Safety, reliability, effectiveness, and efficiency are key attributes when it comes to maximum customer value and excellent customer benefits.”
Ladies and Gentlemen,
Dear Readers,

What makes a product or a service truly valuable? What actually constitutes a benefit for the customer?

Our authors asked owners, buyers, and engineers from our circle of customers about the role our components and services play in their success. They learned what makes young companies hidden champions, and what makes hidden champions global market leaders.

**Safe**
BEC is a hidden champion. The robotics specialist is one of the fastest-growing medium-sized firms in Germany’s southwest. In its Rides segment, the company develops one-of-a-kind adventures for amusement parks and shopping centers based on industrial robots and virtual reality applications. Thrills for the senses – and safe, thanks to passenger restraint systems made by HOERBIGER.

**Reliable**
Plasser & Theurer is already a global market leader for railroad track laying machine technology. For more than 50 years, HOERBIGER has supplied extremely leakproof hydraulic check valves – crucial components for the machines’ stability. The reason? Because they function reliably.

**Effective**
Our customers in the oil and gas industry are driven by rising cost pressure and ever more stringent requirements with regard to safety and environmental sustainability. The effective services offered under our PerformanceXperience® portfolio help them achieve ambitious targets and goals.

**Efficient**
In the automotive industry, customer benefit is defined as maximum performance at the best cost. The HOERBIGER SlimLINE synchronizer is an innovation that creates space for efficiency in the truest sense of the word.

Our features show that safety, reliability, effectiveness, and efficiency are key attributes when it comes to maximum customer value and excellent customer benefits. Our goal is to make the best contribution possible.

Dr. Jürgen Zeschky
CEO and Chairman of the Executive Board
HOERBIGER Holding AG
What do an amusement park, a specialist hospital, and a bobsled training center have in common? For all of them, modern robots installed by BEC are an integral part of their operations. The dynamic robotics specialist from Southern Germany operates around the globe. When it comes to passenger safety, BEC relies on HOERBIGER and its decades of experience with passenger restraint systems used in roller coasters.

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What do an amusement park, a specialist hospital, and a bobsled training center have in common? For all of them, modern robots installed by BEC are an integral part of their operations. The dynamic robotics specialist from Southern Germany operates around the globe.

Text: Dr. Andreas Neemann  Photography: Jürgen Wittke, BEC

When you take a look around at BEC, the term hidden champion likely springs to mind. The company — which calls the small city of Pfullingen at the foot of Germany’s Swabian Alb plateau home — was founded in 2003 by then recent industrial engineering graduate Matthias Buck (BEC originally denoted Buck Engineering and Consulting). Presently employing a staff of 36 with sales of 6 million euros in 2016, BEC is a traditional medium-sized firm. What’s more, with recent sky-high growth rates the high-tech specialist is one of the fastest-growing firms in Germany’s southwest, which is rife with industry. This is evidenced by a certificate from Germany’s business magazine “Focus Money,” which is posted in the meeting room. The company also sports an impressive list of references. BEC’s operations cover research institutes in Australia, amusement parks in China, the renowned German Sport University Cologne, US treatment centers, all the way to a space telescope in the Atacama Desert where a robot controller installed by BEC is used to adjust the telescope.

Interaction between man and robot

So what is the common thread in such a broad field of applications? “Companies seek us out wherever the interaction between robots and people is important,” explains Martin Gerlich, the second Managing Director aside from Buck and the firm’s CFO. This core competency runs through BEC’s four fields of activity: Medical, Motion Simulation, Industrial Solutions, and Scientific Research. In the medical field, state-of-the-art medical robotics are now the trend. The entrepreneurs from Pfullingen install intelligent treatment tables as well as therapeutic equipment for hospitals around the
Passenger safety plays an important role with the robots used for amusement rides. HOERBIGER has decades of experience with restraint systems, such as those installed in roller coasters.
globe. Proprietary developments have established the firm as an innovator in this field. The Motion Simulators field includes simulators for training purposes, particularly for pilots. “Converted industrial robots have the advantage that they are able to realistically replicate critical flying maneuvers, such as sideways or even inverted flights,” Gerlich comments. This is something a traditional simulator is not capable of, as its movements are generated by hydraulic cylinders. At the same time, simulators increasingly benefit manufacturers of large equipment such as industrial or agricultural machines, helping them train employees to operate the complex equipment.

The Motion Simulation field also includes the relatively new Rides segment. This segment covers robots used in amusement parks, which allow visitors to experience the dynamics and acceleration forces of an entire roller coaster ride in a comparatively small space – a tremendous growth market internationally. The rides require appropriately designed seats with secure restraint mechanisms featuring hydraulic systems made by HOERBIGER. In the Industrial Solutions field, BEC supplies robots that work hand in hand and alongside staff. They are in stark contrast to current robotics models in which the machines still have to operate behind safety barriers because their relatively simple control unit has no regard for the consequences of the system’s motions and they represent a hazard for the human workers. BEC, however, has always been at the forefront of current trends: “Industry 4.0 products are already stock items for us,” says Matthias Buck, alluding to the latest trend of interconnected, intelligent manufacturing processes. Scientific Research, another field of activity, is important to BEC’s founders because it takes them back to their academic origins. “Working closely with research facilities and being involved in research projects gives us the opportunity to mine know-how that will be of interest to industry several years from now,” Gerlich adds. This sector provides inspiration for innovations.

The quest for tried-and-tested expertise

A comparatively small company that operates as a global player and supplies heavyweight equipment for a wide range of applications faces many challenges. Since BEC primarily relies on robots produced by KUKA, the firm is able to utilize the partner network of the Augsburg robotics manufacturer. “We are traditional integrators of robots,” Gerlich states. “This means that we purchase robots and give them their ‘intelligence’ and application to allow others – our customers – to turn them into something value-adding.” The development of the application takes place in Pfullingen – and not just on the computer monitor.

Most of the robots BEC sells are first assembled as prototypes and tested. In the case of larger orders, BEC engages an external firm. But what does “larger” involve when we’re talking about a quantity of one? A 3D printer in the prototype facility demonstrates that the boundaries between development and production, and between in-house and outside production, are blurred – such as when cowlings, components, or the occasional demo seats are needed.

Procurement and supplier management are no less challenging. The robots used for amusement rides in the new BEC Rides segment are a good example. Passenger safety plays an important role here, as a result of the high international stan-
The BEC engineers synchronize the movements of a robot with the complex virtual-reality graphics of related software. Kurt Danzer from HOERBIGER Hydraulics has already taken a test ride.
 standards for traditional roller coasters. Since this was new territory for BEC, it was only natural that the company contacted a specialist who had furnished passenger restraint systems for attractions in amusement parks for decades. That specialist was HOERBIGER.

The inquiry was specifically prompted by a flexible seat concept that BEC developed for an exhibit at Asian Attractions Expo 2017 in Singapore. The goal was to retrofit the robot from two-seat to three- or even four-seat operation within a manageable time frame. After all, having only one person sit on the ride would quickly put a damper on profitability. “In addition to the actual seat concept, safety – and the restraint system in particular – was a critical issue,” Gerlich recalls. Complying with the standards in effect in Asia, while saving weight on the seat concept and procuring everything, if possible, from an internationally certified specialist – all these things were only made possible by HOERBIGER. Consequently, Kurt Danzer entered the picture. He is the Key Account Manager in the HOERBIGER Compact Hydraulics Business Unit. “Amusement rides are an attractive application where we can tailor HOERBIGER’s industrial expertise and generate additional business,” he explains.

Regardless of whether it is over-the-shoulder restraints, torso restraints, or lap bars, HOERBIGER offers the appropriate solutions of hydraulic cylinders, connection block, valves, and diaphragms. The cylinders move and lock the bars, which provide passengers with the necessary comfort as well as restraint during extreme movements. In the event of a malfunction, they must still allow manual unlocking to release the riders – this is a requirement of international standards for amusement rides. Danzer’s experience and skill to listen closely did not go unnoticed by BEC; he quickly offered the right solution for the exhibit at the trade show in Singapore, even given the extreme time constraints. HOERBIGER products have since become a standard fixture in the Rides segment of the Southern German robotics specialist.
“Converted industrial robots can realistically replicate critical flying maneuvers.”

Martin Gerlich, Managing Director of BEC

Thanks to virtual-reality goggles, amusement rides can become even more attractive. Riders can be immersed into a digitally programmable experience based on a story they know from a movie or a book.
The growing business of amusement rides

The market is booming in both the traditional and the digitalized segments. In the United States alone, sales of amusement and theme parks have almost doubled to over 20 billion US dollars since the slump caused by the 2009 crisis. According to numbers published by a US industry association, almost one billion customers worldwide visit amusement and theme parks every year. With 368 million visitors, the Asia Pacific region ranks second behind the United States. Theme parks, which rely on the intellectual property of the entertainment industry such as Disney and other firms, are the primary growth drivers. Robotics attractions also benefit. The reasons for this are two-fold: The costs for a robot, as compared to the setup and operation of a roller coaster, constitute a relatively inexpensive investment – not just for amusement parks, but increasingly also for shopping centers. Additionally, thanks to virtual reality (VR) goggles, amusement rides can become even more attractive, especially for the younger target group. Riders can then be immersed into a digitally programmable experience based on a story they know from a movie or a book. Seeking an intergalactic exploratory flight on a Star Trek shuttle or a ride on the back of a dragon through a Game of Thrones backdrop? Anything is possible using the same setup of robot, program, and VR goggles. Creating a real experience would command an investment in the millions for professional decorations alone.

The staff of BEC with their keen sense for growth markets is pursuing activities precisely in this field. The facility in Pfullingen already features the prototype of a KUKA robot with motion profiles that the engineers synchronize with the complex VR graphics of related software with pinpoint precision. Guests taking a seat on the robot speed through a futuristic metropolis on board a flying taxi, controlled by a wacky extraterrestrial. Kurt Danzer already had the opportunity to take a test ride.

Under extreme time constraints, HOERBIGER developed a flexible seat concept for the passenger restraint system.

The bar matters

Safety engineering is an essential element in amusement rides. Since there is no time for the time-consuming buckling and unfastening of safety belts, essentially all attractions use safety bars. Depending on requirements (riders on some roller coasters experience acceleration forces of 4.5 G, which is four-and-a-half-times the force of gravity), shoulder, lap, and/or waist bars are installed. Hydraulic cylinders made by HOERBIGER provide the appropriate restraining force. For decades, HOERBIGER has benefited from its industry expertise for applications for amusement rides.
Protection against dust and gas explosions

FULLY COMMITTED TO EXPLOSION PROTECTION

Historically accounting for less than 4 percent of all business interruptions, dust and gas explosions can be considered an uncommon event. So wouldn’t it be better not to dwell on this and to simply hope that an explosion won’t happen in your facility?

Text: Stephan Fabrizius   Photography: iStock.com, HOERBIGER
Not a good idea. After all, explosions are responsible for 40 percent of all losses experienced by companies – four times higher than the amount of losses from all other causes including fire. Such an event can greatly impact the ongoing operation of facilities that process a wide range of materials, such as flour, paper, starch, sugar, and plastics – just to name a few. When an explosion occurs in an industrial processing operation, the consequences are often devastating. Statistically, every explosion in an industrial plant causes financial damage to the tune of 2.8 million euros – not to mention injuries suffered by employees and damage to the community. To assist in preventing such losses, HOERBIGER Safety Solutions provides prevention and comprehensive protection solutions specifically designed to protect the customer’s staff and operation.

Explosion protection on an uptrend

Due to progressing harmonization of explosion protection standards and legislation, plant operators are becoming increasingly aware of the potential consequences of an explosion. Advanced protection solutions and experts who design, install, and service them are increasingly in demand. Even though the market for safety solutions has undergone appreciable growth, this trend still offers potential for expansion in many countries. With this in mind, the HOERBIGER Safety Division has decisively enhanced its portfolio of system solutions, among other things by acquiring the renowned IEP Technologies and Newson Gale brands.

All-encompassing strategy for prevention, venting, and isolation

The risk of gas or dust explosions essentially exists wherever flammable gases or combustible solids, oxygen, dispersion, and an ignition source come together in an enclosed space. Fuels include not only combustible gases or vapors from volatile chemicals, but also dust. The smaller and drier the dust particles, or the more flammable the gas, the more ideal are the conditions for these materials to be ignited by sources as common as an overheated bearing, for example – which is all it takes for an explosion to occur.

Electrostatic charging inside production equipment during operation also presents a potential ignition source. HOERBIGER addresses this situation with its Newson Gale range of static grounding and bonding protection solutions. The core of this portfolio consists of technologies that are specifically designed to prevent or dissipate static electricity in plants and reduce the likelihood of a spark ignition. Prevention is one side of the coin – but what happens when, despite all precautions, a dust explosion occurs after all? This is where proven and effective explosion protection technologies provided by IEP Technologies including venting, isolation, and suppression are required. These solutions can be categorized into passive and active protection.

The most common approach to passive explosion protection is to utilize explosion relief vents within the protected process equipment. Standard rupture vents in effect create a weak point within the vessel wall, which is designed to open at a certain pressure that is below the pressure at which the protected vessel itself would rupture. This type of vent relieves pressure effectively, but this pressure, and the associated fireball, must be directed to a safe area. This is typically a cost-effective protection option if the vessel being protected is located outside of the building or, if inside, is located near an external wall allowing ducting to the outside.

“Our employees have extremely comprehensive know-how and are able to offer our customers protective solutions that are optimized to their individual situation.”

Markus Häseli, Director of Sales Europe at IEP Technologies
A range of flameless venting solutions are also available to allow venting indoors in certain situations. These either employ an essentially maintenance-free relief valve, which closes automatically after the pressure has been relieved, or a conventional rupture vent, which is combined with a flame arrester. Both products prevent flames from escaping the facility.

If passive protection such as venting is not possible, active explosion suppression is the product of choice. A pressure sensor detects the incipient explosion based on a sudden pressure rise inside the protected vessel within 10 milliseconds after ignition. This signals the control unit to immediately discharge the suppressant, which dissipates the heat and extinguishes the explosion while still in its incipient stage.

The protective measures are rounded out by appropriate isolation systems. These prevent explosions from propagating through interconnected ducts to other parts of the process. Explosion isolation measures are consequently a fundamental component of comprehensive explosion protection concepts. Solutions for passive isolation include flap valves that are held open by operating pressure and are closed by the initial explosion pressure, thereby creating a barrier within
the duct. Active isolation includes high-speed gate valves or barriers of chemical suppressant, which are activated at the time the increased pressure is detected.

Custom system solutions and services offer added value

Effective explosion protection requires quality products and safety systems for practical implementation. The strategic approach pursued by HOERBIGER Safety Solutions as a full-service provider takes it even one step further. “We are one of the few full-service providers in the market,” comments Markus Häseli, Director of Sales Europe at IEP Technologies. “Our employees have extremely comprehensive know-how and are able to offer our customers protective solutions that are optimized to their individual situation – technologically as well as economically.”

Close contact with the customer and in-depth on-site consulting are among the pillars of the HOERBIGER business model. These endeavors are paying off: a growing number of customers in the international market trust in the systems’ high quality and concept design, which is tailored to their specific needs.
What strategy for the future does HOERBIGER pursue with the realigned Safety Division?

Going forward, we plan to grow the Safety Division into one of the HOERBIGER Group’s main pillars. To achieve this goal, our team expects to grow in two areas. We will significantly increase business in the explosion protection segment. This will be done both organically – by tapping new markets, developing new products, and acquiring new customers – and through acquisitions. The key here is to find suitable companies that are a meaningful addition to our existing explosion protection portfolio and are open to growing with us. We are also exploring entry into additional safety segments that complement explosion protection.

What distinguishes the HOERBIGER Safety Division from other market players in the explosion protection segment?

The employees are what set us apart. Our team offers integrated solutions to the customers in the safety business, not just individual products. In addition to extensive experience, this also takes expertise with respect to our customers’ plants and processes. The companies of HOERBIGER Safety, such as IEP Technologies and Newson Gale, are pioneers in their fields. They have valuable know-how, and our customers appreciate that. Additionally, our premium technology gives us a good position against the competition. Our goal is to always be one step ahead of the competition. This is what has made our company strong over decades. We are presently investing heavily to enhance the market in the coming years and better serve our customers.

In your view, what is the role of service and consulting for your market presence as a full-service provider?

Both factors are important for us even now, and they will continue to play a central role in the future. We don’t sell without in-depth advice. As a full-service provider, together with the customer we develop the best customized solution, both for the customer and the plant. Additionally, when it comes to dust explosions, we are the market leader with arguably the largest base. Our service coverage plays a crucial role. Our customers can rely on receiving service quickly worldwide, around the clock – a clear advantage over our competitors.

“As a full-service provider, together with the customer we develop the best customized solution, both for the customer and the plant.”
“We are exploring entry into additional safety segments that complement explosion protection.”
PerformanceXperience®

Performance in action

HOERBIGER customers benefit from our performance-defining components and services. Attractive business cases ensure an optimal return on investment (ROI). In the last two years, the average payback time for larger upgrade projects using our services was under 12 months. PerformanceXperience® is a solution tailored to customer needs. The top priority is safe and economical plant operation. Consequently, the customer experiences real performance.

Experience know-how

A successful company history spanning more than 120 years has allowed HOERBIGER to accumulate an unparalleled wealth of knowledge in the industry: extensive engineering and application knowledge, ideal configurations, and individual solutions from the more than 50,000 compressors HOERBIGER has equipped with performance-defining components or optimized through upgrades. This knowledge benefits Service customers in every single project. HOERBIGER has extensive experience with the modernization of reciprocating compressors.

The changing oil and gas industry

HOLISTIC SERVICE

PerformanceXperience® – or PX for short – is the combination of all HOERBIGER services that allow reciprocating compressor operators to achieve measurable and long-term improvements in efficiency, reliability, and environmental sustainability.

Text: Magnus Terner    Photography: Marcel Billaudet

In just a few years, the oil and gas industry has undergone a paradigm shift. The low price of oil, rising cost pressure, and ever more stringent requirements for safety and environmental sustainability have permanently changed market conditions. Additionally, in-house capacity for projects to optimize individual machines – or entire plants – is limited. HOERBIGER has analyzed the needs of plant operators in great depth. Customers are looking for a tailor-made range of services to help them develop their key businesses profitably and improve their processes so they can achieve their ambitious goals.
In order to meet the individual needs of operators and to identify pain points, HOERBIGER has developed a powerful tool: the REE (Reliability, Efficiency, and Environmental Soundness) approach. HOERBIGER uses REE to analyze critical compressors in the customer’s plant and to rate each unit on a scale from 0 to 10. REE best practices are derived from all segments of the oil and gas industry worldwide, making each plant’s specific improvement potential transparent. A comprehensive and detailed analysis of all processes, equipment used, and current as well as future production requirements forms the basis for an REE audit. The audit is also the cornerstone for developing solutions together with the customer and uncovering unexpected improvement potential for greater efficiency and profitability.
For specific technical challenges in the plant
PX Upgrade™ is known as the customized solution. HOERBIGER takes a structured and holistic approach to analyzing each specific challenge. The focus is not only on individual components or compressors, but also on their interaction in the processes in which they are utilized. The analysis forms the basis for developing tailor-made solution packages that boost the reliability and efficiency of compressors and hence of the entire plant.

For increasing production output and meeting challenging KPIs with limited budgets
With PX Plan™ HOERBIGER defines specific performance targets jointly with the customer. For instance, a performance contract can specify the mechanical availability of the compressors, or the desired energy savings.

For specific replacement parts or services
PX Base™ is the offering through which HOERBIGER delivers spare parts, reconditions valves, packings, and controls, and gets them ready for the next production cycle. Work is carried out either at a HOERBIGER location or directly on site by skilled field service staff with short turnaround times.

Worry-free with PerformanceXperience®
There are many ways to overcome challenges successfully. What matters is the how. HOERBIGER provides an all-around approach to analyzing and solving problems, and works with the customer to outline, establish, and implement the solution. This yields robust solutions that go beyond providing short-term benefits. Instead, they make lasting improvements possible in the medium and long term.

PerformanceXperience® is the combination of all HOERBIGER services that allows reciprocating compressor operators to achieve measurable and long-term improvements in efficiency, reliability, and environmental sustainability. The approach makes this possible through quality performance-defining components, experienced engineers, long-term performance contracts, and innovative services centered around plant efficiency.
More than 200 million people have moved from villages to the megacities over the last few decades in search for work. This also benefits China’s steel industry. Following the merger of Shanghai Baosteel Group Corporation and Wuhan Iron in late 2016, China Baowu Steel Group Corporation Ltd (Baosteel) became the largest steel producer in China, and the fifth-largest in the world. It generates some 37 billion US dollars in sales annually and has approximately 130,000 employees worldwide. The company manufactures steel products in a variety of grades and configurations – ranging from bar steel, wire rod, steel sheet, tubes, and plates to alloys for aerospace and automotive industries.

Protection of the environment and safety have utmost priority for the Chinese steel giant. As a trailblazer, Baosteel was the first in its industry to initiate DIN ISO 14001 certification for its environmental management system as early as 1998, and in 2009 the company introduced a comprehensive environmental protection strategy. Baosteel adhered to these guidelines in 2014 during a major overhaul of its largest blast furnace system. The project included the new construction of a total of four 7-meter-high coke ovens producing an annual output of 2.47 million tons of coke from hard coal.

Coke is needed in blast furnaces because the direct combustion of coal releases too much sulfur, soot, and smoke. These elements contaminate the resulting iron melt, reducing its quality. The coking of hard coal in a furnace is therefore carried out at temperatures exceeding 1,000°C in the absence of air. This allows the coal’s volatile components, and sulfur in particular, to be removed.
Flue gas purification devices were installed in the ovens' two chimneys. Each set is capable of processing 400,000 normal cubic meters of flue gas per hour and achieving a flue gas desulfurization efficiency of up to 80 percent and a denitrification efficiency of as much as 85 percent.

Baosteel uses the electrohydraulic valve actuator TriVAX™ made by HOERBIGER in one of the two sets of flue gas purification devices to control the integrated shut-off valve. “The most important requirement for the valves of a flue gas purification system is that they must open extremely quickly in the event of a fault to eliminate the risk of an explosion,” explains Xu Jian, Senior Project Manager of Baosteel’s Environmental Protection Division. This is precisely what TriVAX™ does. In the event of a power failure or loss of oxygen, the actuator ensures that the valve is fully opened within 15 seconds. Flue gas can then escape through the open valve system – and the coke production process is not interrupted. “The installation and commissioning of TriVAX™ went smoothly,” recalls Annie Zhou, Sales Support Manager of Valve Automation at HOERBIGER (Shanghai) Co., Ltd. “We coordinated all the schedules in advance as best we could to avoid conflicts and to prevent any impact on the operation of the furnace. Thanks to Baosteel’s excellent preparation, our work on the system on site went just as smoothly.” Her project partner Xu Jian, in turn, was very impressed by the HOERBIGER project team members’ approach to work: he especially commended their dedication, sound knowledge of technical specifications, and uncompromising implementation of the comprehensive safety measures.

The system was officially put into operation in the second half of 2016, and Baosteel did not hesitate to use it as a showcase project. In November 2016, the company invited representatives from over 20 Chinese steel producing firms to visit the plant. In January 2017, the Central Environmental Protection Inspectorate tasked its officers with checking the operation of the device – and verified its outstanding values and results. Baosteel’s flue gas purification device, equipped with the electrohydraulic valve actuator TriVAX™, was the first of its kind in the country – and since being put into operation has proven its worth on two separate occasions. Two faults in the plant occurred within five months after installation and commissioning, thereby activating the security function in the HOERBIGER TriVAX™.
In February 2017, the TriVAX™ safety function proved reliable during a hazard situation caused by a power failure. The electrohydraulic valve actuator swiftly switched to emergency mode. A fault occurred in the steel plant’s distributed control system, also in February. Two fans in ovens 1 and 2 stopped functioning, resulting in negative pressure. The shut-off valve closed, and flue gas could no longer be discharged from the furnaces. TriVAX™ functioned perfectly, opening the bypass valve in less than 15 seconds and ensuring the safety of the entire coke production process and the plant.

“These kinds of faults happen – but the bypass must respond quickly and reliably,” Xu Jian emphasizes. “HOERBIGER’s TriVAX™ impressively demonstrated that it performs flawlessly in these situations.”
The natural gas network in Lithuania is in a state of transition with a new LNG terminal and connections to networks in neighboring countries. To ensure that compression equipment stays up to date in regard to reliability and eco-friendliness, transmission system operator Amber Grid has been focusing on engine upgrades. HOERBIGER has contributed with its Engine Mapping concept to optimize the upgrades.

Text: Alexander Chavez  Photography: Marcel Billaudet, iStock.com

About Amber Grid

Amber Grid holds an open-ended business license for Lithuania’s natural gas transmission system. The company is responsible for the transportation of natural gas through high-pressure pipelines to system users as well as the operation, maintenance, and development of the country’s natural gas transmission system.
ON A TRAJECTORY OF EXPANSION
The natural gas network in Lithuania is undergoing big changes, for example with steps for a more diversified natural gas supply. A significant milestone in this regard was the December 2014 opening of a liquefied natural gas (LNG) import terminal in the port of Klaipeda. The opening of the terminal meant an end to dependence on Russian natural gas via pipeline – as well as a significant capacity boost. Lithuania now participates in the global gas market.

Another major course of action has been the drive to create a single gas market in the Eastern Baltic Region, which covers Lithuania, Latvia, Estonia, and Finland. To this end, Lithuania’s gas network has already been connected to Latvia’s. In 2021, a connection to Poland’s network is expected to open, thereby joining the region to the European Union’s single gas market. To be sure that Lithuania’s gas pipeline network keeps pace with the supply changes, its operator Amber Grid is focusing on infrastructure improvements to keep reliability high. After all, any blips in service could be detrimental to the country’s consumers – the largest of which is a fertilizer manufacturer, followed by electricity producers. Further measures target environmental aspects to keep operations in line with EU directives. For years, HOEBBIGER has been a key partner for keeping engines up to date. Today efforts are being headed by Gediminas Puišys, Managing Director of HOEBBIGER Lithuania.

A solution to replicate

The gas pipeline system in Lithuania dates back to 1961. Currently the network encompasses 2,115 km of gas transmission pipelines, 68 points of connection, two cross-border metering stations, and two gas compressor stations – one of which opened around seven years ago. HOEBBIGER got involved in the 1980s and has since then provided maintenance and spare parts for engines at the original gas compressor station in Panevezys.

An ongoing project is the update of four of seven RUMO 10GKN integral engines installed at the Panevezys station. The work now in progress is based on a study carried out in 2011 on engines with the goal of decreasing NOx emissions. “For the lean operating point, the NOx was considerably high. Plus, the results from our examination showed that several cylinders operated in continuous misfire, and others misfired intermittently,” says Puišys. A further finding, he adds, was that the turbochargers installed by the OEM were a less-than-ideal match. HOEBBIGER came up with a solution that involved installing a new turbocharger and intercooler as well as a waste gate for more accurate control of boost pressure at part load. To stabilize combustion and improve the control and efficiency of the pre-combustion chamber (PCC) fueling, Electronic Pre-Chamber Check (ePCC) valves were also added. After the equipment was in place, further adjustments were carried out. The end result: significant reductions in NOx emissions and fuel consumption. The excellent outcome with the initial engine convinced Amber Grid to commission HOEBBIGER to upgrade further engines according to the strategy. This current project will be completed by the end of 2018.

Amber Grid helps keep the lights on in Vilnius. That’s because the grid operator provides Lithuania’s electricity companies with a steady supply of gas for their power plants.
Engine Mapping

Engine Mapping is carried out according to an established approach: The HOERBIGER team first meets with the customer to learn more about their installation and review their typical operation. The goals the customer wishes to achieve with their engines are also reviewed at the initial meeting. The focus can be on efficiency, reliability, or emissions. In a next step, an engine map is performed in which a range of scientific data is collected. A detailed report is then drawn up based on the collected data, which is compared with data in HOERBIGER’s extensive database. The report also includes recommendations for action. If the customer is interested in implementing the recommended changes, commercial talks are initiated.

1 “Like HOERBIGER, our focus is on long-term solutions. The uniqueness of the solutions, the technology – and of course the expertise of the HOERBIGER team in Lithuania – are a relevant match for us,” comments Andrius Dagys (in the background), Technical Director at Amber Grid.
2 Gediminas Puišys (in the foreground), Managing Director of HOERBIGER Lithuania, is dedicated to continuing the strong relationship with Amber Grid that goes back to the 1980s.
Integral engines

With integral engines, the engine and compressor are on a single frame with the crankshaft serving both the engine’s power cylinders and the compressor’s cylinders. In larger units like the RUMO 10GKN, the power cylinders are often arranged in a vertical V design.

1 The gas pipeline system in Lithuania dates back to 1961. Pictured here are the RUMO 10GKN engines at the Panevezys gas compressor station, which until around seven years ago was the country’s only gas compressor station.

2 Among the measures taken to upgrade the RUMO 10GKN engines was the addition of Electronic Pre-Chamber Check (ePCC) valves (shown here) to improve control and consistency of PCC fueling.
A proven concept

At HOERBIGER, the process of uncovering potential through a comprehensive examination and making suggestions for steps of action in a detailed plan is known as Engine Mapping. The concept has its origins in the United States, where the business model was established in 2000. A decade later, Engine Mapping was introduced to HOERBIGER’s European businesses. “In 2010 we started working with the European teams to teach them about Engine Mapping. They absorbed everything very quickly,” says Greg Beshouri at the Engine Systems Integration arm of the HOERBIGER Engine Division. “Today the level of expertise is definitely equal to that in the United States,” he continues. Nonetheless, the European and US teams actively collaborate to provide the best possible results to customers. In fact, for the project with Amber Grid, HOERBIGER Lithuania received support from the US business.

That’s because the engines installed at the Panevezys gas compressor station are practically identical to engines widely employed in the United States. As the story goes, the Cooper-Bessemer GMV engine was introduced to the market in the time leading up to World War II. Aside from applications in the gas sector, the engine is also used in petrochemicals and to drive water and oil pumps. After the war, domestic production picked up significantly, and the engines were also produced under contractual arrangements in foreign markets. As part of a lend-lease agreement, 25 engines were dispatched to the USSR in 1945. One of the motors was never installed; instead, a local engine company cloned it and sold it as the RUMO 10GKN.

The Cooper-Bessemer GMV, upon which the RUMO 10GKN is based, is one of around 12 legacy engine types regularly upgraded by the US team. “Given this history, it only made sense that we reviewed the results the HOERBIGER Lithuania team came up with,” says Beshouri, who adds that he made no changes to their concept. Furthermore, representatives from Amber Grid travelled to the United States to tour an installation with Cooper-Bessemer GMVs that had been upgraded using a similar approach.

A partner at the ready

For the engine upgrades at the Panevezys gas compressor station, Amber Grid is benefiting from local competence supported by a worldwide network. With collaboration between the two companies going back nearly 40 years, the current project represents yet another chapter in their joint history. “Like HOERBIGER, our focus is on long-term solutions. The uniqueness of the solutions, the technology – and of course the expertise of the HOERBIGER team in Lithuania – are a relevant match for us,” comments Andrius Dagys, Technical Director at Amber Grid. What’s more, Puišys sees HOERBIGER Lithuania as a strategic partner for Amber Grid. And for the coming years, Amber Grid has its challenges laid out. Among others, the transmission system operator has to continue to ensure a high level of utilization of existing infrastructure as laid out in the European Commission’s European Energy Union. Other operators in the region will also be facing similar challenges. HOERBIGER is poised to help – for example with engine upgrade opportunities that have been identified in the other Baltic countries as well as in Poland.
Plasser & Theurer and HOERBIGER – Partners for more than 50 years

PERFECTLY TAMPED...

Text: Ludwig Schönewald  Photography: Plasser & Theurer

Railjet 867
At a speed of 225 kilometers per hour (139 miles per hour), the Railjet 867 whizzes along the Western Railway (Westbahn), bound for Vienna. It is almost inconceivable that the contact surface between the wheels of the train and the track is smaller than a fingernail.
Plasser & Theurer is a global market leader for track laying machine technology with roots in Vienna and Linz, Austria. Since the days of its first patent applications and the company’s inception in 1953, Plasser & Theurer has evolved into a full-range manufacturer of railway track laying and maintenance machines with a global presence. It all started with the development of a machine used to build railroad tracks that consolidated the ballast under the sleepers of railroad tracks. Known as tamping, this process creates a stable yet elastic track system that is able to safely absorb and distribute maximum loads, even at extremely high speeds. Machines made by Plasser & Theurer revolutionized what used to be a markedly labor-intensive construction process. Today, modern machinery – laser-controlled and aided by satellite navigation – requires merely a few hours to accomplish what previously took hundreds of railroad workers often weeks to finish.

Track tamping machines

The first track tamping machine developed by Plasser & Theurer was a 1-sleeper tamping machine that was able to handle approximately 150 meters (492 feet) of track in one hour. Advancements in engineering allowed the capacity of 1-sleeper tamping technology to be increased to 500 meters (1,640 feet) of track in one hour. In 1965, the Plasser & Theurer Duomatic was launched, a 2-sleeper tamping machine that increased hourly capacity to 800 to 900 meters (2,625 to 2,950 feet) of track. The next step allowed simultaneous tamping of three sleepers. One of the company’s current premium products is the 09-4X Dynamic Tamping Express. This 4-sleeper tamping machine is able to lift, line, tamp, and stabilize up to 2,600 meters (8,530 feet) of track per hour.

Ever since the company was founded, the heart of every Plasser & Theurer track tamping machine has been non-synchronous constant pressure tamping, a hydraulic process in which tamping tines penetrate the ballast bed and compact the ballast under the sleepers of the railroad track with a squeezing movement. During this process, the tamping tines vibrate with a frequency of exactly 35 Hz. The company’s founders, track construction entrepreneur Franz Plasser and engineer Josef Theurer, had discovered that this directional, linear vibration combined with non-synchronous tamping created ideal conditions to produce a homogeneously compacted ballast bed.

Pioneers in track construction

As part of a scheduled overhaul, Josef Theurer converted an existing track laying machine, equipping it with non-synchronous constant pressure tamping. Practical experiences with the prototype verified his theoretical assumptions, but also showed another advantage: Since the machine was tamping two stretches of tracks at a time, the consolidation of the bed under the right and left tracks was absolutely identical. To this day, uniformity on both sides of the track is a prerequisite for high railway speeds.

The pioneers of automated track construction initially offered their expertise and patented invention to mechanical engineering firms operating in this field – without success. Disappointed, but driven by pioneering spirit and having secured additional patents, Plasser & Theurer decided to take matters into their own hands and produce modern, automated track laying machines. In 1955, the two entrepreneurs began manufacturing hydraulic track tamping machines, specifically the VKR 01 tamping machine in cantilever design, with a handful of employees. In 1957, the VKR 01 was followed by the VKR 03, the first high-capacity tamping machine. In its first two years of production, Plasser & Theurer was already exporting to five countries outside Austria, and the VKR 03 yielded the company its first successful exports to the United States.
At Plasser & Theurer in Linz I learned that the horizontal deviation of the track on which the wheels of my train roll cannot be more than one millimeter (0.039 inches) over 200 meters (656 feet) of track in high-speed rail traffic. Consolidating the ballast bed in which the track is laid therefore requires maximum precision.
The APT 1500 RA track welding machine weighing some 80 tons is supported by two hydraulic struts during welding – secured by HOERBIGER check valves.

“In many instances, one of our track building machines completes the last steps on a new rail line before it is officially opened for train operation,” says Johann Dumser, Head of the Advertising Department at Plasser & Theurer. Right after St. Pölten, the train has to brake sharply, and the track bed has to withstand maximum stresses. None of the guests on the train give it any thought.
Ever since, the company has repeatedly set technological milestones in track laying and maintenance across the world. While Plasser & Theurer initially focused solely on machines used for track laying, ballast bed cleaning, track maintenance, and measuring work, the company added machines for the installation and maintenance of overhead lines to its portfolio in the 1980s. In total, Plasser & Theurer has shipped more than 16,000 heavy-duty machines to 109 countries around the globe. Over the years, the company has filed some 10,000 patent applications and presently has approximately 2,000 active patents. Plasser & Theurer, including all its partner firms, has a staff of approximately 3,500 worldwide, of which 1,800 are in Austria. With manufacturing facilities of its own and partner firms in 19 countries, as well as service, repair, and spare parts depots, the company has locations close to its customers around the world.

Customer benefit: high capacity
“We offer our customers high capacity, precision, and reliability. This is our brand’s commitment,” explains Gerhard Hübsch, Purchasing Manager at Plasser & Theurer. “Given our position as a global market leader, we are also expected to continually deliver technological innovations at the highest level,” he continues. “We do everything conceivable to launch new developments to protect this position,” adds Johann Dumser, Head of the Advertising Department. “In Austria, we rank at the top when it comes to patent applications.” With this in mind, it comes as no surprise that four of the 18 machines Plasser & Theurer showcased at the International Exhibition for Track Technology (iaf) in Münster, Germany, in May 2017 were innovations. HOERBIGER has supported the success of Plasser & Theurer for more than 50 years. While the items supplied are comparatively small in number, they are crucial for the safety of many track laying machines. One example involves the transfer of a self-loading tamping machine from the rails onto a flatbed truck. Hydraulic cylinders manufactured in-house by Plasser & Theurer play a key role in ensuring that the machine is securely positioned during the transfer. The extremely leak-proof hydraulic check valves supplied by HOERBIGER from Altenstadt, Germany, guarantee that the heavy-duty tamping machine supported on the hydraulic cylinders does not move inadvertently during reloading.

Precise, crucial for safety
“The supports are absolutely crucial for safety,” explains Rudolf Bernecker, Chief Design Engineer Hydraulics/Pneumatics at Plasser & Theurer. The HOERBIGER check valves are installed directly on the stabilizing cylinders, reliably preventing the machine from inadvertently moving even during a power failure or loss of hydraulics. “This has worked flawlessly, without exception,” he says. The check valves HOERBIGER supplies to Plasser & Theurer are equipped with ball valves. The principle of the valve is relatively simple: when closed, a steel ball closes off the valve with precise form fit, permanently and absolutely reliably fixing the positions of the stabilizing cylinders.

Customer value: reliability
This kind of reliability must be ensured unconditionally. “When we assemble components such as the check valves, all parts must function reliably, without exception,” explains Bernecker. Why doesn’t Plasser & Theurer produce the valves in-house? “Typically we keep our core competencies within the company, simply because this allows us to achieve an
extremely high level of quality,” explains Purchasing Manager Gerhard Hübsch. “At the same time, we don’t want to reinvent the wheel. Valves are not a core competence for us because the market offers the right products in this very specific hydraulics segment,” continues Hübsch. “The key reasons why we have been working with HOERBIGER for so long is that they are a reliable supplier, and our personal relationship with them,” adds Bernecker. “This matters even more so when we are faced with an issue that must be resolved quickly,” he says further.

Industrial partners

Plasser & Theurer has manufactured hydraulic track tamping machines in Linz since 1953. At present, the company occupies manufacturing space measuring approximately 123,000 square meters (1,324,000 square feet) in plant area A on Pummererstraße and in plant area B on Hafenstraße. The lion’s share of added value is still generated in-house, with the company manufacturing approximately 90 percent of design-specific parts on its own. For some standard power units such as diesel engines and compressors, and for pneumatic and hydraulic components in particular, Plasser & Theurer resorts to industrial partners. The company procures 80 percent of its order volume from 200 to 300 partners worldwide.

Every machine is a prototype

This happens quite frequently, since at Plasser & Theurer almost every machine is a prototype. “It’s rare that even two machines are completely identical,” explains Advertising Department Head Johann Dumser. “Each machine is based on a common technology platform and optimized with the customer’s individual needs in mind.” One example is the track tamping machine that is undergoing delivery acceptance by a delegation from a Japanese customer during our visit in Linz. It will be used on narrow-gauge railways. Dumser adds: “Supporting the availability of machines on-site for the customer is a great benefit. We do everything in our power to ensure maximum operational readiness of our machines.” As a result, suppliers such as HOERBIGER must be prepared to keep replacement parts in stock for the after-sales market for sufficiently long periods.

Continuous dialog

Plasser & Theurer strives to continually improve the railway traffic system. The company is in constant dialog with rail operators, railway construction firms, railway consultants, universities, and research centers around the world. Its goal is to develop machines that offer maximum benefits to track construction firms, direct customers, as well as rail operators – machines that meet the requirements of modern high-speed rail lines in Europe and Asia as much as they meet the special requirements of curvy narrow-gauge railway lines in India’s mountains.
A self-loading tamping machine during use on the section of Vienna’s U2 subway line that travels over the Danube city bridge.
SLIMMED-DOWN DESIGN FOR HYBRID VEHICLES

Hybrid drive systems for vehicles are gaining ground worldwide, but they present new challenges for automobile design engineers seeking a wide range and high efficiency. The SlimLINE synchronizer made by HOERBIGER introduces new, valuable design freedom in the powertrain.

Text: Achim Neuwirth   Photography: Fotolia, HOERBIGER

Mobility and environmental conservation: “Hybrid technology in general, and specifically our HOERBIGER SlimLINE synchronizer, helps build the bridge that defines the path from a past marked solely by internal combustion engines to an all-electric future,” says Ottmar Back.
“These products move electrification and environmental sustainability forward, without requiring drivers to compromise on what they have become accustomed to. As a result, they help build the bridge that defines the path from a past marked solely by internal combustion engines to an all-electric future.”

Creating space for efficiency

Incorporating the advantages of hybrid drives into vehicles is a very complex task for today’s developers. “They must find a way to additionally fit an electric motor in what is already a very tight space between the combustion engine and the transmission system. Our HOERBIGER SlimLINE makes this easier. Each installed synchronizer saves as much as seven millimeters in length – in an area where every millimeter counts,” Back explains. “As a result, transmissions can have an overall shorter design in the future – and this applies equally to dual-clutch transmissions, automated systems, and traditional manual transmissions.”

Short and powerful

For SlimLINE, HOERBIGER essentially redeveloped the existing sleeve/hub system. The hub can now be built significantly narrower, still transmitting the same high forces while maintaining superb shifting quality. The continuous, closed tooth ring offers an additional advantage in terms of strength, because another synchronization component, the blocker ring, has now been displaced further into the hub ridge, saving even more space. “Alternatively, we can also design the SlimLINE so that it transmits more torque than before with identical dimensions,” Back elaborates.
All measures combined, the HOERBIGER SlimLINE ends up as much as 20 percent slimmer than the compact ClassicLINE. “When used in dual-clutch systems, savings of another three millimeters for a total of ten millimeters is possible when we combine the SlimLINE with our ClassicLINE DCT-Type synchronizer,” Back says. “As a result, a transmission can be built as much as four centimeters shorter. Ideally, our SlimLINE synchronizers alone create the additional space required by an electric motor for a hybrid drive.” Seemingly small innovations can therefore, in sum, have a big impact. Specifically when weight is taken into consideration, the HOERBIGER SlimLINE lives up to its name, since its design is as much as 20 percent lighter than the ClassicLINE.

Enormous potential

These developments will especially benefit plug-in hybrids, the most efficient among electrically assisted vehicles. They are able to cover average daily distances solely with electric power, generating no emissions on the road. Charging happens at the power outlet. If the charge is not sufficient, the combustion engine simply pitches in. In addition to all-electric cars, plug-in hybrids therefore also fall under the electric vehicle category – and even China’s strict administration considers them new energy vehicles. “The opportunities for our SlimLINE synchronizer in the market are huge. The number of registered NEVs in China doubled between 2015 and 2016 alone to a total of approximately 650,000 vehicles. Nowhere else will you come across more electrified cars on the roads,” Back adds. In terms of absolute manufacturing figures, the Chinese rank ahead of Germany and the United States. When it comes to the number of electric cars per inhabitant, in contrast, Norway is leading, ahead of the Netherlands and Sweden. This shows that new solutions are needed internationally.

“ Ideally, our SlimLINE synchronizers alone create the additional space required by an electric motor for a hybrid drive.”

Ottmar Back,
Head of the Synchronizer Product Line
HOERBIGER Antriebstechnik Holding GmbH

The SlimLINE can best demonstrate its strengths with compact and midsized cars in which the motor and transmission are installed transversely to the direction of travel. Within these cramped installation areas they ideally free up the amount of space needed for the electric motor in the hybrid drive system.
CURRENT VEHICLES
FEATURING HOERBIGER DRIVE TECHNOLOGY

Ford C-MAX

No other manufacturer has more experience with vans in the German market than Ford. One vehicle that is particularly attractive for families is the Ford C-MAX. It sports a superbly appointed, flexible cabin and a modern front end – and it has been designed with safety in mind. The elevated seat position and ample window surfaces offer drivers better visibility of the road, while passengers enjoy the excellent view. Other characteristic traits of the C-MAX are the comprehensive standard range of advanced protective and assistance systems and its maximum cargo space of 1,684 liters (59.4 cubic feet).

Anyone traveling with a full load generally needs plenty of power, which is not a problem thanks to available gasoline engines ranging from 85 hp to 182 hp, and diesel engines ranging from 95 hp to 170 hp, providing loads of fun on curvy roads. All engines meet the stringent Euro 6 emissions standard and – with the exception of the liquefied petroleum gas (LPG) model and one gasoline variant – come standard with an environmentally friendly start/stop system. The 6DCT451 dual-clutch transmission made by Magna GETRAG delivers the C-MAX’s horsepower to the road in some diesel variants. Gear shifts are sporty and immediate, and with no loss of traction, the transmission offers a direct, precise driving experience. The 6DCT451 shines with improved responsiveness and acceleration, resulting in greater efficiency. This, in turn, lowers fuel consumption and reduces CO₂ emissions – to which HOERBIGER synchronizer sleeves produced at the Oberstenfeld plant make a contribution.
VW Arteon

Those looking for an absolutely remarkable combination of emotional Gran Turismo design, a highly functional overall concept, and sporty charisma will find exactly that from the world’s largest automaker, more specifically: its new first-class sedan, the VW Arteon.

The five-door fastback delivers a perfect balance between an aesthetic, sloping roof line and generous headroom. The fact that the vehicle sports a 563-liter (19.9 cubic feet) trunk could be a cause of concern for many competitors with mid-range category station wagons. Since the design, quality, and comfort have mimicked the luxury of the premium class, the engine must keep pace too. The range of efficient four-cylinder turbocharged engines among the gasoline models runs the gamut from 150 hp to 280 hp. VW produces a range of diesel engines that start at the same performance level. The real attention-grabber, though, is a power plant that passes 240 hp and some 500 Nm (369 ft-lb) on to a 7-speed dual-clutch transmission internally termed DQ381. With one exception, this automatic transmission is available as an option for all of the VW Arteon’s engine models, and in the most powerful versions it comes standard from the factory.

The cars are also regularly equipped with advanced HC310 carbon friction linings inside the DQ381, which HOERBIGER developed for upscale and high-performance synchronizers.

Great Wall WEY VV7c & VV7s

A car built like a fortress: With the new SUV WEY VV7c, along with its VV7s sport version, the Chinese auto giant Great Wall Motors is moving into the premium segment. The automaker already holds a leading position in the SUV segment in China, especially in the high-volume market.

A long hood and a sharply sloping tailpiece will likely also make the sporty design of the WEY VV7c and VV7s attractive to Europeans. Leather, chrome, and digital displays in the cabin provide the fitting touches of luxury. The vehicle is powered by a 234 hp, 2-liter turbo engine coupled to a 7DCT450 dual-clutch transmission developed and produced by Great Wall Motors. This powertrain ensures sporty and dynamic handling without sacrificing the ride comfort. Experience in engineering and production from abroad makes this possible: HOERBIGER supplies complete synchronizer systems from its plants in Changzhou, China, and Schongau, Germany.
xetto® user Schöler Fördertechnik AG

PROBLEM SOLVED OVERNIGHT

Michael Reinhoffer and Peter Schrott come across transport and lifting equipment on a daily basis and have seen their share of products over the course of their careers. Both were fascinated by xetto®, the HOERBIGER comfort loading system, which has proven its worth in everyday work settings.

Photography: HOERBIGER
Some problems solve themselves overnight,” recalls Michael Reinhoffer, Sales Manager for Schöler Fördertechnik AG in Rheinfelden, Germany’s second-largest Linde Material Handling dealer. During the summer of 2016, he was planning to add Cleanfix cleaning robots to his product range, but had a difficult time figuring out exactly how to get the 250-kilogram (over 551 pounds) piece of equipment to the customer. It was around the same time that Reinhoffer first set eyes on xetto® during a presentation. “As a Linde dealer, we have seen our share of transport and lifting equipment. Still, we were immediately excited about xetto®,” he recounts.

This solved his problem of transporting Cleanfix units overnight. He had previously contemplated a long list of solutions – such as loading by crane or purchasing a larger vehicle equipped with a lifting platform – only to dismiss them because they would have been uneconomical. The biggest issue was how to unload the cleaning robot from the vehicle. “Municipal customers with sports or festival halls have neither a crane nor a forklift on site. If I can’t handle the job on my own, I’m out of luck,” Reinhoffer comments.

Peter Schrott, who works for Schöler and is in charge of Cleanfix on-site demos for customers, chimes in: “The combination of xetto® and Cleanfix is very efficient and incredibly easy to use,” he reports, drawing on his day-to-day practical experience. Using an aluminum ramp, he moves the Cleanfix onto xetto® and then rolls both into his small van. As a result, he always has his helpers on board. The lashing straps from the xetto® portfolio of accessories make it very easy to safely transport cargo. “The xetto® offers exceptional yet simple handling,” Schrott continues. For him, the greatest advantage of the unit is at the customer’s location. “I simply move xetto® back out of the van and then push it to the cleaning job.” He doesn’t have to bother anyone for transport and lifting gear, there is no wait, and he doesn’t need a second person.

“It’s fun to work with xetto®, “Schrott sums it up. He can imagine a number of other possible applications beyond the Cleanfix cleaning robot. “I think xetto® is the ideal solution for transporting unwieldy items like gas cylinders, fire extinguishers, or heavy tools. It’s also great for intralogistics uses inside large factory buildings, where I don’t want to use a large crane for every step; with xetto®, I’m much more flexible and faster. I can also easily overcome steps with xetto®, or reach landings.”

Flexibility is also one of Michael Reinhoffer’s key arguments in favor of xetto®. “The investment paid off very quickly, several times over, because we didn’t need to purchase a larger vehicle. We don’t have to worry about any other transport and lifting gear, or send another man on the job, and the time savings alone are enormous. The system also considerably reduces the physical strain on our demo employee Peter Schrott. We find xetto® incredible, and especially in combination with the Cleanfix it’s indispensable.” Michael Reinhoffer is not aware of any alternative product that offers this kind of versatility. “I’m convinced that a growing number of customers will find the efficiency of xetto® compelling.”

In late July, HOERBIGER Nippon KK shipped the first xetto® to a customer in the Far East. The delivery to Tanabe Compressor Co. Ltd. headquartered in Osaka, Japan, marks a milestone in the sale of the innovative HOERBIGER loading and unloading system. The HOERBIGER customer magazine, which is also made available in Japanese, brought xetto® to the attention of a number of customers in Japan. Prospective customers from a wide variety of sectors were impressed by the product’s versatile usage options. In early October, xetto® celebrated its official debut in Asia at the 2017 Factory Facilities & Equipment Expo (FacTex), which was held in Osaka.
Reliability matters in operating rooms where physicians and medical staff must move between mobile measuring equipment, operating tables, and robots. Thanks to RHOMBUS and HOERBIGER, they can rely on secure footing for the equipment.

Text: Kathrin Wildemann  Photography: RHOMBUS, HOERBIGER, iStock.com

OPERATING SAFELY
Anyone lying on the operating table as a patient must have assurance that not only every move of the medical staff is exactly right, but also that the medical operating equipment functions with absolute reliability. A tiny wrong move can result in a life or death situation. High demands also apply for seemingly inconspicuous components, such as the casters on a mobile operating table. During surgery, they must be locked safely to ensure that the table has a stable footing. Together with RHOMBUS, HOERBIGER therefore developed a series of casters featuring an integrated hydraulic floor lock system and a standardized caster stem. When the operating table is secured, hydraulic cylinders lift the casters off the floor, ensuring a solid footing.

Cooperation in record time

RHOMBUS is one of the world’s leading manufacturers of wheels and casters. Medical technology is an important sector for the company steeped in tradition. In its quest for an experienced partner for an integrated hydraulic plunger lock caster system, in April 2016 RHOMBUS came across the floor lock system made by HOERBIGER. In under six months, the two companies were able to jointly unveil the integrated plunger lock caster system at the leading medical exhibition MEDICA.

“Working together as partners was very constructive – we contributed our fastening competence, and HOERBIGER contributed its hydraulics expertise,” recounts Roland Kausemann, Design Engineering, RHOMBUS Rollen Holding-GmbH. “As a result, we were able to develop an intelligent floor lock system in a very short period of time.”

The integrated plunger lock caster system requires less installation space than external jack systems, and with its supports positioned closer to the corners, it provides greater stability. Compared to fixed casters, the powerful hydraulic system is safer, especially with heavier patients, since the wheels are lifted completely off the floor, allowing less residual movement. The most extraordinary feature: The jacking cylinder is installed in the stem of the caster. As a result, the system is
Surgical robots were originally developed to allow surgeons to operate remotely in conflict areas. Today they are used in many hospitals.

Hospitals of the future: surgical robots and hybrid operating rooms

While surgical robots may sound futuristic, they are already part of the everyday work setting in many hospitals and employed in a number of urological or gynecological minimally invasive standard surgeries. The robot does not act independently, but is remotely controlled by a physician who tracks the surgical instruments via an enlarged 3D image. The system compensates for involuntary movements, such as trembling of the hands.

Hybrid operating rooms rely on a similar principle. Using imaging methods such as computer or magnetic resonance tomography, or a variety of X-ray-based methods, minimally invasive procedures are monitored in real time. Without major incisions, the surgeon immediately sees whether, and where, a complication exists, and can respond in a timely manner.

compatible with a wide variety of products. Even existing systems are therefore easy to retrofit, as HOERBIGER supplies the floor lock system as a plug-and-play solution, if needed. Both partners benefit from the collaboration: “With its broad product portfolio, RHOMBUS covers a wide range of customer needs – providing us access to new target groups,” says Georg Wagner, Head of Sales & Marketing Medical/LE, Business Unit Compact Hydraulics at HOERBIGER.
The four-cylinder hydraulic system is able to lift as much as 1,000 kilograms. One cylinder measures 32 millimeters in diameter, which is about as thick as one and a half fingers.

From mobile operating tables to high-tech medicine

The main applications for casters have been mobile operating tables. These movable operating tables offer a variety of advantages over the stationary tables that are rigidly installed in operating rooms. They enable more efficient use of the operating rooms since patients can be prepared outside the room. They also save additional sterilization, which is necessary when the patient has to be transported into the operating room on a different gurney.

Moreover, the stress on the patient is reduced when the transfer onto the table in the operating room is eliminated, which represents an addition movement, at times under critical conditions. In many countries, mobile tables are standard in day-to-day hospital operations. The market for the integrated plunger lock caster is nonetheless accordingly large: “I believe that anyone manufacturing operating tables sooner or later will have to explore ways for locking mobile tables,” Kausemann explains.

Modern medical technology offers a whole host of potential applications for the system. Owing to the smaller installation space, for example, it is well-suited for surgical robots or medical measuring devices in hybrid operating rooms on a small footprint.

This is where another advantage of the floor lock system presents itself: The hydraulic system not only compensates for potential uneven surfaces, but also dampens vibrations. This is crucial, in particular for mobile measuring devices using imaging processes, since the equipment’s natural oscillation could distort the image. The integrated plunger lock caster therefore affords the hospital operator greater flexibility and efficiency in several respects – ranging from the use of mobile devices to efficient utilization of the facility.
WE’RE LOOKING FOR TALENT

“At HOERBIGER we learn what matters.”

HOERBIGER has a promising future in store. By 2020, the company wants to considerable increase its turnover from today’s ca. 1.1 billion euros. At the same time, employees are being sought all over the world. All company areas and business units have ambitious goals for growth.
To reach its goals, HOERBIGER will continue to expand its market position. As a company steeped in tradition and a leader in technological niche markets, HOERBIGER is never satisfied with the status quo. That’s because new technologies, markets, business models, and processes are the elixir of life for the company – and have been for over 120 years. In 1895, the steel plate valve invented by Hanns Hörbiger was patented, a revolutionary innovation and cornerstone for today’s HOERBIGER Group. People who work at HOERBIGER have curiosity running in their veins; they have both feet firmly planted on the ground, are creative, and think like entrepreneurs. Again and again, they discover new challenges, find solutions for their customers, and continuously contribute to HOERBIGER's success – from the Production, Purchasing, and Sales departments all the way to the developers who shape the future of the company with their innovative ideas.

HOERBIGER gives everyone the opportunity to develop, make a contribution, and grow. More than 6,800 people go to work at HOERBIGER every day. On average, they spend 8.9 years with the company. During that time,

- 20 million new cars are built with HOERBIGER components, and
- 1 million new compressors are equipped with HOERBIGER products.

So quite a lot happens in nearly nine years’ time. Still, what is it like to work for HOERBIGER? “We know that our future success is closely tied to how HOERBIGER embodies the values that are attractive to our employees,” says Dr. Jürgen Zeschky, CEO and Chairman of the Executive Board.

The market environment is in the midst of a revolution that is changing technologies and entire industries. This presents great challenges for companies – as well as opportunities. “It is important for HOERBIGER to align the company with the volatile market conditions by adopting a modern leadership style that is geared toward transformation,” says Zeschky. “Our employees’ engagement and initiative give us confidence for the future.”

“We ensure that we stay up-to-date technologically.”

“At HOERBIGER, we look to the future together and receive support to grow personally.”
Pit stop at HOERBIGER in Vienna

In October, the OS.Car Racing Team of FH Campus Wien, the university of applied sciences in Vienna, made a pit stop at HOERBIGER, displaying its latest OS.Car CR-117 SCATHA race car.

With SCATHA the team will be competing with in the international Formula Student design competition held among students from a wide variety of universities. HOERBIGER has been a sponsor of the OS.Car Racing Team since 2015.

The OS.Car Racing Team has been represented in Formula Student since 2012. In the quest for a suitable supplier for brake disks, the students turned to HOERBIGER in 2015. “Good brakes are essential for the vehicle's handling in curves and for the driver's safety. To ensure both, we need a reliable partner who can offer us top quality. We were impressed by HOERBIGER’s manufacturing expertise,” Team Captain Natalie Gemovic commented during the presentation of the race car.

So far, HOERBIGER has produced some 180 parts for the OS.Car Racing Team. In addition to brake disks, the company also supplies parts for the vehicle's suspension.

The goal of Formula Student is to design a compliant race car within one year. Afterward, the cars compete against one another in racing events. Still, it takes more than driving performance to achieve a good ranking. Know-how in the areas of project management, marketing, controlling, and public relations is also considered in the rating.
1 Marcel Billautdet is based in Wiener Neustadt, Austria, and works as a photographer for national and international clients. He spent many years in the movie business, an experience that has a strong influence on his way of storytelling, directing, and lighting. His main focus is on people photography – from portraiture to reportage. Besides that, he also enjoys shooting architecture and stills.

2 Alexander Chavez has been working as a freelance journalist for communications departments at internationally active corporations since 2005. A California native, he now calls Munich home. He has a bachelor’s degree in environmental studies from the University of California, Santa Cruz and a master’s degree in communications sciences from Ludwig-Maximilians-Universität Munich.

3 Terence Chua is Head of Marketing Communication at HOERBIGER in Singapore and leader of the region’s APAC MarCom team. He has an MBA in International Marketing from Oklahoma City University. Chua holds more than 20 years of regional marketing and communication experience with established and publicly listed companies in Singapore.

4 Jeanne Dai is an experienced freelance photographer. She graduated from East China Normal University with a major in arts and design. Dai has worked as an arts editor for an advertising company and as a full-time photographer for a magazine in Shanghai. Her works have been published by various established lifestyle, tourism, and trade media in China.

5 Stephan Fabrizius is Creative Manager at LEWIS in Düsseldorf, an international PR, communications, and marketing agency. He is a seasoned expert in editorial PR and storytelling with works focusing on topics related to technology and industry.

6 Dr. Andreas Neumann has been working as an editor at the agency DIE WORTWERKSTATT near Tübingen, Germany for 15 years. A historian with a PhD and a soft spot for complex technology and market topics, he writes for companies from the automotive sector on a regular basis.

7 Achim Neuwirth has authored articles for HOERBIGER since 2013 and also writes for other big names in the mobility industry. He holds a degree in journalism and has a weakness for technical topics, applying the extensive editorial and communicative experience he has gained since 2003 working for automotive companies and agencies. His texts reflect his excitement for cars.

8 Klaus Prokop picked up his first camera at the age of seven and has never let go. His work focuses on portraits and product photography. In addition to contract work, the photographer based and born in Vienna also produces books on the topic of technology and industry.

9 Ludwig Schönefeld is the Head of Corporate Communications at HOERBIGER and manages the production of the HOERBIGER@MOTION customer magazine and the HOERBIGER@MOTION online magazine. Previously, starting in 2012, he handled the Group’s digital media. Simon Schmid began his professional career as an author for the automotive industry. He studied social sciences and economics in Tübingen.

10 Simon Schmid is in charge of Corporate Media at HOERBIGER and manages the production of the HOERBIGER@MOTION customer magazine and the HOERBIGER@MOTION online magazine. Previously, starting in 2012, he handled the Group’s digital media. Simon Schmid began his professional career as an author for the automotive industry. He studied social sciences and economics in Tübingen.

11 Magnus Terner works as Marketing Manager for Compression Technology, Engine & Safety of the HOERBIGER Group. After earning an industrial engineering and supply chain management degree from Chalmers University of Technology, Sweden, in 2010, he was hired by HOERBIGER in Vienna as a Sales Engineer before joining Marketing in 2015.

12 Kathrin Wildemann felt drawn to corporate communications after studying chemistry and completing various internships in journalism. After a traineeship at an international conglomerate, she held several positions in public relations. As of 2016, she has been working as a PR consultant writing for a number of leading German automotive suppliers.

13 Jürgen Wittke is a freelance photographer, focusing on the portrayal of people, products, and production processes for customers from the realms of industry and culture. He has worked with video media for several years, in addition to dedicating his time to his own photography projects and exhibitions.

14 Annie Zhou studied mechanical engineering at Shanghai Dianji University. Afterwards, she worked as an engineer and trainer in the hydraulics and pneumatics industry for about ten years before she joined HOERBIGER in early 2013. Today she works as a Sales Engineer in Shanghai and bears responsibility for the sale of electrohydraulic valve actuators.