

SAXONY!

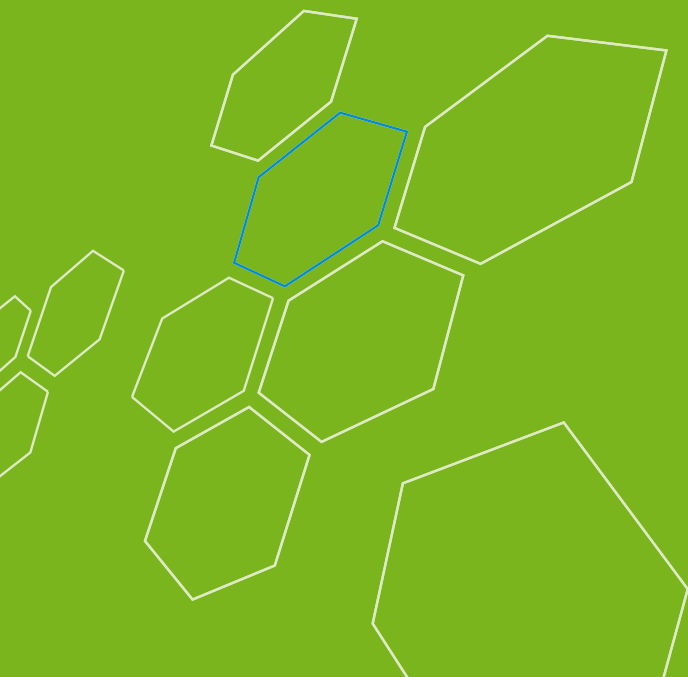


WIRTSCHAFTSFÖRDERUNG
SACHSEN



AEROSPACE INDUSTRY IN SAXONY

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WELCOME

Around 160 companies and research institutions with more than 7,000 employees generate an annual turnover of about 1.4 billion euros in Saxony's aerospace technology sector.

In Saxony, the branch is characterized by the Elbe Flugzeugwerke GmbH (EFW) – a company of the ST Aerospace and Airbus Groups. EFW is an acknowledged expert when it comes to lightweight components for modern Airbus models and, at the same time, also the market leader in freighter conversion.

The supplier landscape, which consists primarily of small and medium sized enterprises, is a reliable partner of the big aircraft manufacturers and participates in major international projects such as the A350 program.

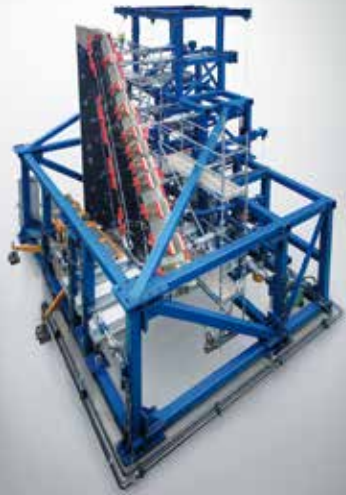
Core competences:

- Freighter conversion
- Aircraft maintenance
- Lightweight construction, materials technology
- Electronics, testing and sensor technology
- Systems for water supply and wastewater disposal
- Fluid mechanics
- Production technologies, tool making

Education and research in the aerospace technology sector is mainly pooled at Dresden University of Technology which sets standards around the globe with its Institute for Aerospace Engineering (ILR), Institute of Lightweight Engineering and Polymer Technology (ILK), and Institute of Fluid Mechanics (ISM).



COMPANIES



■ One of the three main business segments of the **EFW – Elbe Flugzeugwerke GmbH Dresden** (a company of the ST Aerospace and Airbus Groups) is the development and production of flat composite components made of paper honeycombs and carbon / glass fiber materials for all Airbus models. The product spectrum ranges from floor panels to ceiling panels and cargo compartment linings all the way to bulletproof cockpit doors. EFW also is the competence center of the Airbus Group for the retrofitting of passenger planes into cargo aircraft and a market leader in this segment. The third business segment is the maintenance, repair, and overhaul of airplanes. The company is continuously expanding this sector.

■ The **Dresden branch of the AOA Apparatebau Gauting GmbH**, which is a part of the Bavarian Diehl corporation, was founded already in 1991 and has been expanded several times since then. AOA is a leading supplier of systems solutions for the water supply and wastewater disposal as well as fire detection and air conditioning in planes. With currently around 200 employees, the Dresden branch has nearly reached the size of the corporate headquarters in Gauting and will continue to grow in the future due to the concentration of the mass production here. Another important aspect is the modern simulation and test center in Dresden – even allowing for test rigs in the size of an original commercial airliner aircraft.

■ The Dresden-based **IMA Materialforschung und Anwendungstechnik GmbH** is a globally active company with 180 employees focusing on the qualification, validation, and monitoring of materials, components, and products. The service portfolio encompasses the design and dimensioning, strength calculation and verification, testing, and analysis of structural components.



COMPANIES



■ The Mittweida-based **COTESA GmbH** specializes in the production of fiber-reinforced composite components. Since its founding in 2002, the COTESA GmbH has evolved into an important series supplier for many big aerospace companies. Its customers include Airbus, Airbus Helicopters, ESW, and the Diehl Group. COTESA manufactures, for example, extremely lightweight, curved sandwich structures, CFRP profiles, and bulletproof lightweight components. The company possesses state-of-the-art production facilities with a number of autoclaves as well as CNC processing technology and can build components with sizes of up to 8 x 2 meters.

■ The **EAST-4D Carbon Technology GmbH** in Dresden is dedicated to the topic lightweight construction with ultramodern procedures. The company develops ideas and project proposals in line with specific customer requirements. Design and approvals are implemented individually in further process steps. For the mass production of ultralight composite structures, the company has developed the filament winding forming and the filament winding injection procedure. These procedures permit the production of both rotating components with complex geometry and nacelles which are exposed to maximum stress. With this patented technology, EAST-4D produces, for example, the jet engine inlet cone for the Airbus A350 900 XWB.



COMPANIES

■ Located in Wilsdruff near Dresden, the **PMG Precision Mechanics Group GmbH** can look back on more than 15 years of experience as an aviation supplier. PMG produces, in particular, lightweight, thin-walled and geometrically complex components. The core competences of the company include the development of sophisticated machining strategies as well as mass production. The company possesses high-performance machinery with diverse CNC milling, machining as well as milling / machining centers. It also offers 2D and 3D laser cutting, pipe processing, waterjet cutting, CNC swing folding, and additional processing options. Surface treatment according to aerospace standards is also part of PMG's portfolio.

■ Hutchinson Aerospace is a leading systems supplier to the aviation industry. Since 1997, the company has been producing thermal acoustic insulation systems on behalf of Airbus; since 2003, this has been carried out at the corporate site of the **OLUTEX GMBH** in Seifhennersdorf. The plant, which has more than 230 employees, is the European market leader when it comes to the design and manufacture of thermal acoustic insulation systems and the only supplier for insulation systems on all current Airbus platforms. The factory applies such state-of-the-art procedures as CNC cutting, special welding procedures, and barcode identification. All production processes are approved according to Airbus and Boeing standards. Installation teams of the company are located in the vicinity of the final assembly lines, for example, in Hamburg and Bremen, Toulouse and Saint-Nazaire (France), and Seville (Spain). In addition to Airbus, OLUTEX's customers also include Airbus Helicopters, Alestis, Boeing, Diehl Aircabin, EFW, and AWACS.



COMPANIES

■ The **ADZ NAGANO GmbH** develops and produces premium quality pressure sensor technology in Ottendorf-Okrilla. The ADZ development team includes experts from the fields of industrial circuit technology, microsystems technology, design, and programming who develop solutions for the machine construction, vehicle construction, and rail technology sectors. Since 2006, ADZ NAGANO has been a certified supplier for renowned end customers in the aviation sector. The company's products are not only used, for example, in hydraulic and pneumatic systems, in fuel and water management, in air conditioning systems, but also by ground service and in test systems for aircraft engines. The customers include such aircraft manufacturers as, for example, Airbus and Embraer.

■ The **Leichtbau-Zentrum Sachsen GmbH (LZS)** is a spin-off of Dresden University of Technology's Institute of Lightweight Engineering and Polymer Technology (ILK). The LZS is one of the leading development partners for lightweight construction systems in Germany. The service portfolio ranges from the design and engineering, material characterization, structural and process simulation to prototype construction all the way to process development and structural testing. The LZS is a systems supplier up to Technology Readiness Level 6 and an acknowledged development supplier for Rolls-Royce and Airbus.

■ Headquartered in Coswig, the **HTS Hoch Technologie Systeme GmbH** is part of the Swiss RUAG (Space) corporation and a service provider which is active in the sectors design, dimensioning, engineering, and verification (analysis, testing) of customer-specific new product innovations and product customizations. The customers of the HTS GmbH in the aerospace technology sector include, for example, Airbus and the European Space Research and Technology Center (ESTEC).



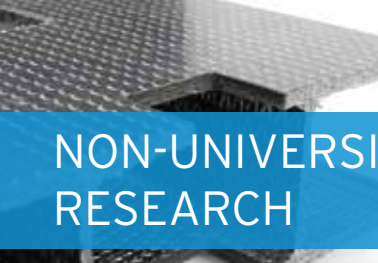
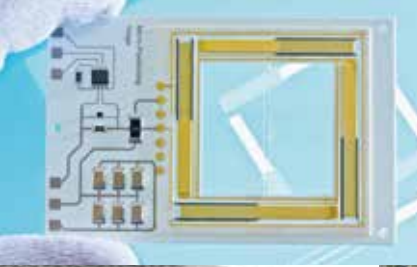
UNIVERSITY RESEARCH

Dresden University of Technology has profound R&D competences in the aviation and space sector.

■ In close cooperation with aircraft manufacturers, the Chair of Aircraft Engineering at the **Institute of Aerospace Engineering (ILR)** researches innovations and investigates practical problems posed by aircraft construction. The Chair for Space Systems conducts fundamental research in engineering sciences on novel space propulsion systems. Another focus of the scientific work is on the development and testing of technologies for space missions and subsystems of spacecraft. The aspect of transferring technology into earth-based applications plays an important role in this. The university's **Postgraduate Program**, financed by **Airbus Defence and Space**, focuses on concepts for future earth observation and interplanetary missions.

■ The **Institute of Lightweight Engineering and Polymer Technology (ILK)** develops load-adapted lightweight structures and systems. The spectrum ranges from fundamental research all the way to the concrete innovation development of demonstrators for industrial partners. Initiated by the aircraft engine manufacturer Rolls-Royce, the **University Technology Center Dresden "Lightweight Structures and Materials and Robust Design" (UTC)** was established in 2006. The research alliance, which consists of five institutes, generates impulses for lightweight construction systems and multi-material design in aviation and promotes technology transfer from science into applications at Rolls-Royce.

■ At the **Institute of Fluid Mechanics (ISM)**, scientists at three professorial chairs work on such topics as, for example, fluid mechanics, turbomachines and flight propulsion as well as magnetofluidynamics, measuring and automation technology.



NON-UNIVERSITY RESEARCH

■ The **Fraunhofer Institute for Machine Tools and Forming Technology IWU** in Chemnitz is one of the leading institutes for application-oriented R&D in the production engineering sector. The service portfolio for the aerospace industry ranges from automation solutions for the assembly of large-scale aircraft components all the way to the development of intelligent components.

■ The **Fraunhofer Institute for Ceramic Technologies and Systems IKTS** Dresden conducts applied research on high-performance ceramics. The research topics include material development, production processes and prototyping as well as material diagnosis and testing. In this context, the IKTS has already successfully implemented projects, for example, on behalf of the MTU Aero Engines AG, Airbus Operations, and the German Aerospace Center (DLR).

■ The key activities of the **Fraunhofer Institute for Material and Beam Technology IWS** Dresden include the joining of metallic / nonmetallic materials, of intermetallic compounds as well as of CFRP / metal composites for structural and turbine components. In addition, the Fraunhofer IWS conducts research on the additive manufacturing of complex-shaped 3D components, the wear and tear protection of turbine components, and the thermal insulation of rocket engines. The institute also works on test devices for the characterization of the mechanical properties as well as the thermal shock and thermal cyclic resistance of advanced coatings.

■ The **Saxon Textile Research Institute (STFI)** Chemnitz has developed special boxes for storing air cargo and baggage which consist of high-strength and at the same time flexible aramid fabrics. Tests have demonstrated that exploding suitcase bombs cause virtually no damage if the baggage items are stored in such a "fly bag". Another focus of the STFI is lightweight construction; in particular, reinforcement structures for plastics.



NETWORK

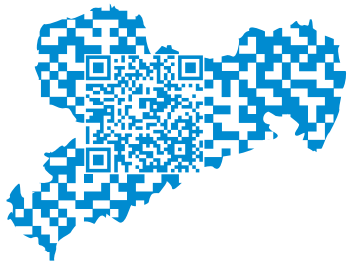
■ The **Competence Center Aerospace and Space Technology Saxony / Thuringia e. V. (LRT)** pursues the objective of significantly advancing the development of the regional aerospace industry and stabilizing and strengthening the competences in this sector. The branch association cooperates closely with German and international networks – for example, the German Aerospace Industries Association (BDLI) – and is a member of the international “European Aerospace Cluster Partnership” (EACP). The network provides its more than 30 members numerous opportunities to represent themselves and exchange experiences with one another in form of, for example, company visits, technology meetings, workshops, exhibitions, and network events.



www.lrt-sachsen-thuringen.de



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