

SAXONY!



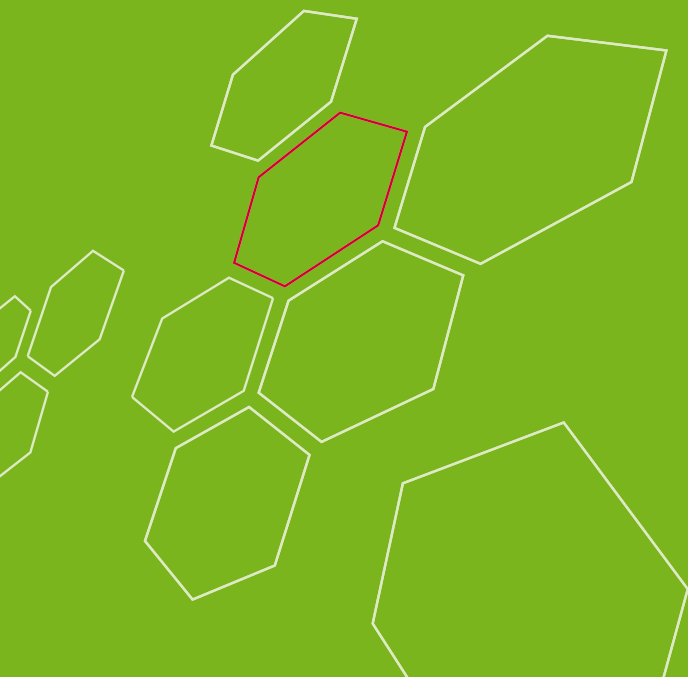
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 *Innovationszentrum
Bahntechnik
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RAILWAY TECHNOLOGY IN SAXONY

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WELCOME

For more than 175 years now, Saxony has been standing for innovations in the rail industry. It was here where Germany's first long-distance rail line commenced with its operations on the Leipzig-Dresden route in 1839. The first fully functional locomotive built in Germany was manufactured by the "Maschinenbau-Anstalt Übigau" in the vicinity of Dresden – and its name was "Saxonia."

Since then, Saxony has evolved into a leading venue for rail technology and is among the top 3 centers of the branch in Germany today. About 13,000 employees in more than 240 companies generate a turnover of approximately one billion euros every year. With Bombardier, RailMaint, Goldschmidt Thermit or NILES-SIMMONS-HEGENSCHEIDT, globally active manufacturers, suppliers, equipment providers, engineering and service providers of rail technology are located in Saxony.

Fields of competence:

- Production of complete rail vehicles and components
- Drive and propulsion technology
- Lightweight structures
- Information systems, control and safety technology
- Traffic route and track construction
- Maintenance / repair services
- Engineering

An excellent research infrastructure consisting of, for example, Dresden University of Technology and the Fraunhofer Institute for Machine Tools and Forming Technology IWU cooperates closely with industrial enterprises in joint projects revolving around new lightweight construction concepts, energy-efficient drive and propulsion as well as storage systems, noise and vibration reduction, and digitalization.



COMPANIES

■ With its plants in **Bautzen and Görlitz**, the Canadian manufacturer of rail vehicles **Bombardier Transportation** operates two high-performance sites in Saxony. Görlitz is being turned into a highly automated competence center for the production of rail car bodies for double-deck coaches and trams. Currently, the paintwork and window installations for the shells of the high-speed ICE4 trains are being carried out here on behalf of Deutsche Bahn. Bautzen is to become the global competence center for the digital mass production of regional and long-distance trains as well as commuter trains and metros. In 2017, the cornerstone for a new final assembly hall was laid here which will set the pace for digital production at Bombardier Transportation and set standards for the “Smart Factory” in the rail industry.

■ The **WBN Waggonbau Niesky GmbH** develops and produces freight cars for specific applications and the logistics sector as well as shell constructions for passenger transport on rail. The references include, for example, special-purpose railcars for freight traffic in the St Gotthard Tunnel and the Channel Tunnel. WBN sliding wall cars are suitable, in particular, for the transportation of large-volume and palletized cargoes sensitive to weather conditions. The portfolio is complemented by such rail vehicle components as, for example, innovative low noise and low maintenance bogies.

■ The **Dresden-based VEM Sachsenwerk GmbH** develops and produces drive and propulsion solutions. The portfolio includes highly efficient asynchronous traction motors for electrical or diesel-electrical locomotives, multiple units, commuter and underground railroads, trams as well as monorails and maintenance vehicles. This spectrum is complemented by main and auxiliary operating generators and the associated control systems. Auxiliary drives in rail vehicles propel compressors and ventilation units.



COMPANIES

■ As a member of the Bavarian HOPPECKE Group, the **HOPPECKE Advanced Battery Technology GmbH Zwickau** develops modern battery technologies based on lithium-ion and nickel-metal hydride technology. They are used for the assembly of complex energy storage systems. A product focus is on lithium-ion high-voltage modules for rail technology. These modules, which are designed to meet maximum functional safety requirements (for example, high fire protection standards), collect and store all relevant operating states and communicate with the superordinate energy management system. Another innovation is their thermal management which is based on air cooling instead of liquid cooling. The new system is used for the first time in the Deutsche Bahn corporation's "EcoTrain" project as well as in a hybrid shunting locomotive built by the GMEINDER LOKOMOTIVEN corporation.

■ The globally active **NILES-SIMMONS-HEGENSCHEIDT Group**, which has its **corporate headquarters in Chemnitz**, is the market leader in the field of machines and plants for wheelset repairs, the manufacture of train and metro wheels as well as axles and wheelsets. Product examples include diagnostic systems for the automated monitoring of wheelsets in continuous operation with the help of ultramodern measurement technology as well as mobile wheelset machining on high-performance wheelset lathes which can be brought to any desired site of operation. Underfloor and portal wheelset lathes, wheel machining centers, CNC technology for axle machining as well as wheelset presses complement the product spectrum for the rail vehicle industry. In addition NILES-SIMMONS-HEGENSCHEIDT is the only company on the entire globe to build "turnkey" wheelset assembly lines, wheel machining lines as well as axle assembly lines.



COMPANIES

■ The **RailMaint GmbH**, which is **headquartered in Delitzsch**, is one of the major manufacturer-independent service providers for the maintenance, repair, and modernization of freight and passenger railcars in Europe. Delitzsch is the largest RailMaint production site in Germany with a specialization in passenger railcars. The full vertical production range is available here – something that is hardly found anywhere else in Europe: In addition to heavy maintenance and repair, the corporate site also provides such specialized services as bogie and wheelset refurbishment, coloring, interior furnishings, electronics, and hydraulics. Mobile teams also cater to the cleaning of restroom facilities in all trains throughout Europe. The **corporate site Leipzig** is responsible for the maintenance and repair as well as the modernization of railcars. Tank cars can also be cleaned and fixed here.

■ The **Goldschmidt Thermit Group** is the global market leader for rail joints and an internationally renowned provider of products and services for the construction and maintenance of railroad track systems. All activities of the more than 20 subsidiaries and affiliated companies around the globe are managed from the **corporate headquarters in Leipzig**. The Thermit® process for continuously welded rails, which was developed over 120 years ago, marked the beginning of the success story of today's Goldschmidt Thermit Group. Reference objects include, for example, the Shinkansen high-speed train route between Tokyo and Osaka which was put into operation in 1964 or high-performance public transport rail lines for such mega events as, for example, the Soccer World Cup in Brazil or the Olympic Games in Sochi. The Group's international research and development activities are pooled at the **Technology Innovation Center (TIC) in Leipzig**.



COMPANIES

■ A specialized provider of couplings for rail technology applications is the **KWD Kupplungswerk Dresden GmbH**. The company develops and produces couplings for the most diverse electrically powered bogies. KWD has attained a leading market position thanks to its continuous innovations, for example, when it comes to railway gear couplings. The coupling from Dresden possesses a unique metal bellows seal which hermetically seals the coupling's interior. The associated savings are reflected by the life cycle costs for the operators.

■ The front nose, the roof of the driver's cabin as well as the aprons of the Deutsche Bahn corporation's new high-speed train ICE 4 are all manufactured at the **RCS GmbH Rail Components and Systems in Königsbrück**. RCS has repeatedly furnished ample proof of its broad competencies for large-scale fiber-reinforced plastic parts, for combined systems made of metal, plastics, and electrical / electronic components as well as for ready-to-install modules. Equipped with front noses made by RCS, for example, high-speed trains commute in the Eurotunnel between France and the United Kingdom as well as in Spain, Russia, and China, and the same is true for regional trains, suburban railroads, and trams which travel in Europe and Asia.

■ The **RAILBETON HAAS KG from Chemnitz** can look back on more than 80 years of experience in developing and manufacturing concrete components for rail-bound transportation engineering. The company's product portfolio also includes numerous in-house developments; for example, the railroad crossing cover system BETOCross®. With an intelligent material mix, it combines the advantages of high-tensile concrete with the elastic properties of plastic bearings as well as pre-installed galvanized steel modules.



UNIVERSITY RESEARCH

As one of Germany's leading research institutions for the rail industry, **Dresden University of Technology** focuses on the rail transportation system in a holistic, comprehensive manner.

■ Energy efficiency and lightweight construction are key research areas at the **Institute of Railway Vehicles and Railway Technology (IBB)**. At the Chair of Electric Railways, research is conducted on the generation, transmission, distribution, and supply of electric power, on electric vehicles, on return current circuits and interferences as well as on rail vehicle and plant operation. Within the scope of the "EcoTrain" project, the professorship is working on an electric recharging system for hybrid locomotives and traction units. The Chair of Rail Vehicle Technology has developed the DIMA program system in cooperation with the rail industry. DIMA is designed to calculate the main vehicle dimensions of standard-gauge rail vehicles and is used by all large manufacturers.

■ The **Institute of Railway Systems and Public Transport (IBV)** addresses the optimization of superstructures, track and switch systems under the aspect of minimizing life cycle costs, for example, by predictive maintenance and repair. Digitalization is a focal point of the Chair of Rail and Public Urban Transport. In the "Center for Rail Logistics," which is jointly operated with DB Cargo, the scientists are developing a software system with which all planning processes for the train composition in marshaling yards can be automated. The professorship also initiated the "Technical Innovation Circle for Rail Freight Transport (TIS)" in which operators, manufacturers, suppliers, and research institutions are working on the concept of the "Innovative Rail Freight Wagon 2030." The focus of the Chair of Transportation Systems Engineering and the Chair of Railway Signaling and Transport Safety Technology is on automated operational management and telematics as well as the control and protection of track-bound transport systems.



NON-UNIVERSITY RESEARCH

■ The **Fraunhofer Institute for Machine Tools and Forming Technology IWU in Chemnitz** conducts applied research in the sectors lightweight construction (metal foam, GFRP, CFRP), energy efficiency, technical acoustics, structural dynamics, and mobile assistance systems. Its developments went already, for example, into a traction unit's hood that uses aluminum foam construction in a high-speed train or into crash absorbers for rail vehicle components. Metal foam panels with integrated heating and/or cooling coils are also used in, for example, bottom plates in Beijings subway trains. In the "GEARFORM" project, the scientists are working on the resource-efficient production of large-module gearwheels. Solutions of the Fraunhofer IWU institute are also used for the construction of quiet, low-vibration air-conditioning units in trains.

When it comes to the hybridization of diesel-electric trainsets, Saxony assumes a pioneering role. With the "**Eco Train**", the DB RegioNetz Verkehrs GmbH Erzgebirgsbahn Chemnitz is readying hybrid technologies for mass production together with its development partners Chemnitz University of Technology, Dresden University of Technology, the Fraunhofer Institute IVI Dresden, and the DB Systemtechnik corporation. Depending on the individual requirement and route topography, the modular conversion concept for diesel-electric trainsets permits the flexible use of various combinations of diesel and electric power in local transport. Particularly innovative: The diesel-electric hybrid drive and propulsion system. Its electric power does not come from the catenaries; instead, it actually comes from the conversion and storage of excess energy generated by the diesel drive while accelerating and braking. In addition, the "EcoTrain" is also a step towards the digitalization of the existing vehicle fleet because the energy management system is connected to the already existing driver assistance system and to all consumer components in the vehicle.



NETWORKS

Download Trade Directory
"Railway Industry in Saxony"
(pdf, 10.6 MB)



■ With the **"BTS Rail Saxony" cluster**, Saxony's railway companies and research institutions have created an umbrella organization in order to develop new products and successfully enter foreign markets. Marketing for the rail technology location Saxony as well as establishing an extensive network among the participating enterprises and with other European companies are additional objectives of the cluster. The cluster was initiated, conceived, and implemented by the **BTS Bahntechnik Sachsen e. V.** (regd. assn.). The **Dresden-based** association is the representative body of the SME enterprises in Saxony's rail technology branch, a knowledge and technology hub, and the driving force behind the positive business development of its more than 50 members. BTS is founding member of the European Railway Clusters Initiative (ERCI) and is the spokesperson of the ERCI alliance.



www.bts-sachsen.de

■ At the **Innovationszentrum Bahntechnik Europa e. V. (IZBE)** association, which is **headquartered in Dresden**, companies as well as teaching and research institutions have joined forces in a network that is active internationally. The association pursues the objective of organizing cooperations, aligning the performance potentials of its members, and initiating innovations. The primary focus is on research and technology transfer, fostering interdisciplinary interregional cooperations, the acquisition and initiation of business transactions, education and training as well as providing expert consultations for traffic solutions and their components within the realm of rail technology.



www.izbe-cont.eu



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- customized service packages for business site selection,
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- information on opportunities for financial support and subsidy programs,
- access to branch networks in Saxony,
- assistance in opening up new markets, and
- in initiating cooperative partnerships.

WHAT CAN WE DO FOR YOU?

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