The FriendSHIP Project

Forthcoming Research and Industry for European and National Development of SHIP

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Context & Objectives

FRIENDSHIP
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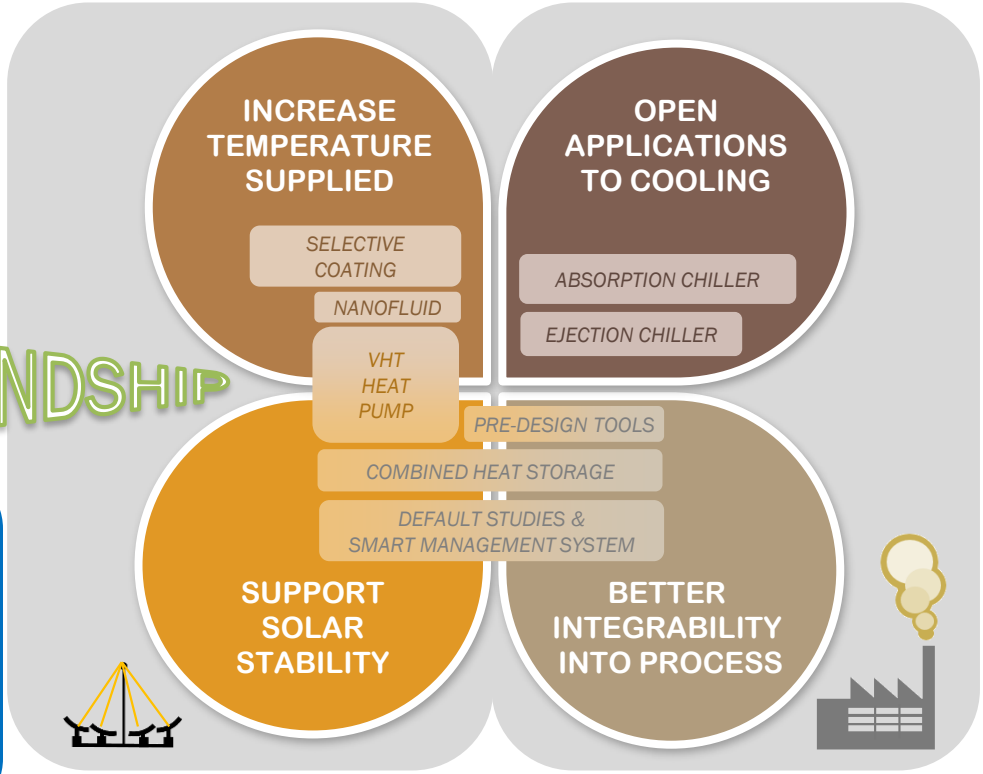
Solar heat is already used for Agro-Food industrial processes, mainly under 120°C (Low Temp range).

The **FRIENDSHIP** project aims to demonstrate that solar heat can also be a **reliable, user-friendly, high quality** and **cost-effective** resource to meet the heat requirements for other industrial sectors as **Textile, Plastics, Wood, Metal** and **Chemistry** (Mid Temp range).



cea
SINTEF
National Institute of Chemistry
ines NATIONAL INSTITUTE OF SOLAR ENERGY

ABSOLICON SOLAR COLLECTORS
INDUSTRIAL SOLAR renewables onsite
RINA
AMIRES
SONNAEMC
CLARIANT

The **FRIENDSHIP** project will attempt **to break down some of the major barriers to SHIP implementation** by developing **more cost-effective and reliable SHIP solutions** (all-in-one, scalable, flexible and user-friendly systems) and by **increasing awareness** through active **communication** to the research community and potential customers.

Project facts:
Start date: 01/05/2020
Duration in months: 48
EU funding: € 4.99 M
RIA GA no.: 884213
H2020-LC-SC3-RES7-2019
H2020-LC-SC3-2019-NZE-RES-CC
Solar Energy in Industrial Processes

FriendSHIP Concepts

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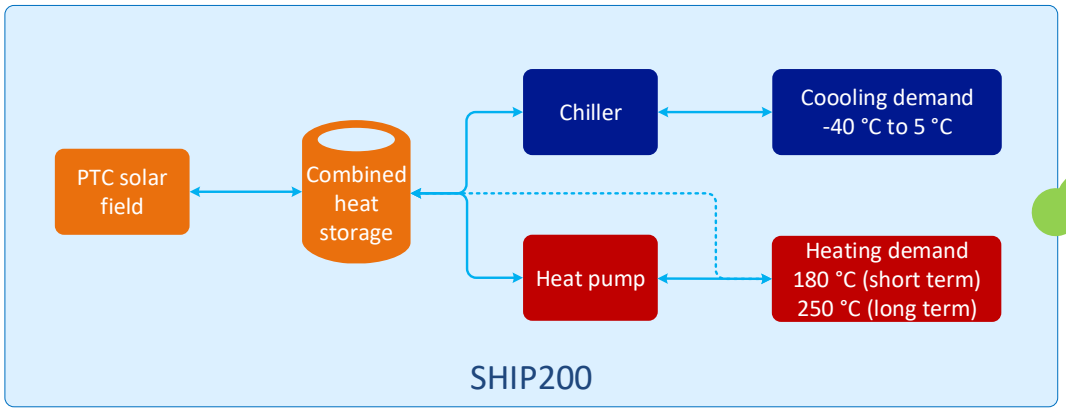
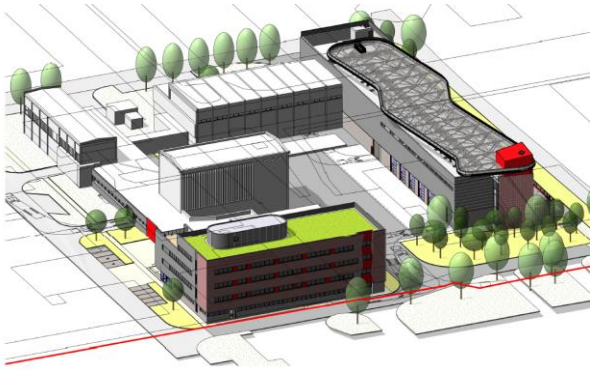
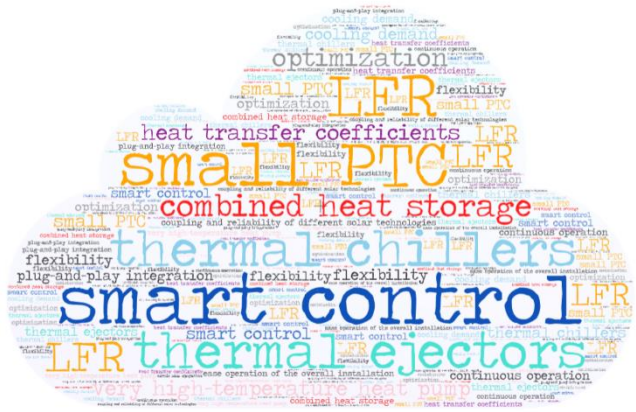
The proposed systems **SHIP200** and **SHIP300** will be able to supply together **heat** at temperature up to **300°C** and **negative cold** at temperature down to **-40°C**.





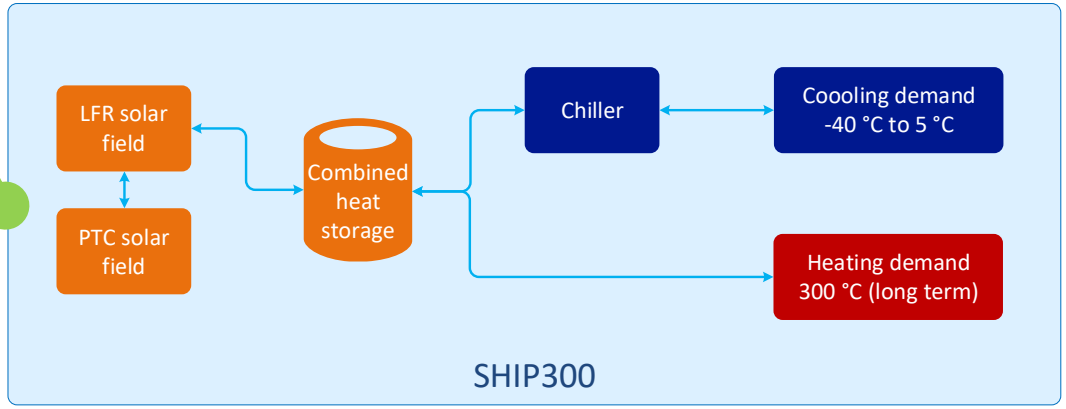
Validation of SHIP200 in relevant conditions

Demo site Grenoble (FR), Annual DNI 1,400 kWh/m²



Numerical validation of SHIP300 in relevant conditions

End-users sites (DE, PT, SP)



Expected Improvements & Impact

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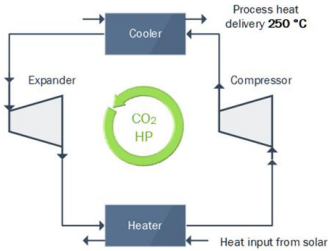
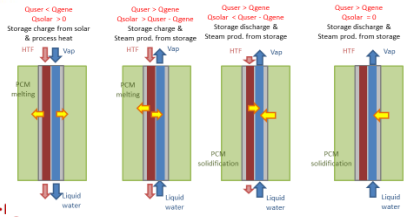
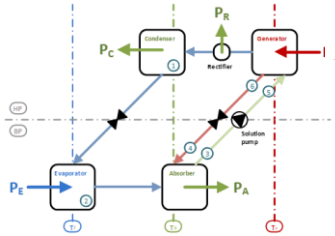
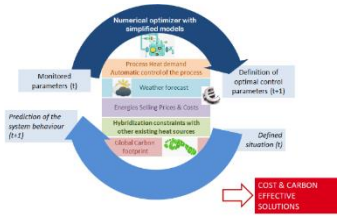
FRIENDSHIP aim at superior performance by **incorporating several new improvements and functions to the standards SHIP solution**:

- **Low-cost solar collectors** combined with **selective coatings** (improve absorbance) and **nanoparticles** (improve heat transfer)
- An advanced **very high temperature heat pump** that enables continuous and stable heat supply at target temperatures **between 180 and 250°C**
- A **high-density combined thermal storage** that allows the storage of heat from the solar heat loop as well from the process process loop
- A cooler that enables **cold production** for industry from the residual high-temperature heat, either by using an **absorption** or **ejector** chiller
- An **advanced control management** will allow the enhancement of the quality and availability of heat, to match the process demands and rationalise the use of the existing energy sources









SHIP200 and **SHIP300** aims to **decrease by 30% the CO2 and air pollutants emissions** of the industrial site (Textile, Plastics, Wood, Metal and Chemistry) where the system will be installed.

FRIEND SHIP
Forthcoming Research and Industry for

SUSTAINABLE PLACES 2020
October 27-30, 2020
Digital Event

Thank you for your attention

Stay tuned with the FriendSHIP Project: www.friendship-project.eu

Take another opportunity to visit Aix-les-Bains!

ACKNOWLEDGMENTS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 884213, project FRIENDSHIP

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