SHIP2FAIR

Solar Heat for Industrial Processes towards Food and Agro Industries commitment in Renewables

Solar Heat for Industrial Processes

Webinar 2, 20/05/2021

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 792276.

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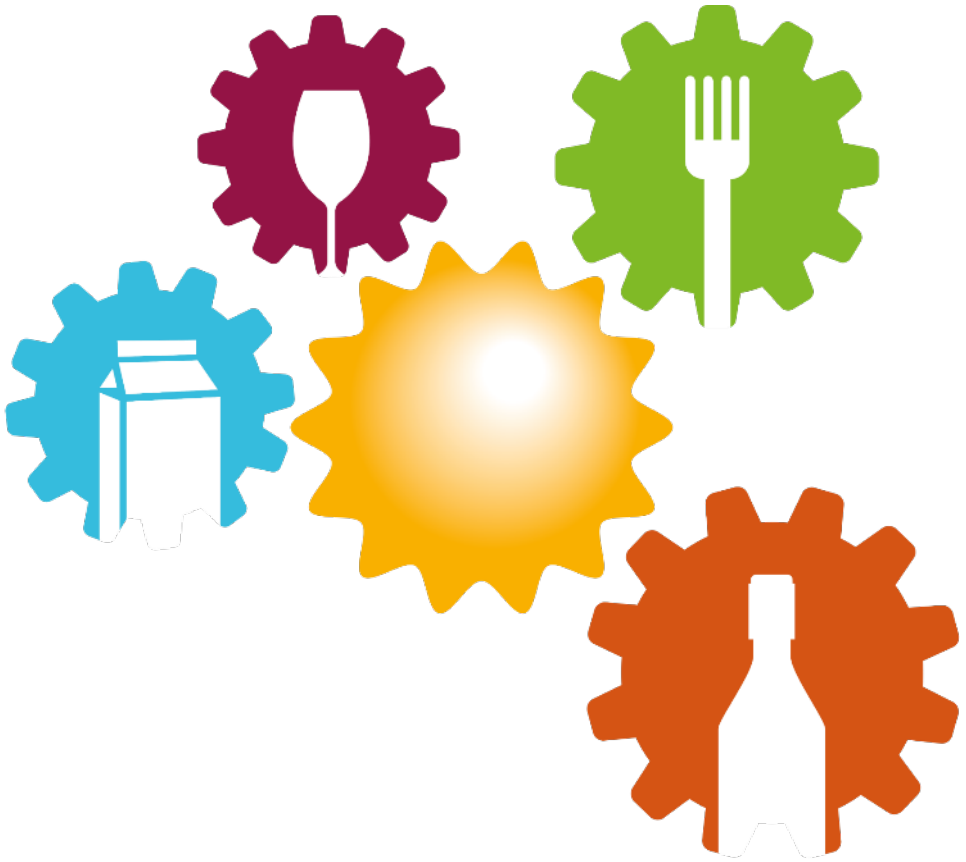
Concept



Fostering the integration of solar heat in industrial processes - SHIP from agro-food sector, by developing and demonstrating a set of tools and methods for the development of industrial solar heat projects during its whole life-cycle.

BUDGET: 7.996.793,25 €
DURATION: 2018-2022

SHIP2FAIR Project

Challenges

Economic competitiveness

Integration of SHIP in existing industrial processes

Solutions

- Development of easily replicable solutions to increase energy efficiency and lower process heat temperature.
- Development of suitable control strategies taking into account inertia effects, delays, influence of radiation fluctuations and susceptibility to oscillations.
- Tools validation by continuous feedback from real-operating systems.
- Development of training from a practical methodology, making large use of use-cases, letting users utilize the software directly within their local environment, thus achieving a tailored solution to users' local challenges.

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Partners

Coordination

Solar technologies providers

R&D and consulting

Agro-food field experts

Dissemination & Training

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Expected results

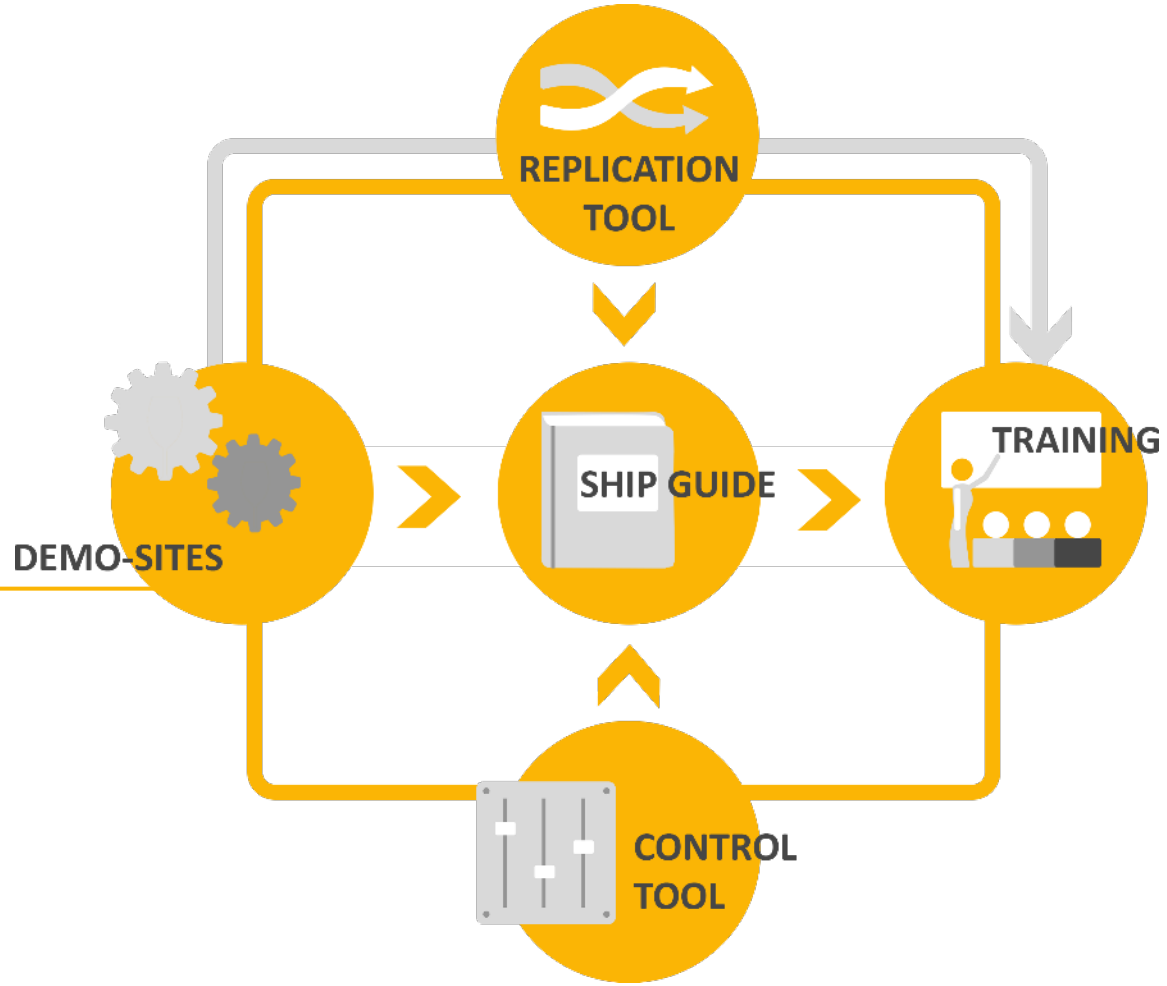
SHIP2FAIR will develop & demonstrate, in a minimum of 4 real industrial sites - demo-sites, a set of tools & methods for the development of industrial solar heat projects during their whole life-cycle.

Sugar boiling
Porto, Portugal

Foie-gras production
Castelnaudary, France

Spirits distillitation
Pessione, Italy

Wine fermentation & stabilization
La Rioja, Spain



The demo-sites & the flagship projects

A minimum of 4 SHIP systems fully validated in real processes: new demo-sites joining in 2020

Novel solar collectors demonstrated in average irradiance areas through a 18-month demonstration campaign

- Total capacity: 2.9 MWth
- Solar fraction:
  11.2% (RAR)-39% (RODA)
- Yearly average solar efficiency:
  37% (M&R)-54% (RODA)

- Primary energy savings:
  - 4 GWh/year
  - 1145 tCO_2/year avoided
  - 5.4 GWh/year increase of RES in industrial heating

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Replication Tool

The Replication Tool is a software able to evaluate the techno-economic potential of SHIP solution, starting from local solar potential and current process heat demand.

This tool is able to provide a first outlook on the SHIP integration within the process and to optimise the system according to the user's needs.

It provides:

- Evaluation of solar field parameters (sizing, technology, thermal storage requirements, etc.)
- Expected energetic and environmental results (solar fraction, energy savings, avoided emissions, etc.)
- Preliminary economic figures.

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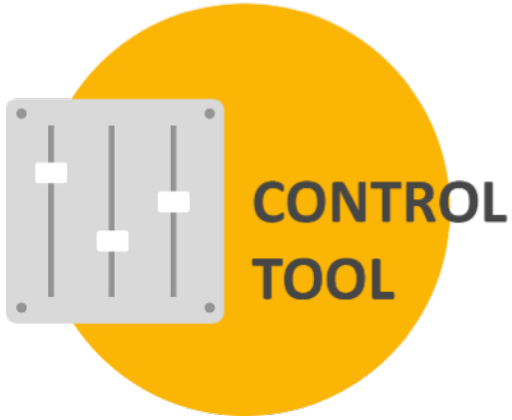
Tools & Methods



A Decision Support System to optimize the operation of SHIP projects combining supply and demand data specially designed for SHIP

Objectives

- To define the ICT infraestructure required to make an optimal solar heat process integration control
- To identify the most convenient control strategies allowing to make the most of the solar production for a particular process use case
- To develop a Model predictive control to optimise the management of solar production integrated with TES in collaboration with already installed process heating and CHP generators

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Thank you!

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