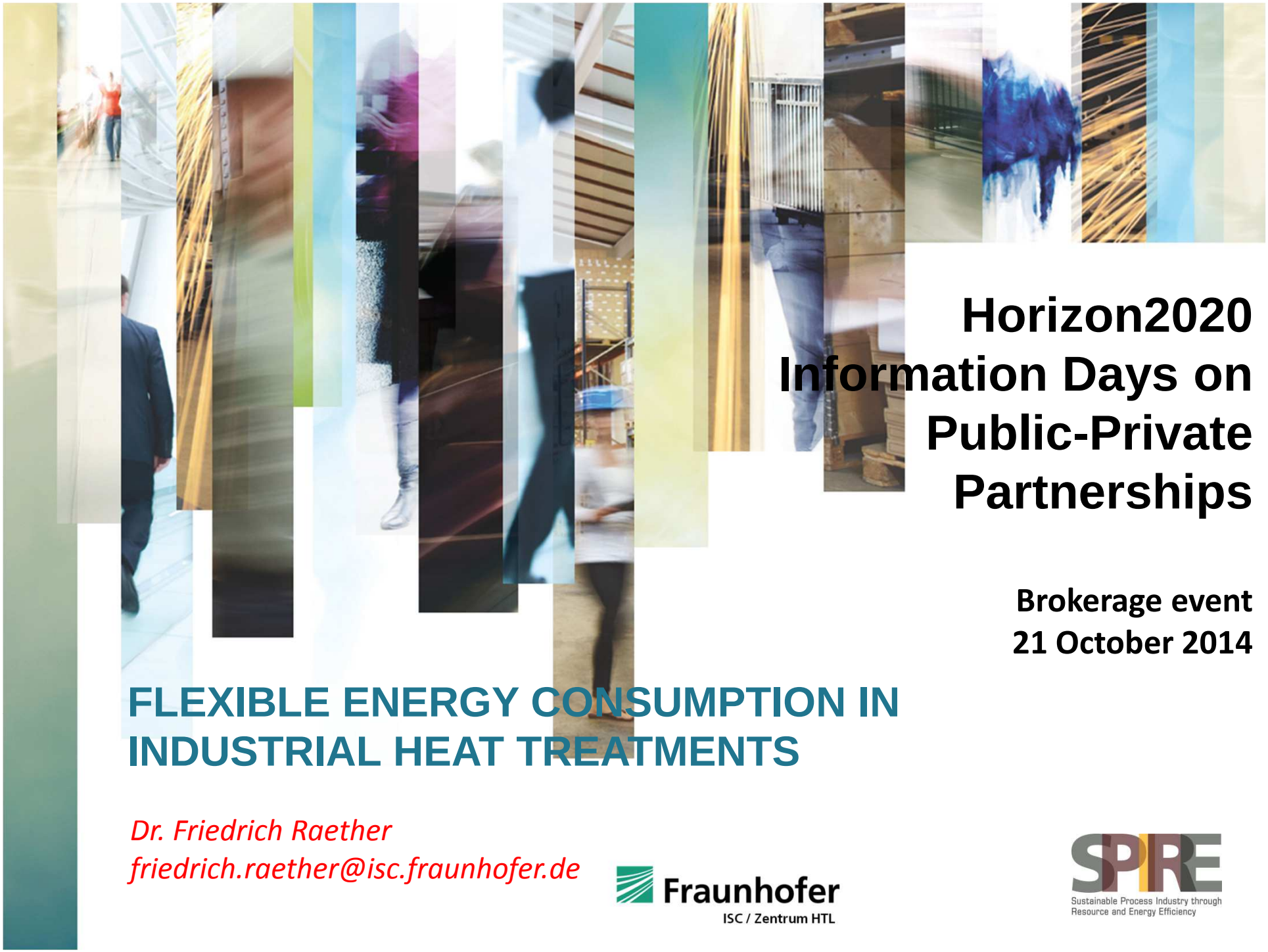

Horizon2020 Information Days on Public-Private Partnerships

Brokerage event
21 October 2014

FLEXIBLE ENERGY CONSUMPTION IN INDUSTRIAL HEAT TREATMENTS

Dr. Friedrich Raether
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Fraunhofer
ISC / Zentrum HTL

SPIRE
Sustainable Process Industry through Resource and Energy Efficiency

Fraunhofer Center for High Temperature Materials and Design in Bayreuth, Germany

High Temperature Materials

- Fibers
- Coatings
- Matrices
- CMC

High Temperature Characterization

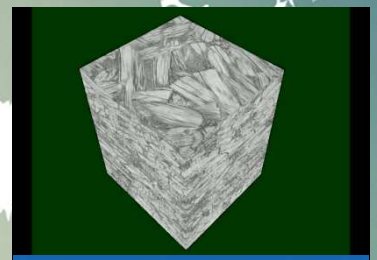
- Materials
- Processes

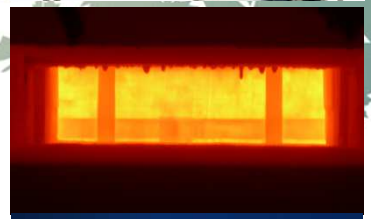
High Temperature Processes

- Simulation
- Opimization

High Temperature Components

- Energy-
- Propulsion-
- Heat Technology

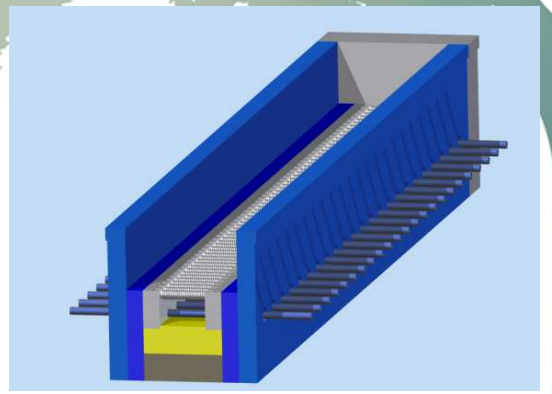




PROJECT IDEA

Objectives

- Design of flexible and efficient heating processes in industrial furnaces
- Development of thermo process equipment for flexible processes
- Simulating industrial processes:
  - In situ measurement in lab furnaces at controlled atmosphere
  - Computer simulation of heat flow and material response
- Energy and material flow management systems



PROJECT IDEA

Special competence of Fraunhofer HTL

- Highest resolution and reproducibility in situ monitoring of heating processes
- Accurate prediction of reaction kinetics

Spire key activity

- 2. Process
- 2.2 Energy storage and reuse
- 2.3 Process monitoring, control and optimization
- 2.4 More efficient systems and equipment
- 2.5 New energy and resource management concepts
- Call SPIRE-06-2015

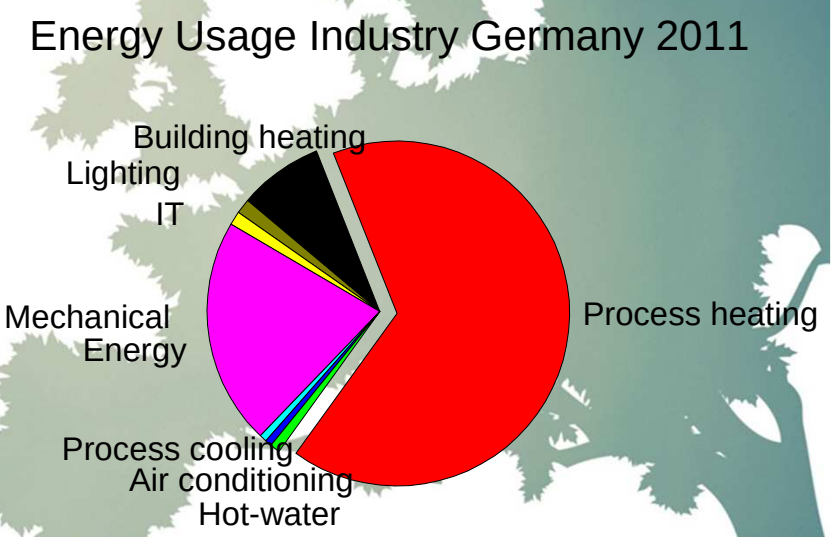
EXPECTED IMPACT

- **Industry: 66% of energy used for heating processes**
- **Heating processes are not flexible**
- **Fluctuations in energy supply cannot be considered**

→ **Significant decrease in energy consumption (30 %)**

→ **Significant increase in flexibility**

→ **Better control of product quality**



EXISTING PROJECT CONSORTIUM

SGL, Bonn, Germany, Coordinator

- Development of carbon based high temperature materials
- Optimization of heating processes for production of carbon products

Fraunhofer HTL, Bayreuth, Germany

- In situ monitoring of heating processes
- Computer simulation of furnaces and processes

CEC, Limoges France

- Measurement and simulation of heat flow
- Optimization of silicate ceramics

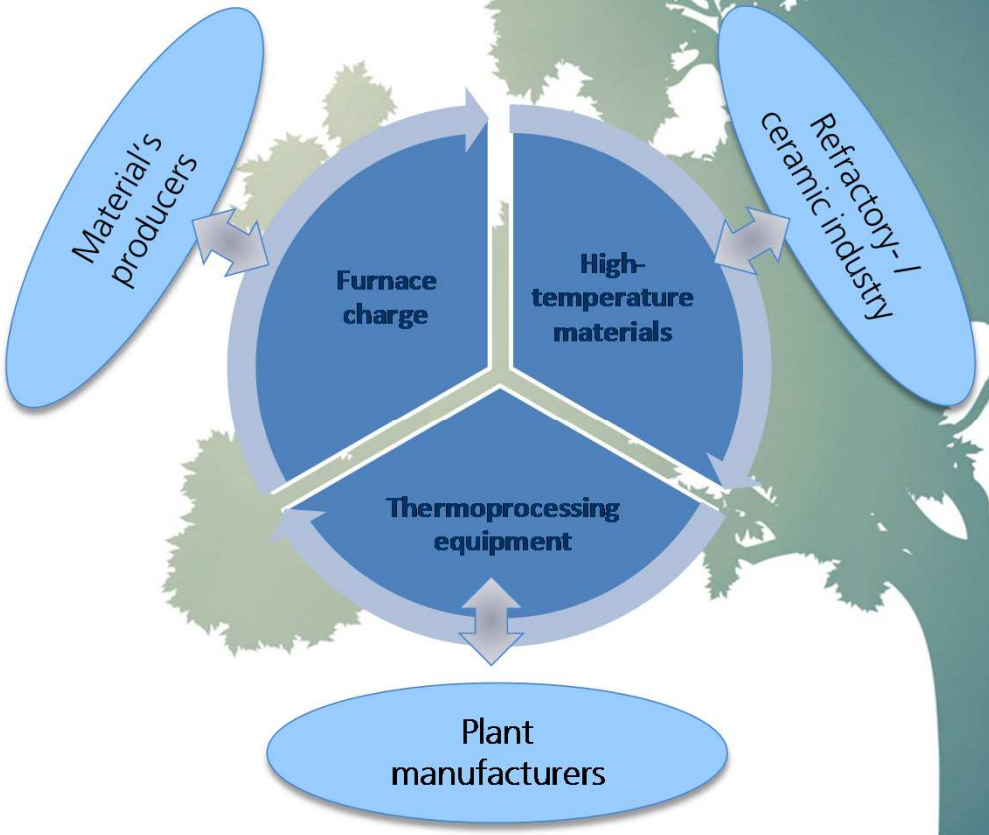
2 other French companies, Limoges region

- Development of heat storage devices
- Optimization of firing processes for silicate ceramics

LOOKING FOR PARTNERS

We look for additional partners:

- **European companies and institutes**
- **With complementary competence**
- **Outside Germany and France**



CONTACT DETAILS

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