



Project Data

| | |
|-----------------|--|
| Project title: | Efficient Use of Heat Energy in Industrial Processes |
| Management: | Fraunhofer-Center HTL |
| Partners: | Ceramic and refractory industry Manufacturers of thermoprocessing equipment Manufacturers of high temperature components |
| Duration: | 5 years |
| Project launch: | September 2012 |
| Funding: | Bavarian State Ministry of Economic Affairs and Media, Energy and Technology |
| Funding amount: | 9.5 million € |



Please feel free to contact us

Fraunhofer-Center for High Temperature Materials and Design HTL

Gottlieb-Keim-Straße 62
95448 Bayreuth

www.htl-enertherm.eu

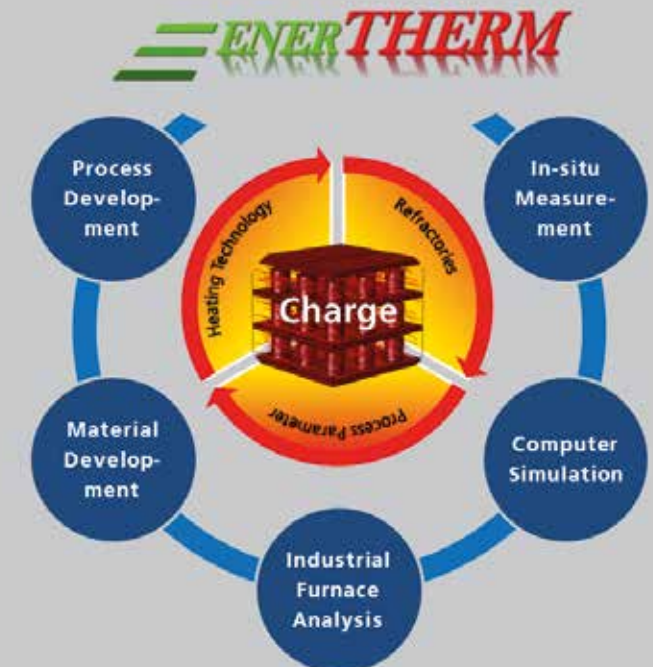
Dr. Holger Friedrich
Tel.: +49 921 78510-300
holger.friedrich@isc.fraunhofer.de

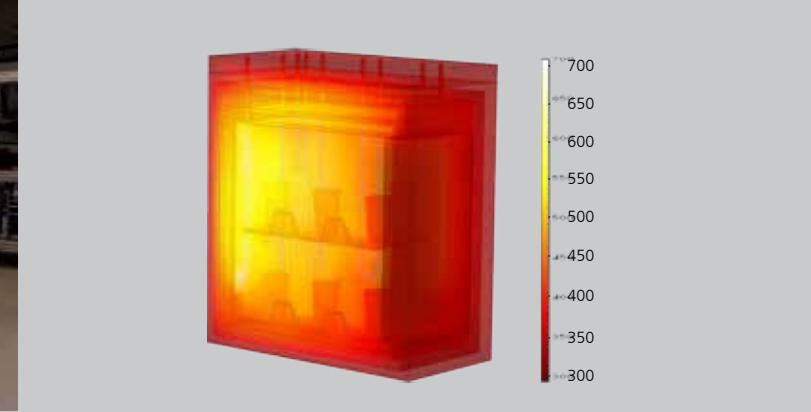
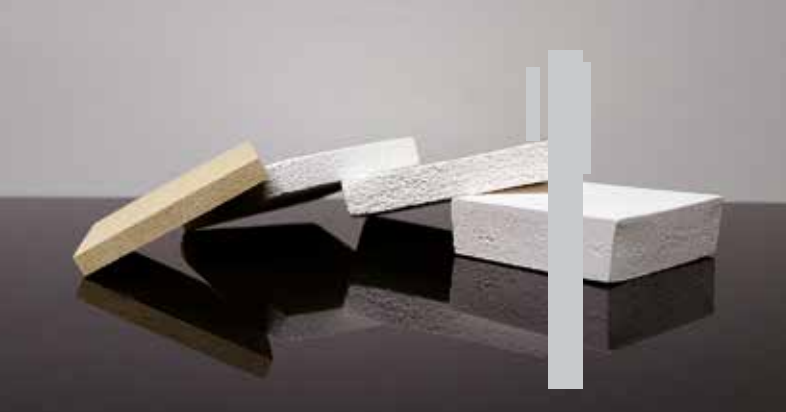
Dr. Gerhard Seifert
Tel.: +49 921 78510-350
gerhard.seifert@isc.fraunhofer.de

Dr. Friedrich Raether
Tel.: +49 921 78510-002
friedrich.raether@isc.fraunhofer.de



Project EnerTHERM Sustainable Thermal Processes





Motivation

Approximately 20% of the total energy in Germany is being used for industrial heat treatment processes. If the sustainability goals set in the Paris Agreement are to be reached, drastic savings must be achieved without jeopardizing product quality.

The energy costs of the heat treatment significantly contribute to the production costs of metals and ceramics at approx. 5 – 20%. So far, the energy efficiency is far below the theoretically achievable value. The material efficiency is equally important, which can be increased by reducing scrap rates and process variations during heat treatment.

Project Aim

The EnerTHERM project of Fraunhofer-Center HTL aims to significantly improve sustainability in the heat treatment of materials. A comprehensive approach including process parameters, kiln furniture and heating technology is being pursued: Product quality remains the top priority.

Method

The ThermoOptical Measuring systems (TOM) of HTL were further developed so that a complete chemical, thermal and mechanical characterization of the high-temperature behavior of materials in a wide variety of process atmospheres is possible. In addition, methods have been set up for measuring thermoprocessing equipment in the industry. Based on the measurement data, computer simulation methods were developed with which thermal processes can be energetically optimized without restraining the product quality. The demand for new high-temperature materials and components was derived from the analyses. The project has developed new technologies for the production of these components.

Project Organization

The EnerTHERM project covers 7 subprojects:

- Characterization of high-temperature materials in terms of application properties and service life
- Characterization of industrial thermal processing plants
- Optimization of heat treatment processes regarding the carbon footprint
- Improvement of thermal processing plants
- Development of lightweight materials for use at high temperatures
- Development of technologies for the cost-efficient production of high-temperature components and systems
- Energy efficiency in continuous heat treatment plants

The project is being carried out in close cooperation with the manufacturers and operators of thermal processing plants as well as manufacturers of high-temperature components.