



ACTE HEAT EXCHANGERS

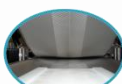


A passionate team with cutting-edge training and extensive experience in heat recovery

A business culture based on the development of a disruptive heat recuperator

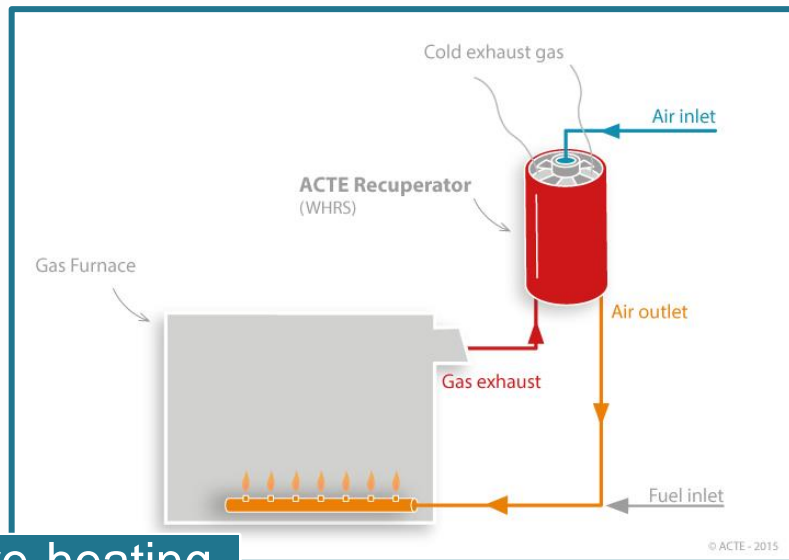


Industrialization oriented

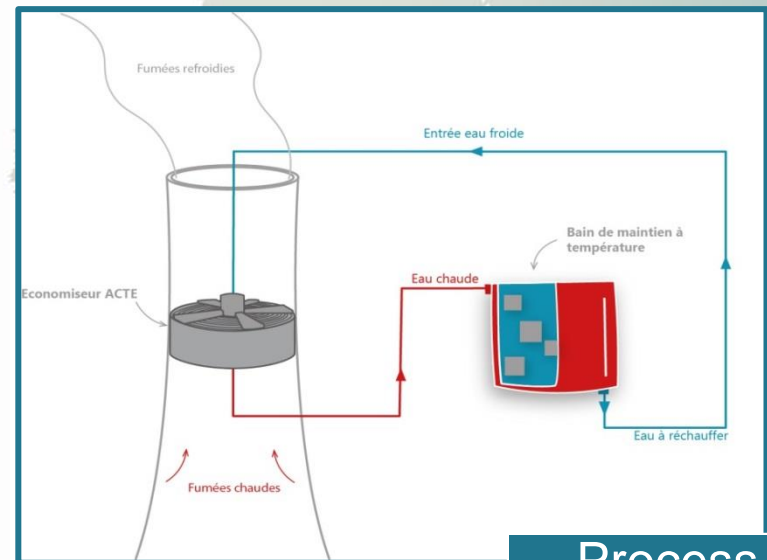


PROJECT IDEA

- Main concept :
 - Developing a **standardized plug&play** waste **heat recovery system** for **easy** retrofitting of **existing** energy consuming **industrial furnaces**
 - Key factors :
 - Focus on one key **European industry** with potential dissemination
 - **Cost optimization** through the whole system : heat exchanger, implementation/regulation/automation/piping/insulation, valorization
 - Adapted manufacturing techniques for standardization and **flexibility of the modular system**



Pre-heating



Process

PROJECT IDEA

- Topic :
 - **SPIRE 04-2016:**
Industrial furnace design addressing energy efficiency in new and existing furnaces
- Key components:
 - **FEED:**
 - KA 1.1: Enhancing the availability and quality of existing resources → gas burners...
 - **PROCESS:**
 - KA 2.2: Energy harvesting, storage and reuse → **High temperature heat recuperator**
 - KA 2.3: Process monitoring, control and optimization → **Hardware/software**
 - Key Action 2.4: More efficient systems and equipment → **Modular plug&play systems**
 - **APPLICATION:**
 - KA 3.1: New materials contributing to development of energy and resource efficient processes → **Especially for heat recuperator and storage through HTI and coatings**

EXPECTED IMPACT

According to the call topic

- Reduce the energy consumption by at least 15%
→ Recovery of more than 70% of waste heat (target 80%)
- Reduce the operating costs by at least 15% | Reduce Capex and Opex costs of the furnaces by at least 15%
→ Combustion fuels represent the most important cost of furnaces + low cost heat recovery/valorization system
- Reduce NO_x, SO_x and CO emission by at least 25%
→ Less combustion = less emissions
- Clear business cases for the deployment of the solutions in industry
→ Based on one concrete site and use of the expertise of the partners focusing on industrial processes optimisation

According to the SPIRE roadmap

- Recycle internal process wastes
→ Recovery of more than 70% of waste heat (target 80%)
- Re-design of products and/or business models for less use of materials and energy
→ About 20% less material used for the waste heat recovery system on existing furnaces than state of the art technology

EXPECTED IMPACT

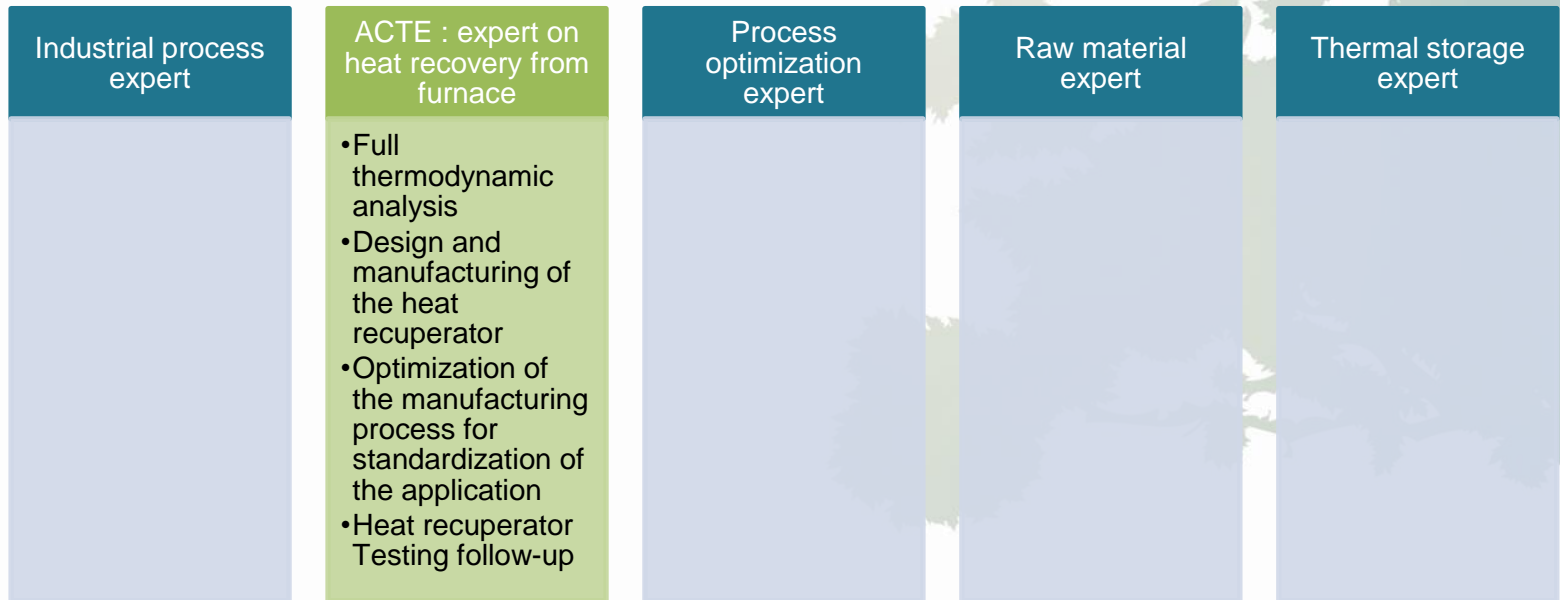
Cross-sectorial characteristics

- Designed for existing furnaces retrofitting
→ based on an accessible knowledge
- Plug and play solution for high temperature furnaces
→ glass industry, steel industry, ...
- Flexible system manufacturing process
→ material, size, corrosion and clogging resistance, fouling ...

Cross cutting activities

- Focus on several energies → gas, electricity and hybrid heating
- Overall cycle → interaction upstream and downstream the furnace, with heat transfer and valorization
- Improved equipment efficiency → new material allowing the system to deal with corrosion, fouling, clogging...
- Prediction tools and software → modular system management
- Monitoring and control of NO_x, SO_x and CO → safety and interfacing

EXISTING PROJECT CONSORTIUM



LOOKING FOR PARTNERS

Industrial process expert

- **Coordinator ?**
- Site for testing
- Perfect knowledge of **High temperature furnace constrains**
- Management of **interactions between furnace and other on-site needs**
- Expression of **needs** and sector specificities

ACTE : expert on heat recovery from furnace

- Full thermodynamic analysis
- Design and manufacturing of the heat recuperator
- Optimization of the manufacturing process for standardization of the application
- Heat recuperator Testing follow-up

Process optimization expert

- **Coordinator ?**
- Global view on industrial needs
- **Automated monitoring, control and prediction software/hardware**
- Regulation and safety
- **Hydraulic piping and on site implementation**

Raw material expert

- For heat recuperator and sub systems (inc. Storage)
- Innovative alloys
- **High temperatures**
- **Creep** ressitance
- **Corrosion** resistance
- **Fouling** slow down

Thermal storage expert

- Expertize on **innovative techniques and materials** for thermal energy storage
- **Sizing** of thermal solution for industrial needs
- Design and **manufacture** of storage system

CONTACT DETAILS

- Business development
- Partnerships building

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- Technical specification
- Engineering
- Innovation

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- When needed

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