

innovative practical & market-oriented



Hochschule
Zittau/Görlitz
UNIVERSITY OF APPLIED SCIENCES

Overview Zittau Power Plant Laboratory

The »Zittau Power Plant Laboratory« (ZKWL) is a laboratory of the Institute of process technology, process automation and measurement technology which is part of the University of Zittau/Görlitz. It was constructed under the direction of the Institute in the years 2011 to 2015. The laboratory is used to experimentally develop measures to increase the energy efficiency of energy systems, to develop energy storage systems and to develop solutions for the improved use of renewable energy sources. The main focus of the ZKWL are test facilities that have been designed and built up within the framework of three research projects. The total costs for the ZKWL amounted to EUR 7 million, of which EUR 6.3 million was founded by ERDF. The Zittau/Görlitz University of Applied Sciences contributed 10 percent to the financing. In addition, there was a further € 1 million of construction costs for the rehabilitation of the research building.

The local energy supplier »Stadtwerke Zittau GmbH« actively supports the ZKWL. It is thus the largest research investment since the founding of Zittau/Görlitz University in 1992.



contact person:

Prof. Dr.-Ing. habil. T. Zschunke
Director IPM

✉ ipm@hszg.de

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Gefördert aus Mitteln
der Europäischen Union

Europa fördert Sachsen.
EFRE
Europäischer Fonds für
regionale Entwicklung

IPM

Being a faculty combining Institute, the Institute of Process Technology, Process Automation and Measuring Technology realizes application-oriented research and development in the fields of energy technology and mechatronics.

The R&D activities of the institute are divided into five Departments:

- Measuring technology/process automation
- Nuclear engineering/soft computing
- Mechatronic systems
- Power plant-, steam generator- and firing technology
- Applied electronics



**Zittau Power Plant
Laboratory**



Partner for application-oriented research and development

☎ +49 3583 612-3441
📠 +49 3583 612-3449
✉ ipm@hszg.de

👉 <http://ipm.hszg.de>

Contact:
Theodor-Koerner-Allee 8
02763 Zittau, Germany



Thermal Energy Storage Facility

The thermal energy storage facility (THERESA) is used for the experimental investigation of thermal energy storage systems for the flexibility of thermal energy systems. In the Free State of Saxony, mainly lignite power plants are responsible for covering the base load and providing the residual volatility due to renewable energy input. Accordingly, the flexibility of the Saxon power plant capacity has a high priority to ensure the energy supply of the Saxon industry.

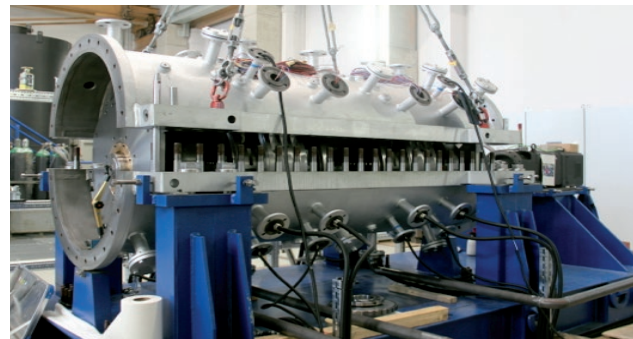


Current research areas at the test facility THERESA:

- Integration of thermal energy storages systems (into power plant processes)
- Development of I&C concepts for the efficient operation of energy storage systems
- Optimization of storage systems (sensors/actuators/storage)
- Modeling and experimental validation of storage systems
- Maintenance strategies and component monitoring

Test Facility for Magnetic and Catcher Bearings

The test facility for magnetic and catcher bearings (MFLP) was designed for the experimental investigation of active magnetic bearings and catcher bearings. Active magnetic bearings allow an efficient and reliable operation of turbomachines. Conventional bearings cause energy losses, because of friction respectively the necessary lubrication. Magnetic suspended rotors are levitated within an air gap without mechanical contact. Therefore, the energy losses are significantly reduced. Furthermore, there is no need for lubrication. This means that the amount of flammable substances within the plant can also be reduced.



Research focuses with the test facility MFLP:

- development of high temperature magnetic bearings
- usage of magnetic bearings under extreme operating conditions (high temperatures, high rotational speeds, presence of corrosive media)
- reliable operation of magnetic and catcher bearings

Thermochemical Test Area

The aim of the project »Thermochemical Test Area« is to generate knowledge for the efficient design and use of decentralized heat and power supply systems on the basis of biomass as energy raw material. The focus is on the use of wood and woody energy products and the thermochemical conversion process, which is primarily to be mastered.

In this context, short-term storage options for heating and air-conditioning systems play a large and increasingly important role in the flexible practical application. These include latent heat storage and latent cold storage of various types.



The main research content of the project is to investigate and analyze the behavior of individual components (dryers, carburetors, CHP, sensitive heat storage, latent heat and latent heat storage) in the system and the system behavior, including the cross and feedback.