

Applied Research at Aalen University



The State of Baden-Württemberg

- Europe's most innovative region in research and development
 - Expenditure on research and development in Baden-Württemberg accounts for 4.2 % of the gross domestic product
- High living standard
 - GDP: 343.74 billion Euro (third-highest in Germany)
 - GDP per capita: 32,000 Euro (9 % above the average for Germany and 25 % above the average for the European Union)
- Very low unemployment rate
 - In the Region of Aalen: 3.8%



Research at Universities of Applied Sciences

- Has become a main task of professors
- Is needed for accreditation of Master courses
- Is needed for teaching on a high level
- Is necessary to get co-workers and laboratory equipment
- Permits qualification of graduate students
- Creates the reputation of a University

- Needs much time and discipline
- Requires actual knowledge of research and technology

Organisation of Research at Aalen University

- Central Research Coordination by the University
(Coordinator Dr. Ralf. Schreck / ralf.schreck@htw-aalen.de)
- IAF – Institute for Applied Research with Emphases on:
 - Laser Technology
 - Production Technology
 - Chemistry
 - but also other areas involved
- Specialised Institutes and Centres like for example:
 - Institute for Material Research
 - Centre for Optical Technologies (ZOT)
 - GTA Foundry Technology Aalen
- Steinbeis Transfer Centres
- Innovation Centre Aalen (University & City)

A photograph of three scientists in a laboratory. A man on the left, wearing orange safety glasses and a white lab coat, is looking towards two women. The woman in the middle has long brown hair and is wearing clear safety glasses and a white lab coat. The woman on the right is also wearing clear safety glasses and a white lab coat, and is pointing towards a piece of equipment. They are all smiling and appear to be engaged in a discussion. In the foreground, a pair of large, white, protective gloves is visible. The background shows a laboratory setting with various pieces of equipment, including a large glass-enclosed machine on the right.

Research & Transfer

Research Emphases

Business

Business Processes and Health Management



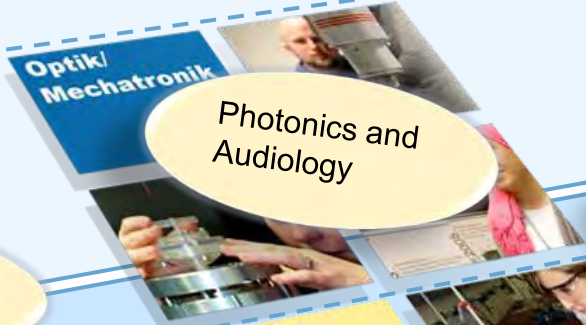
Construction in Mechanical Engineering



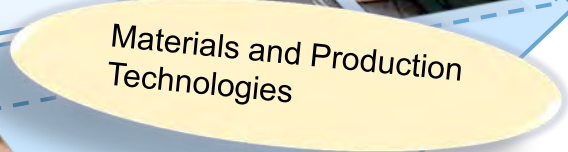
Software Engineering and Image Processing



Photonics and Audiology



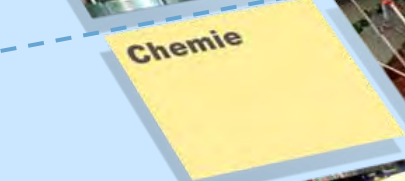
Materials and Production Technologies



Electronics for Energy Conversion



Chemie



Analytical Chemistry



Engineering

Main Research Fields 1 (Status Summer 2013)

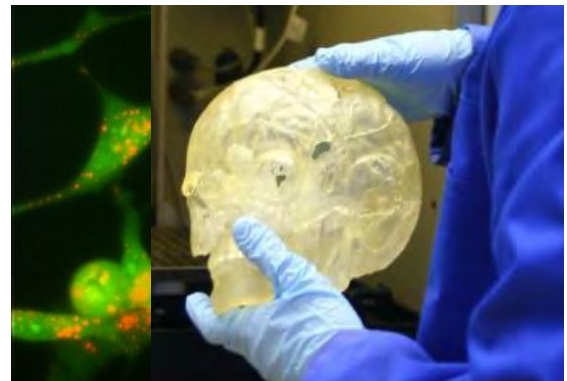
- **Advanced Materials and Manufacturing**

- exploration and application of innovative materials
- development of resource-saving and energy-efficient manufacturing processes,
- lightweight construction,
- energy storage,
- materialography,
- electromobility



- **Innovative foundry technologies**

- sand, permanent mold and high-pressure die casting,
- gas injection technology,
- adaption of methods to novel alloys
- lightweight design,
- resource-efficiency



Main Research Fields 2 (Status Summer 2013)

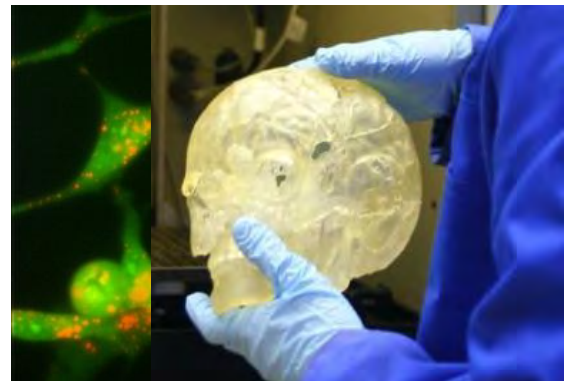
- **Photonics**

- optical technologies,
- development of economical and energy-efficient manufacturing technologies,
- optical manufacturing and metrology



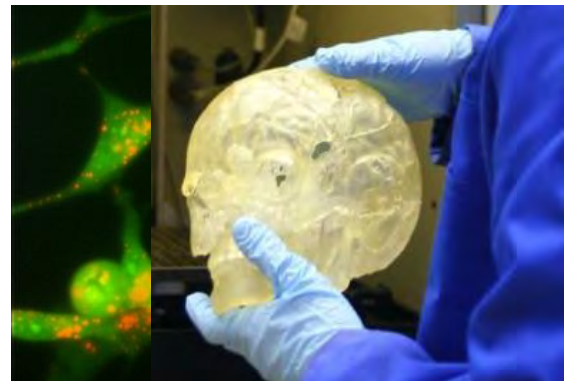
- **Waste heat utilization, Electrical drive engineering and power electronics**

- novel solar power inverter
- control engineering
- smart grids



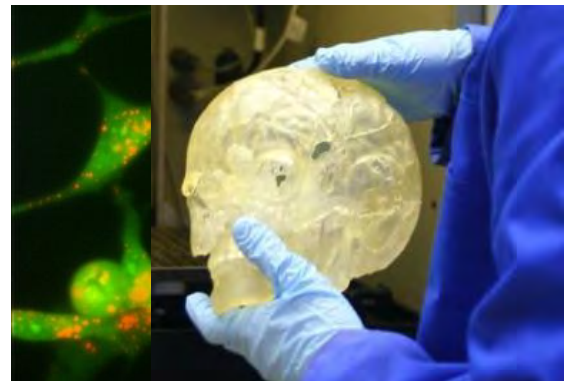
Main Research Fields 3 (Status Summer 2013)

- **Mass spectrometry**
 - development of novel methods and their application
- **Renewable energies**
 - development of novel solar cells,
 - development of novel methods to disintegrate biogenic materials
- **Applied system dynamics**
 - automation engineering,
 - robotics,
 - dynamics of socio-economic systems,
 - corporate management and organization design



Main Research Fields 4 (Status Summer 2013)

- **Automated software engineering**
- **Image data processing**
- **Business process modeling**
 - Design and support
- **Biophotonics**
 - Development of high-resolution microscopic methods and their biomedical application
- **Research on sustainability**



Steinbeis Transfer Centres at Aalen University (1)

- **School of Management and Business Sciences**

- STC for Applied Management (Prof. Ulrich Holzbaur)
- STC for Optimized Product and Process Development (Prof. Florian Kauf)
- STC for Production, Processes, Human Resources Development (Prof. Volker Beck)

- **School of Electronics and Computer Science**

- STC for Consulting in Information security and data protection (Prof. Roland Hellmann)
- STC for Electrical Drive Technology and Power Electronics (Prof. Heinrich Steinhart)
- STC for Image Processing and Applied Computer Science (Prof. Ulrich Klauck)
- STC for Innovation Management and Information Technology (Prof. Manfred Bartel)
- STC for IT and Business Process Management (Prof. Rainer Schmidt)
- STC for IT Safety (Prof. Christoph Karg)
- STC for Software Engineering (Prof. Roy Oberhauser)

Steinbeis Transfer Centres at Aalen University (2)

- **School of Mechanical Engineering and Materials Science**
 - STC for Corrosion and Materials (Prof. Thomas Ladwein)
 - STC for Foundry Technology GTA (Prof. Lothar Kallien)
 - STC for Innovative Drive Engineering and Waste Heat Recovery (Prof. Markus Kley)
 - STC Institute of Technology, Marketing & Service Mgt (ITMS) (Prof. Arndt Borgmeier)
 - STC for Materials Engineering (Dr. Alwin Nagel)
 - STC for Polymer Engineering - PETZ (Prof. Achim Frick)
 - STC for Technical Sales Management (Prof. Jobst Görne)

- **School of Optics and Mechatronics**
 - STC for Good Hearing (Philipp Heller)
 - STC for Measurement Systems, Sensor Technology & Signal Processing (Prof. Peter Zipfl)
 - STC for Mechatronics (Prof. Ulrich Schmitt)
 - STC for Optical Technology (Prof. Rainer Börret)
 - STC for Technical Advising (Prof. Günter Dittmar)
 - STC for Technical Communication – Paracam (Prof. Michael Bauer)



Innovations



Innovation center Aalen

a unique kind of founding and networking

Stadt Aalen 
im Kommunalverbund



Targets

- **Enlargement and empowering of existing industrie structures ,
Improvement of current competitiveness.**
 - Improvement of core competences
- **Current industries are enforced to stay in region.**
 - Start ups will be supported by industrial networking.
- **Creation of innovative start up´s.**
 - Support by use existing networks, potential customers, decrease of financial risks and use of existing know how. Generating taxes for development of community.
- **Development and supporting of innovative Ideas of high educated engineers.**
 - Equality of chances of rural areas versus areas with high population density.
- **Develop perspectives for high potentials in rural areas and bind them to their native regions.**
 - Creating chances for start up´s to develop, get supported and transferred into networks of existing industries.

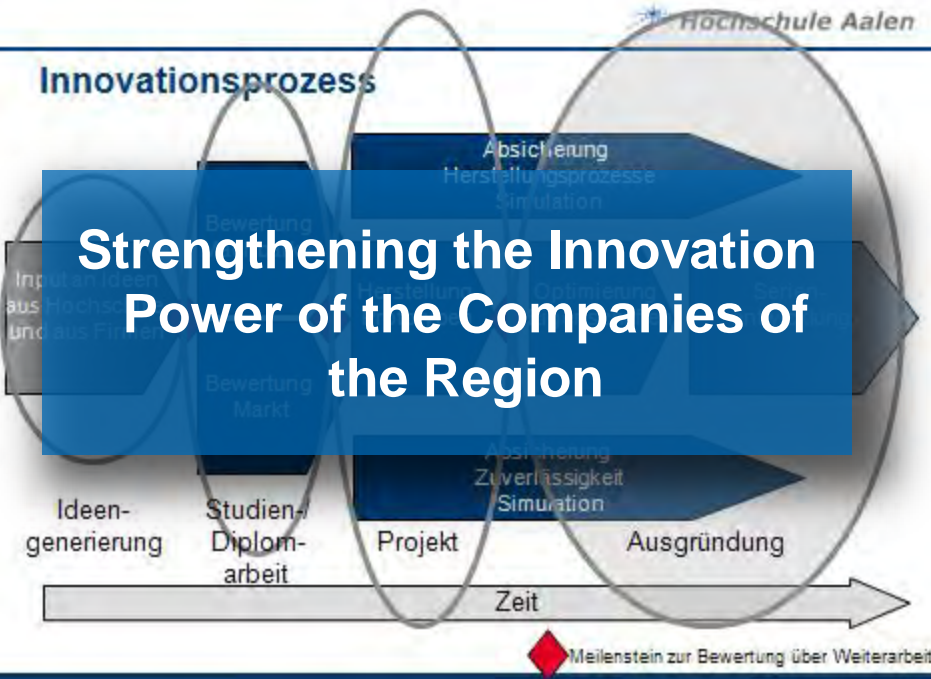
Comparison with other Centres of Innovations

- The Aalen Innovation Centre is linked to Aalen University with excellent laboratories facilities and its innovative milieu.
- In contrary to other centres of innovations, the Aalen Innovation Centre offers not only room space for founders but excessive usability of existing facilities, labs and competencies at Aalen University allowing for successful founding, innovation and product development processes.
- The Aalen Innovation Centre is thus supporting sophisticated developments from the idea until the implementation at the benefit of potential customers.
- **It is a cooperation between**
 - the City of Aalen &
 - Aalen University



Innovation Centre - EULE

Innovationsprozess



23

Konzepte und Ziele des Innovationszentrums EULE-Projekt



30

Potential users of innovation center

1. University

- University is renting approximately 30 % of existing room space as an incubator.
- Networking between professor an innovation manager creates an early warning system for innovative ideas.
- Networking performs in a bidirectional way: Industry into university → University to industry.
- Incubator, labs an infrastructure for students is almost for free.
- Users are examining process of „Proof of Concept“. (see below)
- Team of competence will support technology, finance, marketing, timeline and quality issues during development process or will network with existing industries.
- Competence team will provide for stipendiums.

2. Regular founders

- Regular founders can rent in with attractive conditions and can use labs and innovative milieu of university to finalize their innovative ideas into market products.
- Team of competence will support technology, finance, marketing and quality issues during development process or will network with existing industries.

3. Existing companies

- Existing companies can found a daughter companies and place themselves into innovation center with attractive conditions and can use labs and innovative milieu of university to finalize their innovative ideas into market products.

Conclusion

- The Aalen Innovation Centre provides for a network gateway between the City of Aalen, the Industry and its associations, the Aalen University and company founders in the meaning of:
 - Low Risk and nearly cost free establishment of innovative products or process ideas for students already during their education (incubator function)!
 - Gateway function between industry and university. Therefore path breaking potential for entrepreneurs and founders to make use of the innovative environment of the Aalen University.
 - Partnership for development of mutual strategies between university education and industry to generate value chain and cultural advantages for the regional environment.

**Thank you very much
for your Attention!**