

# GEMÜ news

## INTO THE FUTURE WITH INVESTMENTS AND CONFIDENCE

Product news

Innovations

Application reports

Apprenticeship and working

Commitment and initiatives

Magazine for the  
customers, partners  
and friends of the  
GEMÜ Group

EDITION 01.2023

### Dear Readers,

The first half of the 2023 financial year has been successful for the entire GEMÜ Group. As was also the case last year, we are very satisfied with the order situation. We're glad to see that the general economic situation is continuing to normalize. The worldwide supply chain has also largely stabilized, which is clear, for example, from the lower demand and better availability of microchips.

Now, we once again have the opportunity to focus more intensively on projects and develop them further. Also in the area of new technologies, we are working intensively on future issues, especially with the coming AICHEMA 2024 in mind. Our technology centres research many exciting innovations and develop new products that offer our customers additional added value.

We're also taking the next step in the area of digitalization. Even if subjects to do with digitalization have no longer been such a key public focus since the end of the COVID-19 pandemic, we see digital further developments as an important, cost-effective driving force, and will keep following new paths here.

In addition to the worldwide economic situation, the geopolitical situation also continues to be strained. Our professional risk management precisely observes worldwide events, so that we can react in good time to changing situations.

The GEMÜ Group is still registering good and stable growth. We see this not only from our turnover, but also from the number of newly created jobs and the continuous growth of staff. We are confident about our medium-term planning, and know to appreciate the fact that we have mastered the challenges very well together.

We're currently in the final phase of the construction of our new GEMÜ headquarters in the Hohenlohe business park. The building will be ready to move into in about six months. The entire construction phase has gone to plan so far. Due to forward-looking conceptual design, the required materials were generally available in good time, so that we continue to be on schedule. In addition, we are currently creating a new production plant for GEMÜ France. A new high-tech production building that will reach the



next evolutionary stage in the area of diaphragm technology is created here. The building is expected to be inaugurated at the same time as the GEMÜ headquarters.

On behalf of the entire Management and the Müller family, we would like to say a big thank you to all members of staff all over the world for exceptional collaboration. It's not a given that a company would be so successful even in

challenging times. That can only be achieved through forward-looking planning, loyal customers, reliable suppliers, and a team that does its best every day. We're proud of the entire GEMÜ team all over the world, and of everything that we have achieved to date. We look forward to continuing to design the future together with you.

**Gert Müller**  
Managing Partner  
of the GEMÜ Group

**Stephan Müller**  
Managing Director  
of the GEMÜ Group

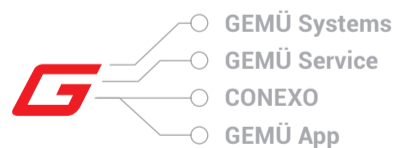
## SYNERGY BY GEMÜ DIGITALIZATION, SOLUTIONS & SERVICE

**GEMÜ's wide variety of valve, measurement and control system solutions affords flexibility when catering to customers' needs and creates synergistic effects.**

Thanks to its many years of experience, GEMÜ can offer a wide range of flexible solutions that are geared to the needs of its customers. These solutions cover everything from requests for customized individual components or ready-to-fit subassemblies through to the joint development of entire system solutions.

GEMÜ Service is available for commissioning the products, along with subsequent maintenance and plant screening. In addition, GEMÜ offers a comprehensive training and further education programme on valves and valve designs, as well as service fitter courses and expert-level training courses.

When it comes to digital information management, CONEXO allows for the unique identification of valves and components, and provides support for plant qualification processes and paperless maintenance.



The new GEMÜ app brings us one step closer to the future. For the first time, this enables users to configure and operate GEMÜ products on a mobile device.

As a solutions provider, GEMÜ is well equipped to cater to a wide variety of requirements and can create synergistic effects for customers across different areas of application.



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**AWARD-WINNING EXCELLENCE!**

GEMÜ is always ahead of the pack – whether that’s in terms of the quality of its education and training, its commitment to being an outstanding employer in the Hohenlohe region, or its digitalisation strategy – as evidenced by the awards and certificates received from renowned institutions both at home and abroad.

**GEMÜ WINS MULTIPLE AWARDS**  
**GLOBAL MARKET LEADER, TOP EMPLOYER**  
**AMONG SMES, AND DIGITAL CHAMPION**

**Landing three awards in three different areas, GEMÜ's year got off to a winning start in 2023.**



**Global Market Leader Champion 2023**

For the seventh time running, GEMÜ has been awarded WirtschaftsWoche magazine's "Global Market Leader Champion" quality seal. The award recognizes GEMÜ's inclusion in the Global Market Leaders' Index compiled by the University of St. Gallen and the Academy of German World Market Leaders – more specifically, in the segment "Valves and automation components: Valves, Process and Control systems for sterile applications".

Companies are designated as "Global Market Leader Champion" if they are first or second in the relevant market segment, are represented on at least three continents with their own production and/or sales companies, have an annual turnover of at least €50 million, and can demonstrate an export share of at least 50% of their turnover. The owners must also at least partially be based in Germany.



**Top Employer among SMEs**

GEMÜ's excellence is not just confined to its performance as a global market leader. The family-owned enterprise has once again been named one of the top employers among SMEs. This was decided by online recruitment portal Yourfirm.de, which recognizes the 1000 highest-ranked SMEs each year. Yourfirm publishes

company rankings in order to help jobseekers identify attractive employers in the SME sector. The rankings are based on users' accessing and reading patterns: The average number of jobseekers that a company manages to reach with each of their job advertisements and their company profile, the percentage of users who actually read through the content – i.e. who spend sufficient time on the page – and the proportion of readers who perform an action that suggests an interest in applying, e.g. clicking on "Apply now" or clicking the link to the company's website.

Based on these three categories, each employer is ranked on a "popularity index". As one of the 1000 highest-ranked companies, GEMÜ has earned itself the accolade "Top Employer among SMEs 2023".



**Digital Champion**

The company received its third award in recognition of its digital strategy. As specialists in technology, GEMÜ's objective is to ensure lasting success by leading the way, identifying digitalization opportunities early on and seizing them.

On behalf of the German magazine Focus Money and its consumer testing brand "DEUTSCHLAND TEST", the German Institute for Management and Economic Research (IMWF) carried out an extensive study to determine who would be the "Digital Champions 2023". Scoring 94.4 out of a possible 100 points, GEMÜ came in fifth out of the 91 companies recognized in the "machinery and plant construction" sector. The IMWF believes that companies that take a bold approach to digitalization will be the long-term winners in their industrial sectors. In

order to determine these businesses, the study thoroughly analyzed 12,000 companies' statements in the categories of "digitalization", "technology" and "innovation".

The study's findings were based on a "social listening" method and a survey of the companies. 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). Meanwhile, for the data collected by questionnaire, the businesses were asked about their digitalization measures in different thematic blocks. The findings were then evaluated using a points system, which then determined the "Digital Champions 2023".

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**DUALIS-CERTIFIED TRAINING SPECIALISTS**  
**IN THE TRAINING BUSINESS FOR OVER 10 YEARS**

**Following its second reaudit, the Chamber of Commerce and Industry (IHK) of Heilbronn-Franken once again recognized GEMÜ for its training excellence, which surpassed the fantastic standards already witnessed during the 2016 reaudit.**

By awarding the DUALIS quality seal to qualifying companies, the Chamber of Commerce and Industry (IHK) of Heilbronn-Franken aims to raise the overall quality of the vocational training offered by businesses throughout the region. The qualification process includes advice from the IHK and a company audit to ascertain how well the company meets specific quality criteria. GEMÜ's recent recertification as an "Ausgezeichneter Ausbildungsbetrieb" ("Outstanding training provider") was confirmed following an assessment by four external auditors working with the IHK's designated project coordinator.

The DUALIS assessment highlighted GEMÜ's prioritization of vocational training within the company, as well as its superior training standards and the high percentage of apprentices who are offered a permanent role within the company upon completion of their training. The auditors were



also particularly impressed by the well equipped, state-of-the-art training workshops. The IHK also noted the attractive pay and benefits package offered to apprentices working at the family-owned enterprise.

Other areas that the IHK homed in on during the assessment process were the extent to which GEMÜ has embraced digitalization within the company, and the opportunities that GEMÜ offers its apprentices to participate in interesting social media projects. In their summary, the IHK testified that GEMÜ's apprentices receive comprehensive vocational training informed by the latest technological expertise, which helps to keep them motivated and engaged.

"We are delighted to receive the stamp of approval once again. The DUALIS seal confirms our belief that providing high-quality training is a worthwhile investment. As a family-owned enterprise, we are committed to training young people and are keen to recruit from among our own trainees when we have vacancies to fill," says Gert Müller, Managing Partner at the GEMÜ Group.

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# GEMÜ BRASIL AWARDED SPECIAL SEAL

## FOCUS ON VOCATIONAL TRAINING

In connection with its specialist technician training, GEMÜ Brazil has received the **Apprendiz Legal seal**, an important award created by GERAR – a social organisation working to create jobs, boost income and support regional development – to reward vocational training measures.

According to a survey by the National Industry Confederation (CNI), around 50% of Brazilian production businesses are suffering from a shortage of skilled staff, which is impacting productivity and competitive ability. In view of this labour shortage for industry, continuing vocational training for employees is a key priority for GEMÜ Brazil. After all, investing in people already working at the company is the best way to motivate and retain staff and, by doing so, to boost innovation.

That's why GEMÜ Brazil launched a funding scheme for its employees. The scheme covers up to 50% of monthly fees. Employees are free to choose the type of professional development, whether it's a postgraduate course, master's degree or technical course.

In addition, the Brazilian subsidiary also offers language courses, covering 100% of the costs. Currently, around 40 employees are learning a foreign language at GEMÜ Brazil – an opportunity also available to apprentices at the Brazilian site. Plus a further 30 employees are learning how to use tools such as Excel.

GEMÜ Brazil has now been awarded the **Apprendiz Legal seal** for these measures.

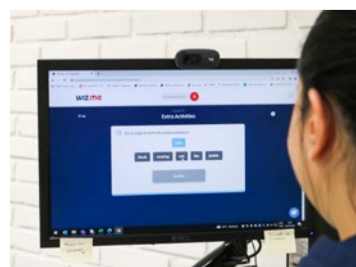
In addition, GEMÜ Brazil is part of the **dfp** programme for helping young people to prepare for and integrate into the labour market. Participation in the programme is subject to the following three criteria, all of which are met by the Brazilian site:

- ⇒ Continuous mentoring of apprentices,
- ⇒ Training of supervisors who mentor apprentices' professional development,
- ⇒ Compliance with the legally required learning quota.

Through these measures, GEMÜ Brazil is not only contributing to vocational training in the country, but also helping to effectively combat the skilled worker shortage there.



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# LAYING THE FOUNDATION STONE FOR INTERCARAT IN FRANCE

## A NEW BUILDING FOR ADDED CAPACITY

The growth of the GEMÜ Group as a whole has been mirrored by its French subsidiary Intercarat, which has increased its capacity, expanded its machinery inventory and hired extra staff.



A side effect of this growth is that Intercarat – the GEMÜ Group's competence centre for diaphragm technology – has run out of space. When making plans to expand the subsidiary, it quickly became clear that there was not enough room at the existing Duppigheim site to accommodate the expansion. It was then that a new opportunity presented itself: A plot of land spanning around 4 hectares was available in a recently established business park nearby, enough to accommodate a new building for Intercarat and for GEMÜ France.



This project was another chance for GEMÜ to break new ground and devise concepts fit for the future. Optimizing the manufacturing processes topped the list of priorities. The second priority was to ensure that there was scope to further increase capacity and productivity in the future.

Sustainability has also been high on the agenda since planning began. This includes making use of energy-saving technologies such

as heat pumps for heating and cooling the building, generating electricity in-house by means of photovoltaic panels, and recovering energy from the production processes and test rigs, with the ultimate aim of making production carbon neutral. But sustainability also means improving working conditions for the members of staff. As things stand, the new production and office building is on track to be completed and up and running in the first quarter of 2024.

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For 28 years, Duppigheim-based Intercarat has been making high-quality moulded parts from elastomers and polytetrafluoroethylene (PTFE/Teflon™) and composite parts from rubber, plastic and metal. The range of products manufactured by

GEMÜ's production partner includes diaphragms for pumps and valves, silicone masking products and covers, rubber seals and Viton® watch straps. Intercarat currently employs over 100 members of staff.

# ARTIFICIAL INTELLIGENCE AND THE COGNITIVE COMPANY IN THE CONTEXT OF INDUSTRY 4.0

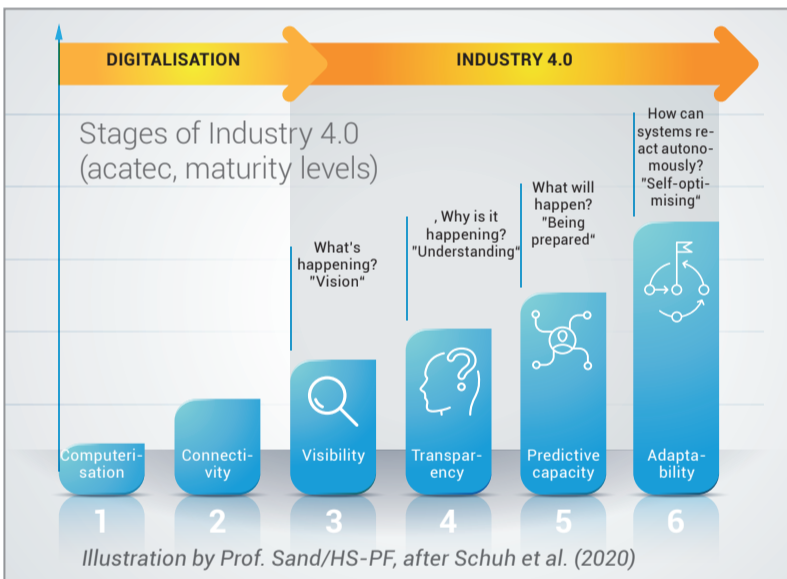


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The term "cognitive company" has become increasingly significant in the context of Industry 4.0 in recent years. It involves a new approach where artificial intelligence (AI) and other cognitive technologies are used to improve decision-making, boost operational efficiency and create new business models.

In his 2022 book, "Wege zur autonomen Produktion" – a guide by innovators for innovators – Prof. Dr. Sand (ed.) describes the (at least partial) computerisation of cognitive activities as a necessary factor in fully implementing the different stages of Industry 4.0.

In this article, we look at what makes a cognitive company, what advantages it offers and why it is becoming increasingly important.



Cognitive companies use AI and other cognitive technologies to automate and expand processes, increase efficiency and improve decision-making. For example, data analysis, machine learning and natural language processing are used to gain insights, automate tasks and make better decisions.

However, one of the most important elements of a cognitive company is its capacity to learn and adapt. In other words, data is at the heart of a cognitive company. By collecting and analysing large amounts of data from different sources, such as customer interactions, market trends or user experiences, new insights can be gained and better decisions made for developing new products and services, for example, and in order to react more effectively to changing market conditions, customer requirements and other factors.

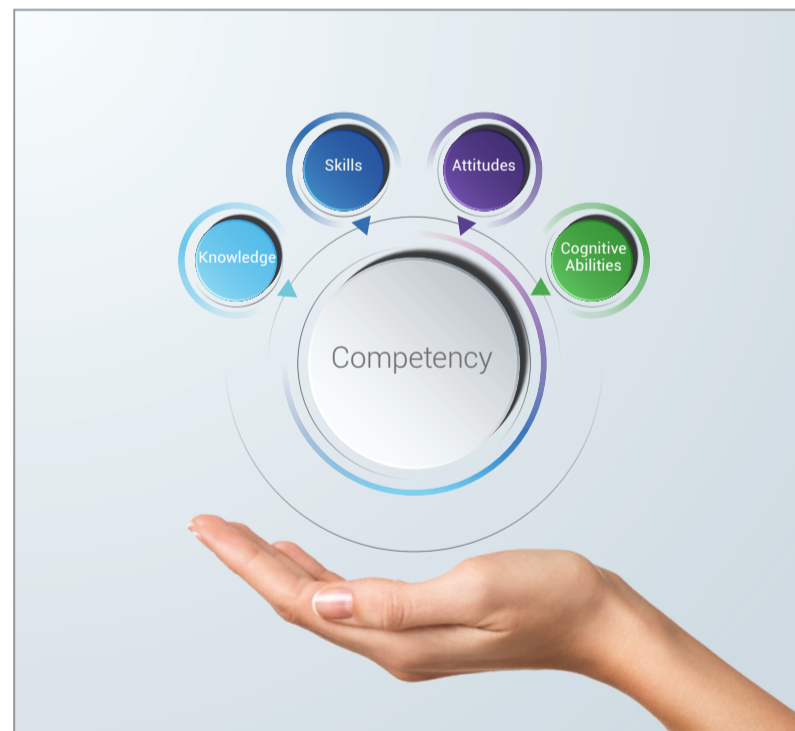
In this process, a cognitive company relies on a range of cognitive technologies, including:

- ⇒ Natural language processing (NLP): NLP enables machines to understand and interpret human language. This can be used to automate customer service interactions, analyse the mood on social media and gain insights from unstructured data.
- ⇒ Machine learning (ML): ML algorithms enable machines to learn from data and improve their performance over time. This can be used to optimise business processes, predict customer behaviour and identify fraud.

- ⇒ Computer vision (CV): CV technologies enable machines to interpret visual data such as pictures and videos. This makes it possible to identify errors in production processes, monitor traffic flows and track stocks.
- ⇒ Robotic process automation (RPA): RPA uses software robots to automate repetitive tasks such as data entry and reporting. This allows employees to focus on higher-value tasks.

### What advantages does a cognitive company offer?

Artificial intelligence (AI) is a key component of a cognitive company, enabling the company to automate and optimise its processes, improve decision-making and create new value for customers.



Cognitive companies are becoming increasingly important for a number of reasons:

- ⇒ Greater efficiency: Business process automation and optimisation enables cognitive companies to boost efficiency, cut costs and improve quality.
- ⇒ Better decision-making: Access to real-time data and in-depth analyses enables companies to make well-founded decisions more quickly.
- ⇒ Improved customer experience: The use of cognitive technologies enables companies to offer their customers personalised experiences, improving customer satisfaction and loyalty.
- ⇒ Competitive advantage: Cognitive systems enable companies to stay ahead of competitors by continuously learning and adapting to changing market conditions.

### WHAT DOES "COGNITIVE" MEAN EXACTLY?

Cognitive skills include learning, creativity, focus, imagination, perception and intention – skills that are needed to perform the most varied of tasks, from the simplest to the most complex.

### What conclusions can we draw from this information?

The cognitive company is a new approach that uses AI and other cognitive technologies to automate business processes and develop new business models. In a cognitive company, the concepts of "Vision", "Understanding" and "Being prepared" are considered to be key stages in the Industry 4.0 roadmap and are continuously being developed. Creating the future means: Cognitive companies rely on artificial intelligence and cognitive technologies on their way towards achieving autonomous production.

Here at GEMÜ, we are on that very same journey. We aim to create added value by continuously learning, constantly developing and placing a strong emphasis on digitalisation in a spirit of innovation and responsibility. We want to operate successfully while strengthening the value of the people involved.

With this in mind, we are looking to the future with our sights set on modern solutions for tomorrow's tasks.

It would be our pleasure to research this exciting future with you at our side.



# REPAIRS AND MAINTENANCE INSTEAD OF DISPOSAL GEMÜ SERVICE

GEMÜ's approach is to protect resources and encourage sustainability, including when it comes to repairs and maintenance. Because of this, one of its objectives is for products to remain in use for as long as possible. Thanks to the intelligent, modular construction of GEMÜ products, the most varied repair issues can be tackled quickly and flexibly.

GEMÜ products are high quality and durable. When the products are used by customers, they are exposed to a wide range of stresses and strains. They undergo different operating times and switching cycles, not to mention the effects of temperature, pressure and process media. This inevitably leads to a certain degree of wear and tear, which may require wearing parts to be replaced.

If a customer contacts GEMÜ about a repair issue, checks are carried out to see if a repair is advisable and financially viable. Due to the wide range of products, each case is examined in detail to ensure the best possible solution is offered individually. Repairs significantly extend the product's lifecycle and safe operation.

GEMÜ was not immune to the recent global shortage of resources. This made repairs or worn or defective devices even more important than ever. Thanks to these repairs, machines and systems could continue being used despite delivery shortages for new products, preventing interruptions to customers' operations.

Using the product label or traceability number and year of manufacture of a product, GEMÜ can tell which versions, parts and components are installed in it and whether they are available for repair purposes. This enables short reaction times and makes it possible to check quickly whether repairs make financial sense. If the check shows a repair would be worthwhile, a case is set up and a process initiated, with the customer being given a reference number and return label. The reference number allows the entire process, from receipt of the goods to the return to the customer, to be documented continuously.

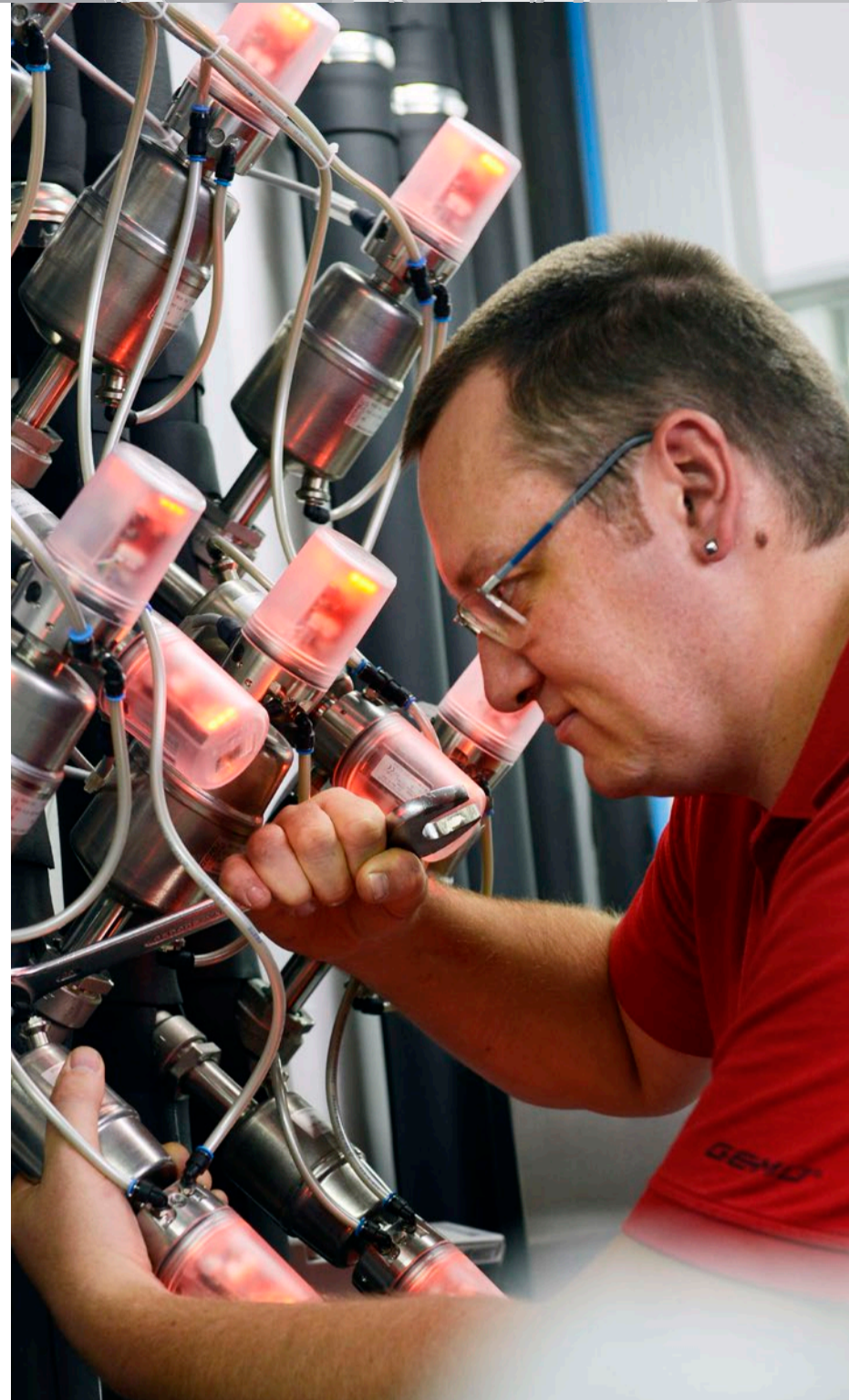
Once GEMÜ has received the product, GEMÜ customer service experts first check its condition and whether it's working. Thanks to their many years of experience, our service engineers can identify faults fast and specifically.

After a feasibility calculation is made, the customer receives a cost estimate. Once the customer has accepted the estimate, the repairs are carried out without delay, then a function and leak test is performed before the product is returned to the customer.

If a product is beyond economical repair or has reached the end of its lifecycle, a proposal for a suitable new or successor product is issued to the customer.

Although repairs can be carried out in-house, service jobs are also possible directly on site at the plant operator on request. Thanks to the long-term availability of spare parts and wearing parts, a high proportion of products can be repaired, extending the product lifecycle significantly.

Plus, GEMÜ also offers service training on how to replace spare parts and wearing parts correctly. The training sessions can be held either at our headquarters in Ingelfingen-Criesbach or on the customer's premises.



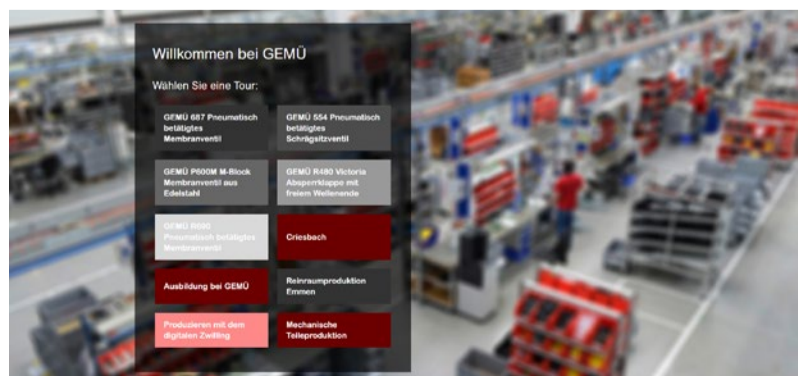
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# VIRTUAL FACTORY TOUR INSIGHT INTO THE WORLD OF GEMÜ

With our Virtual Factory Tour, GEMÜ offers an exclusive look behind the scenes into the world of GEMÜ, offering a digital tour through our modern production plants and high-tech assembly workstations at our different sites.

Practically every GEMÜ product is developed and manufactured in-house. The extensive GEMÜ product range is made in Germany, Switzerland, France, China, Brazil and the USA. Within the manufacturing sites, each plant concentrates on specific core skills.



Participants in the Virtual Factory Tour can follow the journey of a GEMÜ valve, from the incoming goods department to quality assurance and assembly, and finally the dispatch process. Along with a personal guide, anyone interested can experience a virtual 3D tour, share thoughts, ask questions and gain exciting insights – almost as if they were visiting GEMÜ in person. The focus and extent of the tour can be chosen according to personal preferences. The following subject areas are offered:

- ⇒ Creation of GEMÜ 687 and R690 diaphragm valves, GEMÜ 554 angle seat globe valve, GEMÜ P600M M-block and GEMÜ R480 Victoria butterfly valve.
- ⇒ Tour around the Criesbach site and the mechanical parts production based there.
- ⇒ Insight into production and the digital twin.

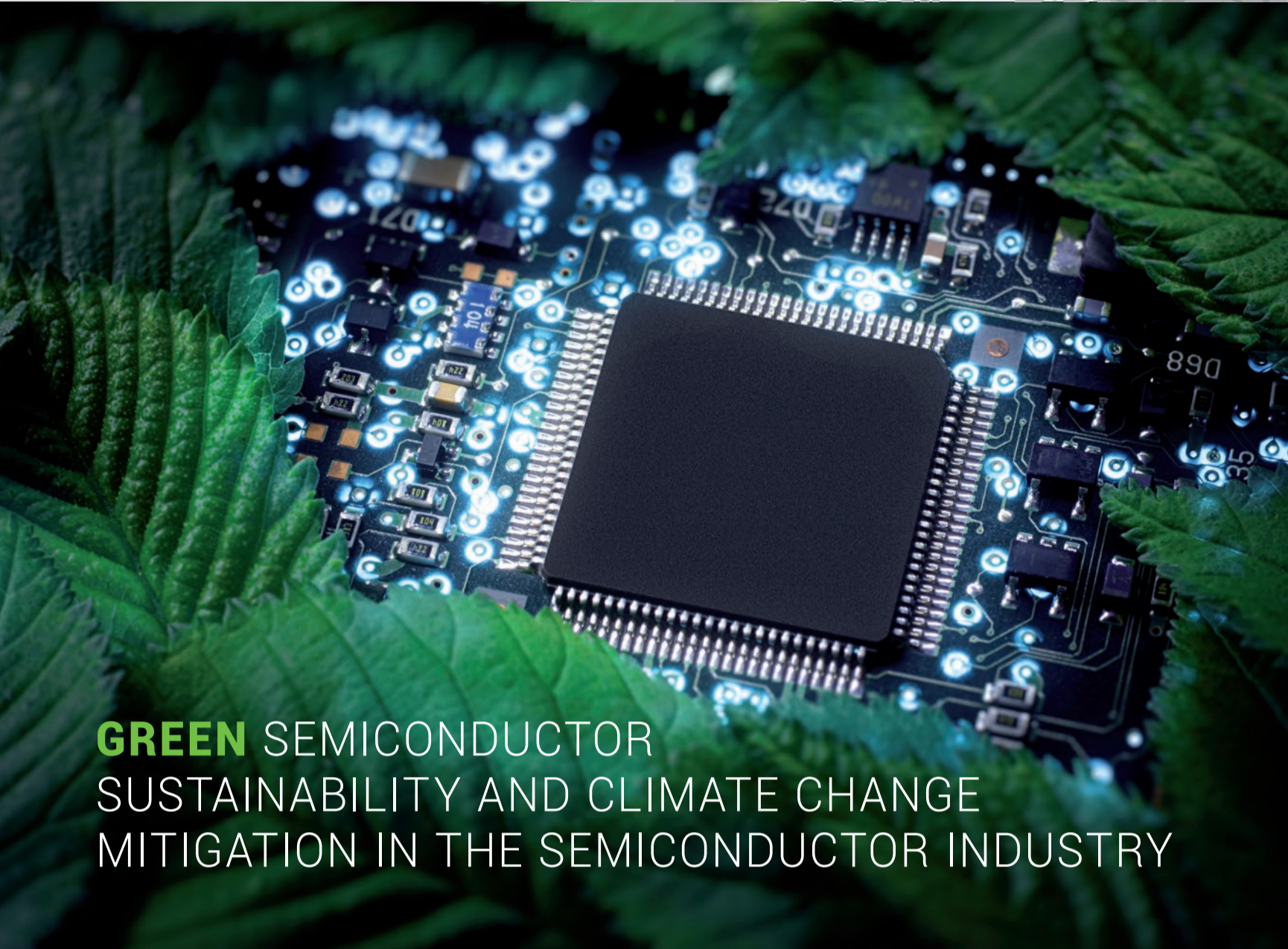
The Virtual Factory Tour is constantly updated to cover the latest research & development and sites.

### Interested?

Register now by emailing [info@gemue.de](mailto:info@gemue.de), with "Virtual Factory Tour" as the subject. We will put you in touch with our specialists so that you can then experience the digital tour together.

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# GREEN SEMICONDUCTOR SUSTAINABILITY AND CLIMATE CHANGE MITIGATION IN THE SEMICONDUCTOR INDUSTRY



**Faster, further, more sophisticated:** Such are the demands that underpin the research & development process for technologies that facilitate – and in some instances even dictate – our everyday professional activities and private lives. For many industries, increasing digitalization is one of the major drivers of high-performance-electronics production. The semiconductor industry is profiting massively from this trend, with further growth expected over the coming years. But what does this growth mean for our environment?

Semiconductor production is incredibly resource-intensive. More than twice as much water and three times as much power is required to manufacture sophisticated, 2-nm microchips than for 28-nm chips. The release of fluorinated greenhouse gases is also an issue.

The semiconductor industry is currently attracting new investment on a global scale, and new fabrication facilities are popping up all over the world. Up to 2030, the demand for semiconductor products is expected to grow by 6 to 8% year on year across all sectors. (Source: McKinsey & Company, semiconductor market analysis 2022). Geopolitically motivated subsidy programmes like the European Chips Act or the multibillion-dollar investments in this growth market by the USA serve to boost its expansion. But with the uptick in production that this stimulates comes an uptick in emissions. This has created an urgent need to minimize the semiconductor industry's ecological footprint.

Below, we will discuss a couple of examples that illustrate the urgency of the situation: Market leader TSMC (Taiwan Semiconductor Manufacturing Company) managed to double its emitted CO<sub>2</sub> equivalents in 2020 to 15 million tonnes within the space of a year. Greenpeace estimates that in 2020, TSMC was responsible for almost 5% of Taiwan's total energy consumption.

To counteract this trend, the EU Chips Act addresses the issue in its report and stipulates that, while its objectives include doubling Europe's share in the global microchip production market to 20%, the manufacturing processes must nevertheless be modified to reduce their impact on the environment.

For companies in the semiconductor industry, sustainability has been working its way up the agenda in recent years. They have committed to stricter measures concerning the use of renewables, improving their



energy and water consumption and, above all, reducing their greenhouse gas emissions.

## Net zero – climate change mitigation in the semiconductor market

Greenhouse gases and their elevated concentrations in the atmosphere are responsible for global warming and all the resultant shifts that we collectively refer to as climate change. The Paris Agreement adopted in 2015 aims to limit the mean temperature increase to 1.5 °C above pre-industrial levels. This signals a need to pick up the pace when it comes to decarbonizing industrial enterprises if we are to curb emissions and achieve the ambitious "net zero" objective. If the emissions produced are balanced by removing the same quantity of emissions from the atmosphere, we achieve climate neutrality. "Net zero" means that the amount of CO<sub>2</sub> emissions removed exceeds the amount produced. In this scenario, net emissions are therefore below zero. Companies in the semiconductor sector have come up with their own reduction targets. Obtaining the raw materials will always be one of the trickiest stages along the value chain. But sophisticated, sustainable semiconductors are needed as part of efforts to mitigate climate change. In their article "Sustainability at semiconductor fabs," McKinsey mentions, by way of example, that Infineon intends to slash its greenhouse emissions by 70% by 2025, compared with its 2019 output. Many electronic applications are already benefiting from the improved energy efficiency afforded by Infineon's "Tech for Green" semiconductors.



Intel has committed to eliminating its global greenhouse emissions entirely by 2040. By 2030, it aims to be obtaining 100% of its electricity from renewable energy sources.

One of GEMÜ's customers, Merck, has made its goals explicit. The company aims to be climate-neutral by 2040. In the interim, it is targeting a 50% reduction in direct and indirect greenhouse gas emissions by 2030, using its 2020 figures as the baseline. Additionally, it wants 80% of the electricity that it purchases from external suppliers to be from renewable sources. This information was provided in an article published on LinkedIn by Kai Beckmann, CEO Electronics.

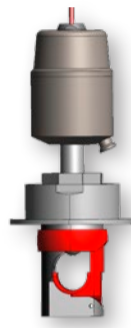


# GEMÜ PRODUCT NEWS

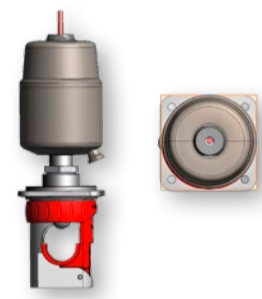
## PRODUCT OPTIMIZATIONS AND UPGRADES



GEMÜ Q40  
size 2



Previous design:  
pinch valves  
GEMÜ Q40 size 2



Optimized design:  
pinch valves  
GEMÜ Q40 size 2

### GEMÜ has optimized its Q40 size 2 pinch valves

GEMÜ has been working closely with customers to optimize its Q40 size 2 pinch valves for 3/4" and 1" tube inside diameters and 1 1/8 - 1 3/16" and 1 13/32 - 1 1/2" tube outside diameters – these efforts have resulted in lighter, more compact valves with a smaller footprint in the plant. No changes have been made to the tube holder, the compressor or the actuator.

End users now have a new set of expectations for the semiconductor market to contend with. Nowadays, it is important to consumers that companies are environmentally responsible and incorporate sustainable practices into their production processes. Energy efficiency has become a top concern in all areas of life.

These issues are crucial to customers wanting to help mitigate climate change. As part of the supply chain, GEMÜ is embracing the transition to "green" semiconductors by continually optimizing its semiconductor range and developing new features, upgrades and product innovations. When it comes to batteries, we are dedicated to continually expanding our expertise and product developments, since the growing demand for energy stores shows no signs of slowing. One benefit of lithium-ion batteries specifically is that they produce zero CO2 emissions when used for stationary applications.

It is important to GEMÜ's Semiconductors business unit to be part of this positive trend. GEMÜ's products and solutions can be integrated into highly efficient processes, enabling customers from the semiconductor industry to meet modern production requirements while using resources more sparingly.

This is in keeping with GEMÜ's commitment as a company to avoid wasting resources and incorporate sustainable practices wherever possible. This policy manifests itself in a myriad of different measures: The expansion of the company's fleet of electric cars, along with the associated charging points, and the ongoing expansion of the photovoltaic systems at all sites, including the cleanroom manufacturing site in Switzerland, are just a couple of examples. GEMÜ's production facility in Criesbach has switched over to an adiabatic cooling system. Adiabatic cooling is an environmentally friendly process in which cooling is performed through evaporation.

From industrial enterprises to individuals, we all have our own carbon footprint, and we need to be conscious of the fact that our natural resources are finite. But every little helps – even seemingly insignificant efforts by individuals contribute towards creating a more environmentally friendly future for us all.



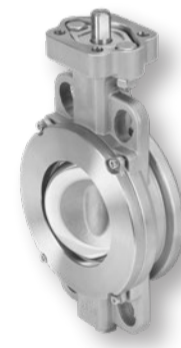
### SIL approval for GEMÜ R470 Tugela and GEMÜ R480 Victoria

The GEMÜ R470 Tugela double-eccentric butterfly valves and the GEMÜ R480 Victoria butterfly valve have been assessed according to SIL. Both butterfly valves were rated at the SIL 2 level.

SIL certification provides users with additional reassurance and attests to the reliability of these GEMÜ products. This means that the butterfly valves are perfectly suited to safety-relevant applications and meet the highest requirements for functionality and safety.



GEMÜ R480  
Victoria



GEMÜ R470  
Tugela



Actuator  
GEMÜ PF80

### The new GEMÜ PF actuator

The Ingelfingen-based valve specialist GEMÜ has expanded its product range to include the GEMÜ PF motorized quarter turn actuator with integrated control unit. The new GEMÜ PF actuator boasts the option of a cost-effective bus connection. The Profibus, Profinet and Modbus fieldbus systems are available.

The GEMÜ PF is a compact and high-quality actuator. It is easy to install and intuitive to commission. It also has a clear status indication with good visibility at the same time as low consumption in standby, as well as being highly efficient with a self-locking function.

The following types are compatible with the GEMÜ PF: GEMÜ 423, 428, 488, 498, 723, B52, B57, B54, B56, D458, D488, R488, R478 and R488.

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## ASME APPROVAL FOR GEMÜ BALL VALVES AND BUTTERFLY VALVES BURST TESTS PASSED

The GEMÜ R480 series butterfly valve and the GEMÜ BB02 series ball valve have successfully completed testing for ASME approval.

In order to export products to the USA, some states require certification according to the ASME standard. Furthermore, there are many other countries that impose or accept approval according to the ASME code. These approvals are currently recognized in 113 countries all over the world. This certification opens the door to customers with international operations and enables manufacturers to market their products around the world. Having the ASME stamp on products certifies that the required safety standards of the ASME code have been fulfilled.

GEMÜ performed burst tests according to the ASME B31.3 standard on the GEMÜ R480, R481, R487 and R488 butterfly valves and the GEMÜ BB02, B22, B42 and B52 ball valves to ensure that the products meet the highest safety standards.

The bursting pressure was calculated from the pressure rating and the material characteristics. This pressure was then applied to the valves to test whether the body would reliably withstand extreme conditions. The pressure was maintained using specially made burst flanges and custom-designed O-rings in the body.

An external auditor monitored the burst testing to verify that it complied with the specified requirements. This monitoring guarantees that the findings were assessed independently and objectively and that GEMÜ's products meet the most stringent standards.

GEMÜ's butterfly valves and ball valves passed these rigorous tests, demonstrating that they are able to perform safely and reliably under the specified conditions.



GEMÜ R480 butterfly valve

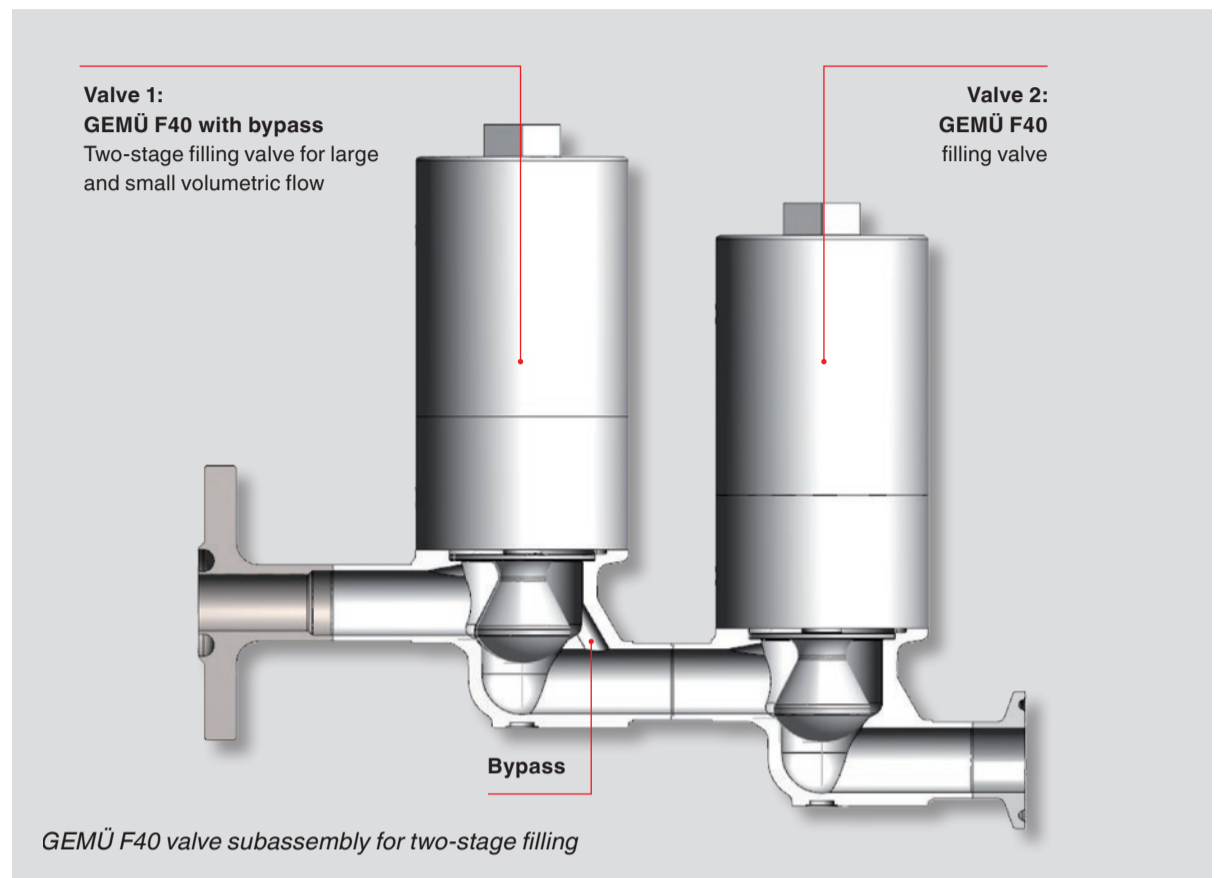


GEMÜ BB02 ball valve

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## GEMÜ F40 DIAPHRAGM GLOBE VALVE GEMÜ FILLING VALVE USED FOR TWO-STAGE FILLING



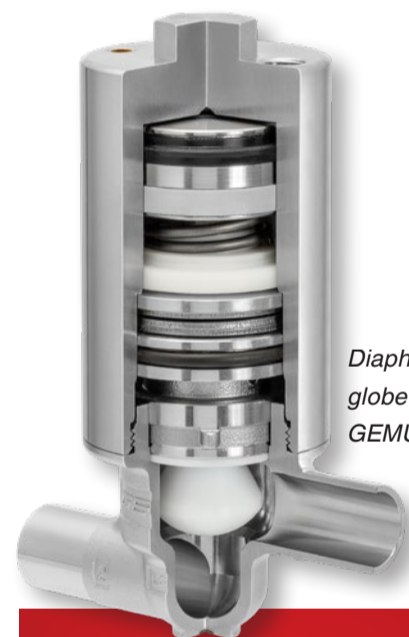
The GEMÜ F40 has proven very successful in various fields of application and among an increasing number of customers. Two-stage filling is one such application, where the GEMÜ F40 filling valve is used in bypass systems for filling liquid and viscous media.

The case described below shows an example application that was implemented at a GEMÜ customer and significantly increased the efficiency and accuracy of the filling process:

In this application, bottles are filled with still mineral water in a circular filler with two GEMÜ F40 valves in series. To ensure a high volumetric flow for fast filling and a low volumetric flow for slow filling, valve 1 is fitted with a bypass. When the bottles are filled to a level of approx. 10–20%, valve 2 opens first. Valve 1 remains closed so that the medium only flows through the bypass in valve 2. This low volumetric flow prevents the medium from spurting excessively when the bottle is filled. To fill the bottle quickly in the next step, valve 1 is also opened until the fill level reaches approx. 90–95%. To achieve an exact level at the end, valve 1 closes again and the bottle is filled to the desired filling volume through the bypass with the low volumetric flow.

The filling volume can be measured using a mass flowmeter, weigh cell or level sensor. If a mass flowmeter is used, the volume to be filled is measured, and with a weigh cell, the weight of the filled container is measured. If level sensors are used, all containers are filled up to the same filling point. One or more of these measuring methods can be used depending on the requirements.

An alternative to the GEMÜ F40 filling valve is the GEMÜ F60 servoDrive. With the GEMÜ F60 servoDrive, the two-stage filling process described above can be achieved using just one valve. Due to the fast actuation, high traverse speed and precise positioning, a low and high volumetric flow can be programmed freely with the GEMÜ F60 servoDrive. The high speed and low wear of the servoDrive technology mean even faster filling cycles and longer production times between maintenance intervals are possible.



Diaphragm globe valve GEMÜ F40

The GEMÜ F40 filling valve is perfect for filling liquid and viscous foodstuffs, cosmetics and pharmaceuticals. Simple, fast maintenance is possible thanks to the unique PD sealing concept with actuator fixing via a central thread and cartridge technology. Plus, the GEMÜ F40 is designed for multiple fast cycle duties, ensuring the filling machine is highly efficient.

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# WHEN PRECISION GETS MORE PRECISE

## NEW CONTROL RANGE OPTIONS ADDED TO THE GEMÜ C53 ICOMLINE

Unlike the pneumatically and manually operated valves in the iComLine series, the GEMÜ C53 iComLine control valve is used for control applications in the semiconductor production sector, rather than the typical open/close applications. This requires precise control of flow rates and pressures. With its high-precision stepper motor in conjunction with special control PDs, the GEMÜ C53 iComLine is ideally suited to meeting these requirements.



Since its launch back in the summer of 2021, the GEMÜ C53 iComLine has successfully established itself as an excellent solution for control applications and is now used across a wide range of process areas in the semiconductor production industry. For manufacturing products such as microchips and displays and for filling lithium-ion batteries, the GEMÜ C53 iComLine is the optimal choice when it comes to control valves. It can also be used for metering the chemicals required for manufacturing state-of-the-art printed circuit boards (IC/integrated circuit technology).

One thing that sets GEMÜ's iComLine apart is the fact that, when developing, expanding and updating the series, GEMÜ has always sought to ensure that it caters to its customers' specific requirements. This has been a focal point for GEMÜ's C53 iComLine too. Since this control valve was launched, GEMÜ has produced multiple customized versions for clients who needed the valve's flow rate range to be optimized for their specific application. In the future, all customers will be able to benefit from this type of optimization. To this end, GEMÜ has added three further variants to its regulating cone range:

**Variant 1:** This regulating cone allows for flow rates of up to 20.8 l/min (depending on the connection size and type).

**Variant 2:** This regulating cone allows for low flow rates of between 0.8 and 3 l/min (depending on the connection size and type).

⇒ The control ranges that these two variants allow have been achieved purely by optimizing the PD. The design of the body and actuator has not changed.

**Variant 3:** This regulating cone allows for very low flow rates of between 0.17 and 1 l/min. With this variant, the body has been optimized to accommodate these minimal flow rates.

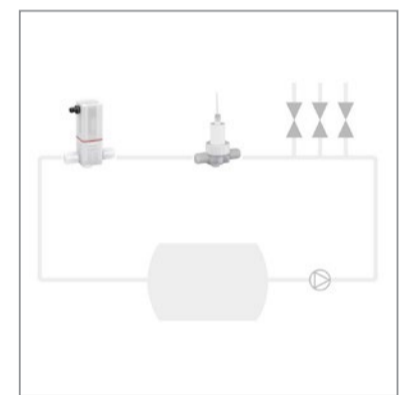
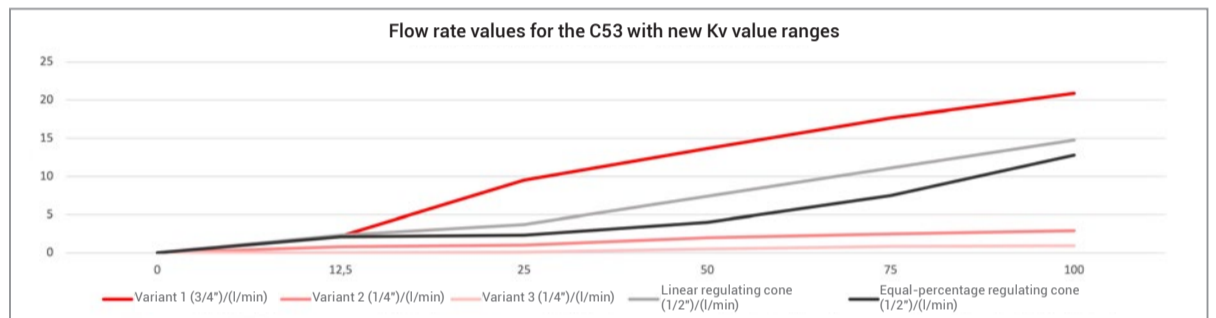
These new iterations of the regulating cone design mean that GEMÜ has you covered for any flow rate between 0.17 and ~21 l/min. As such, GEMÜ's C53 iComLine is the optimal solution for a whole variety of applications. These new additions demonstrate how customer-specific requirements can be incorporated into GEMÜ's standard range. The new regulating cone variants are available right now and can be ordered as standard products.

### GEMÜ's C53 iComLine used in the single-wafer tool

To ensure that the nozzle head sprays the wafer uniformly, the GEMÜ C53 iComLine is used for (back)pressure control. For this purpose, a control valve is installed, along with a pressure gauge, in the back flow of the media line to the tank. The pressure gauge measures the pressure in the line and, if it detects any changes, signals the control valve. If the pressure in the line rises significantly (e.g. because a valve has been closed in response to the process requiring less of the medium), the control valve will open. If the pressure decreases (e.g. because a valve has been opened in response to the process requiring more of the medium), the control valve will close. A constant pressure is maintained in the line to ensure that the outlets feeding the process have a consistent supply of medium.

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### New actuator generation for the GEMÜ C53 iComLine

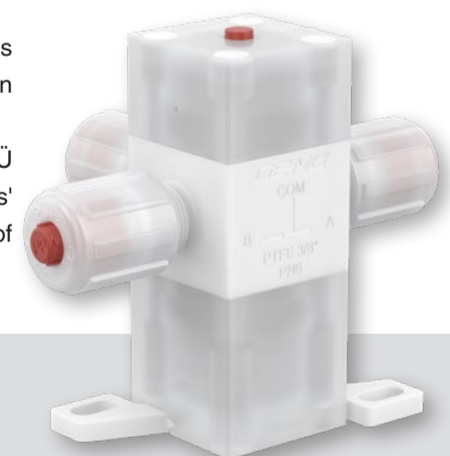
GEMÜ is set to launch the EVO2, the latest update to its C53 actuator. Changes to the hardware and software will allow the operating status to be indicated using LEDs. While the plant control system already provides feedback, these LED indicators will provide additional, visual feedback regarding the operating status.

Another change concerns the magnetic-field sensor – this change was made in order to optimize the initialization process. The magnet has been relocated to the valve itself for improved process reliability.

By combining an optimized actuator with optimized control ranges, GEMÜ has created a reliable valve that is closely tailored to customers' applications, helping to improve the overall efficiency and reliability of customers' processes.

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## GEMÜ C58 ICOMLINE

### The first GEMÜ high-purity 3/2-way diaphragm globe valve

The new C58 iComLine is GEMÜ's first 3/2-way diaphragm globe valve for ultra-pure applications. It has one supply and two possible outlets. It can also be operated in the opposite flow direction. The switch position can be detected using an optical position indicator.

For many years, the semiconductor industry has been successfully using the GEMÜ iComLine series all over the world. GEMÜ customers appreciate the numerous advantages of the design and the multitude of possible applications.

The new GEMÜ C58 iComLine 3/2-way process valve is suitable for ultra-pure and corrosive media. All media-wetted parts are made of pure, highly resistant PTFE. The footprint/flow rate ratio is outstanding. This diaphragm globe valve is therefore particularly suited to applications in the process area and at the distribution level of semiconductor production.



OVERSEAS PLACEMENTS AS PART OF A STUDY COURSE  
GEMÜ STUDENTS GAIN EXPERIENCE AT ITS SUBSIDIARIES

View of Sitges

GEMÜ's students benefit from opportunities to acquire a variety of experience in different departments, participate in numerous activities and support programmes, attend regular meetings during the practical periods of their course, and spend time abroad at one of GEMÜ's many European or international subsidiaries.

Dual-system students can take up an overseas work placement during the extended practical period in the fourth/fifth semester; other students can do this during their practical semester. Depending on what they agree with the department that they wish to work in, students can arrange to spend between 2 and 5 weeks in one of the subsidiaries to gain insights into what they do there.

Not only will they be actively working in their chosen country, students will also get to experience a different culture, language and way of life. An overseas placement offers them the opportunity to sharpen their language skills, upgrade their professional knowledge and improve their intercultural understanding, as well as fostering personal growth.

Last year, the latest crop of GEMÜ students seized this opportunity to spend a few weeks working in one of GEMÜ's overseas subsidiaries.

**Marco Höger, dual-system student studying business informatics:**

"I spent just under 4 weeks at our subsidiary in the greater metropolitan area of Barcelona (Spain). During my time on site, I was able to experience the subsidiary's transition to using the ERP system PSIpenta, I assisted with training and I acted as a liaison between Spain and Germany.

Besides the many culinary specialities and visits to the beach at the weekend or after work, my ultimate highlights outside of work were the Champions League match at the Camp Nou stadium, the hike to La Morella and the excursion to Sitges."

**Michael Förch, dual-system student studying mechatronics, and Nicolas Bienieck, dual-system student studying business administration:**

These two students spent a few weeks at GEMÜ's subsidiary in Atlanta (USA).

Michael: "During my time in Atlanta, I analyzed a welding process used in production and came up with ways to improve it. My stay was very well organized and I learnt a great deal in many different areas. I highly



Atlanta Braves baseball game



Scottish specialities

recommend taking advantage of the opportunity to spend time abroad at one of the foreign subsidiaries."

Nicolas: "I assisted the Sales team on site in Atlanta and acted as a liaison between the German and American Sales teams. I spent most of my free time with my American colleagues. We attended various sporting events, went to an amusement park and visited the Coca-Cola museum; we regularly stopped for sustenance at restaurants and sports bars to ensure that we were properly fuelled for the following day's work."

**Nicole Barwig, dual-system student studying mechanical engineering:**

"My 8-week overseas placement at INTERCARAT in Duppigheim (France) gave me an interesting insight into diaphragm production. I am glad that I was able to spend a few weeks in France. They gave me a better understanding of what the diaphragm does in a control valve. Getting to know and be a part of the tight-knit French team was also a fantastic experience."

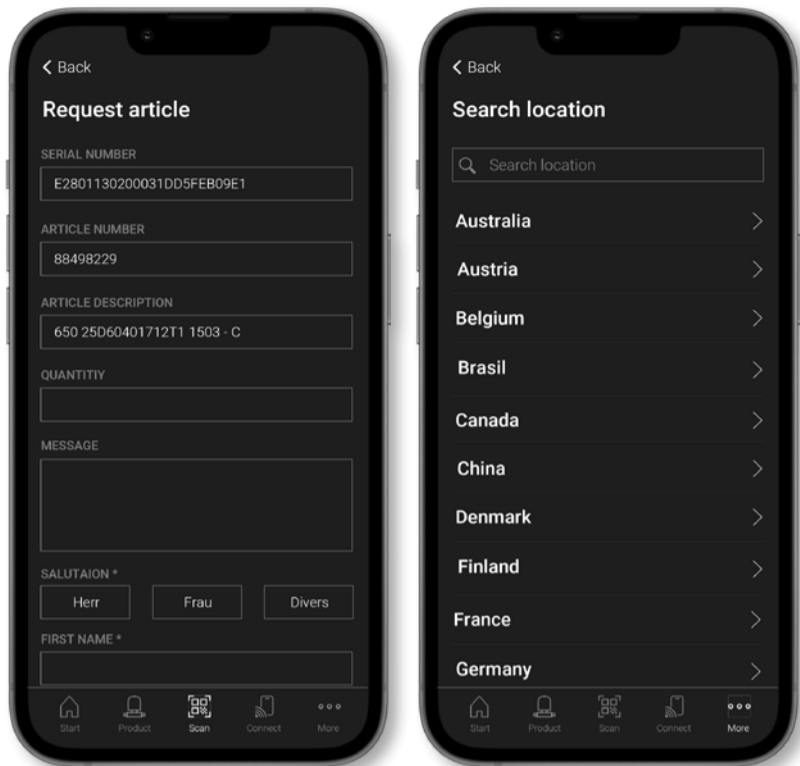
**Lena Gebhardt, dual-system student studying industrial engineering and management:**

"I spent 2 weeks working in the Sales subsidiary in Birchwood (UK). I had the opportunity to go on the road with some of the external sales employees

and accompany them to their meetings with customers. This allowed me to get myself better acquainted with our GEMÜ products, particularly the single-use valves. Aside from the many different customers, I also learnt a lot about the country. A weekend in Manchester, a trip to Liverpool, and Scottish specialities such as deep-fried pizza and Irn-Bru (Scottish soft drink) are just a few of the highlights from my stay."

**Marco Höger, Michael Förch, Nicolas Bienieck, Nicole Barwig, Lena Gebhardt**

**Ilka Rölke**  
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## LIGHTER, MORE COMPACT, MORE HYGIENIC IMPROVED TWO-STAGE ACTUATOR FOR DIAPHRAGM VALVES

**GEMÜ's pneumatically operated two-stage actuators feature a stainless steel actuator housing, along with two pistons that operate independently of one another and can be actuated separately.**

They can perform either a full stroke or an (adjustable) part stroke. This makes these two-stage actuators perfect for filling applications that require rapid open/close cycles and precise metering. An opening stroke limiter for setting the part stroke is integrated as standard.

Until now, GEMÜ's range of two-stage actuators has consisted of the GEMÜ 658 and GEMÜ 688 valves. GEMÜ 658 has been available in nominal sizes DN10 - DN20 (diaphragm size 10), and GEMÜ 688 in nominal sizes DN15 - DN65 (diaphragm size 25-50).

As part of GEMÜ's continual improvement strategy for its products, the GEMÜ 9688 two-stage actuator has undergone a number of modifications, including a new look to enhance its visual appeal, while retaining its original functionality. The new actuator will be available from 1st July 2023 and will be sold as the GEMÜ 9658; this series will cover the entirety of nominal sizes DN10 - DN65 (diaphragm size 10-50) for diaphragm valves with a two-stage actuator.

When updating and standardizing the design, GEMÜ was able to significantly reduce the amount of material used (in line with the green engineering philosophy), resulting in a more compact two-stage actuator. It is more than 25% lighter than its predecessors. Welding the actuator housing instead of using screws has made it easier to clean properly and reduced the number of individual components. Additionally, it is now possible to use the GEMÜ 658 diaphragm valve with the code 5M PTFE/EPDM diaphragm at operating pressures of up to 10 bar.



GEMÜ 658 (DS 10)



GEMÜ 658 (DS 25 to 50)

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## ALL THE INFORMATION RIGHT THERE IN YOUR POCKET NEW FEATURES IN THE GEMÜ APP

Since AICHEM 2022, the GEMÜ app has been an indispensable hub for GEMÜ's customers and its Sales team.

Among other things, the app is a convenient tool for operating GEMÜ products with a Bluetooth interface. Furthermore, it allows users to access the complete set of documentation for all GEMÜ products. And at the click of a button, users can get in touch with GEMÜ. Additionally, the GEMÜ app integrates unique identification of GEMÜ products with a QR code or RFID tag.

New features and content are continually being integrated in order to provide a comprehensive user experience at all times. Below is a selection of the new additions scheduled for 2023:

- ⇒ Bluetooth interface upgraded to enable integration of future products
- ⇒ New product functions such as the convenient import and export of configuration data and enhanced maintenance functions
- ⇒ Overview of all GEMÜ's sites and means of contacting them directly
- ⇒ Newsfeed and event information
- ⇒ Easy sharing and requesting of scanned GEMÜ items
- ⇒ Interactive, digital specification of control valves and multi-port valve blocks
- ⇒ Integration of resistance information

Users will be notified when each of the updates is available. The GEMÜ app is available in English, German and French, and can be used on both Android and iOS operating systems.

**Is this something that might interest you?**

Download the GEMÜ app at:



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## TRADE FAIRS 2023 (INTER)NATIONAL

Semicon West	11.07. – 13.07.	San Francisco (US)
Bio Asia Taiwan	27.07. – 30.07.	Taipei (TW)
ISPE Singapore Conf. and Exh.	23.08. – 25.08.	Singapur (SG)
Semicon Taiwan	06.09. – 08.09.	Taipei (TW)
Inchem Tokyo	20.09. – 22.09.	Tokyo (JP)
Farmaforum Spain	20.09. – 21.09.	Madrid (ES)
Hohenloher Wirtschaftsmesse	22.09. – 24.09.	Künzelsau (DE)
Ilmac Basel	26.09. – 28.09.	Basel (CH)
Hydrogen Technology Expo	27.09. – 28.09.	Bremen (DE)
WEFTEC USA	02.10. – 04.10.	Chicago (US)
HI (Herning Industri) Denmark	03.10. – 05.10.	Herning (DK)
UPM Micro USA	10.10. – 12.10.	Austin (US)
CibusTec Italy	24.10. – 27.10.	Parma (IT)
Pumps & Valves CH	25.10. – 26.10.	Zürich (CH)
DIAM Bochum	08.11. – 09.11.	Bochum (DE)
Semicon Europa	14.11. – 17.11.	München (DE)
Förderprozess-Foren Pumpen	20.11. – 21.11.	Würzburg (DE)
Brau Bevale	28.11. – 30.11.	Nürnberg (DE)
Löhnberger Abwassertage	29.11. – 30.11.	Wellburg (DE)
Praxis des Reinstwassers	30.11.	Leverkusen (DE)
Semicon Japan	13.12. – 15.12.	Tokyo (JP)

Subject to change!

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## 2023 training dates

### FACE-TO-FACE TRAINING

#### SPECIALIST LEVEL

##### ⇒ Product training in valve designs

- PV1000D Valves for the biotechnology, pharmaceutical, foodstuffs and cosmetics industries  
*9th October 2023, 8:00 am – 5:00 pm*
- PV1100D Single-use valves for the biotechnology and pharmaceutical industries  
*10th October 2023, 8:00 am – 5:00 pm*
- PV2000D Valves for high purity, semiconductors and critical media industries  
*23rd October 2023, 8:00 am – 2:30 pm*
- PV3000D Diaphragm valves in the chemical and processing industries and water  
*11th October 2023, 8:00 am – 5:00 pm*
- PV3004D Globe valves in the chemical and processing industries and water  
*12th October 2023, 8:00 am – 5:00 pm*
- PV3001D Ball valves in the chemical and processing industries and water  
*6th November 2023, 8:00 am – 5:00 pm*
- PV3002D Butterfly valves in the chemical and processing industries and water  
*7th November 2023, 8:00 am – 5:00 pm*
- PV4000D Automation components and accessories for linear valves  
*16th October 2023, 8:00 am – 2:30 pm*
- PV4001D Pneumatic quarter turn actuators and automation components for quarter turn valves  
*8th November 2023, 8:00 am – 2:30 pm*
- PV6000D Special bodies for diaphragm valves and multi-port valves  
*24th October 2023, 8:00 am – 5:00 pm*

##### ⇒ Product training in measurement and control system

- PM0101D Measurement devices and measurement principles for pressure, temperature, level and volumetric flow  
*13th November 2023, 8:00 am – 5:00 pm*
- PM0201D Positioners: Function and application  
*14th November 2023, 8:00 am – 5:00 pm*
- PM0301D Process controllers: Function and application  
*15th November 2023, 8:00 am – 5:00 pm*

##### ⇒ Product training in electrical actuators

- PE1000D Motorized linear actuators  
*17th October 2023, 8:00 am – 2:30 pm*
- PE2000D Process solenoid valves  
*18th October 2023, 8:00 am – 11:00 am*
- PE3000D Motorized quarter turn actuators  
*09th November 2023, 8:00 am – 12:00 am*

### ONLINE TRAINING

#### ALLROUNDER LEVEL

##### ⇒ Basic technical principles of valve designs

- GV0101DON Functional principles of valves and their selection criteria (basic module)  
*11th September 2023, 8:00 am – 2:30 pm*
- GV0102DON Plastics in valve and pipeline construction  
*12th September 2023, 8:00 am – 12:30 pm*
- GV0103DON Metals in valve and pipeline construction  
*13th September 2023, 8:00 am – 12:30 pm*
- GV0104DON Pipe connectors and assembly information  
*14th September 2023, 8:00 am – 12:30 pm*
- GV0105DON Explosion protection, ATEX / IECEx  
*21st September 2023, 8:00 am – 12:30 pm*
- GV0106DON Surface finishing in plant engineering  
*15th September 2023, 8:00 am – 12:30 pm*

##### ⇒ Basic technical principles of application technology

- GA1000DON Procedures and processes in the biotechnology, pharmaceutical, foodstuffs and cosmetics industries  
*18th September 2023, 8:00 am – 12:30 pm*
- GA2000DON Procedures and processes in High Purity, semiconductor and critical media  
*19th September 2023, 8:00 am – 12:30 pm*
- GA3000DON Procedures and processes in the chemical, processing and water industries  
*20. September 2023, 8:00 am – 12:30 pm*

##### ⇒ Basic technical principles of measurement and control systems

- GM0101DON Introduction to electric systems, electronic systems and pneumatics (basic module)  
*25th September 2023, 8:00 am – 12:30 pm*
- GM0102DON Measurement variables and measurement principles in process engineering (basic module)  
*26th September 2023, 8:00 am – 12:30 pm*
- GM0103DON Control circuits: Their construction and function  
*27th September 2023, 8:00 am – 12:30 pm*



### SERVICE TRAINING

#### SPECIALIST LEVEL

##### ⇒ Qualified service fitter for GEMUE valves and automation components

- SM1001D\* Servicing and changing replacement and wearing parts in diaphragm valves for hygienic and sterile applications, attachment and readjustment of valve accessories.
- SM2002D\* Servicing and changing replacement and wearing parts in HP CleanStar diaphragm valves, attachment and readjustment of valve accessories. Expert manufacture of ultra pure PFA tube connections for the GEMÜ FlareStar/ TubeStar tubing and fitting system
- SM3001D\* Servicing and changing replacement and wearing parts in globe valves, attachment and readjustment of valve accessories
- SM3002D\* Servicing and changing replacement and wearing parts in elastomer butterfly valves, attachment and readjustment of valve accessories
- SM3003D\* Servicing and changing replacement and wearing parts in diaphragm valves for industrial applications, attachment and readjustment of valve accessories
- SM4001D\* Installation and commissioning of valve accessories such as stroke limiters, electr. position indicators and positioners

\* On-site briefing, approx. three hours, appointments by arrangement, minimum five participants

#### EXPERT LEVEL

##### ⇒ Qualified service expert/service trainer in accordance with GMP/FDA

- ET1001D Training as authorized service expert for GEMÜ diaphragm valves  
*21st November 2023, 8:00 am – 5:00 pm*  
*Suitable for external service and maintenance personnel with the skills of an experienced mechanic (face-to-face-training).*

The training courses will be held in German.

Subject to changes!

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