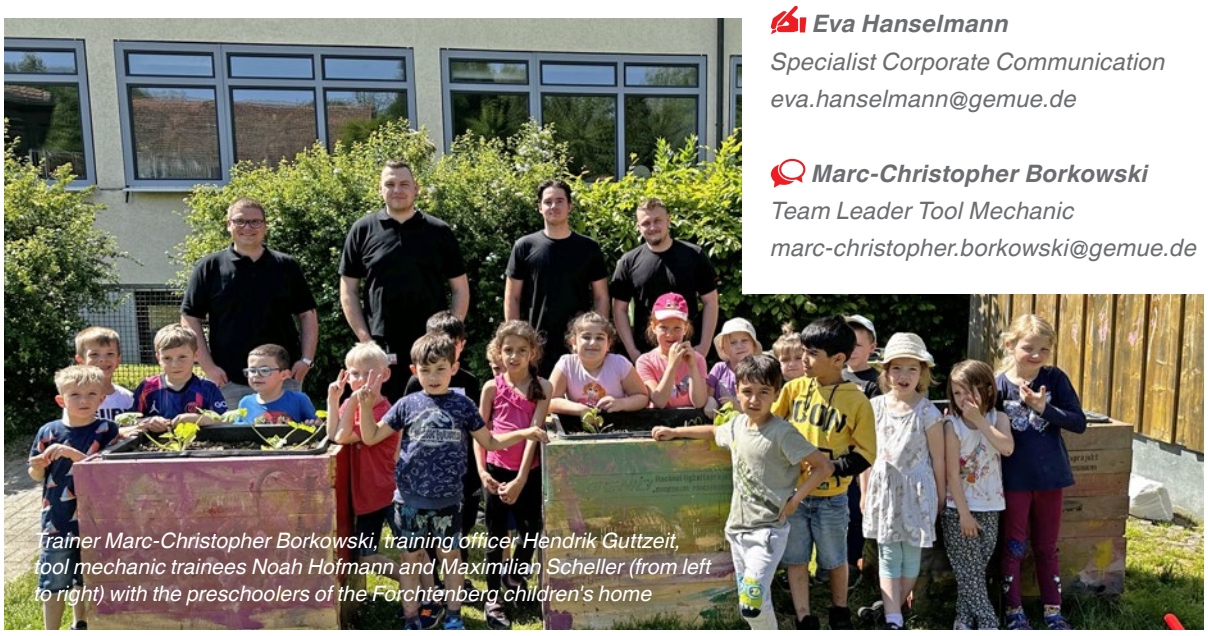
RAISED-BED GARDENING PROJECT FOR PRESCHOOL CHILDREN
GEMÜ APPRENTICES IN THE FORCHTENBERG DAYCARE CENTRE

Every year, GEMÜ and the Forchtenberg daycare centre launch a joint project. In 2023, the subject of sustainability was the main area of interest. Seven raised beds made from recycled materials were prepared by the GEMÜ apprentices and set up in the garden of the daycare centre.

Sustainability plays a major role at GEMÜ. It is therefore important to the company not only to practise environmentally conscious behaviour internally, but also to actively communicate it to the outside world. That's why the first-year metalworkers and their trainer Marc-Christopher Borkowski embraced the subject of sustainability, in order to introduce it to the preschoolers at the Forchtenberg daycare centre in a child-friendly way. The 'raised-bed gardening' project was born.

Firstly, the GEMÜ apprentices developed a plan for a recycled raised bed. They bought black tubs made of 100% recycled plastic from a nearby DIY store and built the base frame. In the next step, the apprentices took apart old pallets and sawed them to the corresponding dimensions.

Once the preparations were completed, the apprentices worked together with the children to create seven recycled raised beds on seven on-site visits to the Forchtenberg daycare centre. To do so, three GEMÜ apprentices and six to eight preschool children first made a joint study of the construction plan on each visit. The children were then put to the test, and were able to demonstrate their talents in grinding, filing, drilling and screwdriving. And of course, last but not least, colourful painting was a must. The children were eager to get down to business. There was, of course, also a break in between for refreshments, and the GEMÜ balls brought along were subjected to some very thorough testing! At the end, each child received a 'tool driving licence' with their own name and the skills they had learned, which they could proudly take home with them.



Trainer Marc-Christopher Borkowski, training officer Hendrik Guttzeit, tool mechanic trainees Noah Hofmann and Maximilian Scheller (from left to right) with the preschoolers of the Forchtenberg children's home

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Marc-Christopher Borkowski
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"We look forward to the joint project with the Forchtenberg daycare centre every year," says trainer Marc-Christopher Borkowski. "Our apprentices enjoy developing a project together and passing on their knowledge – and the preschool children also clearly enjoyed the handiwork and handicrafts. It is important to us at GEMÜ that something useful is developed here. Staying true to the motto of 'Turn old into new' on this occasion."

THE INGELFINGER FASS WINERY RECEIVES AN ORGANIC WINE CERTIFICATION
IMPROVEMENT OF QUALITY AND PROFILE

In the 2020 wine year, the Ingelfinger Fass winery began the changeover to organic viticulture. The first organic-quality vintage was harvested in autumn 2023. The wines are available with immediate effect.

The changing climatic conditions mean that adaptations are required in the cultivation of the vines. The long dry spells of recent years have caused stress. Although the vines in the vineyards of the Ingelfinger Fass winery are rooted quite deeply and can also reach more hidden water reserves, the framework conditions continue to put pressure on the vineyard ecosystem. This was also one of the reasons for cultivating the vineyards organically from then on.
Avoiding herbicides and artificial fertilizers, planting greenery in spring and autumn, introducing organic humus and using open soils in every second alley of vines will offer the vineyards greater vitality and stability against the effects of climate change.

In spring 2024, a new vineyard was created below the Ingelfinger Fass. Plant protection treatment is required even in organic viticulture. To further reduce this measure, however, the Ingelfinger Fass winery is breaking new ground and planting two PIWI grape varieties for the first time. New varieties of vines that feature multiple resistances to fungal attack are designated as PIWI. The use of plant protection products can be drastically reduced, thereby promoting ecological viticulture.
The white Cabernet Blanc variety and the red Cabernet Cortis variety were planted.

Cabernet Blanc is a fairly newly cultivated white wine grape variety. It originated in Switzerland and was further developed in Germany. The vine is characterized by very good resistance to diseases, and its taste is somewhere between a Riesling and a Sauvignon Blanc. A grape variety that is not yet widespread, but is becoming increasingly popular.

Cabernet Cortis is a fungus-resistant red wine variety cultivated in 1982, which was crossbred at the State Viticultural Institute Freiburg from the Cabernet Sauvignon and Solaris varieties. The wine is very colourful and rich in phenols, with a taste reminiscent of Cabernet Sauvignon.

The first grape harvest is expected in 2026, meaning that the wine can be bottled and will be available in spring 2027.

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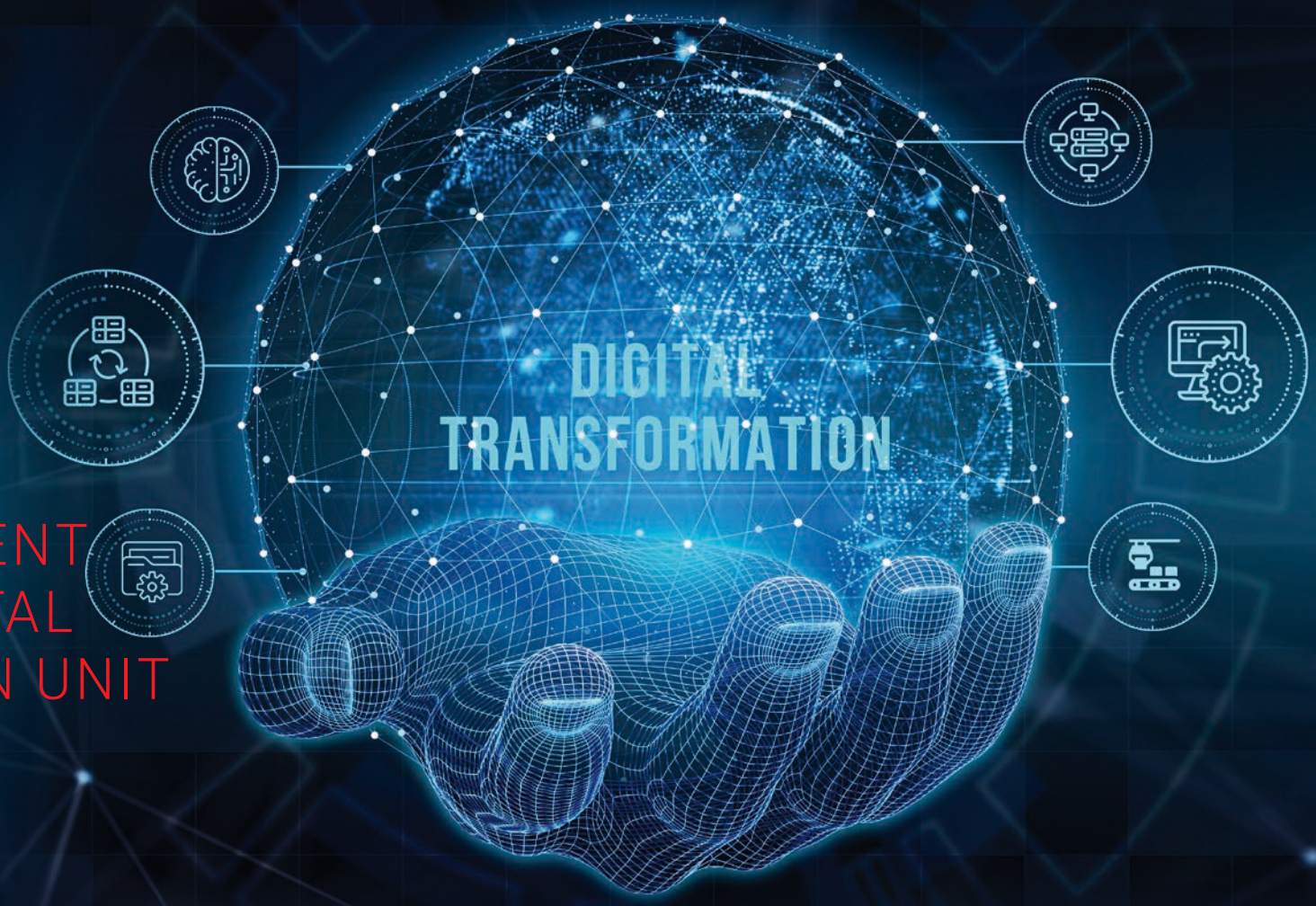
Ingelfinger Fass winery given a great deal of praise and credit for their wines

We are proud and delighted to be named for the first time as one of the best wines of 2024 in the Gault & Millau German wine guide. The 2022 Ingelfinger Hoher Berg Riesling Spätlese and the 2020 Ingelfinger Hoher Berg Spätburgunder were classified as impressive wines and as outstanding in their categories by being awarded three red grapes. The Ingelfinger Fass winery is also listed again in the Eichelmann 2024 wine guide of German wines. The ratings of the wines have increased here from 1 star to 1.5 stars compared with the previous year, and the Ingelfinger Fass winery is also listed in the 'Falstaff Wine Guide Germany 2024'.

Wine tastings in the winery

It takes less than you think to successfully enjoy wine.
Book a wine tasting in our Ingelfinger Fass winery opposite the Schlosshotel Ingelfingen. It is the ideal way to enjoy a wine tasting or an evening of wine with friends.

New: Wine rendezvous on Thursday evenings
Would you like to discover previously unknown wines? The themed wine evenings are perfect for this – as well as offering a gift idea for genuine connoisseurs. Information is available directly from the Schlosshotel Ingelfingen or on the homepage:
www.schloss-hotel-ingelfingen.de/weinmanufaktur



THE ESTABLISHMENT OF THE NEW DIGITAL TRANSFORMATION UNIT DIGITALIZATION AT GEMÜ ENTERS A NEW ERA

The establishment of the new Digital Transformation Unit and the integration of inevvo solutions mark a shift in the digitalization activities of the GEMÜ Group.

The GEMÜ Group is pleased to announce that its digitalization activities are undergoing a fundamental shift. This shift is made possible by the establishment of the Digital Transformation Unit (DTU) and the integration of inevvo solutions into the GEMÜ Group. This strategic decision underlines GEMÜ's commitment to creating added value, both internally and externally, though digital innovations.

The establishment of the Digital Transformation Unit

The Digital Transformation Unit (DTU) will play a pivotal role in the digital further development of GEMÜ. This new department combines state-of-the-art software and the technical expertise of startup inevvo solutions, which is renowned for its excellent digital maintenance and asset management solutions. This integration brings fresh impetus to GEMÜ's innovative approach and improves its ability to offer comprehensive digital solutions.

Vision and objectives

The main objective of the DTU is to improve the entire value chain and to offer customers unparalleled advantages. The focus is on the development and provision of advanced digital software tools and solutions which make the internal organization more productive, increase efficiency and boost productivity in all stages of production.

Seamless integration and strategic investment in the future

The integration of inevvo solutions marks a significant milestone in the digital transformation of GEMÜ. This strategic decision improves the portfolio of technologies and brings new impetus and ideas into the innovation ecosystem. Generous investments in this area underline the importance of digitalization as a crucial component of future success.

Focus on key areas

GEMÜ's digitalization activities support customers throughout the entire value creation process. This includes:

⇒ **Extended planning and component selection:**
Intelligent planning tools recommend optimal components for specific needs in various customer applications. These tools are based on data analysis and ensure precise and efficient planning which considerably reduces time and costs.

⇒ **Consistent support in the engineering phase:**
With in-house solutions and collaborative engineering platforms, customers benefits from quicker development cycles and receive optimized solutions for individual requirements – from the flow characteristics and sterilization processes, through to the design of complete system solutions.

⇒ **Digitally traceable production processes:**
For many years now, GEMÜ has been using advanced manufacturing techniques and ensuring compliance with the very highest industrial standards, all while providing the precision the company is known for. Using in-house technologies, production processes are digitally monitored via tracking and tracing and are available to customers.

⇒ **Transparent supply chain:**
Digital solutions relating to the digital product passport provide consistent transparency along the entire supply chain and enable barrier-free, paperless tracking and receipt of goods.

⇒ **Intelligent operation and maintenance:**
GEMÜ supports customers with software solutions developed in-house for the operation of digital asset management through to software-aided maintenance.

The DTU functions as a proactive partner for digital solutions at the interface between the market and the department.

Customer-focused advantages based on the latest IT technologies

GEMÜ's digital transformation is driven by a strong focus: Delivering exceptional added value for customers. By using the latest digital technologies, every aspect of customers' experience is improved. These include state-of-the-art technologies such as those involving artificial intelligence, data processing, 3D visualization and much more.

From intelligent planning and superior engineering, through to optimized production and efficient maintenance – customers enjoy tangible advantages which are reflected in substantial cost savings and improved operating performance.

Creating the future together

GEMÜ is certain that, by integrating the inevvo solutions team into the DTU, it will be able to provide even better, more comprehensive support in future. The members of the Digital Transformation Unit look forward to talking to customers, partners and suppliers who are enthusiastic about innovation in order to create a more intelligent, interlinked future together.

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