



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

Solar Heat for Industrial Processes

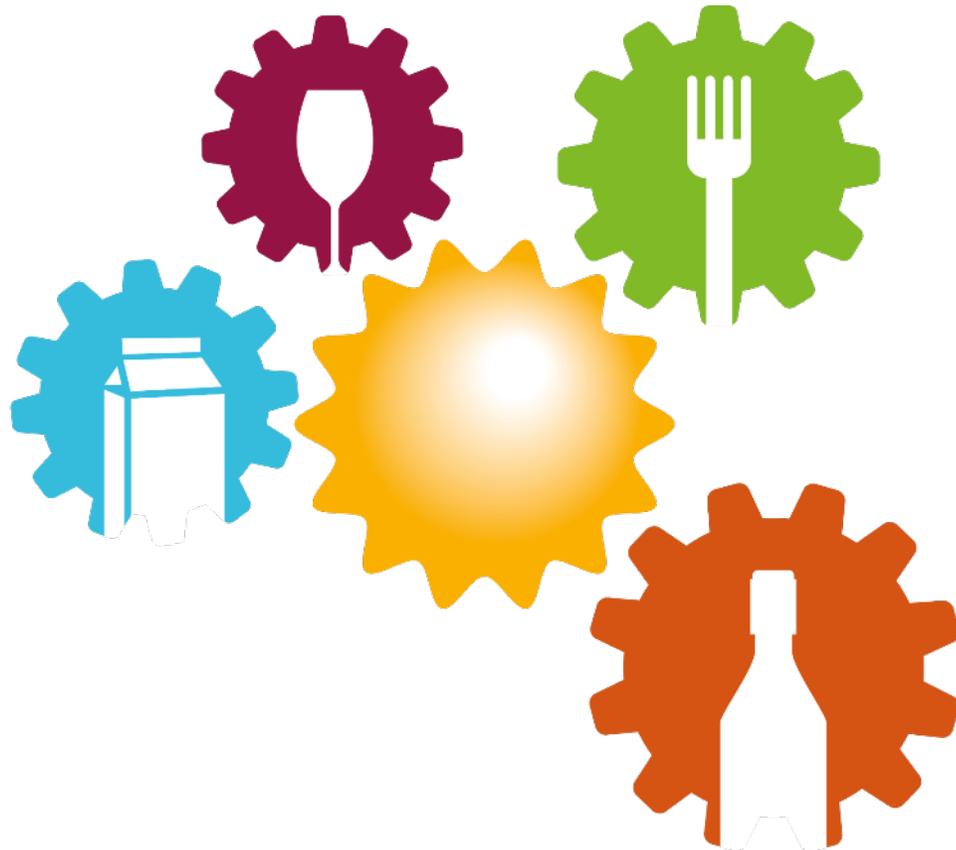
Webinar 1, 06/05/2021

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SHIP2FAIR 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

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

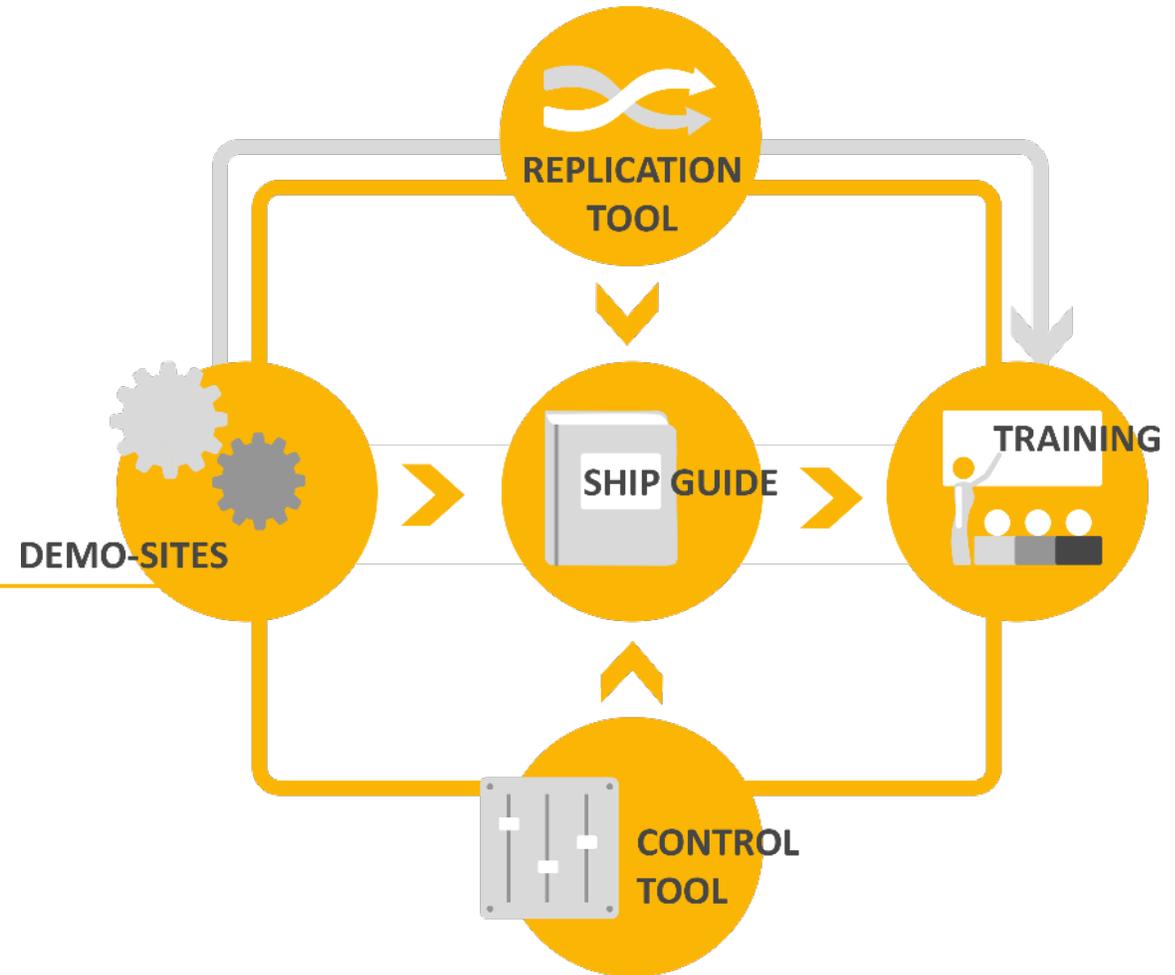


SHIP2FAIR will develop & demonstrate, in a minimum of 4 real industrial sites - **demo-sites**, a set of **tools & methods** for the development of industrial solar heat projects during their whole life-cycle.

SHIP2FAIR

Expected results

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



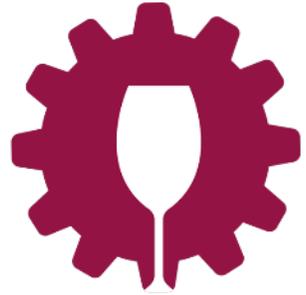
The demo-sites & the flagship projects



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



**Wine fermentation & stabilization
La Rioja, Spain**



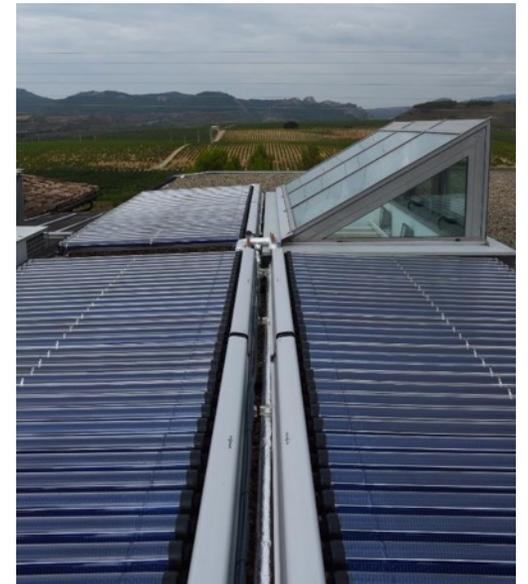
Technology: Evacuated Tubes

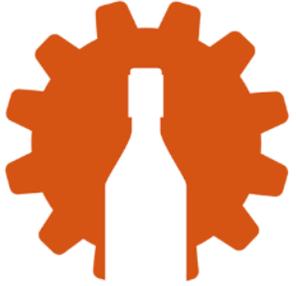
- Hot Water T=70°C
- 400 MWh/an - 100 m²
- Absorption Chiller: 35kW
- Cold Storage: 4m³
- Hot Storage: 4m³



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First demo-site installed





Spirits distillation
Pessione, Italy

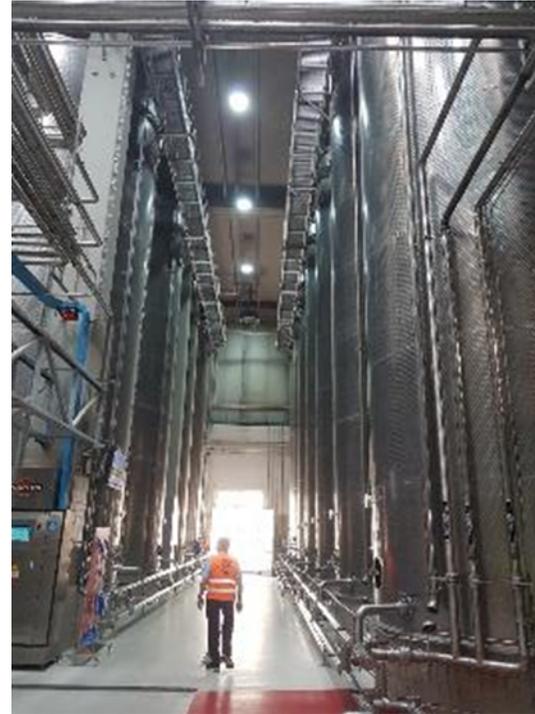


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Second demo-site installed

Technology: High Vacuum Flat Panel

- 600 m² gross area - 350 kWth peak power
- Dual use of solar heat
 - Summer -> Steam at 3.7 bar – 150°C
 - Winter -> Space heating at 70°C
- Maximization of solar output -> 0.6MWh/m²/y



TVP  SOLAR



Sugar boiling
Porto, Portugal

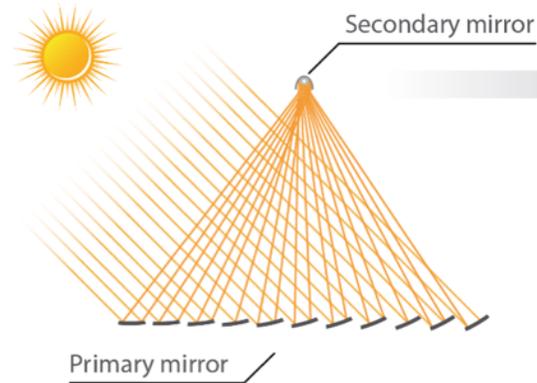


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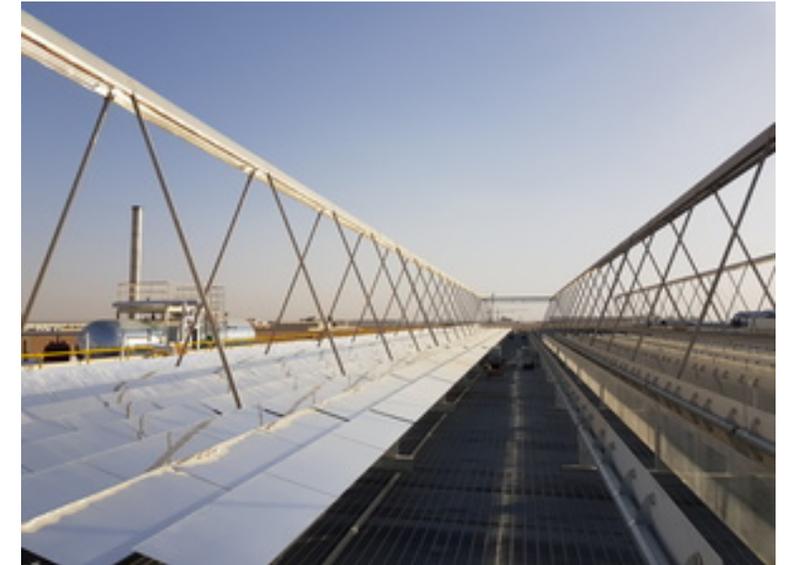
Third demo-site under construction

Technology: Solar Fresnel Concentrators

- Direct Steam generation
- Solar field size: 30 modules – 660 m² aperture
- $T_{\text{process}} = 130^{\circ}\text{C}$
- Production: steam @10 bar
- Storage: 9 m³



INDUSTRIAL SOLAR
thermal solutions





Foie-gras production
Castelnaudary, France



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Fourth demo-site under construction

Technology: High Vacuum Flat Panel

- Solar Field size: 1600 m² – 1 MW
- Cascade application:
 - Boiler feed water pre-heating @140°C
 - Water tank heating @65C



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Thank you!

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