

SAXONY!



WIRTSCHAFTSFÖRDERUNG
SACHSEN

AGRICULTURAL TECHNOLOGY IN SAXONY

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WELCOME

Agricultural technology looks back on more than 150 years of tradition and innovation in Saxony: Already in 1856, Friedrich August Raussendorf had founded an agricultural machinery factory near Bautzen which evolved into one of Germany's largest agricultural machinery manufacturers in the early 20th century. With "Fortschritt" farm machines, one of the world's largest manufacturers of agricultural machinery had its corporate headquarters in Saxony since the 1960s.

Today, the agricultural technology branch in Saxony is characterized primarily by small and medium sized enterprises. These companies are capable of responding very quickly to the changing needs and requirements of their customers. They have established themselves as highly valued suppliers and partners on the global market and become major partners of OEMs.

Core competences:

- Manufacture of components and modules
- Development, engineering, and production of electronic and mechatronic components
- Intelligent processing of process and production data used in agriculture

The key to the success of Saxony's research expertise in the fields of innovation autonomous machines, bioenergy technology, electrification and lightweight construction in agriculture, precision farming as well as solutions for efficient-ecological animal husbandry is the close interaction of scientists at Saxony's universities and institutes with end users in the farming sector and producers of the requisite technology.



COMPANIES

■ As a systems supplier, the **WTK-Elektronik GmbH** from Neustadt / Saxony develops and produces customized electronic modules and components for agricultural machines with a service spectrum ranging from electronic control systems, terminals, job controllers, joysticks, control panels and consoles to distribution boxes and cable harnesses all the way to the development of product-specific software. The agricultural electronics specialist possesses comprehensive competences, for example, when it comes to technology for area-related arable farming and site-specific field cultivation and provides farmers with applications for precision farming. The company's groundbreaking achievements include, for example, wireless handheld terminals, agronomic terminals as well as wireless ISOBUS operating and control systems. A pioneering field of the future is researching autonomously operating flexible modules which are to permit resource-saving farming from seedbed preparation all the way to harvest.

■ The **BBG Bodenbearbeitungsgeräte Leipzig GmbH & Co. KG** specializes in the development and production of soil tillage machinery and crop protection sprayers. Since 1998, the company has been acting as a member of the Amazone Group, a globally leading manufacturer of complete process chains revolving around "intelligent crop production." Compact disk harrows, mulch cultivators, and reversible plows made by BBG are suitable for the most diverse tillage and cultivation operations. Specific features of these machines include their strict alignment to the needs and requirements of modern precision farming. For example, an increasing number of electronic components are used primarily in crop protection sprayers.



COMPANIES



■ A leading provider of multiphysical simulation software is the Dresden-based **ESI ITI GmbH**. The self-developed software “SimulationX” permits the modeling and analysis of various product development approaches even before a real component is built. These virtual prototypes help save times and costs in the development process and shorten test phases. In addition, ESI ITI possesses competences for the energy-efficient optimization of machines and components.

■ The Dresden-based start-up **Apus Systems** has developed a globally unique service and software package for the recording, analysis, and maintenance of agricultural drainage systems which permits time savings of up to 80 percent during the detection of defective drainages. In addition to ground-level tracking via GPS and camera techniques, APUS uses drones for the analysis of aerial images. The recorded data help create high-precision digital maps which farmers can use directly in the field thanks to the appropriate software and which facilitate maintenance and repair considerably. Apus Systems also enters all values into an online melioration land improvement register so that the requisite knowledge is no longer lost.

■ Digital plant cultivation is the business segment of the **Agricon GmbH** from Jahna. The requisite service spectrum encompasses the conceptual design, development, and sale of sub-area specific crop farming methods and management systems as well as their integration into the agricultural enterprise. Farmers are equipped with intelligent tools for the efficient organization of their farms. The internet-based data management solutions developed for this purpose link information – which is collected, for example, via sensor systems from the actual soil and plant conditions – with one another and derive the requisite recommendations for action with regard to the sub-area specific tillage of a field.



COMPANIES

■ Under the brand “Innomadie”, the **EIDAM Landtechnik GmbH** from Löbnitz distributes its own products which are all designed and manufactured in-house. These products include, for example, devices with which manure and fermentation residues are efficiently spread on farmland. In addition to manure technology, the core product range of the company from the Erzgebirge Mountains also includes silage spreaders and silage compactors. Additional equipment which meets the specific demands of fields, farmyards, and stables, both as in-house developments and in job-order production, complements the corporate portfolio. Towards this end, the EIDAM team successfully masters not only mass production, but also the manufacture of special constructions. Together with partners from industry and science in Saxony, EIDAM is also working on power-driven tools which are specifically designed to prepare heavy, hard soils in a gentle, energy-efficient manner for the subsequent sowing with just one crossing of the field; on the introduction of a new wear material to the market; and on a new system development – the “Feldschwarm®” concept.

■ The team of the Freital-based **Hydrive Engineering GmbH** develops drive technology and control systems which are used, for example, in agriculture and which are not only powerful and reliable, but also energy-efficient and low in emissions. Decisive for finding and retaining customers are increasingly shorter development and commissioning times. Hydrive meets this requirement, for example, with its state-of-the-art software tools. The company’s dynamic and realistic system simulation permits the development of a specific design at an early stage and provides an in-depth understanding of the system. The manufacture of expensive prototypes is reduced to a minimum. Hydrive creates and tests software for machine control systems on its own in-house developed software test rigs applying automated test cases.



UNIVERSITY RESEARCH

■ The staff at **Dresden University of Technology's Chair of Agricultural Systems Technology** promotes and advances the paradigm shift from thinking bigger-faster-wider all the way to intelligent, networked technology. Towards this end, the scientists seize the options which are provided by such key technologies as automation, digitalization, electrification, and lightweight engineering. Examples of this approach are new harvesting technology concepts which split large combine harvesters into smaller, autonomously operating units. One research result bears the name "Venum" and is the concept study of a two-cabin reversible combine harvester with retractable cutting unit. Additional projects include, for example, autonomous maintenance robots for fruit orchards or electric beet harvesters with a high degree of efficiency in all load ranges.

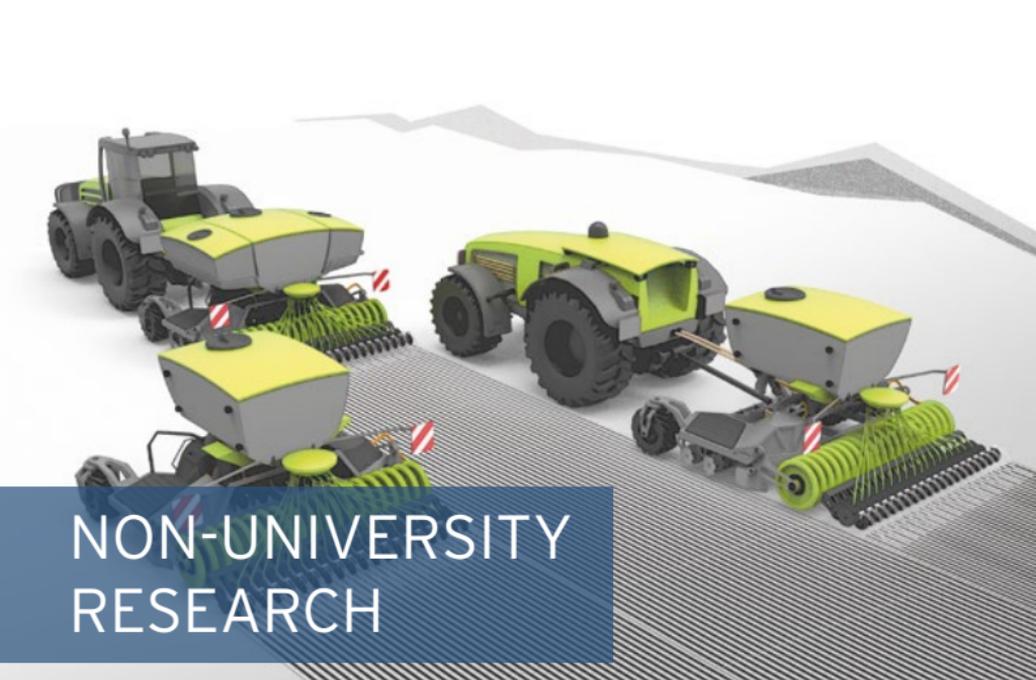
■ The task of the **Center for Applied Research and Technology (ZAFT) at Dresden University of Applied Sciences (HTW)** is to conduct applied research as well as knowledge and technology transfer in an interdisciplinary manner. The scientific discipline "Technology in Horticulture and Agriculture" at the ZAFT pursues the objective of developing innovative products and procedures for an environmentally friendly and effective plant production, particularly for smart farming. Focal points of interest include the development of sensors for the collection of the most diverse parameters of plants, soils, and machines.



NON-UNIVERSITY RESEARCH

■ The Dresden-based **Fraunhofer Institute for Transportation and Infrastructure Systems IVI** employs more than 100 scientists. The institute's research and development spectrum ranges from traffic planning, traffic ecology, traffic information as well as vehicle propulsion and sensor technology to traffic telematics, information and communication technology all the way to disposition and logistics. The Fraunhofer IVI also contributes, above all, its core competences electric drivetrains, automated vehicle guidance as well as positioning methods and trajectory planning for vehicles to the transformation process which will result in highly automated, sustainable agricultural technology.

■ As a leading institute for resource-efficient production within the Fraunhofer Society, the primary focus of the **Fraunhofer Institute for Machine Tools and Forming Technology IWU** in Chemnitz is on the development of efficient and intelligent production systems for the manufacture of car body and powertrain components. A key area of the Chemnitz researchers' work is the development of techniques for the processing of new materials as well as for the manufacture of innovative lightweight structures which are to also be used in agricultural vehicles. Together with its partners, the Fraunhofer IWU has developed the demonstrator vehicle "Kulan" which weighs only 300 kilograms but is nevertheless capable of transporting loads of up to one ton – ideally suitable, for example, for landscape conservation.



NON-UNIVERSITY RESEARCH

The future of agricultural technology is taking shape in Saxony. Instead of large, heavy machines which damage the ground, small, light modules are to realize all tasks revolving around agriculture and farming in a significantly more flexible and more resource-friendly manner than today's technology. The idea behind this technological concept is called swarm intelligence. Together with John Deere, the global market leader for agricultural machinery, six companies and four research institutes from Saxony form the innovative **Regional Growth Core "Feldschwarm®"** and are developing the enabling technologies for autonomously operating accessory equipment in agricultural technology until July 2020. The self-organizing units are individually powered by electricity and collectively operated via smart connected technologies. The modules can be used either in front of or behind tractors or operated independently at any point in the field. They have such a flexible design and structure that various machining tools can be employed. This permits all types of work to be carried out – whether it be soil tillage or sowing, or even harvesting.



NETWORKS

■ The **AgroSax e.V. association** is the project coordinator of the **Saxony Agricultural Competence Network**. The association is the result of an alliance between companies from the agricultural technology sector and suppliers in Saxony. The network pursues the objective of improving the competitiveness on national and international markets by pooling and further enhancing the strong points of its members in the sectors agricultural technology and farming, environment and environmental technology, forest and forestry as well as renewable energy.

www.netzwerk-agrartechnik-sachsen.com

■ The network **Saxony Agricultural Technology Initiative** was founded by firms and scientific institutions from the agricultural technology sector in Saxony with the objective of augmenting the economic potential of the participating small and medium sized enterprises through sustainable cooperation. The association also acts as an initiator and communication platform for the development and promotion of state-of-the-art procedures and equipment pertaining to agricultural technology.

www.initiative-landtechnik-sachsen.de



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