english

Mobility. Materials. Photonics. united by passion.





Dear Customers,

Since its founding in 1946, HÜBNER has established itself as a reliable partner in a diverse range of business areas. Closeness to our customers with innovative solutions and a genuine promise of quality – today these continue to be the characteristics that make our company stand out from others and to win over our customers.

HÜBNER is now the leading company in the field of gangways and door sealing and safety systems for buses and railway vehicles and is developing innovative lasers and laser-based systems in the Photonics business segment. It is our mission to contribute to the continuing success of our customers with customized products. In keeping with this, many of our products are in-house developments which often come to be known as the industry standards. In these endeavors more than 3,300 employees of the HÜBNER Group are employed at more than 30 locations around the world.

We invite you to discover the world of HÜBNER products on the following pages.

The HÜBNER Management Board

H. Fritz

and Sale

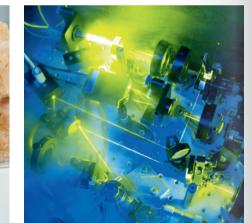
Helge Förster

Ingolf Cedra

Mobility. Materials. Photonics. United by passion.



4



Since its first beginnings, HÜBNER has been shaped by a spirit of enterprise, inventiveness and innovation. Today it continues to be this same passion for new solutions that drives the company and its employees. Again and again over the years, new concepts for new products and new markets have been developed and implemented.

It is on this basis that HÜBNER has become the company that it is today: A comprehensive system supplier for transportation technology and the worldwide leader for gangway systems (Mobility), a well-recognized specialist for sophisticated elastomer solutions and products, insulation and composite materials (Material Solutions), as well as an up-and-coming company in the field of laser, terahertz and high frequency technologies (Photonics).

This all comes together in our company slogan: Mobility. Materials. Photonics. | united by passion.

HÜBNER is a company you can count on. From its beginnings in 1946 when Kurt Hübner founded the company with great inventiveness, passion and capability, customers have valued this dependability. Today, HÜBNER products continue to stand out with their high-quality workmanship, their superior comfort and distinctive durability.

This all is made possible through the company's harmonized production standards in place around the world and the highly trained specialists who work for the family-owned company. Expertise, creativity and high-tech materials come together for the manufacture of products that meet the highest standards – as evidenced by approximately 1,000 patents awarded to the company and numerous certifications. HÜBNER is certified, for example, in accordance with the globally recognized standards DIN EN ISO 9001 and DIN EN ISO 14001, among others.

Whether it is a mini-product, a complete system or a whole series – HÜBNER develops and produces customized solutions for its customers, making use of its broad expertise from employees around the world. Research and development has long had an established place in the company culture, which is one of the reasons why HÜBNER is known as a driving force for technological progress in the fields in which it is active.

Tradition and innovation, expertise and passion since 1946

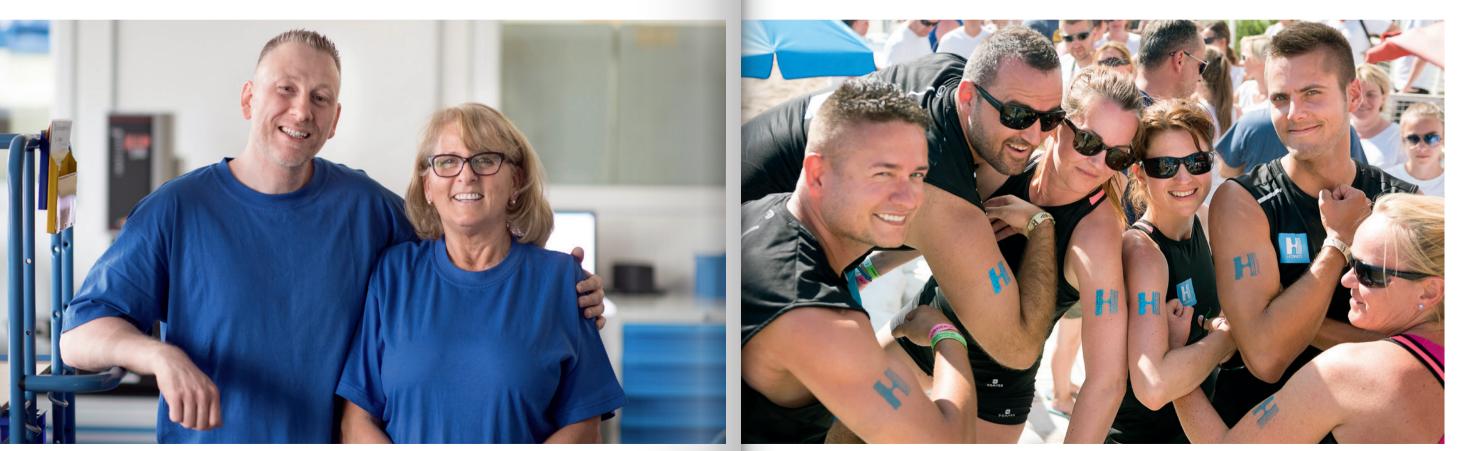
We are **HÜBNER**

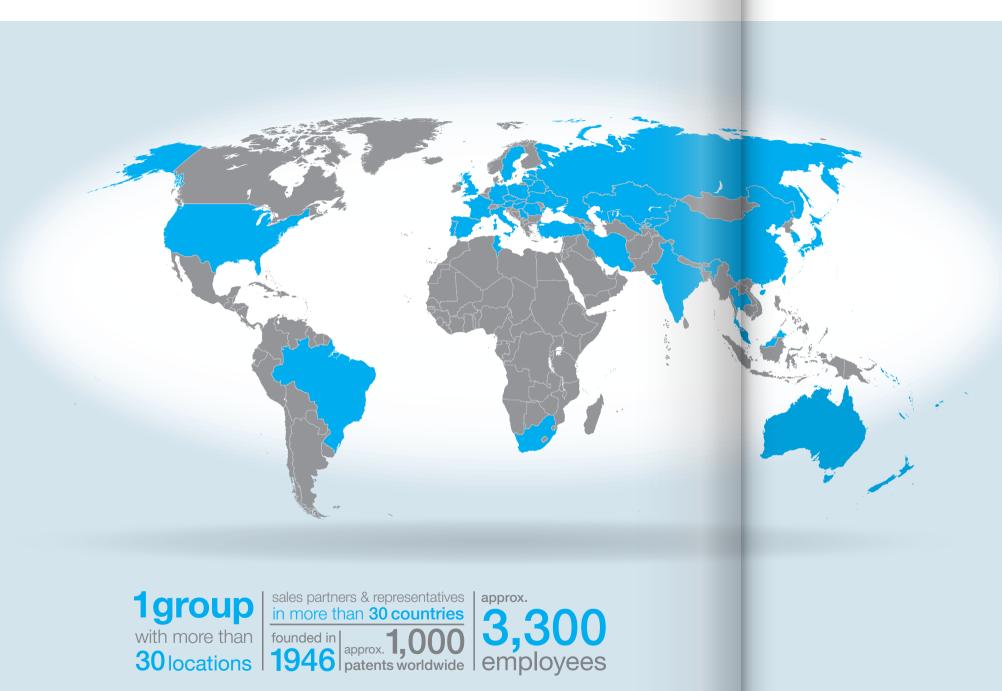
Approximately 3,300 employees in countries around the world are shaping the success story of HÜBNER. With their expertise, dedication and enterprising spirit, they realize the best solutions for our customers – whether that's an implementation in the transport field, the best material combination for a particular product solution, or the required laser technology for industrial or scientific applications.

As a family-owned company, we see our employees as our most important asset. Not only do they actively participate in the financial success of the company. We also seek to create conditions where each individual employee can develop and be trained in an optimal manner. A pleasant and creative working environment throughout the whole HÜBNER Group is one of the key building blocks for our growth and success.

Team spirit is therefore a top priority in the company. Our work together is shaped by reciprocal respect, openness and trust. On this foundation, a strong solidarity develops between HÜBNER and its employees. Many employees have been together with the company for decades.

With company pension plan contributions and profit sharing in the form of target agreements and premiums, HÜBNER gives its employees the security they need – and which they certainly deserve. A wide range of company-sponsored athletic activities such as various sports groups and an in-house fitness studio are one further part of the employee services provided at our company. Working at HÜBNER should be a pleasure – that's how we see it.





HÜBNER worldwide

Think globally, act locally: HÜBNER is there where its customers are – because close contact helps us to understand business partners better and to provide better support. Individual wishes and requirements can be determined quickly and then put into effect and implemented without delay. Customers thus have direct benefits from our strong local presence.

In addition to the company headquarters in Kassel, Germany in the heart of Europe, HÜBNER has built up more than 30 locations around the world in the preceding years and decades. The company now has major plants in Hungary, Poland, the USA, China, Russia and Brazil. This network of company-owned locations is supported by sales partners and trade representatives in more than 30 additional countries.

For HÜBNER, a local presence does not only mean getting to know local particularities and premises. The knowledge that we gain through our presence around the globe also lets the company continually improve its products and its processes.

And the company's offering to customers does not end with the delivery of the products. The HÜBNER Group is also continually expanding its service structures – in personnel and in the technical facilities that are provided. To be on hand ready to provide support as quickly as possible – in locations around the world.

www.hubner-group.com/en/worldwide



Social engagement is important to us

HÜBNER sees itself as part of a larger society. The people in the regions of our locations should have a part in our business success – that's why we get engaged in many different ways: HÜBNER provides support for non-profit initiatives, social institutions, cultural events as well as national and international educational projects.

A special interest of ours is to help get young people interested in technology and engineering. Since 2018, we have been sponsoring the "Schülerforschungszentrum Nordhessen", a learning center in Kassel, Germany, where young people in grades 5 - 13 can do their own research projects in the natural sciences. In addition, HÜBNER is financing a research position in cooperation with the University of Kassel in the field of high-frequency technology.

Under the auspices of a Germany-wide business plan competition managed by promotion Nordhessen, HÜBNER also funds a €10,000 innovation prize in the mobility segment. This serves to award outstanding new business ideas in the field of vehicle technology.

Promotion of cultural life and activities is also important for HÜBNER. In this area, we fund the Best Director prize at the international Kassel Documentary Film and Video Festival, we support the highly popular annual Summer Night Open Air Concert of the Kassel Staatstheater that typically has more than 30,000 guests, and we organize an annual city volleyball tournament in Nyíregyháza, Hungary, where one of the largest plants in our worldwide rubber production is located.

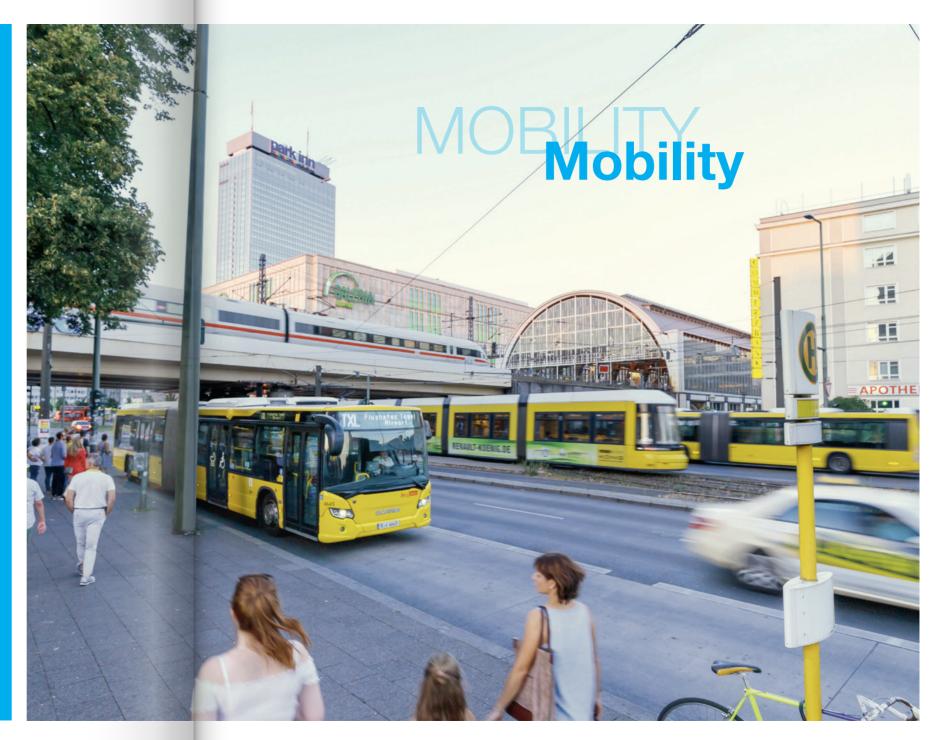
Mobility | Making mobility happen.

Hardly anything in today's globalized society shapes life as much as mobility. In addition to data and goods, it is people who are on the move more than ever before. As the global leader for gangway systems and a major supplier of bus, rail and airport technology solutions, the HÜBNER Group plays an integral part in this megatrend.

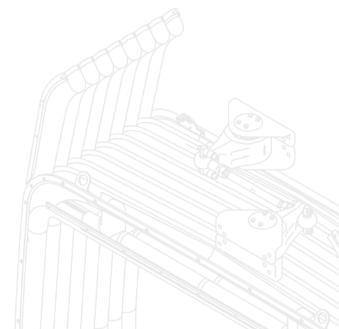
For decades, the company has been delivering innovative products for the transport sector. The extensive portfolio ranges from customized gangway systems, to chassis technology, to driver displays in locmotive cabs and other vehicles, to products for airport technology applications.

With increasing mobility, however, there is also growing demand for protection of the environment and resources. HÜBNER innovations such as lightweight articulation systems or aerodynamically streamlined corrugated bellows for railway vehicles are making significant contributions to greater energy efficiency in public transportation – while at the same time allowing for higher speeds.

And the materials used in HÜBNER products – many developed specifically for these applications – feature outstanding durability, thus reducing the consumption of resources over the whole product life cycle. HÜBNER has been developing innovative mobility concepts and solutions around the world for decades. These are making mobility happen today and are opening up new mobility horizons for the future.



Aobility



Products for railway vehicles Making connections

HÜBNER's Mobility business segment develops and produces high-performance components that are essential for every railway vehicle. Particularly well known are its gangway systems for trams, metros, subways and suburban railways as well for mainline trains and high-speed trains. In the preceding decades, HÜBNER has made outstanding developments in the production of high performance gangway systems. Thanks to this demonstrated expertise, the company is the global leader in this area. With the acquisition of the railway electronics company GERSYS, HÜBNER has now expanded its product portfolio to include instrumentation in the cabs of railway locomotives and other vehicles. The product spectrum is rounded out with paneling systems made of fiber reinforced plastic (FRP) for German and international railway manufacturers.

The requirements for all these products are high: The folding Transport comfort and safety are optimized with the new damor corrugated bellows and other components must have exping and chassis systems for railway vehicles. The HÜBNER Group company HEMSCHEIDT Fahrwerktechnik produces cellent flame resistance, very good sound insulation, overall resilience and above all a long service life - under constant damping and rolling systems that significantly increase the demanding use. Finally, any railway vehicle is only as safe as running stability of railway cars and also harmonize the movethe gangways that connect its various segments. In addition ments between different parts of the car. to the safety aspects, the comfort of passengers is being continually improved with new gangway developments. Im-HÜBNER develops customized solutions for each customer. portant developments are the flexible and rollable side walls, This is expertise that speaks for itself. Worldwide.







Products for buses We build **1.60 meters** of the **bus**

Without HÜBNER, articulated buses would be missing something – exactly 1.60 meters right in the middle of the bus! 1.60 meters equipped with the latest technology and engineering solutions. HÜBNER Mobility provides complete, ready-toinstall connection systems for all types of articulated and biarticulated buses in low-floor and high-floor models. These systems include the articulation system, the folding bellows, energy guidance components, electronic articulation control and components for the bus interior.

The name HÜBNER and the best in bus engineering have had a long and successful association over many years. The first fold-

ing bellows for articulated buses were produced by HÜBNER in 1952 – followed by a continuous series of groundbreaking innovations. These included the first low-floor articulation in regular series production, the first redundant articulation damping system, and more recently the new articulation family HNGK 19.5, which stands out with its distinctively lightweight design, as well as the first halogen-free folding bellows.

For handicapped persons, HÜBNER Transportation GmbH produces customized, user-friendly ramps and lifts for convenient vehicle entry. These bus entry systems eliminate mobility barriers and fulfill the highest safety and quality requirements.



Mobility







Many leisure and business trips get started with HÜBNER. Connection systems produced by the company make it possible for passengers to enter planes safely and comfortably via the passenger boarding bridge – at airports around the world.

HÜBNER produced the first folding canopies for passenger folding canopy and a touchless sliding floor element that can boarding bridges in 1971. Since then, the family-owned compivot symmetrically in both directions. pany has delivered more than 5,000 of these high-performance New standards in airport technology are also being set by units. What makes them so special is that they can flexibly adjust to nearly every sort of commercial aircraft - from small re-HÜBNER's modular passenger weather protection and guidgional planes to the jumbo Airbus A380. The patented HÜBNER ance system. The system allows for a perfect connection kinematic system allows for gap-free docking with the pasacross the airport apron from the terminal to an airplane, prosenger boarding bridge. Elastic bumpers provide an optimal viding passengers with a clear way to follow and ideal weather seal between the folding canopy and the aircraft, protecting protection. passengers against any type of weather they might encounter.

Airport technology products Boarding completed



Again and again, HÜBNER innovations have brought advances in airport technology. One such innovation is the Passenger Boarding Bridge Interface (PBBI) – a complete system consisting of a fixed frame mounted on the cabin of the passenger boarding bridge, an adjustable tilt-correction mechanism, the folding canopy and a touchless sliding floor element that can pivot symmetrically in both directions.

For all the requirements of a commercial vehicle

Commercial vehicles are there to transport persons and goods safely from point A to point B. No matter how far and always as efficiently as possible. Components for this class of vehicles therefore need to be both lightweight and robust and at the same time economical to purchase and to maintain. Products of the HÜBNER Group meet all of these demands. For customers that means favorable procurement costs, low fuel consumption, long service life as well as high efficiency and safety.

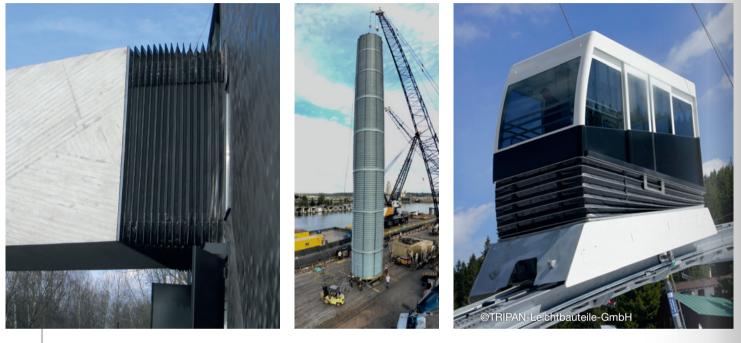


The HEMSCHEIDT Fahrwerktechnik GmbH & Co. KG - a by ECUtronic GmbH, a joint venture between HÜBNER and HÜBNER Group company - develops and produces high- Fraunhofer-Institute IVI established in 2018. These newly performance components especially designed for the de- developed units will fulfill the requirements of ISO Standard mands of commercial vehicles. These include the special trail- 26262, which in future will apply to commercial vehicles and er air suspension system for 9-ton axles, the hydropneumatic will entail significant increases in safety standards. suspension system with load-adjusting damping, as well as axle guides in many different forms. The products facilitate The GWU Group, which belongs to HÜBNER, supplies German problem-free and comfortable operation even with extreme and international vehicle manufacturers with FRP components loads or in difficult terrain. and paneling systems that are individually and flexibly adjust-

truck and trailer segment are high-safety electronic control mold and model making as well as the production and assemunits for commercial vehicles that prevent malfunctions with bly of ready-to-install components. electronic components. These devices are being developed



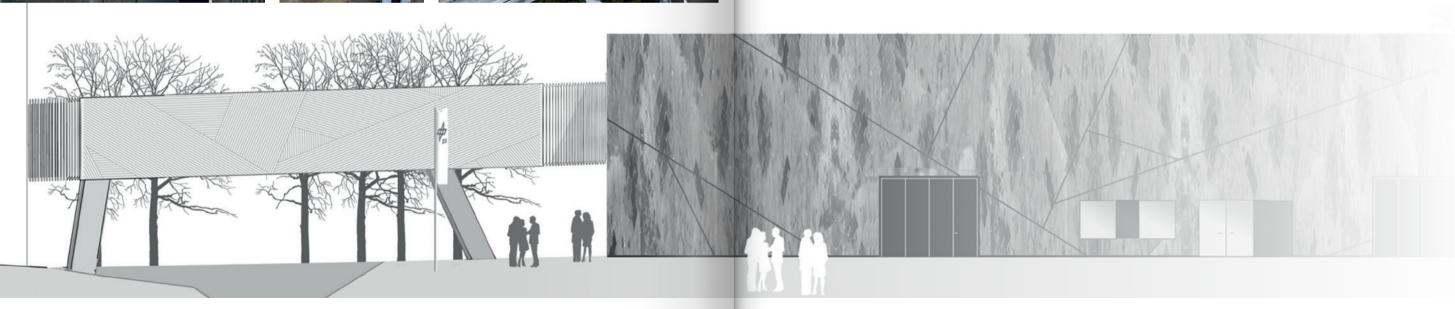
ed to specific customer wishes. The company can provide The latest addition to the HÜBNER product range in the product development, prototype and sample construction,



Engineering services and flexible connections **Know-how** for every occasion

What do the German Aerospace Center, the famous Makkah Royal Clock Tower of Mecca, flood barriers in the Netherlands and a 40-meter high mega folding bellows in the harbor of Vancouver all have in common? In each of them, HÜBNER know-how has made a special contribution. Whenever customers require a component or a material with highly specific characteristics and capabilities, such as extra flexibility, extreme noise protection or high flame resistance, HÜBNER is there to develop the needed solution.

is there to develop the needed solution. In close collaboration with customers, HÜBNER engineers seek solutions offering optimal functionality and durability – whether it's customized bellows for prestigious architecture And HÜBNER does not only put these key resources to work in executing special projects. Each and every gangway system for railway vehicles, buses or the airport sector is always a custom solution, individually produced and modified to perfectly fulfill the customer's wishes.

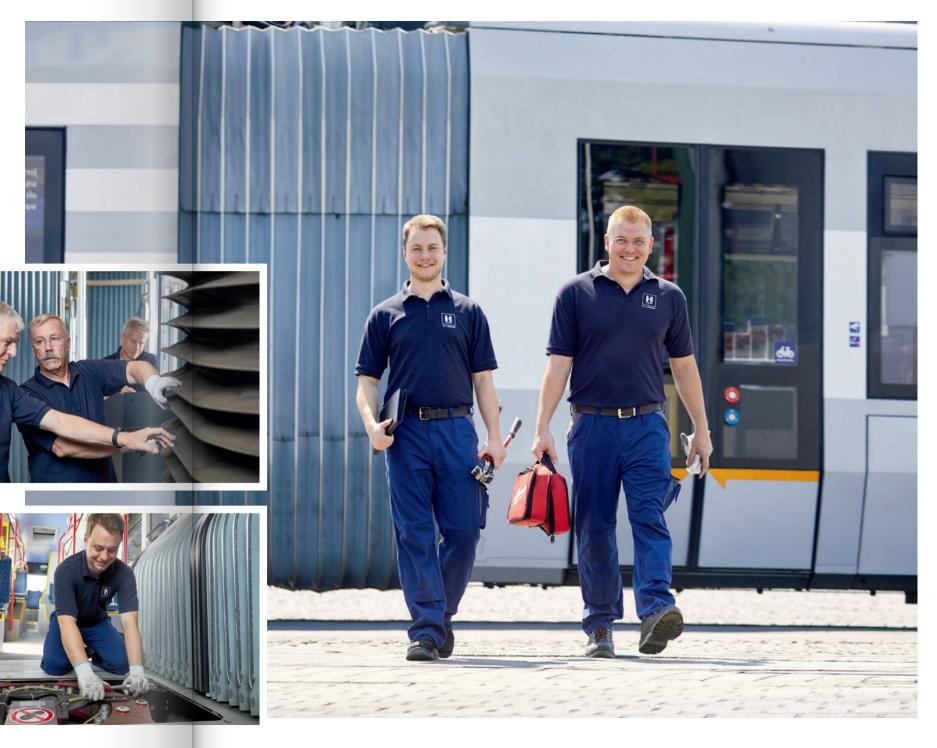




HÜBNER is a company you can count on: The company's experts are always there ready to provide practical assistance and technical expertise – from the start to the finish of the product life cycle. That begins with comprehensive consultation during the offer phase, continues after delivery with maintenance support and quick delivery of spare parts, and finds a further form with the provision of individual training as requested. All of this service support has the aim of reducing downtimes with the use of HÜBNER products to an absolute minimum. For that reason, such work is conducted at the customer's location whenever possible.

What we do goes beyond just delivering products

The great advantage of the HÜBNER Group: Over the preceding years, the company has built up a close-knit network of locations and service points around the globe so that contact to customers is quick and direct. Because a strong partner is there wherever support is required. HÜBNER has its own branches in more than 20 different countries and is represented by sales partners and trade representatives in more than 30 additional countries.



Mobility



Material Solutions | Shaping ideas.

MATERIAL SOLUTIONS

The HÜBNER business segment Material Solutions is the specialist for sophisticated solutions and products made of elastomers, insulation materials and composite materials (FRP). With a clear focus on innovative, technologically challenging products for the mobility sector (Rail & Bus Business Unit) as well as for high-growth markets such as the oil industry, aerospace and healthcare (Industry Business Unit), Material Solutions has sharpened its image and its range of products and services.

The latest examples of the HÜBNER Group's innovative strength and capability in the Material Solutions segment include new functional seals for oil and gas extraction, modern hygiene applications such as a vacuum-sealed soap dispenser made of plastic and silicone, and intelligent door safety systems with integrated sensors for public transport applications. In addition, Material Solutions is the main supplier of the HÜBNER Mobility business segment, providing products and solutions that conform with the demanding fire-safety requirements specified by EN standards for the transportation sector.

HÜBNER possesses extensive knowledge and valuable expertise in the fields of material compounding, processing and combining. And no wonder: Already at the time of its founding, Kurt Hübner laid the foundation for today's worldwide HÜBNER Group with his optimized material solutions for rubber products.



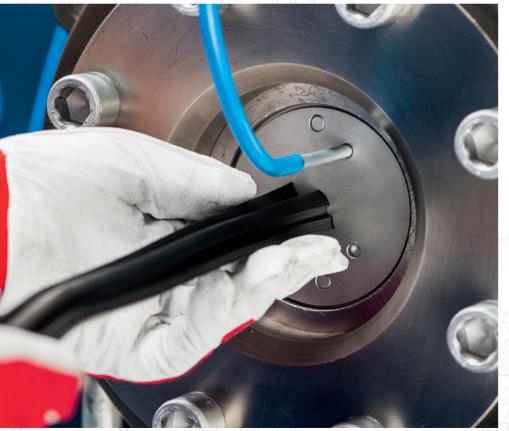


Elastomer solutions Elasticity with shape retention

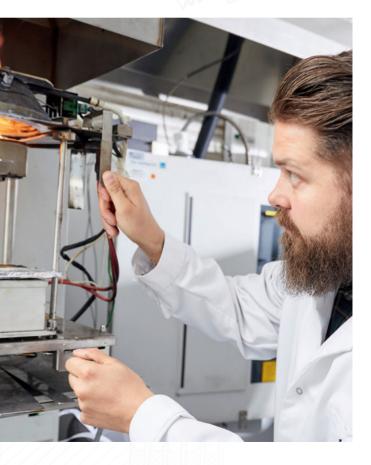
HÜBNER got its start with the repair of conveyor belts and rubber components. Today the company produces a wide ranging spectrum of rubber products - from mini-components to seals weighing several kilograms. The special feature of elastomers such as rubber and silicone is the fact that as industrially processed materials they display both elasticity and shape retention. Elastomer solutions from HÜBNER are used in different industries around the world. For railway vehicles and other vehicles, the company produces window sealing systems, door profiles and finger protection profiles with integrated sensors. With the acquisition of the Gummi-Welz Group, HÜBNER is also one of the leading companies in the area of door safety and sealing systems for buses and railway vehicles.

Products in the medical technology sector include silicone membranes for dialysis machines. The products for the oil and gas industry are especially robust. They can withstand the extreme weather conditions in offshore settings as well as high pressure or contact with oil. HÜBNER also has many years of experience as an original equipment manufacturer for the defense industry for which it produces diving seals and CBRN-resistant rubber among other products. Docking fenders and rub strakes for boats are also part of the product portfolio.





HÜBNER provides individual elastomer solutions as required by the customer - produced as extruded, fabricated or molded parts. The development department of the family-owned company has decades of experience and more than 600 recipes for rubber compounds that it brings to each new project. The company experts also make use of the latest software as well as in-house toolmaking capacities. With these resources, the company produces molded and extrusions parts, injectionmolded corners, rubber-metal and silicone-metal bonded components all in the highest quality. All standard material tests are conducted by highly trained specialists in the company's own in-house research laboratories, including testing for fire-safety requirements.





Plastics technologies A wide spectrum of sophisticated solutions

HÜBNER is a strong partner wherever sophisticated solutions making use of plastics technologies are required and have to be developed. The company has extensive expertise in the development and production of multi-component products. These solutions not only feature combinations of different thermoplastics, polyurethane and liquid silicone rubber (LSR) but also the joining of metal or rubber.

HÜBNER's years of experience in plastics production allow it to provide a level of quality that guarantees long product life as well as the highest standards in the look and feel and the functionality of products. With its broad developmental expertise and in-house simulation and testing processes in combination with its own toolmaking facilities, it is possible for HÜBNER to handle customer wishes in all their diverse and demanding detail. HÜBNER is thus in the position to provide its corporate customers with optimum support throughout the plastics manufacturing process - from the development of molded parts, components or products through the prototype phase to efficient high-end series production.

In the transport sector, HÜBNER develops and produces weight-saving, wear-resistant injection molded plastic parts

HUBNER



such as energy guidance systems, couplings, articulations or parts made of high-performance plastic. With its company Kunststofftechnik Hennigsdorf (KTH) - part of the GWU Group that HÜBNER has recently acquired - German and international railway manufacturers are supplied with high quality paneling systems made of fiber reinforced plastic (FRP). In addition, HÜBNER's subsidiary Plastocell is specialized in the production of high-performance solutions for sound insulation and thermal protection in buses, trains, ships and buildings.

HÜBNER supplies the hygiene market with fully automatic pumps and individually developed, labeled or enhanced dispenser systems. These products as well as other dosing technology solutions are manufactured under clean room conditions.

Coated fabrics Hard-wearing and impermeable

One of the strengths of PolymerTechnik Ortrand, a company specializing in coating textiles acquired by HÜBNER in 2006, is the wide range of materials it can make use of. It can handle all of the elastomers available on the market including silicone rubber as well as standard fabric types such as polyamide, polyester, cotton, felt and fleece. The material thickness can be adjusted as required by the customer as can the surface structure through vulcanization. Elastomer-coated fabrics are not only mechanically robust, they also are highly resistant against UV light and other environmental factors. In addition, they provide high flame

rubber as well as standard fabric types such as polyamide, polyester, cotton, felt and fleece. In the production process, the elastomers are brought into a liquid form and then the fabrics are coated either through impregnation or brush application. Another processing method is solvent-free coating of fabrics with rubber compounds using calenders.

laterial Solutions

Polyurethane **Consistency** in diversity

part of HÜBNER's production activities for decades. And the innovative characteristics of this material continue to be of great value to customers. Whether polyurethane is processed to be with its very pleasing look and feel. soft, highly resistant or flexible, it has successfully demonstrated its versatility over the past decades in all industrial areas.

On the basis of these manifold material characteristics, HÜBNER manufactures products that can fulfill many special requirements. The company has its own development department to prepare special high-grade formulations for individual customer wishes. HÜBNER products are used in applications made of polyurethane.

Working with the material polyurethane has been an important ranging from the cushioning on operating tables to the bumpers on vehicles. Polyurethane's robust structure and outstanding durability make it particularly popular with customers - together

> In the transport segment, the company has extensive experience in the development of passive safety elements. The individual parts and complete systems bring together passive pedestrian protection with modern vehicle design. In addition, HÜBNER has made a name for itself particularly in the rail transport sector as a specialist for flame resistant products







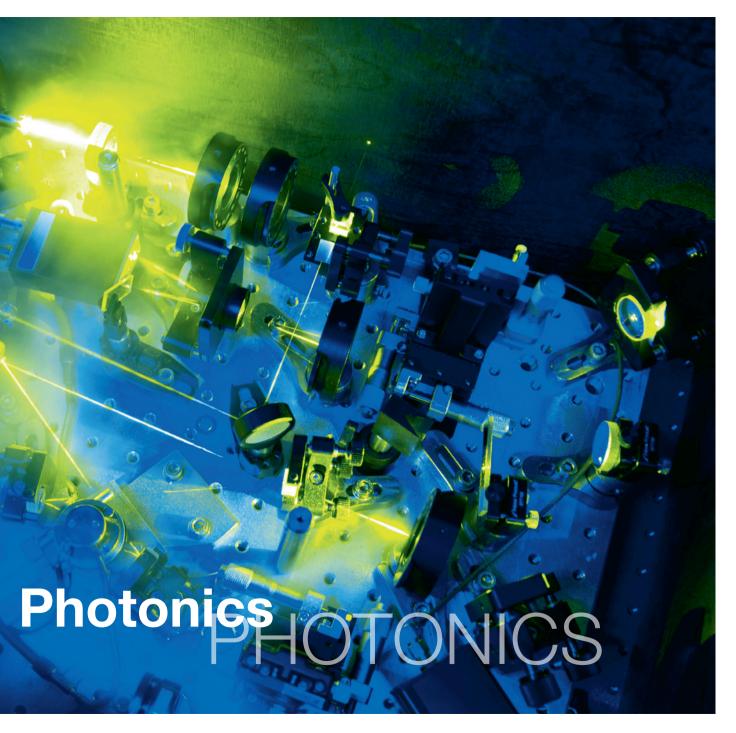


Photonics | Coherence matters.

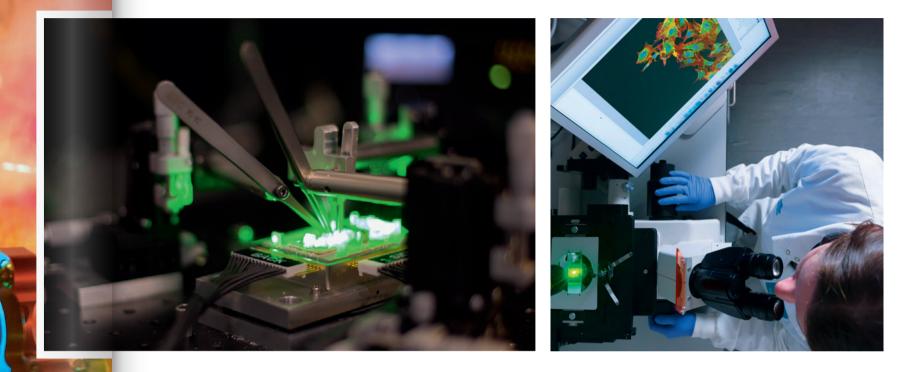
Red, green, blue. A laser's wavelength can be identified from the color of its light. This is because, in contrast to the 'white' light of a bulb or LED, the light particles of a laser – the so-called photons – all travel in perfect synchronization, with the same frequency and phase. It is not only a particular color that distinguishes the light of a laser: It is also the fact that with this perfect synchronization of the lasers photons - referred to as coherence - the photons travel indefinitely.

These special characteristics of laser light make the laser a unique tool for a highly diverse set of applications. Optical processes utilizing laser light are employed in more and more areas, ranging from basic research at the frontiers of science, to diverse applications such as microscopy and spectroscopy in the life sciences, to the deployment of lasers in industrial production. Whether in guality control, medical examinations or in data storage - it is lasers that are providing the basis for the newest technologies and processes. And the latest megatrend in the digital industry – Augmented Reality – also depends on laser technology.

HÜBNER has brought together its worldwide activities in the fields of laser technology, terahertz technology and high frequency systems in its Photonics business unit. The company aims to make a wide array of outstanding products available for photonics applications – and to deliver a coherent and constantly high level of quality in all these products and services - since coherence really matters.



Laser technology High performance lasers, tailored to your needs



Laser technology has come to have an indispensable role in scientific and medical research, in industrial production and even in many everyday applications from cosmetics to autonomous vehicles.

Through the well-known Swedish laser manufacturer Cobolt, doubled OPO (optical parametric oscillator), providing broada proven supplier of high performance lasers of more than 15 ly tunable emission across the visible (and NIR) spectrum. years, HÜBNER offers one of the industry's broadest ranges of compact single-frequency CW lasers, diode lasers and The combination of competencies across the HÜBNER Pho-Q-switched lasers across the full UV-visible-MidIR spectrum. tonics business segment facilitates volume manufacturing Using proprietary HTCure[™] laser manufacturing technology, of exceptional laser designs with unparalleled reliability. This the Cobolt lasers are associated with outstanding reliability means that life science and analytical instrument manufacand lifetime. The patented HTCure[™] process is a gluing turers now have a supplier they can really rely on and pure research scientists have an expert source for lasers to meet technology that works with exceedingly high temperatures to provide outstanding durability in a highly compact design. all their needs.

C Cobolt

Complementing Cobolt's broad portfolio of compact lasers, the tunable lasers developed by HÜBNER cover an unusually wide spectrum and have gained a strong reputation throughout the industry. C-WAVE is one of the most unique kinds of lasers on the market - a single-frequency, CW, frequency

Terahertz technology Visualizing the invisible

Terahertz waves penetrate paper, clothing, plastics and many other materials without causing any damage – contact-free and in seconds. This makes terahertz technology a unique resource for the detection, analysis and hyperspectral imaging of materials. On the basis of the latest research, HÜBNER is developing highly compact systems for such applications.

h-M-hummen warmen wa

These systems make it possible to use terahertz technology for a wide range of detection and measurement applications. And with their plug-and-play features and intuitive user interfaces, HÜBNER products also deliver outstanding ease of operation.

With the T-SENSE Imager, packages and letters can be And there are many other fields of application - whether scanned and hidden contents can be visualized. This makes in visualization, substance identification or spectroscopy of it possible to detect dangerous materials such as drugs or substances for scientific work, public security or industry. explosives. The T-SENSE has been developed together with HÜBNER products working with the terahertz technology the Fraunhofer Institute for High Frequency Physics and Radar can be used for the non-destructive examination of technical Techniques (FHR). The terahertz spectrometer T-SPECTRAproducts, quality control for pharmaceutical products, new LYZER is an advanced system for the automated detection of diagnostic technologies in the life sciences and for data hidden drugs or explosives in letters or small packages. Based communication applications. on the precursor award winning system, T-COGNITION, the

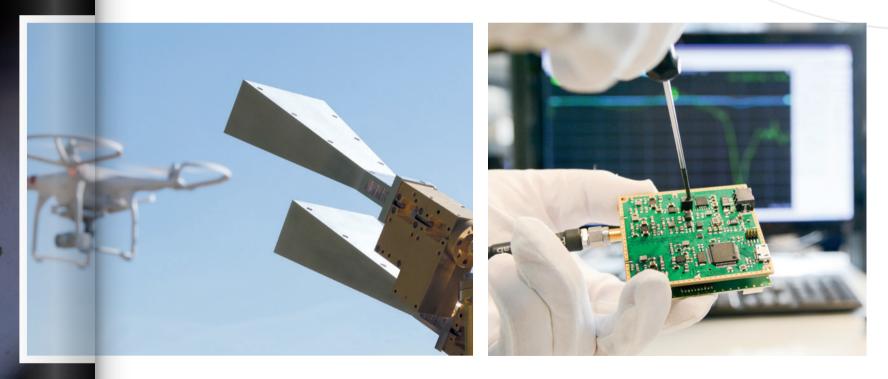


device identifies hidden substances within seconds on the basis of their characteristic spectroscopic fingerprints. The systems help to improve security in mail rooms, at customs stations or at official offices – without any health risk for the users.

High-frequency technology A pathway for innovative technology

For decades, high-frequency technology has been enabling applications that influence – and even help to manage – our daily lives on a global basis: Navigation, telecommunications, weather forecasts and early warning systems all depend on HF technology. HÜBNER is participating actively in the ongoing development of this leading edge technology to enable progress in its use for everyday applications as well as for industrial processes.

Together with customers, HÜBNER develops and manufactures customized high-precision components and systems – from oscillators, amplifiers or filters to complete transmitting and receiving systems. Throughout the industry, HÜBNER



products are known for their very high measurement stability and exactitude, and are distinguished by their very large performance spectrum.

In addition to enabling precise distance measurements, HÜBNER's broadband radar technology also facilitates contact-free monitoring of automated production processes – dust, rain or darkness pose no obstacle for radar frequencies making it a true non-destructive analysis technique. Radar also offers eyes to autonomous vehicles, assessing the surroundings for unusual objects or threats. Chances are radar technology is already helping you today in your daily life.



















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