

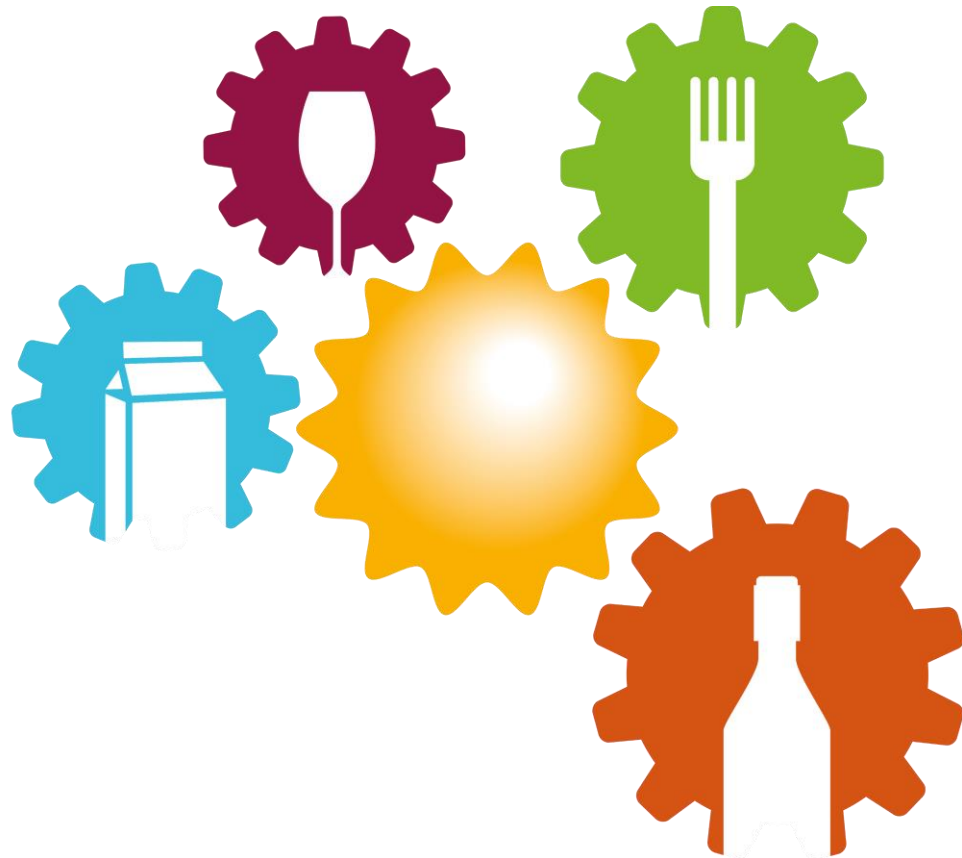


Solar Heat for Industrial Processes
towards Food and Agro Industries
commitment in Renewables

General Presentation



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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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

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**.

SHIP2FAIR

Partners

Coordination



Solar technologies providers



R&D and consulting



Agro-food field experts



Dissemination & Training

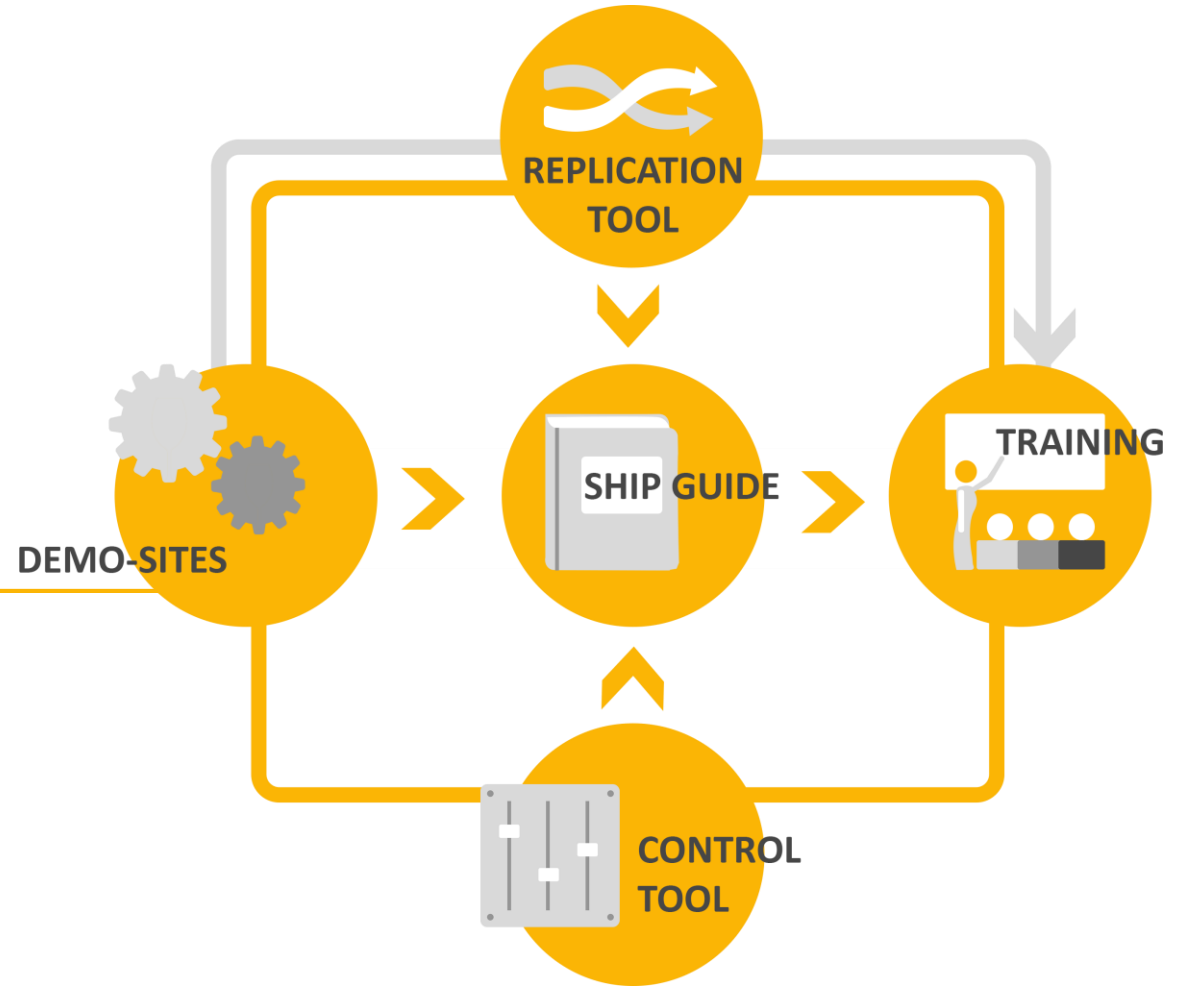


SHIP2FAIR will develop & demonstrate, in a minimum of 4 real industrial sites - **demo-sites**, a set of **tools & methods** for the development of industrial solar heat projects during their whole life-cycle.

SHIP2FAIR

Expected results

- Sugar boiling**
Porto, Portugal
RAR DOCE & PORTUGUESA
- Foie-gras production**
Castelnaudary, France
LARNAUDIE
- Spirits distillation**
Pessione, Italy
MARTINI
- Wine fermentation & stabilization**
La Rioja, Spain
BODEGAS RODA

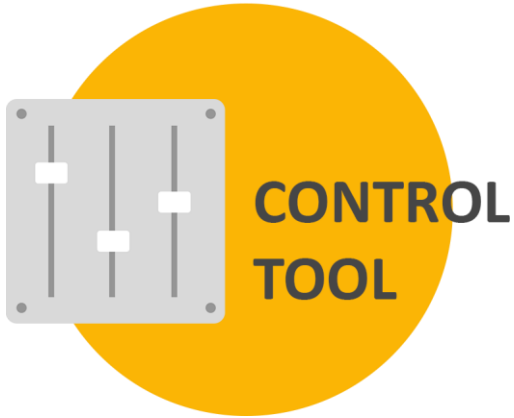




A software that will be developed, validated & fine-tuned at the demo-sites to support the concept design of SHIP projects & the development of techno-economic feasibility studies.

Objectives

- To define algorithms required to map local solar potential for industrial purposes
- To model the demand profiles of the industrial processes identified in the most representative use cases
- To define the necessary algorithms to evaluate the feasibility of a particular solar heat integration solution in a given industrial process
- To define a methodology to carry out the concept engineering and feasibility analysis of a solar heat integration in a particular industrial process



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 infrastructure 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

The demo-sites & the flagship projects

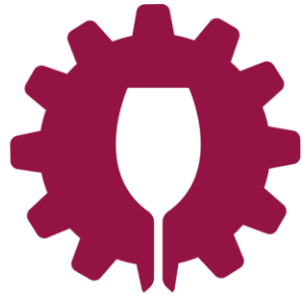
A minimum of 4 SHIP systems fully validated in real processes: new demo-sites joining in 2020

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 tCO₂/year avoided
 - 5.4 GWh/year increase of RES in industrial heating

First demo-site installed



Wine fermentation & stabilization
La Rioja, Spain



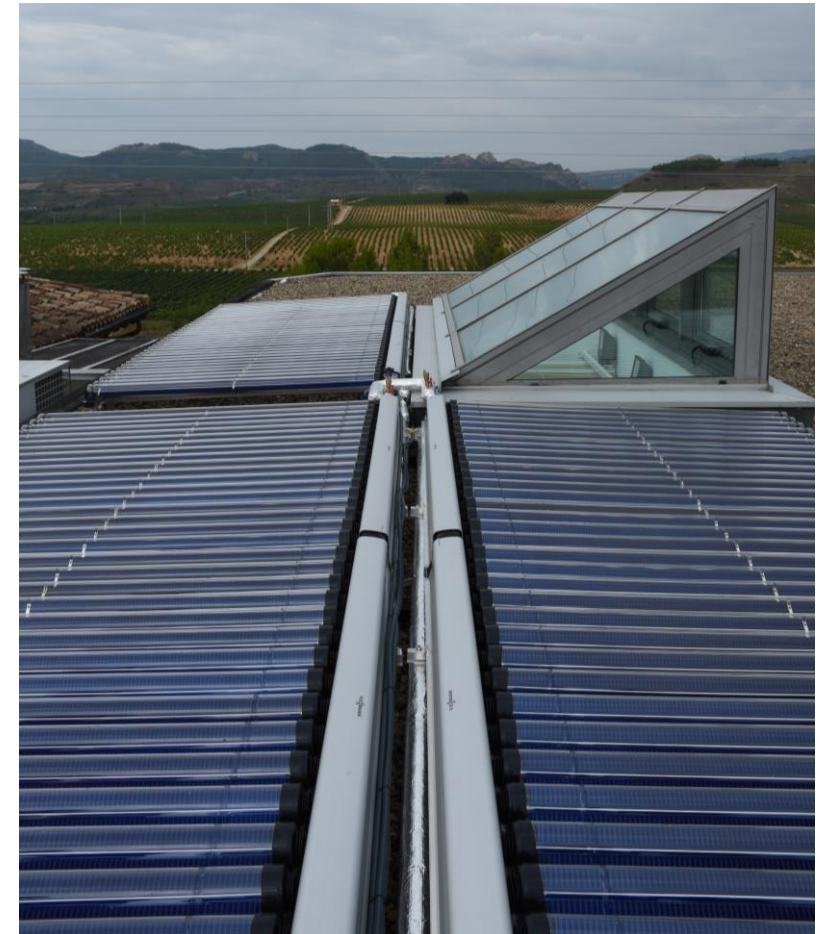
Solar thermal to provide heating & cooling Viessman Vitosol 200TM 70m² area + Absorption machine

Heating

- Radiant floor heating for malolactic fermentation
- Heat for adsorption process
- Pipe cleaning & disinfecting
- High-pressure cleaning

Cooling

- Fermentation process
- Ageing



The Capacity Building Program



- 500 professionals
- 400 undergraduates
- 100 Master students



Will be trained via master classes and visits to the demo-sites with the double benefit of a more prepared workforce & a good number of potential users



Will contribute to create

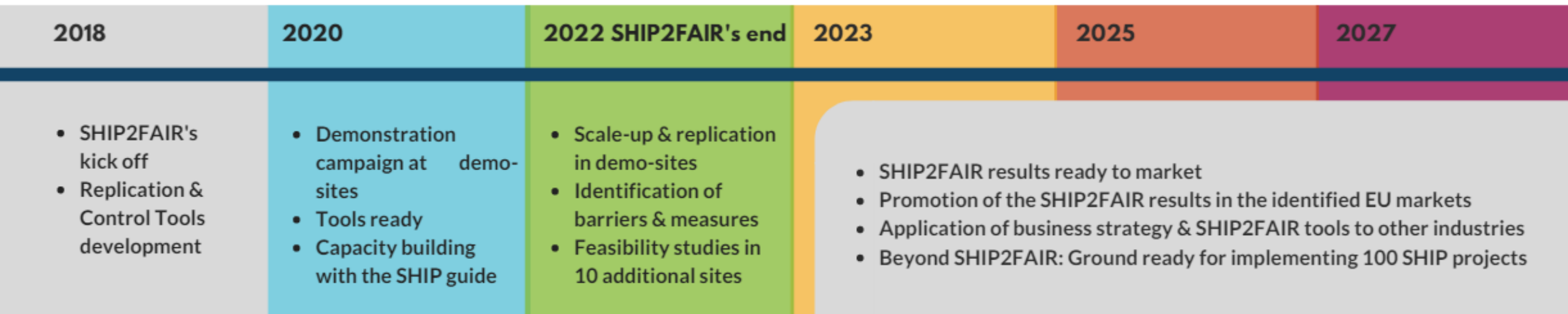
Feasibility studies in 10 additional sites **by the end of the project**



Will help to set the ground for

- 75 EU agro-food industries
- 25 plants from other industrial sectors **after SHIP2FAIR**

From 2018 to 2022 and beyond





Thank you!

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