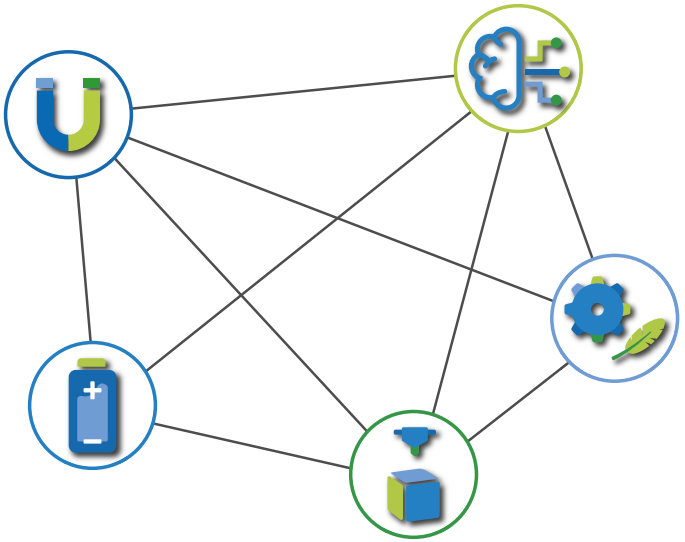
Hochschule Aalen

Key to Smart Products!

SmartPro

Climate protection through energy efficiency and resource conservation

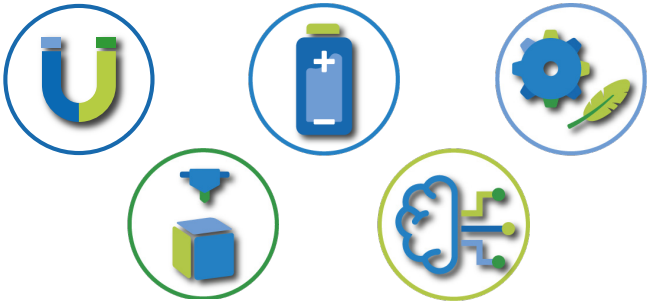


The reseach network of Aalen University for material and technological innovations

SmartPro
– Key to Smart Products!

In cooperation with more than 60 partners from industry and science, Aalen University is conducting research on smart materials and intelligent technologies for future products in the network SmartPro.

SmartPro's research priorities lie in the application fields of energy converters, energy storage systems, and lightweight design – in close collaboration with the cross-sectional technologies of additive manufacturing and machine learning.



Improved energy efficiency and the conservation of critical resources are our key objectives.

SmartPro: Impulse for the future!

Energy converters

Smart magnetic materials for efficient electric motors

We do research on new magnetic materials and technologies for electric motors and generators. Quality assured by machine learning, the efficient novel magnets have less critical raw materials and outstanding importance for resource-saving mobility, renewable energy, and industrial automation (Industry 4.0). Sustainability and efficiency are also improved at the application system level.

Energy storage systems

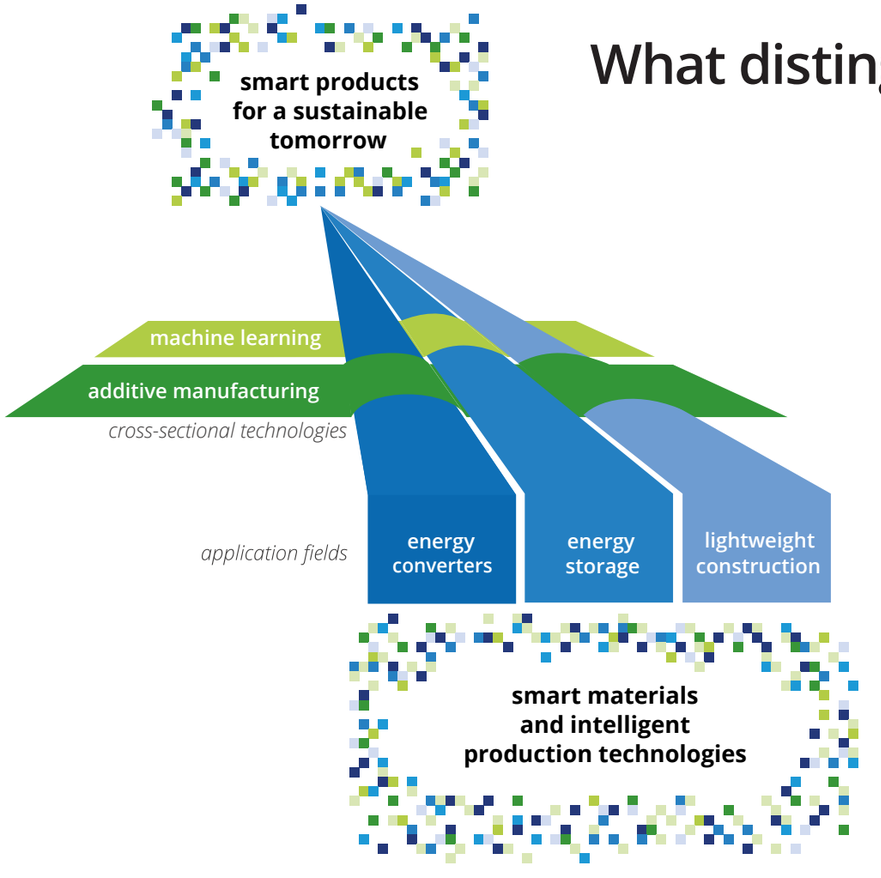
Material concepts & processes for lithium-ion & all-solid-state batteries

We are working on rechargeable batteries with high energy density, which are key technologies for transforming mobility and energy supply. The demand and requirements are increasing immensely. Thus, research on high-performance conventional and all-solid-state batteries is highly relevant, both economically and socially.

Lightweight design

Die casting strategies & hybrid lightweight designs

We develop high-performance joining technologies to join different materials – an important prerequisite for modern, cross-industry multi-material lightweight construction. For this purpose, die casting technologies, adhesive joining, and surface pretreatments are combined with testing methods and machine learning.



What distinguishes SmartPro – Your advantages

Excellent and committed

- Network of Aalen University – one of the most research-intensive universities of applied sciences in Germany
- Modern and steadily growing research infrastructure
- Exchange of ideas and scientific communication with top researchers
- Contact with highly qualified professionals

Diverse and profitable

- Expertise in a wide range of research priorities and topics as well as methods
- Networking with global players across industries and technologies
- Long-term collaborative projects with great leverage through federal funding

Sustainable and future-oriented

- Research and continuing education on future topics
- New materials and technologies
- Digitization and cutting-edge AI applications
- Approaches to climate protection through energy efficiency and resource conservation

Machine learning

Quality assured production through artificial intelligence

We use artificial intelligence (AI) primarily for quality control as well as process monitoring and optimization. To this end, we adapt machine learning methods specifically for magnets, batteries, and lightweight materials as well as production technologies.

Additive manufacturing

Production technologies for resource conservation

We are driving forward the versatile technology of additive manufacturing to conserve resources. To ensure that material in SmartPro application fields can be used directly only in functional places, we are developing hardware and software for optical applications, magnets or lightweight construction as well as low-wear carbide tools.

Invest with us sustainably in your future!



In application-oriented research and development projects, the SmartPro network develops the basis for future products.

Aalen University pursues innovative ideas in SmartPro together with research and transfer partners as well as 40 companies – from SMEs to global players.


The German Federal Ministry of Education and Research (BMBF) is funding SmartPro with around ten million euros until 2026. Corporate partners are contributing an additional two million euros.

This shows the **great importance of the SmartPro research network – for our environment, our society, and our economy.** The aim is therefore to expand the research activities and develop them further together.

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FORSCHUNG AN FACHHOCHSCHULEN

Become part of the success story!

Material and technological innovations of the research network SmartPro offer solutions for societal challenges such as climate protection, sustainability, and digital transformation. A real success story – for the industry partrners, the region, and beyond.

Would you also like to benefit from the trusting collaboration with top researchers? We look forward to discussing cooperation opportunities and project ideas with you.

Come and talk to us!

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