

GEMÜ news

55 YEARS OF GEMÜ –
INNOVATION
GOES ON

Product news

Innovations

Application reports

Apprenticeship and working

Commitment and initiatives

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

ÉDITION 01.2019

Dear Readers,

This year, we are celebrating our 55th company anniversary under the motto of "Innovation goes on". GEMÜ has been an innovative company since day one and, now in the hands of the second generation, the company is making the transition into the digital age. GEMÜ is successfully rising to this challenge and is on a course for growth. It's great to see how our company has developed over the past 55 years. The number of employees is also an indicator of our worldwide growth: The GEMÜ Group now employs more than 1900 people around the globe.

Last year was a very special year. It was dominated by political change, for example the trade dispute between the USA and China. This dispute has been felt all over the world and has had a major impact on stock markets. It has influenced the investment behaviour of markets and customers worldwide. GEMÜ continues to be a financially strong company. That is something I'm very proud of. Our success is the result not only of positive economic development, but also of what we are doing and how we are achieving our goals. We have enjoyed 55 years of remarkable development. From the very first plastic process valve with which my father, Fritz Müller, made his name in 1964, the company's history has been shaped by innovation and growth. Even in difficult times, we've pulled through by working together. Past and current growth would not have been possible without the outstanding commitment and teamwork of all our employees. At this point I'd like to thank the entire GEMÜ team for their dedication and hard work. I'd also like to thank my father, who laid the foundations for GEMÜ and strove to ensure its continuous growth, which enabled a smooth handover to the next generation. The company has always been moving forward and we have consistently identified challenges in good time in order to allow us to develop further. I'm excited about the opportunities a digital future will present us with over the next 55 years and I'm looking forward to embracing these together.

"Innovation goes on" will also be our motto for the coming years. We will continue to invest both in the future of our company and in our region and we

are already planning to construct a new, state-of-the-art administration building in the Hohenlohe industrial estate. Every new building also contains something new. This will be a building not only with an attractive architecture, but also with an interior that boasts sophisticated functions that will benefit our customers as much as it will benefit our employees. Here too, we are going off the beaten track and breaking new ground. Prepare to be amazed. I'm very much looking forward to the groundbreaking ceremony in September and to working with you all over the next few exciting years!

55
years

GEMÜ
innovation goes on
1964–2019

Gert Müller
Managing Partner



TOP

NATIONAL
EMPLOYER

2019

FOCUS

GERMANY'S BEST
EMPLOYERS
IN COMPARISON

IN COOPERATION WITH

kununu | statista

FOCUS-BUSINESS
01 | 2019

GEMÜ RECOGNIZED AS ONE OF GERMANY'S TOP EMPLOYERS

FOCUS LISTS THE BEST EMPLOYERS IN GERMANY IN 2019

GEMÜ is one of the top employers in Germany. So says a ranking published by the German magazine FOCUS-BUSINESS in collaboration with Xing and kununu. GEMÜ was awarded the 477th spot on the list of the 1000 most popular employers in the country, and took 38th place among companies in the "Industrial plant and machinery" sector.

To determine the 1000 top employers in the country, the market research institute Statista assessed more than 143,500 evaluations of German employers. These were collected in an independent online survey and a survey of Xing members, as well as current kununu data. The key factor in the assessment was whether employees would recommend their own employer to others.

"We are proud to be among Germany's top employers. The FOCUS-BUSINESS award shows that our employees value the corporate culture created by our family values," says Gert Müller, Managing Partner at GEMÜ. "Our employees have a very strong bond with the company – some of our employees are the second or even third generation of their family to work at GEMÜ," Gert Müller adds.

Norbert Neumann

Team Leader for Corporate Communication/Press Officer
norbert.neumann@gemue.de

WIRTSCHAFTSWOCHE AWARDED GEMÜ THE THIRD YEAR IN A ROW GEMÜ HONOURED AS "GLOBAL MARKET LEADER" FOR 2018

GEMÜ has been awarded the title of "Global Market Leader" for yet another year, earning the distinction for 2018 as part of the global market leader index of the University of St. Gallen and the Academy of German Global Market Leaders.

For the third time in succession, the German business magazine WirtschaftsWoche has awarded the family-owned enterprise GEMÜ the WirtschaftsWoche quality seal of "Global Market Leader", declaring them "champions" of 2018. In doing so, WirtschaftsWoche has recognised GEMÜ's inclusion in the global market leader index in the segment "Valves and automation components: Valves, Process and Control systems for sterile applications".

The global market leader index is compiled under the scientific direction of Prof. Dr Christoph Müller of the HBM Unternehmerschule (school for entrepreneurs) at the University of St. Gallen, in cooperation with the Academy of German Global Market Leaders (ADWM). In doing so, objective selection criteria and transparent selection processes are developed to

determine the actual global market leaders. The information acquired is then scientifically evaluated and the results are published in a condensed form.

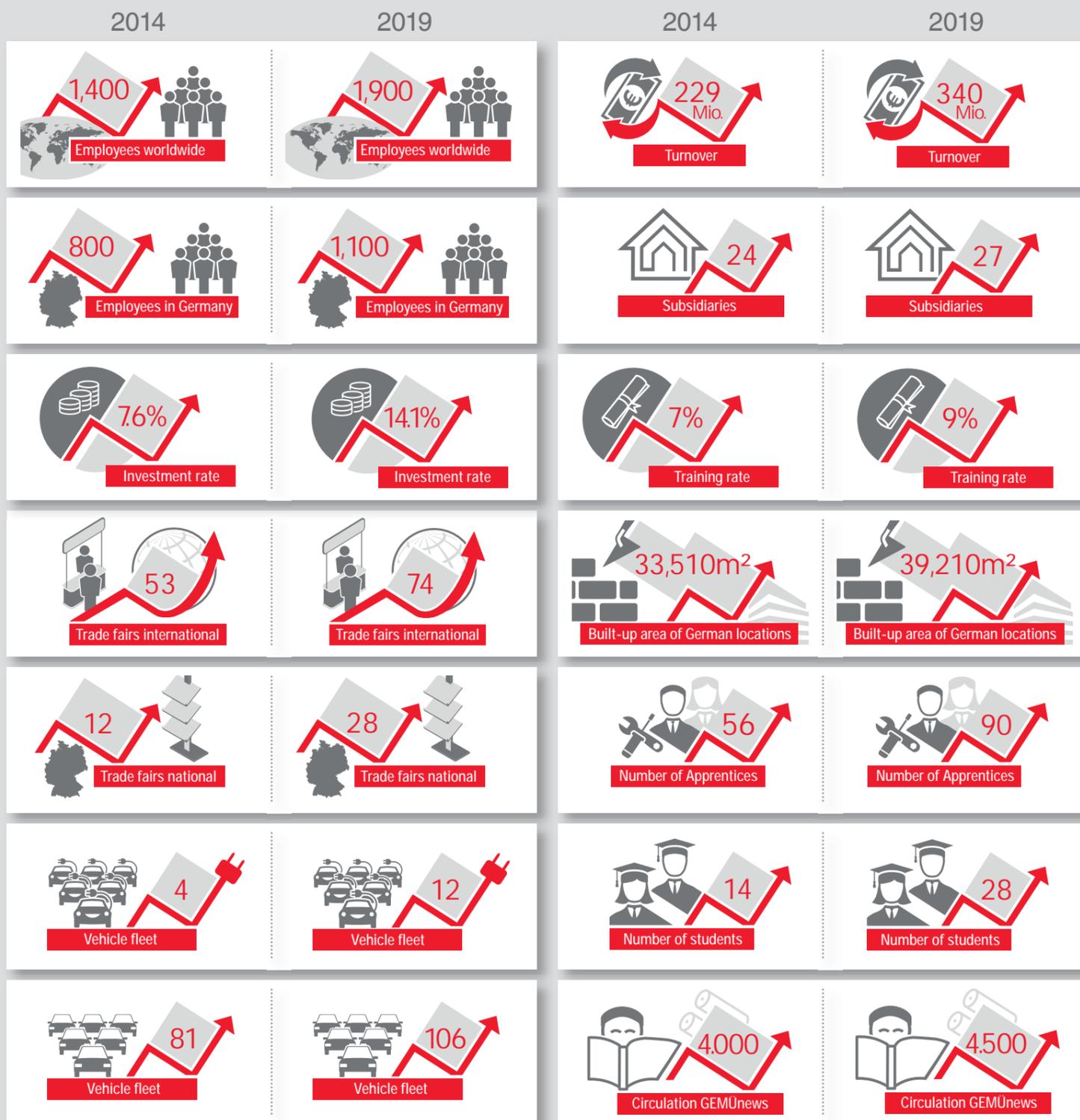
The researchers designate companies as "Global Market Leader Champions" where they are – among other criteria – represented on at least three continents with their own production and/or sales companies, have an annual turnover of at least €50 million, are first or second in the relevant market segment, and can demonstrate an export share or foreign share of at least 50% of their turnover. Another important criterion for a company to obtain the accolade of "Global Market Leader Champion" is to be (owner-) managed with headquarters in the German-speaking region (Germany, Austria or Switzerland).

As a family-owned, owner-managed business headquartered in Ingelfingen-Criesbach (in the German state of Baden-Württemberg), with 27 subsidiaries as well as six manufacturing sites in Germany, Switzerland, China, Brazil, France and the USA, GEMÜ fully satisfies these requirements. In addition to these prerequisites, it was the cutting-edge technology and market leadership in the field of valves, process and control systems for sterile

applications that served as a crucial factor for WirtschaftsWoche in awarding the accolade and WirtschaftsWoche quality seal of "Global Market Leader 2018 – Champions" to GEMÜ.

"We are proud to be represented as a global market leader in the current index and for the third year in a row. This award from WirtschaftsWoche has shown and confirmed to us that it is truly worth focusing on customer requirements, product quality and the continuous further development of our product range," says Gert Müller, Managing Partner at GEMÜ. "As it is based on scientific methods," he adds, "this award serves as confirmation of GEMÜ's worldwide success and its dominance of the technological market."

55 YEARS FULL OF INNOVATIONS SUCCESS IN FIGURES



Norbert Neumann
Team Leader for Corporate
Communication/ Press Officer
norbert.neumann@gemue.de

IMPRINT

Publisher and Copyright:
GEMÜ Gebr. Müller
Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6–8
74653 Ingelfingen-Criesbach
Phone +49 (0) 7940/123-0
gemuenews@gemue.de
www.gemu-group.com

Editors:
Ivona Meißner (GEMÜ)
Norbert Neumann (GEMÜ)
Jasmin Ziegler (GEMÜ)
Birgit Seuffert (factum | adp)

Circulation: 4,500 in German
1,900 in English

APPLICANT SPEED DATING 2.0

GEMÜ'S RECRUITING EVENT



"Skills shortage" is frequently mentioned as one of the main challenges for the HR management of several companies. The labour market is developing into ever more of an employee market – and that's no exception for GEMÜ, who is stepping up its efforts to find good employees. Consequently, GEMÜ has already taken the initiative of simplifying the first step for applicants in the commercial sector, having organized an afternoon of "applicant speed dating" last year as a way of getting to know potential applicants.

The event was held for a second time this year, with a slightly modified format: As an expansion to the previous year, applicants to all areas of the business, including training and internships, were able to participate in the event.

On Friday 17th May 2019, all potentially interested applicants were warmly invited to take part in face-to-face discussions at the GEMÜ Production and Logistics Centre in the Hohenlohe business park. All they had to do was bring along their CV. Once on site, applicants were then able to take part in preliminary discussions with various supervisors of individual departments directly, in addition to talks with the Human Resources department. Effectively, this replaced a personalized cover letter with a personal conversation. Visitors also had the opportunity to take part in a guided tour of the business or get to know the world of GEMÜ through virtual reality (VR) applications.

The second edition of the event was yet again highly successful: The first applicants began turning up even before the event's official start time of 2 p.m., and the number of visitors only continued to grow throughout the day. Despite this, the revised format meant that long waiting times were avoided, and consequently, more than 180 discussions took place throughout the afternoon and evening. The applicants appreciated the open and uncomplicated method of initiating dialogue, and many took part in one of 12

guided tours of the company to gain a small insight into the business. "We're really pleased to see that there is such great interest in GEMÜ as an employer," reports Heike Siegmeth, Head of Human Resources. "We wanted to try out something different and so our team came up with the idea for an applicant speed dating event last year. Following the success of the previous year, we were all looking forward to seeing how this year's event would be received. We are very satisfied with the positive feedback from local attendees regarding the new format."

Speaking as a representative for all other colleagues who were involved in planning and holding the applicant event, Laura Bäuml, Personnel Officer at GEMÜ, added: "We are really happy about the positive feedback. The applicant speed dating event has a number of benefits: On the one hand, the applicants had the opportunity to win us over in person without facing the hurdle of a written application. On the other, for us at GEMÜ, we were able to gather a number of applications that we otherwise would not have received by conventional means. We particularly appreciate the level of commitment we see at the event. Potential employees do not simply come to visit as interested applicants, who have a look around and then maybe send on an application afterwards; rather, they already treat the visit as the first step in the application process."

The afternoon event once again met the participants' expectations. The large wave of interested applicants and the buzzing atmosphere were a source of excitement to all, and it turned out to be a truly successful event. We have nothing but praise for everyone who helped make it happen, and pass on our sincere thanks to employees and visitors alike.

 **Katrin Engert**
Training Management
katrin.engert@gemue.de

GEMÜ TRAINING ON THE ROAD

LEARNING ABOUT TRAINING PROFESSIONS WITH VIRTUAL REALITY



Many young people find it extremely difficult to decide on a specific direction and training profession in the face of the plethora of possible career paths and education opportunities currently available. In view of this issue, the GEMÜ training department has considered how it can help pupils make this decision.

Not all pupils can visit GEMÜ in all locations in order to see the various training professions and their environment. Therefore the training workshops and the training departments go on the road – directly to the school classes and education fairs. With cutting-edge virtual reality equipment, it is possible to present training departments live anywhere, and in the smallest of spaces. To achieve this, 360° videos showing various training professions have been filmed, in which apprentices discuss their training and their experiences.

Viewers can look around the entire room in these videos and form an impression of what it is like to take part in training at GEMÜ. The videos show training workshops in the areas of metalworking and electronics, plastics training in Criesbach, logistics training in the Production and Logistics Centre and commercial professions as well as apprenticeships as product designers in the GEMÜ Dome.



In the last issue of GEMÜ news, we already reported on this large project in the training area. At various events, the GEMÜ 360° app was already in use during the last half of the year. Although the visitors had a rather cautious initial reaction to the modern technology, at the end they were all positively surprised and very excited about the short guide through the training professions. In just a minute, they received a realistic impression of the training facilities with all the important basic information about the training.



The overall results from the first half year are thoroughly positive. Not only numerous young people, but also their parents were able to receive valuable insights into training at GEMÜ. Our in-house apprentices and students were also taken with the technology and did not miss the opportunity to take a look at the videos through the VR glasses. We are already looking forward to new uses for the virtual training and to many more excited faces!

 **Katrin Engert**
Training Management
katrin.engert@gemue.de

SAFE SOLUTIONS FOR OXYGEN APPLICATIONS GEMÜ IS EXPANDING ITS PRODUCT RANGE FOR OXYGEN APPLICATIONS

GEMÜ is expanding its product range for oxygen applications, offering globe and control valves for applications with gaseous oxygen in addition to its multitude of diaphragm valves with immediate effect.

For safe plant operation, GEMÜ is placing particular emphasis on the selection of suitable materials for all media-wetted components. In the case of oxygen applications, this primarily concerns auxiliary and seal materials. This is why, for example, the spindle seals of all GEMÜ globe valves that are suitable for applications with gaseous oxygen are manufactured from PTFE, as the material is difficult to ignite.

Oxygen is considered a critical working medium, since many materials burn intensely and quickly with compressed or pure oxygen. For this reason, special care must be taken for areas of application in which gaseous oxygen is used. In Germany, the Federal Institute for Materials Research and Testing (BAM – Bundesanstalt für Materialforschung und -prüfung) tests and evaluates whether certain materials are suitable for use with the critical medium. GEMÜ offers a wide range of valves for oxygen applications. These include, among others, the GEMÜ 550 globe valves, which feature a uniform stainless steel design; the GEMÜ 554 type, which is distinguished by its particularly compact design; and the motorized GEMÜ 549 eSyDrive type. All these valves use auxiliary and seal materials that have been deemed suitable for use with gaseous oxygen by the BAM. The GEMÜ 601 diaphragm valves for small nominal sizes, the GEMÜ 650 BioStar for small to larger nominal sizes and the GEMÜ 660 filling valve are also type-tested and certified by the BAM.



Thanks to its difficult-to-ignite PTFE seals, the GEMÜ 554 control valve is perfectly suited to oxygen applications.

Florian Mugele
Operational Product Manager
for globe valves
florian.mugele@gemue.de

PRECISE TEMPERATURE MONITORING NEW TEMPERATURE SENSOR

The new GEMÜ 3240 temperature transducer/switch now allows precise temperature monitoring in systems and piping across an even broader measuring range.

The GEMÜ 3240 temperature transducer/switch supersedes the existing GEMÜ 3220 product range with immediate effect. The new sensor's high-quality measuring cells are able to withstand media temperatures of between -40 °C and +150 °C and operating pressures of up to 160 bar while maintaining an accuracy of 0.35% FSO.

In addition to the considerably broader measuring scope, the new series scores highly in terms of its wide range of features. For demanding acid/alkali applications, all media wetted parts are available with PVDF encapsulation, for example.

IO-Link for intelligent networking

With an IO-Link interface, the GEMÜ 3240 temperature transducer/switch can be used centrally to automate and monitor processes. This is beneficial for system networking, for example, as it makes components compatible with one another and facilitates parameterization and data transmission.

The rotatable LED display is another advantage: The 4-digit display allows the current operating parameters to be viewed in any installation position.

Versatility

The new GEMÜ 3240 temperature transducer/switch can be used for a wide variety of applications. The sensor is a reliable temperature measurement and control instrument for use in cooling circuits or for monitoring sterilization processes. It is suitable for a huge variety of media, such as highly viscous or contaminated media. In addition, the high-quality material from which the sensor is made means that it is able to withstand even chemically corrosive media.



Temperature sensor GEMÜ 3240 with various process connections of metal and plastics

With its 3140-series pressure transducer/switch, which it launched back in 2018, GEMÜ has already been able to boast state-of-the-art measurement systems for measuring and controlling pressure. This device is now joined by the new temperature sensor, which broadens the scope of the measurement and control systems range.

Tobias Hasenfuß-Rüdele
Strategic Product Manager
for Sensor Systems,
Competence Center Automation
tobias.hasenfuss-ruedele@gemue.de

CLEAN FILTER PRESSES SAFELY WITH PRE-ASSEMBLED POSITION FEEDBACK

In water treatment and product filtration, filter presses separate solids and liquids in substances such as slurries or suspensions. The mixture of substances to be separated is pressed against the filter cloths via a pump with a pressure of 10–20 bar. The solid parts of the mixture are caught by the filter, forming a filter cake.



GEMÜ 762 – compact flange ball valve with integrated GEMÜ LSC limit switch box

If the filter press is full, compressed air is used in some procedures to dry the filter cake. After completion of the drying process, the press is opened to dispose of the slurry. With an open valve position, however, the feed pump must be switched off, as a contaminated medium will otherwise be pressed into the compressed air network, which results in significant consequential damage to the pneumatic actuators. For this reason, a reliable position feedback of the shut-off valve is an absolute must-have in this step.

For one such deployment upstream of a filter press, a GEMÜ customer required a manually operated shut-off valve with a position feedback that was delivered to the installation site already fully fitted. Taking the given operating parameters into consideration, the choice fell to the tried-and-tested GEMÜ 762 compact flange ball valve with integrated GEMÜ LSC limit switch box. With this position feedback, the feed pump is disabled by the software. This prevented the medium from penetrating the compressed air network by means of the compressed air used when cleaning the filter press.

GEMÜ has a winning formula in the form of its pre-assembled solution

In this case too, GEMÜ was able to provide the customer with a technically advanced solution for ball valves for manual operation with a suitable electrical position indicator that was tailored to their requirements. And what's more, this solution was already pre-assembled, preset and tested.

Thus, the user obtained the appropriate solution for safe operation of their plant from a single source, while simultaneously avoiding additional effort and expenditure when it came to the logistics and installation of the plant on site, as well as the documentation.

For the position feedback, GEMÜ offers the GEMÜ LSF inductive dual sensors or the GEMÜ LSC limit switch boxes. They are available for both the GEMÜ 711 and GEMÜ 740 3-piece ball valves, the one-piece GEMÜ 762 compact flange ball valve as well as for the GEMÜ 797 high-pressure ball valve.



Industrial filter presses separate solids and liquids in substances



SINGLE-USE DIAPHRAGM VALVES

GEMÜ SUMONDO ESTABLISHED ON THE MARKET

GEMÜ has developed the first controllable single-use diaphragm valve.

The GEMÜ SUMONDO product range comprises a manual as well as a pneumatically operated solution.

Produced and packaged in the cleanroom, the single-use valves comply with all requirements for pharmaceutical processes. Yet the application possibilities do not stop there. In other areas too, such as in research centres and laboratory facilities, the valves become a cost-efficient and, above all, safe solution. The risk of cross contamination is considerably reduced, cleaning costs are significantly reduced, and plant downtimes are reduced to a



Manually operated single-use diaphragm valve



Pneumatically operated single-use diaphragm valve

minimum. Even with smaller batches and more frequent changes of media, the advantages of GEMÜ

SUMONDO quickly become apparent and prove themselves in terms of cost.

The underlying idea of GEMÜ SUMONDO can be summarized as follows: A valve body for single use and an actuator for repeated use. With this combination, the foundation is laid for cost-effective processes with the highest quality. The optional instrumentation completes this valve solution and makes it intelligent. This means that, thanks to GEMÜ's modular system, various positioners and process controllers can be easily integrated. GEMÜ SUMONDO is available in various connection sizes and with various connection types. These range from 1/4" to 1" from the clamp connection to the hose barb. Both for new, but especially for existing plants, operators acquire fully new options for more flexible plant

management and a wider range of controllability – with flow rates of 0.5 m³/h up to 12 m³/h.

The requirements and demands placed on the plant design will also increase in the future. With GEMÜ SUMONDO, the operators of single-use systems already have a future-proof solution at their disposal – one that impresses thanks to its safety, quality and efficiency.

 **Lars Seeberger**
Product Manager
Single-Use Valves
lars.seeberger@gemue.de

GEMÜ 567 BIOSTAR CONTROL ASEPTIC CONTROL VALVE WITH EXPANDED PRODUCT RANGE

In 2015, the GEMÜ 567 BioStar control aseptic control valve introduced the ideal solution for regulating small quantities to the market. In the meantime, this innovative valve concept for control applications in hygienic and sterile processes has established itself on the market.

The GEMÜ 567 BioStar control valve uses the GEMÜ PD design, which won the "ACHEMA Innovation Award 2018". In this design, the PD, a highly resistant plug diaphragm made from second-generation modified PTFE (TFMTM), with regulating cone acts as the seal. This seal ensures that all moving parts of the actuator are hermetically sealed from the product area. Thanks to this technology, a very high number of switching cycles is achieved, along with an extremely precise control system.

In order to be able to offer an even more comprehensive range of solutions for position and process controls, the GEMÜ 567 BioStar control has been gradually developed to offer a complete range of small to medium nominal sizes with various actuator concepts and consequently satisfy the existing customer requirements in the best possible way. In the pharmaceutical, foodstuff and biotechnology industries, the trend is moving more and more frequently away from electro-pneumatic controls to software-supported motorized controls. GEMÜ is therefore expanding its existing manual and pneumatic actuator sizes and nominal sizes of the GEMÜ 567 BioStar control valve to include two motorized actuators. The electrical basic version eSyDrive and the high-end version ServoDrive have been available since the end of last year.

The eSyDrive actuator is suitable for all control applications with stringent requirements on accuracy, actuating speed and length of service life. The GEMÜ 567 BioStar control valve with eSyDrive actuator can be used for all applications that have since been performed with pneumatic control valves. In future, however, there should be no need for compressed air and the additional controller. The new actuator can be attached directly to the machine control system of the plant via a cable with various connectors.

GEMÜ 567 BioStar control



with eSyDrive actuator



with ServoDrive actuator



with pneumatic actuator

The ServoDrive actuator is distinguished by its performance, accuracy and long service life. The actuation in real time, a speed of up to 280 mm/s and a positioning accuracy of ±10 µm allow for completely new speeds and positioning accuracies. In addition to these improvements in performance, the low-maintenance servomotor stands out on account of its energy efficiency and long service life. By avoiding exhaust air and the cable with electrical protection class IP69K that is directly connected to the actuator, the control valve can be used in insulators and cleanrooms.

The connection to the machine control system is established via an external controller, which can be connected via a bus system when multiple control valves are used or directly to the machine control system when a single control valve is used.

Along with the introduction of the motorized actuators, the control valve platform has also been further developed for larger sizes and up to a nominal size of DN 25. Consequently, with a pneumatic actuator, Kv values of up to 12.5 m³/h can now be precisely controlled. The electrical eSyDrive actuator version will also soon be available for this first nominal size extension.

Currently, GEMÜ is working on expanding its range of control valves up to a nominal size of DN 50. Through this further development, the complete main application area for aseptic and hygienic controls will be covered in future. Pneumatic and motorized actuators should also then be available for controlling larger quantities. The aim is a regulation of flow rates of up to approx. 50 m³/h.

 **Christoph Winter**
Strategic Product Manager for
Globe, Control and Filling Valves
christoph.winter@gemue.de

GEMÜ AND THE E-MOBILITY INTERVIEW WITH GERT MÜLLER

GEMÜ invests in e-mobility. The fleet is being gradually extended to include electric cars and hybrid vehicles, additional charging points are being installed in the company car park and employees with hybrid or electric cars can recharge their vehicles for free while they are working. In this interview, Gert Müller reveals where he stands on the subject of electromobility.

GEMÜnews: Mr Müller, you seem to be a real fan of e-mobility; do you see the measures that have been taken as a contribution towards sustainable growth?

Gert Müller: GEMÜ is a technology company and a pioneer in many innovative subjects. When I look into the future, I see several new and exciting technologies that will change our lives in the long term. The prevalence of electric cars is one of those. We began using electric vehicles very early on by way of making a gradual contribution to preserving both the environment and our resources. We have also introduced further measures to achieve this goal, such as the construction of a photovoltaic system on the roof of the Production and Logistics Centre. With these measures, I want to send a clear signal that we are an environmentally friendly company.

GEMÜnews: Are there further plans in place, for example to install a stationary energy storage system for intercepting load peaks?

Gert Müller: Yes, that's something I'm working on right now. If the technology continues to develop and is available in a phase of expansion that meets our needs and expectations, it is entirely conceivable that we might install a stationary energy storage system. Our objective is to further increase our degree of autonomy and thereby further reduce our dependence on external energy sources in the future.

GEMÜnews: The subject of e-mobility is not only making waves in Germany. Tesla is placing increasing pressure on German car manufacturers, start-ups such as e.GO and Streetscooter are making a name for themselves on the market and billions are being invested in the development of new mobility concepts and drive technologies in the world's largest automotive market in China. How do you feel about these developments?

Gert Müller: E-mobility wasn't invented yesterday. GEMÜ has been using a hybrid car, an electric Opel Ampera, for just under eight years. There has been increasing pressure from foreign car makers. I think some German car manufacturers underestimated the importance of this technology to begin with. And now it's really taken off. China, for example, is already investing heavily in e-mobility. The number of electric cars on Chinese roads is increasing, considerably more than here in Germany. Electric scooters are also becoming increasingly popular in China. In the space of a year, China has converted the majority of its scooters to electric scooters. But I still believe in the innovative power of Germany and am confident that German companies are set to develop rapidly in this area.

GEMÜnews: The production of the rechargeable battery accounts for approximately 40% of the entire added value of an electric car. The Li-ion battery cells needed for this come almost exclusively from Asia. Is the German automobile industry too dependent on Asian cell suppliers and how successful do you think a European cell-production facility would be?

Gert Müller: It's difficult to say whether the automobile industry should have access to this expertise. But I'm certain that Germany will make an important technological contribution to the production of battery cells, particularly in terms of the mechanical engineering involved in constructing new production facilities for battery cells.

GEMÜnews: The so-called "Swedish study" and further publications report that electric cars are no more environmentally friendly than comparable engine-powered models. What are your thoughts on such studies? Are Germans being cynical when it comes to electric cars – do they fear for the domestic industry and feel threatened by new technologies?

Gert Müller: It is generally assumed that fossil-generated power is used in the production of batteries, although the extent to which these claims are substantiated is questionable. In my opinion, electromobility is only a temporary solution. Time will tell which technology will prevail, whether it's hybrid or hydrogen or a completely new technology. Germany is a car-loving nation that has developed outstanding cars and engines. The automotive sector is the driving force in Germany, without a doubt. We are only cynical about electric vehicles in comparison with China when it comes down to percentages. I do believe, however, that using exclusively electric cars is the wrong approach. There are many other interesting technologies such as hybrid and hydrogen cars. The technology that works best for everyone will prevail. The fear that all petrol engines will be replaced by electric cars is in my view unjustified. The number of new suppliers will increase rapidly, and this will require completely new technologies.



GEMÜnews: Another new concept that is gaining traction is "technological openness". There is a vast difference of opinion on this subject among car manufacturers. For Daimler, for example, the further development of different drive technologies is essential. Whether it's diesel, CNG and hybrids, electric cars, fuel cells or synthetic raw materials, no future technology is overlooked. According to VW, on the other hand, e-mobility is the only technology that can achieve the climate targets of the Paris Agreement. Where do you stand on this?

Gert Müller: I think electromobility is one of the best temporary solutions. Simply in terms of the infrastructure required, the electric car is leagues ahead, as the construction of a charging point network is currently the simplest to implement.

GEMÜnews: Despite the fact that, as a manufacturer of valves, measurement and control systems, GEMÜ does not have a clear way of intersecting the e-mobility market, you have remarkably broad expert knowledge in this area. Is that due to a general passion for the subject or do you think this is an opportunity for GEMÜ to penetrate new sales markets?

Gert Müller: I am open to all technologies that set wheels in motion. GEMÜ is a technology company. We focus not only on the drive concept of cars but also on the digitalization of vehicles and autonomous driving. We are interested in the manufacturing processes of electric cars, as this is where our products, particularly Li-ion battery cells, are likely to be used. During the production of these cells, a range of different chemicals are processed, which place stringent demands on the production plants used. Our Semiconductor Business Segment deals with exactly such topics and specializes in these applications.

GEMÜnews: What can companies do to drive forward electromobility?

Gert Müller: A first step is to use electric cars in their fleet. Companies can also inspire their employees to purchase private electric vehicles by allowing them to charge their vehicles for free on company car parks. Our employees can already recharge their cars for free at our charging points while they are working.

GEMÜnews: Why are you offering your employees free e-charging points on your company car park?

Gert Müller: I want to make electric cars more attractive to our employees. The advantage they have over an internal combustion engine is that they can leave work with their vehicle fully topped up and ready to go. I'm keen to promote e-mobility and support all those employees who make a conscious effort to become more environmentally aware. At our Production and Logistics Centre, the electricity required for this is generated by our photovoltaic system. As a state-of-the-art company, GEMÜ is a pioneer in this field and also an attractive employer.

GEMÜnews: You are supporting an e-carsharing model in the town of Niedernhall. Why are you doing this?

Gert Müller: I'd like to promote e-mobility beyond our company. I think it is brave and remarkable for a town as small as Niedernhall to be pushing forward such an initiative. The town is improving the quality of life of its residents by enabling them to travel in a way that is both cost-effective and environmentally friendly. Mobility can be a problem in rural areas, where local public transport is often inadequate. I therefore believe that local companies should promote e-mobility to the best of their abilities. I hope many more companies will join us. I'd be more than happy to help others come up with ideas.

GEMÜnews: One of the main arguments against electric cars is the lack of charging points, particularly outside large cities. Who do you think is responsible for this?

Gert Müller: The state announced it would expand its electric vehicle charging network but this has not yet progressed far enough. Companies from the automobile industry in particular are therefore expanding the network across large areas. Companies in rural areas need to help drive this expansion. With this in mind, GEMÜ sponsored the charging point on the Wertwiesen festival grounds in Künzelsau in 2015.



FROM A SINGLE VALVE TO A SYSTEM BROAD GEMÜ PRODUCT RANGE FOR MICROCHIP PRODUCTION

The semiconductor market is characterized by its extremely dynamic nature. The demand for new technologies such as Industry 4.0, virtual reality or autonomous driving does not only drive up the demand for microchips, but also increases the manufacturing complexity of the microchips. GEMÜ must be able to adapt to and react to this increasing complexity with innovative, integrative solution concepts.

In order to keep up with the increasing manufacturing complexity, the extensive GEMÜ product range is available to customers. Customers in the semiconductor industry rely above all on the GEMÜ CleanStar and the iComLine series.

The diaphragm valve principle provides the GEMÜ CleanStar series with a flow-efficient seat contour. This results in low-impact media handling and a high Kv value. These features permit the customer to implement trouble-free process sequences for ultra-pure water treatment and media recycling, especially for applications in the chemical industry and slurry supply.

The GEMÜ iComLine series is characterized by the special globe valve design and the excellent PD sealing concept. It is available as a 2/2-way valve, but also permits customized special block solutions with multiple drives, sensor integration and additional features. This permits a particularly compact design and therefore a low space requirement in customer process plants in areas of application such as lithography, etching and coating processes.

It is clear that the areas of application are very different from each other, as can be seen in figure 1.

There are however applications in which both product ranges are used and where additional capabilities are required. An example of this is the primary manufacturing of a wafer. The wafers are cut, cleaned and pre-ground before they are then further processed in the cleanroom to become microchips. The chemical supply of the individual processes takes place through means such as valve manifold boxes (VMBs). These are normally comprised of a

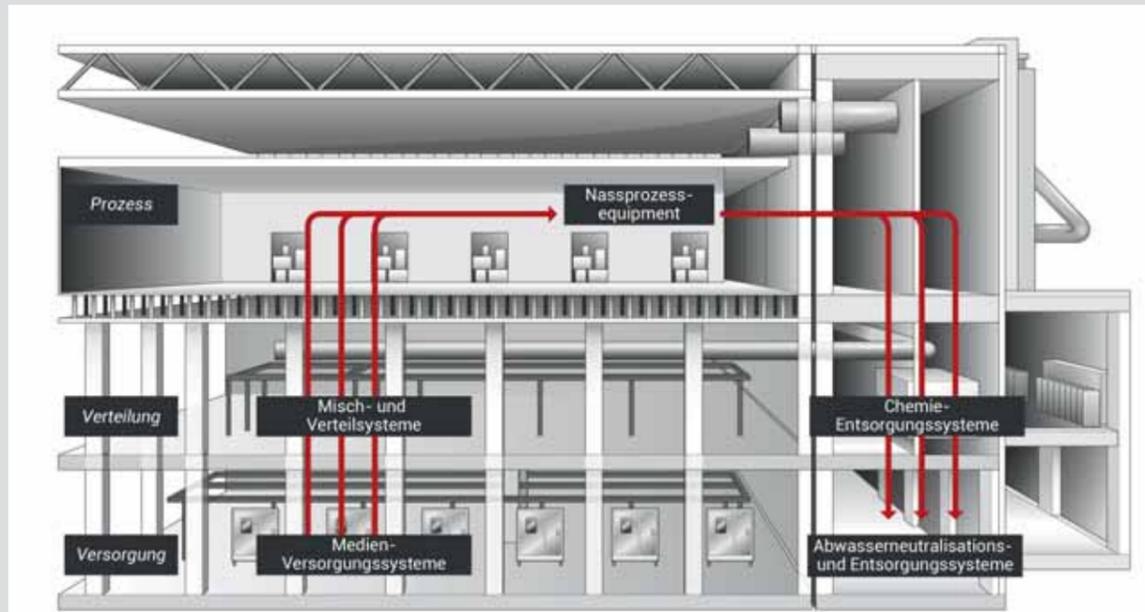


Figure 1

main pipe (main) and a varying quantity of branches (sticks) depending on process requirements.

The respective advantages of the GEMÜ iComLine and CleanStar series are combined in the VMB in figure 2. As it is necessary to ensure a higher flow rate in the main pipe, GEMÜ CleanStar valves have been used to this end, which are joined with each other by means of infrared welding. In order to also provide a compact VMB design, the sticks were implemented with an GEMÜ iComLine special block solution. For this, four valves were integrated in a block.

The described application shows that GEMÜ is already equipped today for tomorrow's challenges with its innovative capacity, supporting its customers in mastering the increasing manufacturing complexity together.

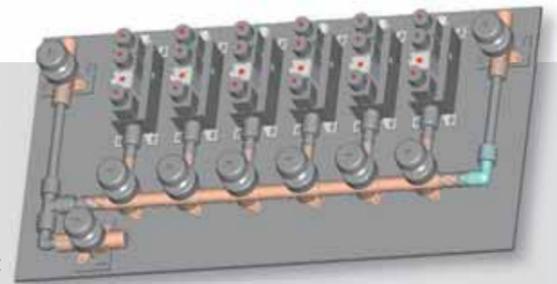


Figure 2

Thomas Naber
Team Leader of the Semiconductor
Business Segment Project Group
thomas.naber@gemue.de

Burkhard Müller
Head of the Semiconductor
Business Segment
burkhard.mueller@gemue.de

SCIENCE SLAM AT THE OPEN CAMPUS NIGHT SECOND PLACE FOR ANATOL TONCH

Fruitful partnership with GEMÜ gives rise to a Science Slam at the Open Campus Night.

The Open Campus Night took place on 24th May 2019 at the Künzelsau campus. In addition to general information about the University of Applied Sciences, this year there was a new highlight: the Science Slam, in which "slammers" faced off against one another with short presentations. Representing GEMÜ, Anatol Tonch stepped into the ring. Mr Tonch impressed the participants with his work on "The miniaturization of electronic units for motor control and regulation with programmable logic using PLD and FPGA technology" and took second place. First place went to Felix Wagner (M.Sc. Electronics) and third place to Kevin Bergen (partner at Optima nonwovens GmbH).

The idea of a science slam as a way of inspiring young people to embrace technology and the region came about as a result of GEMÜ's involvement. The company has been working closely with the Reinhold Würth Hochschule (RWTH) for many years. "The RWTH in Künzelsau trains young students with a passion for technology. The format of the Science Slam is young, fresh and open. Just like the students. We loved the concept," says Werner Flögel, explaining the background to the idea. The Science Slam offers students the

opportunity to present themselves and their skills and to embrace technology. It also provides a platform for networking with local companies.

The first Science Slam was a real success and the highlight of the Open Campus Night. Following on from this success, Werner Flögel hopes to establish and continue the format of the Science Slam as a series of events.



Norbert Neumann
Team Leader for Corporate
Communication/Press Officer
norbert.neumann@gemue.de

Werner Flögel
Digital Officer – Innovation
– Global Technics
werner.floegel@gemue.de

Dr. Georg Pfeifer,
Managing Director of
OPTIMA nonwovens GmbH,
with the winners of the Science
Slam, from left to right:
Anatol Tonch (2nd place),
Felix Wagner (1st place) and
Kevin Bergen (3rd place)

GEMÜ PRODUCTS IN SEMICONDUCTOR FACTORIES

VCR CONNECTION OFFERS MORE FLEXIBILITY FOR PLANT DESIGNERS

One of the main goals in the semiconductor business segment is to offer customers a comprehensive valve solution for their plant, incorporating GEMÜ's experience as well as valves from the pharmaceutical and industrial sectors.

Butterfly valves, ball valves and diaphragm valves made from stainless steel or plastic are typically not developed for the requirements of the semiconductor industry. For this reason, these products do not come to mind straight away in the context of cleanrooms in a semiconductor factory. Cleanrooms are used for activities such as cleaning wafers, as well as applying layers of material, structuring and etching in order to generate functional layers or integrated circuits. These processes place strict demands on purity and resistance, which is derived from the structural size and the process media used. To meet these requirements, GEMÜ supplies a comprehensive range of suitable valves, measurement and control systems. The GEMÜ CleanStar and iComLine valve types are used in this respect, as well as the GEMÜ HydraLine pressure measurement system and GEMÜ SonicLine flowmeters. In addition, GEMÜ FlareStar PFA fittings and GEMÜ TubeStar PFA tubing are used.

If you now take the entire semiconductor factory into consideration, it becomes clear that areas of supply, distribution and disposal also play an important role. Considered in greater detail, the specified areas range from chemical, slurry and solvent supply to ultra-pure water treatment and wastewater neutralization. The requirements for valves, measurement and control systems in this regard could not be more different. GEMÜ has a highly diversified range that includes a suitable product for virtually every application in the areas of supply, distribution and disposal within a semiconductor factory. There's not much more we can do to get closer to our customers in the semiconductor segment than to offer them a comprehensive valve solution for their entire production plant.

In the past, the GEMÜ semiconductor business segment has already successfully achieved exactly this, for example by establishing the GEMÜ



Thanks to the union, customers have greater flexibility in the development of their plants and when replacing components.

Thanks to the existing welding competence of GEMÜ, we can weld VCR connections to valve bodies and directly deliver ready-to-install components ex works.

Leading semiconductor manufacturers already use the series GEMÜ 612, GEMÜ 650, GEMÜ 673, etc. with VCR connection in their factories. This results in various advantages for plant designers and end users:

- ⇒ Simple removal and replacement of components
- ⇒ Flexible installation of supply systems
- ⇒ Service companies that weld connections to components are no longer required



3D-Modell
GEMÜ 650 BioStar control
mit angeschweißtem
VCR-Anschluss

stainless steel diaphragm valves in the area of solvent supply. In this area of application, stainless steel bodies are mostly used on account of the chemical and physical characteristics of the solvents. In addition to butt weld spigots, there is a global demand here for the VCR connection. This concerns a union with what is known as a "metal-face-

to-face" sealing concept, which was originally used in gas applications. Thanks to the VCR connection, GEMÜ is offering its customers additional possibilities for applications in the areas of supply, distribution and disposal. Consequently, the plant operators not only benefit from the specialist expertise of GEMÜ with regard to semiconductor production, but also from the general experience that GEMÜ has in the area of valve design.

 **Jonas Claus**
Application Engineer
jonas.claus@gemue.de

 **Burkhard Müller**
Head of the Semiconductor
Business Segment
burkhard.mueller@gemue.de

NEW ELECTRICAL POSITION INDICATOR

With the new GEMÜ C12A electrical position indicator, GEMÜ is offering a customer-oriented solution for intelligent process automation in the chemical and semiconductor industry.



The position indicator is available as a mounting part for the pneumatically operated GEMÜ C50 iComLine diaphragm globe valves and is particularly suitable for automation in wet process equipment. The GEMÜ C12A end position indicator detects the position of the valve spindle contactlessly. An electrical signal transmits the respective position of the valve (open/closed) to the plant control system. The electrical position indicator is particularly distinguished by its compact design with reliable functionality and simplicity of installation. It is available for all nominal sizes in the GEMÜ C50 iComLine series and can also be adapted to the GEMÜ PC50 iComLine M-block. The position indicator can be pre-assembled or supplied as a retrofit kit. The electrical position indicator has the IP 64 electrical protection class and is operated with a 24 V DC connection.

Pneumatically operated GEMÜ C50 iComLine diaphragm globe valve with GEMÜ C12A electrical position indicator

 **Jürgen Mühleck**
Design Engineer for Block Valves
Business Segment Semiconductor
juergen.muehleck@gemue.de

APPLICATION SYSTEM NEW: LUER VIAL



The modular packaging and application system Luer Vial by GEMÜ allows for one-hand operation combined with a longer useful life of permeable active substances.

The Luer Vial by GEMÜ combines an optimized useful life with a standardized and aseptically filled container. The reliability and user friendliness have been increased with an application-specific applicator, which allows for precise dosing via one-hand operation. The Luer Vial by GEMÜ has been developed as a modular packaging and application system for easier dosing of active substances with a longer useful life, as well as the lower process costs that result from this.

The challenge

Up to now, the useful life of the active substances was dependent on the service life of the applicator. The reason for this is the direct connection of both components during storage. This required both the active substance to be filled and the applicator to be assembled at the same specified location. Both factors had a significant impact on the production, logistics and storage processes. In addition to the specified requirements, the following existing product features needed to be maintained: Simple and intuitive handling, controlled and precise dosing of the active substance, protection against uncontrolled loss of fluid and avoidance of cross-contamination. A controlled droplet size during the spraying process was a strict prerequisite to guarantee the safety of application.

The solution

The device and the container are separated in the Luer Vial Spray by GEMÜ. The vial, or more specifically

the pre-filled container, consists of a different optimized material (COC) to the applicator. The vial is sealed with a film. This makes it possible to fill the vial in a physically separate location to the assembly with the applicator. The sensitive liquid ingredients are filled so that they are protected from light and any other sensory influences. This simplifies the logistics. Furthermore, the reliability of application is increased and a flawless, constant delivery of active substances is ensured. The spray head has been specially developed for the required droplet size and spraying angle, in order to avoid inhalation of the active substance. The key feature of the product is the distinctive product identification at "point of care" and the support of the actuarial simplification of the expensing of borrowing costs for the patient. Thanks to the integrated Luer end piece, the Luer Vial by GEMÜ can be used in a number of different applications.

 **Raimund Bislin**
Head of Medical Division
raimund.bislin@gemue.ch



ZERO COMPROMISES WITH THE CHOICE OF ACTUATOR

STANDARDIZED ACTUATOR FLANGE FOR K415 VALVE BODIES



The standardized actuator flange now allows K415-series butterfly valves to be tailored to a wide variety of applications with even greater precision.

The GEMÜ K415 valve body now has a standardized actuator flange that complies with ISO 5211. Whether it is a corrosion resistant housing for outdoor use or a particularly compact design with a space-saving piston actuator that is required, GEMÜ's new standardized interface offers even greater flexibility when it comes to choosing actuators: Using the modular design principle, it is now possible to fit different quarter turn actuators to the GEMÜ 411 manually operated butterfly valve, the GEMÜ 415 pneumatically operated butterfly valve and the GEMÜ 428 motorized butterfly valve to meet the exact requirements of the application in question.



GEMÜ K415
 **Michael Mütsch**
*Operational Product Manager
 for Quarter Turn Valves
 michael.muetsch2@gemue.de*

The soft seated, concentric K415 valve bodies are manufactured from high-quality stainless steel or brass, and are available with a choice of different connection facilities in nominal sizes DN 15 to DN 50. On request, the metal surfaces can also be finished.

With their rounded off discs and polished edges, the butterfly valves can be relied upon to perform, even in the face of frequent cycle duties. The compact, solid housing is suitable for a huge range of different applications including vacuum applications, even at low temperatures (depending on the configuration).

When combined with the precise actuator design, the GEMÜ 415 series becomes the perfect all-rounder for butterfly valves in small nominal sizes.

EXPLOSION PROTECTION TO GLOBAL STANDARD

FIRST PRODUCTS WITH IECEX CERTIFICATION NOW AVAILABLE

GEMÜ has considerably expanded its range in the area of products for potentially explosive media.

For many years now, GEMÜ has been offering highly successful explosion-proof components for the European and American market that comply with the ATEX 2014/34/EU and NEC 500 guidelines. The first devices certified according to the international IECEX standard are also available from this year onwards, which puts GEMÜ in a position to manufacture and distribute devices for hazardous locations all over the world.

Explosion-proof components are used in a number of applications. This includes the generation and treatment of gases in the chemical industry or the use of chemicals such as ethanol in the pharmaceutical industry. In order for the devices to be able to be used under these operating conditions, they must include specific design features. For example, they must not generate any electrical sparks or become electrostatically charged. These design characteristics of the devices are checked and certified by an external notified body.

The subsequent auditing, which takes place via a wide range of product and process checks at GEMÜ, has proven that GEMÜ boasts highly specialised expertise in the area of manufacturing electronic devices, too. Special test procedures for the respective types of ignition protection have also been validated, as have the training measures for the qualified production staff.



GEMÜ 4242 with various performance

GEMÜ 1242 with various performance

The first few devices that comply with the IECEX standard are the GEMÜ 1242 electrical position indicator and the GEMÜ 4242 combi switchbox, available in size 1 and 2 respectively. The electrical position indicator and the combi switchbox can be used in Zone 2 for gases, mist and vapours and in Zone 22 for flammable dusts. The temperature class for Zone 2 is T4, at a maximum ambient temperature of 60 °C, and 80 °C for Zone 22, also at a maximum ambient temperature of 60 °C.

Gradually, all products that currently possess an ATEX certificate will also need to be certified in accordance with IECEX in future. With this, GEMÜ is gradually expanding its range of products for potentially explosive media.



 **Anesa Stanke**
*Product Manager for position
 indicators and combi switchboxes
 anesa.stanke@gemue.de*

KEEPING UP WITH THE CURRENT OF TIME ELECTRIC VALVES – A BETTER ALTERNATIVE?

A growing trend towards electrification is also noticeable in the processing industry. There is an ever-increasing demand for more energy-efficient alternatives to compressed air systems. Yet every actuator type has its own advantages and disadvantages. Therefore, the general question is not which actuator type is the "best", but rather a question of which actuator system is the most suitable for which application. Consequently, for each application, not only a suitable valve type must be selected, but also an optimum actuator type – as per the slogan "the right actuator for every application". As an expert partner with many years of experience in the field of electrical, pneumatic and manual actuators, GEMÜ is ready to assist its users in selecting a suitable actuator. The main factors for consideration when selecting the ideal actuator type tend to be cost, risk, performance and availability.

Cost reduction

"Energy efficiency" has gained prominence as a guiding concept. Significantly higher efficiency, and consequently a better energy balance, can be achieved with state-of-the-art electric valves as opposed to pneumatic systems. The absence of any need for time-consuming installation processes or maintenance of compressed air systems also allows for additional cost savings. The steadily increasing level of automation is more and more frequently resulting in a coexistence of pneumatic and electrical networks. Electrical auxiliary devices are frequently used for actuation, control and feedback in pneumatic actuators, which require electrical energy and signal transmission along with the pneumatics for the process valve. Therefore, in addition to the installation and maintenance of a compressed air network, an electrical network must be available and suitably maintained. The reduction to a single energy form results in cost savings through lower installation and maintenance requirements, for example, or a reduced need for specialists. Additionally, the system availability is increased, since potential faults are reduced.

Risk reduction

The risk of contamination from compressed air is a frequently discussed issue in the pharmaceutical and biotechnology industries. Critical process steps require sterile compressed air. In this regard, it is not only the generation of sterile compressed air that is a complex process, but the sterilising capability of the entire system must also be taken into consideration. Electrical valves can eliminate the risk of contamination. Yet, in industrial applications as well, system availability can also be increased through the use of electrical valves. The responsibility for compressed air preparation often lies with the plant operator. Accordingly, this matter is handled differently. If contaminated compressed air gets into the system, it can lead

to (often) irreparable malfunctioning of pneumatic components such as pilot valves and positioners. Fluctuations in the compressed air network, for example through simultaneous switching of multiple valves, can lead to the malfunctioning of pneumatic components.

Performance increase

Thanks to their precise control systems with no overshooting and independence from the medium pressure, motorized valves are a fitting choice for control applications. However, in ultra-fast applications such as filling processes as well, the clock rate can be increased further through the use of motorized actuators. In conjunction with an extremely high positioning accuracy, this leads to considerable increases in productivity. A wide range of parameterization and diagnostic facilities that form the basis for increasing digitalization are often part of electrical valves. These are an important prerequisite for Industry 4.0 applications.

Availability

Very often, it is also the pure availability that is the decisive factor. In many areas of application, there is simply no compressed air available for a wide variety of reasons. In contrast to this, electricity is practically ubiquitous. Whether in small plants such as test rigs, mobile plants, applications in outdoor areas or even decentralized systems with occasional or widely distributed valves – electrically operated valves can be used almost anywhere.

The right choice of valve

A number of different electrical actuators are available to customers from GEMÜ. The appropriate actuator for the application is specified by the process requirements. In this regard, performance (power, service life, actuating speed and duty cycle), functions (range of functions, parameterization options, service/diagnosis options) and price are crucial criteria. The figure below provides an overview of the GEMÜ linear valves with a motorized actuator.

A low-cost diaphragm valve for simple and cost-sensitive applications is available in the form of the GEMÜ R629 eSyLite. It constitutes a cost-effective alternative to solenoid valves made of plastic or motorized plastic ball valves.

The GEMÜ eSyStep valves are designed for standard open/closed and simple control applications. With regard to the actuator, this is a compact spindle actuator with step motor. Via the interface in the housing cover, additional accessories such as diverse electrical position indicators or travel sensors can be mounted. The following valve types are available with the GEMÜ eSyStep actuator:

- ⇒ GEMÜ 533 eSyStep globe valve
- ⇒ GEMÜ 543 eSyStep angle seat globe valve
- ⇒ GEMÜ 639 eSyStep stainless steel diaphragm valve
- ⇒ GEMÜ R639 eSyStep plastic diaphragm valve



GEMÜ range of electrical linear valves



Martin Schifferdecker
Produktmanager Elektromotorische Antriebe
martin.schifferdecker@gemu.de

MOTORIZED QUARTER TURN ACTUATORS EXPANSION OF THE PRODUCT RANGE

The GEMÜ eSyDrive valves are available for variable and complex open/closed and control applications in conjunction with high requirements on performance and service life. Designed on the basis of the hollow shaft principle in conjunction with technology that does not use brushes or sensors, the GEMÜ eSyDrive actuator sets new standards in terms of service life, compactness, actuating speed and energy efficiency. The self-locking actuator also offers a high level of reproducibility for positioning and is therefore ideal for use in control applications. GEMÜ offers the following diaphragm and/or globe valves with the GEMÜ eSyDrive actuator:

- ⇒ GEMÜ 539 eSyDrive globe valve
- ⇒ GEMÜ 549 eSyDrive angle seat globe valve
- ⇒ GEMÜ 649 eSyDrive stainless steel diaphragm valve
- ⇒ GEMÜ R649 eSyDrive plastic diaphragm valve
- ⇒ GEMÜ 567 BioStar control valve

In the area of foodstuff and pharmaceutical filling, there are often extreme requirements with regard to actuating speed, positioning accuracy and service life of the actuator. This is why GEMÜ offers the GEMÜ F60 filling valve with motorized actuator, which fulfils these special requirements.

In addition to the motorized actuators, solenoid valves play an important role in the product range. Particularly in the small nominal size range, a solenoid valve can put its advantages to good use, which include a defined safety position, compact size, high switching speed and long service life. New to the market is the GEMÜ M75 process solenoid valve with complete pressure compensation, which can also be used at high pressures and nominal sizes via a doubled bellows system. In the area of metal solenoid valves, the GEMÜ range comprises the following types:

- ⇒ GEMÜ 8253 solenoid valve with positive lift diaphragm
- ⇒ GEMÜ 8257 solenoid valve with positive lift diaphragm
- ⇒ GEMÜ 8258 pilot-operated solenoid valve
- ⇒ GEMÜ 8259 directly controlled solenoid valve

Equipped for the future

Electrical valves have particular appeal on account of their cost efficiency and performance. The reduced risk of contamination and the application in a wide variety of plants are also positives in favour of electrically operated valves. With this expanded product range, GEMÜ is offering an extensive range of electrical valves in addition to manual and pneumatic variants and consequently reacting to the growing demand in this area.

There are also a variety of electrical versions available for GEMÜ quarter turn valves.



Butterfly valve GEMÜ 488
Victoria with actuator GEMÜ AQ



Butterfly valve GEMÜ 488
Victoria with actuator GEMÜ BC



Bernard
GEMÜ BC
Logic actuator



Butterfly valve GEMÜ 423
with actuator GEMÜ 9428

In addition to the previous motorized quarter turn actuators GEMÜ 9428 and GEMÜ 9468, GEMÜ is now expanding its product range to include the GEMÜ BC.

By cooperating with various suppliers, and in combination with its in-house motorized quarter turn actuators, GEMÜ can offer optimal solutions with motorized quarter turn valves for a wide variety of applications and uses. The expanded product range also includes applications that range from very low-cost and simple to complex and sophisticated solutions.

GEMÜ has already been producing in-house quarter turn actuators for many years. These have been tried and tested in practice and are available on all quarter turn valves. The motorized quarter turn actuators

GEMÜ 9428 and GEMÜ 9468 have a plastic housing up to DN 150. For larger diameters, GEMÜ 9468 with a metal housing is used. GEMÜ 9428 and GEMÜ 9468 are always used when the application requires a high duty cycle and many switching cycles.

The range is rounded off by the AUMA actuator, which is called GEMÜ AQ, and is ideal for highly demanding applications and use over multiple decades. This actuator has permitted GEMÜ to win some municipal water supply projects over the past years. The AUMA electric quarter turn actuator makes it possible to provide a solution for extreme applications as well and offer a very large modular system, which includes all approvals, bus systems and special solutions for the customers. Motorized actuators with a spring-return fail-safe function are also available.

The newest motorized quarter turn actuator in the GEMÜ portfolio is the GEMÜ BC from Bernard. This actuator has a coated aluminium housing and was designed for use in industry or outdoors. This actuator is very impressive due to its features and its price. The sales launch took place at the beginning of 2019. The actuator ranges from a simple on/off actuator up to an on-site controllable logic-actuator with display and Bluetooth.

This actuator as well as the GEMÜ AQ optimally complement the GEMÜ range and are an additional step towards expanding the GEMÜ offer of professional solutions for different areas of application.

 **Hendrik Kunze**
CCA Strategic Product Manager
hendrik.kunze@gemue.de



GEMÜ 481 Victoria butterfly valve
with GEMÜ LSC electrical position
indicator fitted

LIMIT SWITCH BOX FOR QUARTER TURN VALVES GEMÜ IS EXPANDING ITS RANGE

GEMÜ is launching electrical position indicators for manually and pneumatically operated quarter turn valves.

To automate process plants, the GEMÜ LSC limit switch box detects the valve position of manually and pneumatically operated quarter turn valves. This is signalled by an optical indication and transmitted to the plant control system. The GEMÜ LSC position indicator can be fitted to all quarter turn valves, such as butterfly valves or ball valves, with a VDI/VDE 3845 standard interface. GEMÜ offers solutions pre-installed on GEMÜ butterfly valves or ball valves, but retrofitting is also possible. Up to four position feedback messages can be sent. In addition to simple microswitches, the GEMÜ LSC limit switch is also available with 2-wire or 3-wire proximity switches. It has the protection class IP 67 and is suitable for explosion-proof areas acc. to

ATEX and IECEx. The GEMÜ LSC limit switch box has also been checked to ensure the reliability of safety functions and has SIL approval. A 3D optical position indicator or OPEN/CLOSED LED display is optionally available. A variety of electrical connections are also available, such as an M20 cable gland, an M12 plug or an NPT threaded connection.

Besides the existing GEMÜ LSF inductive dual sensor, the company is expanding its range of electrical position indicators for quarter turn valves with the addition of the GEMÜ LSC limit switch box, therefore enabling quarter turn valves to be integrated and controlled in automated plants.

 **Anesa Stanke**
Product Manager for position indicators and combi switchboxes
anesa.stanke@gemue.de

GEMÜ R629 ESYLITE MOTORIZED OPEN/CLOSE DIAPHRAGM VALVE

Plastic, electric, cost effective – when all these attributes are called for, motorized ball valves and solenoid valves have, to date, always been in contention as the valve of choice. However, both of these valve types have their drawbacks, and for many applications, a diaphragm valve would be the superior option. With the GEMÜ R629 eSyLite, GEMÜ has plugged this gap and has come up with a motorized OPEN/CLOSE diaphragm valve with an unbeatable price-performance ratio that is able to compete against both motorized ball valves and process solenoid valves.

Besides being able to boast all the benefits and features that are part and parcel of a diaphragm valve, optical position indicator and manual override, the GEMÜ R629 eSyLite valve can also be enhanced with an (optional) integrated emergency power supply module. This allows the valve to move to its safety position in the event of a power failure (normally open or normally closed).

Thanks to the design of the interface between the eSyLite actuator and the valve body, the actuator is also easy to fit to GEMÜ P600 multi-port valve blocks; this interface is suitable for use with both 2/2-way bodies and multi-port valve blocks.

An alternative to process solenoid valves

The larger the nominal size, the less cost-effective process solenoid valves become. When it reaches the end positions, the GEMÜ R629 eSyLite diaphragm valve shuts down, significantly improving energy consumption. The diaphragm valve's high Kv values allow for smaller nominal sizes than process solenoid valves, offering added potential for cost reductions.

Operating pressures of up to 6 bar are possible throughout, further expanding the areas of application for which the GEMÜ R629 eSyLite is suited. By far and away the greatest advantage over process solenoid valves, however, lies in their resistance to the effects of contaminated media.

An alternative to motorized ball valves

Contaminated media cause problems, including where ball valves are installed. The result of this is that spare parts or even the entire ball valve have to be replaced, which is laborious and time consuming. It is therefore advisable in such cases to use a diaphragm valve in order to increase system availability. In addition to system availability, process times are also an important consideration when conducting a system cost analysis. The GEMÜ R629 eSyLite's rapid actuating speed (3 mm/s) makes for a valve operating time that is significantly shorter than that of motorized ball valves; this contributes to an overall reduction in process times.

An alternative to manual valves

Due to the costs involved, manual valves are used for many applications. Increasing system automation means that these valves are often no longer fit for purpose. GEMÜ's R629 eSyLite motorized diaphragm valve is a highly cost-effective solution suited even to applications with strict budget constraints.

Diaphragm size 20 for nominal size range DN 10 to 25 is available with immediate effect. Diaphragm sizes 10 and 40 for nominal size ranges DN 12 to 50 will be phased in later. Due to the GEMÜ modular system, various diaphragm materials, body materials and connection types are available.



 **Martin Schifferdecker**
Product Manager
for Motorized Actuators
martin.schifferdecker@gemue.de

GEMÜ SEALS PRESENTING THE COMPETENCE CENTER SEALING TECHNOLOGIES

The sealing technology is one of the key technologies of valve design. For this reason, GEMÜ has combined its expertise in the sealing technologies competence centre (CCS).

The CCS was founded on 1st April 2018 under the guidance of Michael Klemt, who took over the task as Head of Department. Within the Global Technics area and with the direct reporting path to the divisional manager, the core tasks of CCS include the global construction and state-of-the-art orientation for GEMÜ-relevant sealing products and designs. CCS focuses in particular on diaphragms, but also to an increasing degree on products such as liners for butterfly valves and also secondary, static sealing components such as gaskets and sealing rings.

of this new diaphragm. "We are very much looking forward to the launch and further success of these new and highly advanced diaphragms," says Michael Klemt, Head of CCS.

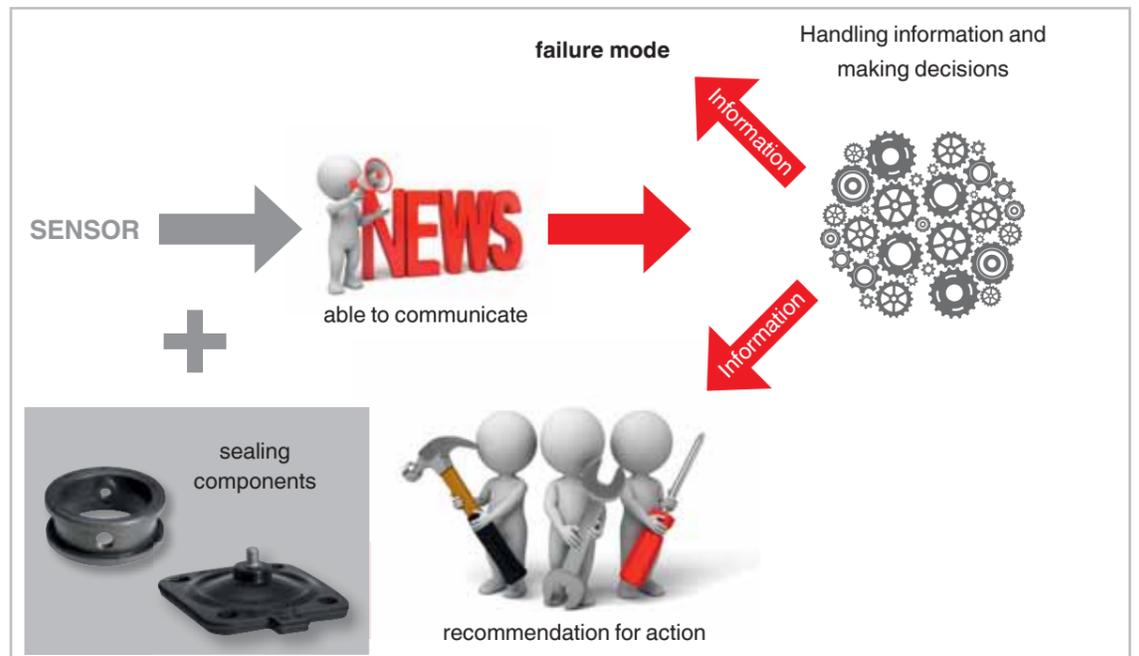
 **Michael Klemt**
Head of Competence Center
Sealing Technologies
michael.klemt@gemue.de



CCS Team from left to right: Michael Klemt, Steffen Meinikheim, Thomas Rüeck and Thomas Esslinger.

The development and implementation of optimal solutions for customers requires close coordination with the business units and business segments as well as with the production and purchasing divisions. Due to the interaction between these functions, it became necessary to establish a central consulting expertise. The CCS Team currently consists of four people (picture 1 from the left: Michael Klemt (CCS Head); Steffen Meinikheim (Diaphragm Technology Specialist); Thomas Rüeck (Master's student); Thomas Esslinger (Sealing Technology Project Manager)).

The varied areas of activity of CCS also include the innovation and idea management within sealing technology and related areas such as the corresponding manufacturing, testing and finishing processes. This includes, for example, projects that concern the partial automation of diaphragm manufacturing, new test methods for valve seal testing and intelligence in seals. The by far largest project in CCS is the research & development and launch of the new codes 5M/19/54. This is taking place in close coordination with all divisions in GEMÜ. The project is nearing successful completion and is therefore ahead of the regulated market launch



MODERN SLUDGE RECYCLING SYSTEM GEMÜ VALVES FOR SAFE PROCESSES

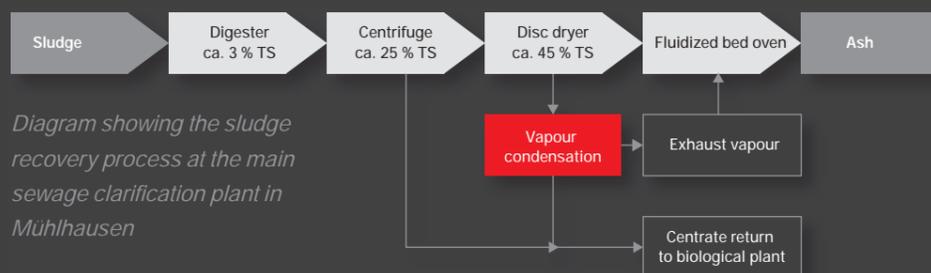
In light of the amendments to German ordinances on fertilizer and sewage, an increasing number of sewage clarification plant operators are faced with the question of what to do with the sludge?

Large sewage clarification plants, such as the in-house Stadtentwässerung Stuttgart (SES [Stuttgart municipal drainage]) plant in Mühlhausen, have already begun to invest in sewage monocombustion plants. When recycling sludge in this way, GEMÜ valves are implemented in plant designs in order to ensure that sludge drying processes are carried out safely.

Currently, 150 tons of dried sludge are thermally recycled every day in the central combustion system in Mühlhausen. The sludge recycled in this process does not just come from factories in the state capital of Baden-Württemberg. Due to the increasing demand for combustion solutions, the main sewage clarification plant also accepts sludge from clarification plants all over the region.

How sludge can be recycled

Before sludge can be incinerated, the moisture must be removed from the mixture of solid and liquid material in a number of steps. First, centrifuges concentrate the sludge to 25% dry material. Next, a disc dryer that is heated by steam concentrates it further to 45% solid content. Once this concentration is reached, the sludge is ready for incineration.



The drying process generates a by-product known as "vapour" – a mixture of substances consisting of gases and air saturated with water vapour that contains liquid and gaseous impurities. As part of cost-effective clarification plant operation, the vapour can be used as an energy source to ensure self-sufficiency in the plant's heating network.

Increasing demand requires tougher plants

Increasing quantities of sludge are pushing many incineration and drying plant operators to the limits of their capacity. This may subsequently lead to difficulties in the drying processes and strong unpleasant smells. In order to guarantee that stable operation can continue, technical expansion and modification is required.

In the case of the Mühlhausen sewage clarification plant, an investment project was agreed and implemented in order to increase the capacity of the external sludge processing facility as a response to increasing demand

One important aim of this process was to optimize vapour condensation as part of the drying process. Upgrading the plant was intended to improve the centrifuges' draining performance, reduce unpleasant smells in the surrounding area and optimize heat recovery in the local heat network.

In the existing two-stage vapour condensation process, the first stage was converted from a system that directly heated the sludge to a heat recovery system for the local heat network. The energy from the vapour, which reaches temperatures of approx. 90–100 °C when generated, is fed into the existing local heat network via heat exchangers. This local heat network is used to provide process heat and to heat the building. In the second stage of the process, the vapour is cooled further with condensate and washed out in order to minimize unpleasant smells.

Valves used in sludge drying processes not only need to withstand high operating temperatures. The body and seal materials must also be highly resistant to the substances contained in the vapour. Depending on the chemical composition of the sludge, the impurities in the vapour may vary and exhibit a range of corrosive properties.

The acids and alkalis contained in the medium will attack the seals on butterfly valves if the sleeve is not made of suitable material. For example, the use of elastomer seals such as NBR and EPDM is inadvisable when working with this vapour, since the influence of high temperatures and chemically corrosive media accelerates the rubber ageing process and leads to visible, quantifiable changes. This can subsequently lead to hardening and crack formation or cause the rubber to become sticky. If the elastic properties of the sleeve deteriorate, this can eventually lead to the butterfly valve's sealing function failing entirely. A combination of fluoroplastics and



Sludge is concentrated in disc dryers.



In case of emergency: If there is a power failure, the GEMÜ butterfly valve opens automatically to prevent damage to the plant.



The vapour is fed into the local heat network via heat exchangers.



GEMÜ butterfly valves with PTFE sleeves are used when working with corrosive media and high temperatures.

elastomers is more suitable for this purpose. A PTFE sleeve protects the elastic backliner from high temperatures and corrosive media.

Taking these operating parameters into account, the decision-makers at the Mühlhausen sewage clarification plant have opted to use GEMÜ butterfly valves from the 490 Edessa series with PTFE sleeves in their plant. Even plant faults that cause the system to reach temperatures above 100 °C will not damage these valves, as the PTFE sleeves are sufficiently resistant to the substances contained in the vapour.

Furthermore, an electrically driven butterfly valve with spring force function is installed near the dryer for optimum safety. In the event of a power failure, this butterfly valve opens automatically. This means that in the event of a fault, the steam in the disc dryers will not cause pressure to build up because of the residual heat, thereby avoiding damage to equipment and pipelines.

Through the use of state-of-the-art technology to optimize vapour condensation, the Mühlhausen sewage clarification plant is now able to process higher quantities of sludge. This optimizes both the safety of the system in the event of faults and heat recovery. It has also allowed the plant to achieve their aim of minimizing unpleasant smells.

 **Sven Truckenmüller**
Application Manager
sven.truckenmueller@gemue.de

TECHNICAL TRAINING WITH VR TECHNOLOGY



Innovative VR training for intensive, sustainable knowledge transfer.

Diaphragms are wearing parts and must be replaced at regular intervals. For this reason, diaphragm replacements are one of the most frequent maintenance or repair measures to be carried out on diaphragm valves. In the bio and pharmaceutical sector or the food and beverage industries in particular, which frequently deal with sensitive and expensive products, this work is usually carried out preventatively in order to guarantee smooth and trouble-free processes.

The quality of the installation and the maintenance work carried out is a crucial factor in the service life of a diaphragm and therefore an important aspect of plant and product reliability. In this regard, GEMÜ supports its customers with innovative training concepts.

In order to prepare service and maintenance staff as practically and effectively as possible for recurring installation work, the technical

training team, which is part of the Service department, provides theoretical and practical training courses for GEMÜ customers as well as in-house employees. Throughout various stages of learning, participants first gain a theoretical background knowledge of products, materials, properties, consequences of assembly errors and the classification of error patterns. As a second step, participants have the opportunity to apply the knowledge they have gained in practical workshops on a workbench by carrying out a realistic diaphragm replacement with its material- and size-dependent features under the supervision of the trainer. Those who sign up for the optional third step can simulate and practise the real-life work steps in the virtual world any number of times. The diaphragm on installed valves is replaced as a wearing part in a simulated process plant that is true to the original. The maintenance process is also supported and documented by the CONEXO app.

The application starts in an introductory mode with varied tasks for the creative teaching of movement sequences in a way that provides a motivational push. Throughout the training mode, the participants are supported by a personal assistant, who introduces each of the tasks to be carried out step by step. In the so-called test mode, trainees can test their knowledge by carrying out the maintenance task independently without access to information or help functions. Having successfully completed the maintenance task, the participants can print out a digital certificate that documents any mistakes and the time taken, which they can then take home with them.

The use of VR technology for training is one of the initiatives the company is taking on the path to digitalization. Used in the context of training, VR overlaps theoretical with practical learning and generally increases participants' ability to retain work steps and understand procedures. This more in-depth preparation increases the quality of the maintenance process, reduces the risk of assembly errors and minimizes failures. In turn, plant operators benefit from greater process reliability and increased productivity.

The GEMÜ VR training courses are already available with short wait times in a number of countries, for example at our sites in Germany, France and Austria; alternatively, they can also be held as in-house training events at customers' premises with our mobile VR equipment.

 **Markus Hammel**
Head of Service Department
markus.hammel@gemue.de

TRADE FAIRS 2019 NATIONAL | INTERNATIONAL

Bio Taiwan	25.07. – 28.07.	Taipei (TW)
ISPE Singapore	21.08. – 23.08.	Singapore (SG)
Food & Drink Business Europe	05.09.	Dublin (IE)
ZVO Oberflächentage	11.09. – 13.09.	Berlin (DE)
Khimia	16.09. – 19.09.	Moskau (RU)
Semicon Taiwan	18.09. – 20.09.	Taipei (TW)
MSR Spezialmesse Südwest	18.09.	Ludwigshafen (DE)
Wirtschaftsmesse Künzelsau	20.09. – 22.09.	Künzelsau (DE)
WEFTEC	23.09. – 25.09.	Chicago (US)
Ilmac	24.09. – 27.09.	Basel (CH)
SIMER Martigues	25.09. – 26.09.	Martigues (FR)
ISPE Europe	25.09. – 26.09.	Brüssel (BE)
Taiwan Water Show	26.09. – 28.09.	Taipei (TW)
HI (Herning Industri)	01.10. – 03.10.	Herning (DK)
PPMA Total	01.10. – 03.10.	NEC Birmingham (GB)
DIAM Bochum	09.10. – 10.10.	Bochum (DE)
IPEX Indonesia	17.10. – 20.10.	Jakarta (ID)
MSR Spezialmesse Südost	23.10.	Landshut (DE)
Water & Waste Åbymässan	23.10. – 24.10.	Åbymässan (SE)
Chemiepark Forum	23.10.	Bitterfeld (DE)
Aquarama	24.10.	Leuven (BE)
CIPM China Autumn	05.11. – 07.11.	Chongqing (CN)
Brau Beviale	12.11. – 14.11.	Nürnberg (DE)
Semicon Europa	12.11. – 15.11.	München (DE)
CBST China	18.11. – 20.11.	Shanghai (CN)
Pharmtech	19.11. – 22.11.	Moskau (RU)
Inchem Tokyo	20.11. – 22.11.	Tokyo (TJ)
Bioprocess	26.11. – 28.11.	Liverpool (GB)
Semicon Japan	11.12. – 13.12.	Tokyo (TJ)

TRADE FAIRS in vivo solutions

Forum Industriearmaturen	04.08.	Bochum (DE)
In.Stand	23.10. – 24.10.	Stuttgart (DE)





GEMÜ SERVICE HELPLINE - CENTRAL POINT OF CONTACT FOR ALL AFTER SALES MATTERS

Satisfied customers are what we strive for as a company, so to us, service means seeing things from our customers' perspective.

The GEMÜ Service Helpline is the central point of contact for all after sales matters for GEMÜ customers all over the world. This includes, for example, product complaints, repairs or returns.

How can customers access the Service Helpline?

The GEMÜ Helpline is available from Monday to Friday from 7 a.m. to 5 p.m. through the following channels:

- ⇒ Phone +49 (0) 7940 123450
- ⇒ E-mail (helpline@gemue.de) for direct customer access

Even before the Service Helpline was established, customer service played a crucial role at GEMÜ. The respective customer contacts in the internal sales team received service requests and processed these locally with the assistance of clerks and product managers from the respective business units and business segments and the support of quality management.

In order to establish a uniform process and optimize response and lead times for the various types of service requests, the Service Helpline was introduced on 1st August 2018 as the central point of contact for all after sales matters.

Initially, the service requests from the global GEMÜ subsidiaries were directed to the central Helpline; two months later, on 1st October 2018, distributors were notified of the new service. Following the successful introduction phase, as of January 2019, the Service Helpline has also been the first point contact for all of our end users worldwide.

Every customer who requires assistance with an after sales matter is directed to the six-person helpline team. The contact person who responds to the case then coordinates further action on a one-to-one basis with the customer.

To give the downstream departments the best possible input, the Service Helpline contact collects all of the relevant data and operating parameters and records them concisely in a dedicated "ticket" in the PiSa Sales CRM software. If necessary, the customer is sent a returns form. This returns form provides GEMÜ with certain information such as the media with which the product has come into contact and any hazard information that needs to be taken into account. This information serves to minimize health hazards from contaminated equipment and to protect our employees who will further process the returned goods.

Once the goods return declaration has been completed correctly, the goods are checked by the after sales service as quickly as possible and appropriate measures are introduced. The customer also receives a confirmation of goods receipt.

There are various different process steps depending on the after sales matter in question. In the case of a complaint that requires troubleshooting to take place within the scope of the 8D process, this is forwarded to quality management. The Service Helpline handles complaints such as incorrect deliveries (missing contents or incorrect quantities) and recording or documentation errors directly.

If repair work is requested, the customer receives a cost estimate after the problem has been assessed or alternatively a quote for a new product if it is deemed no longer worthwhile to repair the device.

If the customer returns the product due not to a complaint but to an error on their part, for example because they have ordered too many items or an incorrect item, the product, in as-new condition, is examined and possibly disassembled. The customer generally receives a corresponding credit note for this minus the administration fee and re-storage costs.

If the product is no longer covered by warranty, the customer is also offered the option of having the product examined for a small administration fee. A dedicated appraisal report provides the customer with useful information regarding the condition of their devices, which enables them to optimize their processes, even after a long service life.

The GEMÜ Service Helpline aims to process after sales matters within the shortest possible lead time and offer its customers the best possible support. With commissioning, maintenance and assembly call-outs by service experts directly on the customer's premises, in-house repairs of all GEMÜ products and technical training from experienced trainers, we offer our customers an all-round package of service and support.

Recommend our Service Helpline to those who might need it – we're here for you!

 **Markus Hammel**
Head of Service Department
markus.hammel@gemue.de

VALVES FOR STERILE AND ASEPTIC APPLICATIONS

INNOVATIVE SEALING CONCEPT FOR HYGIENIC AND ASEPTIC FILLING

To be able to use valves in sterile and aseptic filling processes, they must fulfil stringent requirements. A hermetic separation of the mechanical actuator components from the media flow as well as the ability to effectively clean and sterilise the media wetted areas are essential aspects. To date, diaphragm, globe and bellows valves have been used for filling in the pharmaceutical, biotechnology as well as the foodstuff and beverage industries. These offer many advantages, however they have optimisation potential for the filling processes. The new and trailblazing valve design undertakes to eliminate the shortcomings of the existing filling valve variations and therefore meet the growing requirements of the filling industry.

PD design is setting the course for the future

In sterile and aseptic filling processes, the crucial criterion for the selection of the suitable valve designs is that the actuator unit and the working medium are hermetically separated from each other. Furthermore, the valve designs must sustain the existing operation, cleaning (CIP) and sterilisation conditions (SIP). In addition to the various acid and alkaline cleaning agents, temperatures can reach 140 °C during sterilisation.

Innovative filling concepts are becoming more and more important due to frequently small batch sizes, different fill volumes, short cycle times (only a few milliseconds) and media that is complex to fill. In addition, physiological and health-relevant ingredients in the medium to be filled are often very sensitive and require a process that protects them. Aseptic designs are essential both for ultra-pure or cold aseptic filling systems for foodstuffs as well as for pharmaceutical and biotechnological filling. Furthermore, the requirements for hygienic and operational safety in the pharmaceutical, biotechnology as well as the foodstuff and beverage industries are determined by ever stricter specifications. In order to fulfil legal requirements and comply with customer requirements, GEMÜ has developed the aseptic PD design. This design combines the advantages of diaphragm and globe valve design. It eliminates the disadvantages of the currently used diaphragm, globe and bellows valve combinations.

Advantages of the GEMÜ PD design:

- ⇒ High Kv values through innovative sealing geometry
- ⇒ Simple and fast maintenance thanks to cartridge spare parts system
- ⇒ Resistant sealing from modified PTFE, no retightening required
- ⇒ Hermetic separation of the actuator from the medium flow
- ⇒ Long valve service life with more than 10 million cycle duties
- ⇒ FDA and USP Class VI-approved seal material
- ⇒ Regulating cone geometry can be adapted
- ⇒ Minimal deadleg
- ⇒ Optimal cleanability
- ⇒ No "lift effect"
- ⇒ Compact design according to 3A and EHEDG directives

GEMÜ F40 pneumatically operated filling valve

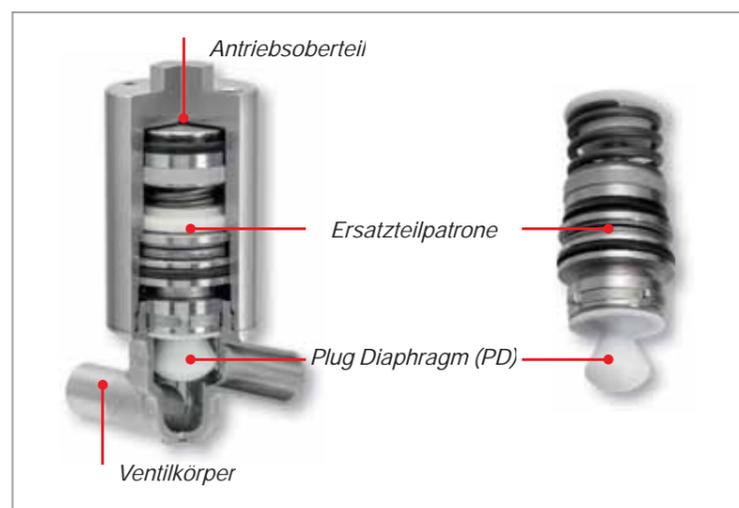
The pneumatically operated filling valve GEMÜ F40 is designed for hygienic and aseptic filling processes as well as aseptic production plants. If two or more filling speeds are required, bypass types with 5–7 mm drilled holes can be used. Due to the pure PTFE sealing system, it can also be used without any problems with media containing oil or grease. It can also be used in filling machines for distributing all types of media (vacuum, liquid or gaseous). In order to regulate the valve opening, a positioner can be adapted on the pneumatic open/close valve. To automate the valve, it is also possible to attach electrical position indicators.

The various legal requirements for hygienic and operational safety (e.g. German Medicinal Products Act (Arzneimittelgesetz, AMG), the German Food and Feed Code (Lebensmittel-, Bedarfsgegenstände- und Futtermittelgesetzbuch, LFGB), Food and Drug Administration (FDA), Regulation (EC) No. 1935/2004, 3A and European Hygienic Engineering and Design Group (EHEDG) Guidelines) in the pharmaceutical, biotechnology

as well as the foodstuff and beverage industries were also taken into consideration in the development of the pneumatically operated filling valve GEMÜ F40.

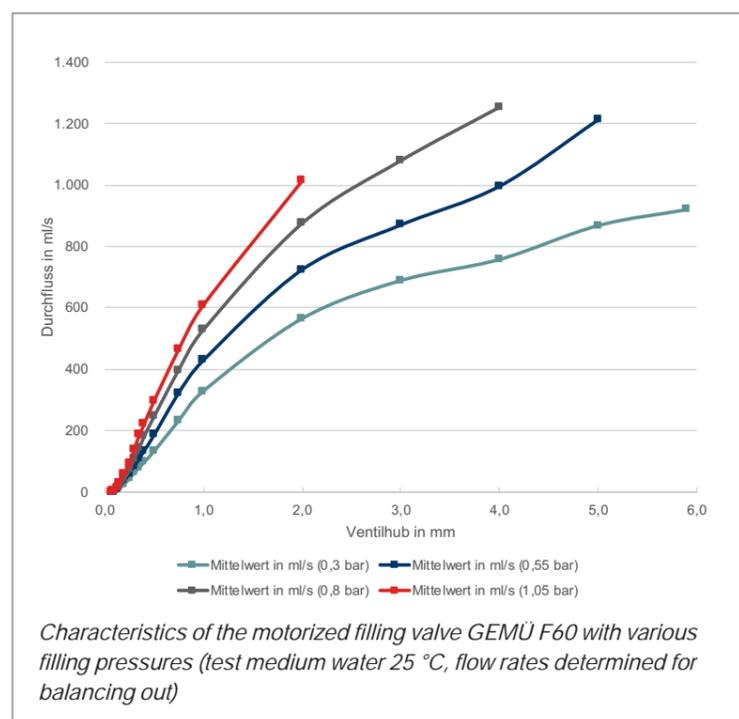
In addition to the advantages listed above, the operator can also benefit from the enormous improvements in the efficiency of the filling machine. Due to the diaphragm's exceptional service life as well as its ease of maintenance, downtimes can be clearly reduced.

Via an innovative cartridge spare parts system, not only the media seal, but also all wearing parts are replaced in the actuator. Maintenance can last a few seconds (cf. the following figure).



GEMÜ F60 motorized filling valve

The motorized filling valve GEMÜ F60 is particularly suited for the use of fast and highly precise control and regulating applications. Due to the positioning accuracy of up to ± 10 µm and a traverse speed of up to 300 mm/s, in addition to batch quantities of 1.7 litres per second, batch quantities of a few microlitres per second are also possible (cf. the following figure).



The closing force of the actuator is programmable via its current consumption. Therefore it can be adapted to fit the operating conditions on a case-by-case basis and the service life of the actuator and seal (PD) system can be substantially increased. Similar to the pneumatically operated filling valve GEMÜ F40, maintenance for this unit is also simple and fast to perform due to the cartridge spare parts system. By controlling the actuator temperature and the current consumption, it is possible in theory to plan valve maintenance in advance. The monitoring of the valve stroke allows a conclusion to be drawn with regard to the status of the seal.



The use of high-quality stainless steel for the actuator and body as well as cable seals with electrical protection class IP 69K permit the cleaning and disinfection of the exterior surfaces with all common cleaning products and sanitisers with all common spray and blasting processes. Due to the protection class, the motorized PD valve is particularly appropriate for use in cleanrooms and insulators. The risk of contamination by compressed air lines as a result of gauge pressure, as is the case with pneumatic actuators, is therefore avoided. Due to the omission of the compressed air line, possible spray shadows are also minimised.

Klaus Heller
 Technical Consultant in
 Projects & Applications,
 Business Unit Pharma,
 Food & Biotech
 klaus.heller@gemue.de



TRAINING AT FIRST HAND GEMÜ OPENS ITS DOORS

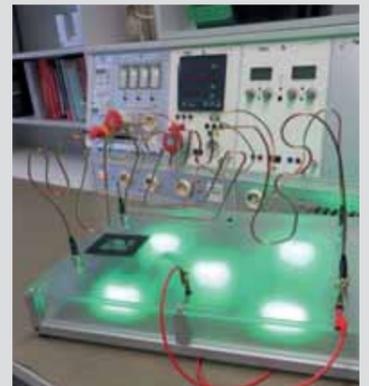
On 8th May 2019, GEMÜ in Criesbach hosted its annual careers information day for all interested pupils between 4–7 p.m.

This event gave young people the opportunity to gain hands-on experience in all areas of training at GEMÜ, and to learn about the opportunities available for training and study. The training workshops opened their doors to interested pupils. Trainers, apprentices and students of all specialisations recounted their personal experience about the training schemes and what training at GEMÜ is like on a day-to-day basis.

To help them find the perfect vocational placement, in addition to personal discussions, potential applicants also had the chance to get involved in some practical tasks to gain first-hand experience of the training programme. For example, they made yoghurt spoons in the plastic injection moulding area, and engraved their names onto the spoons in the training workshop. In the electronics area, visitors could test the valve labyrinth or try their luck with the ball canon. The use of the virtual reality application for training was fully new this year. During the training day in Criesbach, also the Kupferzell and Waldzimmern locations were presented.

The apprentices always look forward to taking part in this event, at which they can share their own experiences and impressions of their training with interested pupils. At the same time, they learn how to approach the visitors, promote GEMÜ as a company and answer their questions in a friendly manner.

For GEMÜ, this event is the best opportunity to present the training activities that take place at the company's own premises and to provide a look behind the scenes of being an apprentice. This year too, the "training at first hand" event remained a huge success for everyone involved.

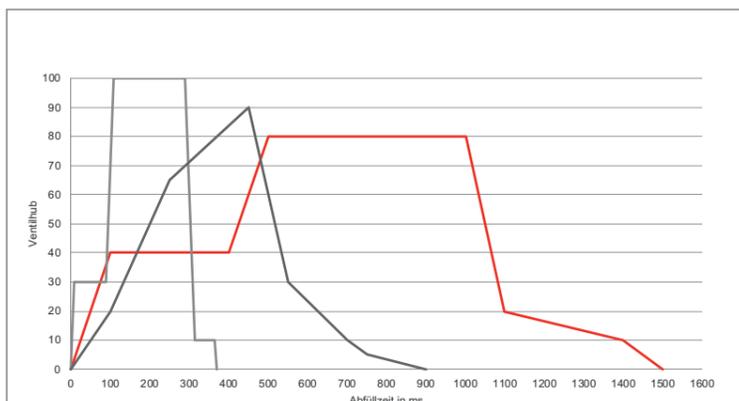


An overview of the features of the motorized filling valve GEMÜ F60:

- ⇒ Long expected service life of the valve
- ⇒ Various possible actuator speeds (up to 300 mm/s)
- ⇒ High positioning accuracy (up to $\pm 10 \mu\text{m}$)
- ⇒ Very high filling accuracy
- ⇒ Freely programmable filling speeds over the filling time for adaptation to various media, container geometries, etc.
- ⇒ Short filling cycles with optional programmable fill curves
- ⇒ Reproducible filling cycles of less than 300 ms in real-time
- ⇒ Suitable for all control functions
- ⇒ Can be operated in almost any bus system
- ⇒ Protection class IP 69K
- ⇒ Motor design and adaptors according to 3A and EHEDG directives

The motorized filling valve GEMÜ F60 makes it possible, with the corresponding sensors (magnetically inductive flowmeter (MID), mass flowmeters (MDM), weigh cells or capacitance probes) to communicate via highly efficient controllers, bus systems and control units, in order to map not only a position control, but also process control if necessary. Actuator communication takes place via various bus systems.

The motorized filling valve GEMÜ F60 makes it possible to implement customised batch quantities and filling curves. It permits product and container shape-dependent programming of the filling speed and batch quantity. This leads to optimal filling results for all containers (cf. the following figure).



Examples of fill curves that are possible with the motorized filling valve GEMÜ F60 – fill curves of below 300 ms are possible

Conclusion

Until today, diaphragm, bellows or globe valves as well as combinations thereof were the only option available for complying with the stringent requirements of ultra-clean or aseptic filling. State-of-the-art research & development in the area of filling valves represents a new and innovative filling valve platform.

This filling valve design makes it possible for virtually all processes in the pharmaceutical, biotechnology as well as foodstuff and beverage industries to implement hygienic and aseptic filling applications.

Both the pneumatic as well as the motorized filling valve variations set new standards as regards

- ⇒ Speed,
- ⇒ Precision,
- ⇒ Flexibility,
- ⇒ Service life,
- ⇒ Ease of maintenance

and therefore undertake to improve the quality and productivity of the filling process.

„JUGEND FORSCHT“ GERMANY'S MOST RENOWNED COMPETITION FOR YOUNG TALENT

GEMÜ apprentices have triumphed in the regional round of "Jugend forscht".

Lukas Neckel and Daniel Pfeifer, apprentices in the second year of their apprenticeship with GEMÜ's Metalworking division, have developed a universal bending tool for the bench vice, wowing the judging panel at "Jugend forscht".



Their invention was awarded first place in the "World of work" category, which takes them through to the state-level competition. The "World of work" judging panel gave a speech in praise of the pair's project and its implementation at the awards presentation ceremony. The two apprentices developed the idea behind the project, which they undertook under the guidance of their GEMÜ trainer, Wolfgang Wick, because workpieces were always slipping out of the bench vice when they were bending them using simple bending blocks. With eliminating the risk of injury as a priority, they developed bending jaws for the bench vice, which are designed to grip a range of different materials and radii. This flexibility allows the bending jaws to cater to the various requirements of a huge variety of metal workpieces, enabling them to play a crucial role in keeping workers safe while they are machining. "Jugend forscht" is a natural sciences and engineering competition aimed at school pupils and young people, and is the best known contest of its kind in Germany. It was launched in 1965 by then Editor-in-Chief of Stern magazine, Henri Nannen. The "Jugend forscht" competition is held every year and is run by non-profit foundation Stiftung Jugend forscht e. V., which joins forces with sponsors to organize the individual regional and state-level rounds. Sponsors take turns to host the national round of the competition each year. At the end of March, the two GEMÜ apprentices travelled to Fellbach to present their project in the next round of the competition, this time at state level. All the regional winners from around Baden-Württemberg will converge on the town, where they will bring their inventions before the state-level judges. The judges conferred Daniel and Lukas a special prize for young employees. "We are very proud of Lukas and Daniel's achievement and are as delighted as they are with this award," says Training Manager Katrin Engert.



SPARKING AN INTEREST IN SKILLED MANUAL WORK GEMÜ INSPIRES CHILDREN AND YOUNG PEOPLE

Through Girls' Day and other projects in schools and kindergartens, GEMÜ offers insights into what skilled manual professions entail.



For many years now, GEMÜ has been supporting initiatives such as the Girls' Day. The company is also involved in a number of long-term partnerships, for example with the Georg-Fahrbach School in Ingelfingen, the Niedernhall Education Centre and the Belsenberg Kindergarten. Through these collaborations, the global market leader from the Kocher Valley offers children and young people an insight into what skilled manual professions entail.

"We are delighted to be able to introduce young people to engineering and skilled manual professions through play and to share our enthusiasm with them," says Gert Müller, Managing Partner at GEMÜ. This enthusiasm becomes all the more obvious when you see how important collaborating with "future employees" is to the company.

Discovering technical professions through play and games

Working with GEMÜ's dual-system students, children from the Belsenberg Kindergarten and Year 6 pupils from the Georg-Fahrbach School discover technical and skilled manual professions through fun, hands-on activities

and making things. In addition to a tour through the new Production and Logistics Centre in Kupferzell, including the modern high-rise store, there are numerous games and challenges to tackle for the children and young people. These include, for example, technical design projects, which the participants are allowed to construct and solder. Having built their own steady-hand game or solar-powered aeroplane, the children and young people can take their work home and proudly present it to their parents.



Girls' Day is a firm fixture in GEMÜ's calendar

One of the school projects in which GEMÜ has been involved for years is Girls' Day. The aim of this initiative is to encourage girls and young women to discover technical and skilled manual professions and to consider a career in these professions. Although the number of women entering technical and skilled manual professions is increasing, many women remain reluctant to do so. GEMÜ is addressing this issue by offering Girls' Day participants insights into the work involved in typically male-dominated professions such as cutting machine operators and electronics technicians.

With initiatives such as these, GEMÜ hopes to share with young people its passion for engineering and technical products and spark their interest in technical and skilled manual professions. Indeed, these initiatives all have one thing in common: At the end, everyone goes home with a smile on their face having benefited from a whole host of new insights and experiences, which will be invaluable when they come to choose their future career.



Jens Breuninger
Dual-system student
jens.breuninger@gemue.de

Katrin Engert
Training Manager
katrin.engert@gemue.de

AWARDING OF THE DEUTSCHLANDSTIPENDIUM STEFAN KUNTZ RECEIVES SUPPORT FROM THE FRITZ-MÜLLER-STIFTUNG

For the fifth time in succession, a student at the Heilbronn University of Applied Sciences has been awarded funding as part of the Deutschlandstipendium programme.

The annual award ceremony for all grant recipients recently took place. GEMÜ Personnel Officer Ilka Rölke was very glad that Mr Stefan Kuntz was able to receive the monthly grant of EUR 300 for this year as well. The budding industrial engineer, who is soon to successfully complete his studies, had already received this support in the third year.

"As a young man, Fritz Müller benefited greatly from the dedication of his teachers, trainers and lecturers. Because of this, he established the Fritz-Müller-Stiftung, a foundation which supports dedicated students together with GEMÜ," said Gert Müller, Managing Partner at GEMÜ, when explaining the participation in the programme.

In addition to the pure financial support, the grant recipients from GEMÜ also benefit from continual mentoring throughout the funding phase. For example, internships or research projects with practical relevance can be completed at one of the three locations in Germany.



Stefan Kuntz with Personnel Officer Ilka Rölke

Norbert Neumann
Team Leader for Corporate
Communication/Press Officer
norbert.neumann@gemue.de

Ilka Rölke
Personnel Officer
ilka.roelke@gemue.de

GEMÜ IS DEVELOPING NEW METHODS

QUANTITATIVE EVALUATION OF THE L/D RATIO FOR MULTI-PORT VALVE BLOCKS

Even today, in pipeline construction, simple 2/2-way valve bodies continue to be welded together with pipe fittings. However, these have a substantial disadvantage due to the relatively large deadlegs – especially with regard to cleanability. Therefore the first simple multi-port valve body was developed in 1993 at GEMÜ: The T valve, which is self-draining and does not have any weld seams.

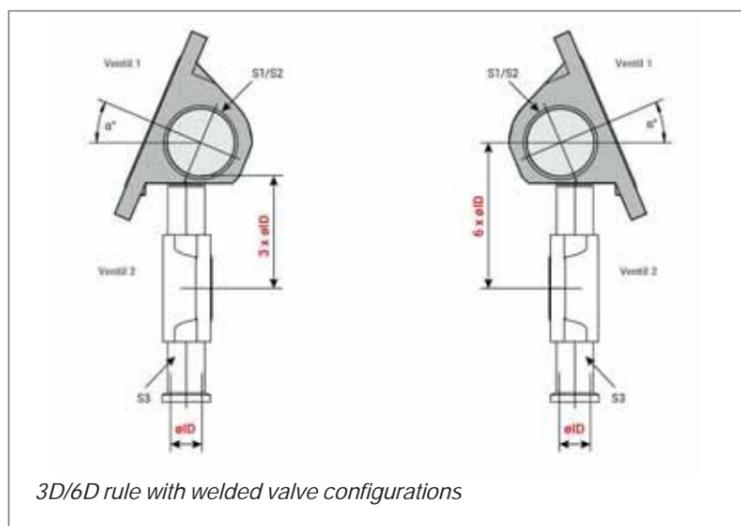
Nowadays, the multi-port valve blocks are the most advanced solution for dealing with the high, complex plant engineering requirements of the pharmaceutical, biotechnological, chemical and foodstuff industries. The most challenging issues include the purity in processes and the associated cleanability of the valves in the best way possible – and not only in the pharmaceutical industry. Plant operators are normally concerned with the FDA/GMP directives or the ASME/BPE standard. All regulatory codes define exact geometric reference points for valve configurations. These rules describe the maximum permissible non-flowing pipe section in a valve configuration between valve 1 and valve 2. This is either designated as the 3D rule (3xØID) or the 6D rule (6xØID):

The longitudinal distance from the lower edge (3D rule) or the centre axis (6D rule) of the inside diameter of the main valve to the centre of the sealing weir of the welded-on second valve body may be max. 3-fold or 6-fold the inside diameter of the welded-on valve body.

directly into the M-block valve bodies. This makes it possible to have basically no limits to the customized design of the valve. During the 25 years since the market launch of the M-block, more than 1200 different designs were implemented with more than 25,000 customized solutions in the most varied stainless steel alloys. Plastic M-block solutions are also possible as a standard and are used in different applications due to their material properties.

A requirement for the plant designer is the quantitative evaluation of the L/D ratio for multi-port valve bodies. The standard formulae from the above-described

3D/6D rules cannot be used, or can only be used conditionally for calculating the deadleg due to the deviating geometries and cross-sections (not circular, rather with "D"-shaped cavities) with multi-port valve blocks. However, the L/D ratio is also decisive in this regard, as it offers a guide value for evaluating the cleanability of multi-port valve blocks. "L/D is the formula we use – it is our benchmark for ensuring that optimal cleanability is designed into multi-port valve blocks," emphasises Wolpert. A special methodology helps make sure that this does not just work on paper, but also that it produces a meaningful comparison characteristic value in practice. As the example below shows, the GEMÜ experts who work with Matthias Wolpert have developed a calculation model in order to easily determine the L/D ratio for multi-port valve blocks in only a few steps:



If many of these single valves are welded in piping, relatively large deadlegs are normally generated. This does not happen with a multi-port valve block (M-block).

"Unlike time-consuming welding configurations, the GEMÜ M-block is manufactured for pharmaceutical applications completely out of a stainless steel solid material block. This offers a compact multi-functional and optimized draining design, greatly reduced deadlegs, a reduced hold-up volume as well as improved expertise protection for plant operators," says Matthias Wolpert, Strategic Product Manager of the Business Unit Pharma, Food & Biotech at GEMÜ. Furthermore, product reliability is increased since there are absolutely no weld seams in the valve block. In addition to all current connection standards, even special process connections such as tri-clamps or hygienically compatible seal contours can be incorporated

1 The theoretical diameter "D"

From the point of view of geometry, the surface of a D-shaped cavity can also take the form of a circular surface (see red marking in the diagram) without changing the surface area.

2 The length "L" and the inclination angle "α"

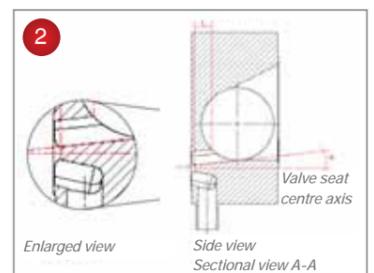
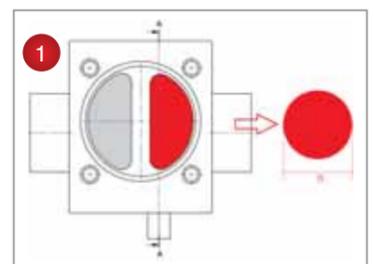
These two dimensions can be determined using the technical drawing of the valve body.

3 Overview of standard designs

The table below lists the most common inclination angles "α" in conjunction with the corresponding diaphragm sizes. These values can be used to quickly and easily calculate the theoretical diameter.

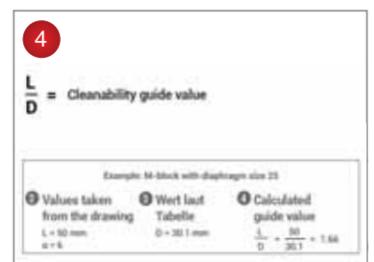
4 Result: The optimal "L/D" ratio

The values determined for "L" (from the drawing) and "D" (from the table) are now represented as a ratio. The result allows a conclusion to be drawn with regard to whether this valve design fulfils the specifications of the directives and standards. In this example, an L/D value of 1.66 is determined and therefore the specifications from the 2D and 3D rule are fulfilled.



Diaphragm size	0°	45°	90°	135°	180°
8	11.3	11.5	11.6	11.7	11.8
10	15.7	15.9	16.1	16.2	16.3
15	23.6	23.9	24.1	24.2	24.3
20	31.5	31.9	32.1	32.2	32.3
25	39.4	39.7	39.9	40.0	40.1
30	47.3	47.6	47.8	47.9	48.0
40	63.1	63.4	63.6	63.7	63.8
50	78.9	79.2	79.4	79.5	79.6

α = inclination angle of the valve seat pocket
 MG = diaphragm size
 D = diameter [mm]



Matthias Wolpert
 Strategic Product Manager for
 Multi-Port Valve Blocks
 matthias.wolpert@gemue.de

A NEW, AUTOMATED SMALL-PARTS WAREHOUSE EXPANDING THE WAREHOUSE CAPACITY IN KUPFERZELL

A new, fully automated warehouse joins existing facilities at the GEMÜ Production and Logistics Centre on the Hohenlohe industrial estate.

In December 2018, excavation work took place in readiness for the expanded warehouse capacity at the Production and Logistics Centre. Between the existing small-parts warehouse and the assembly building, a new, fully automated warehouse is in the process of being built. It is expected to be operational by the middle of August. Fifty three metres long, 14 metres wide and 17.5 metres high, the new small-parts warehouse will double the current storage capacity by exactly 36,036 container storage spaces. The expansion of the automated small-parts warehouse is part of the GEMÜ master plan presented back in 2012 and is in line with the company's policy of making sure that it is equipped for future growth. GEMÜ has chosen to expand its warehouse capacity in Kupferzell now because the existing small-parts warehouse has reached its capacity and performance limits. Two factors are key here: Firstly, GEMÜ has undergone substantial growth since 2013 and secondly, both production and stock were relocated from the Rotkreuz site in the Swiss canton of Zug to Germany in 2017. Additionally, GEMÜ is planning to relocate the warehousing and distribution of high-purity products from the site in Emmen (Switzerland) to the Production and Logistics Centre this September.

Like the existing pallet high-rise store, the new building will be designed in the manner of a silo, which is to say that the foundation slab will be laid first, then the racking and sprinkler system will be installed, and finally, the wall cladding will be fitted.

The benefit for production and logistics is the performance boost and increased system availability afforded by the three extra storage and retrieval units. These allow for a greater number of storage and retrieval operations and increase the availability of the picking and dispatch services. If, for example, one storage and retrieval unit is temporarily out of action for maintenance purposes, there will still be five operational aisles to ensure a steady service.



 **Andreas Bösche**
Head of Logistics
andreas.boesche@gemue.de

