

# 29<sup>th</sup> May 2017

University of Malta (Valletta Campus)

## Towards a Zero Carbon Economy Beyond 2030

### Sustainable Urban Centres

Marie Prouteau – H2020 SOLPART Project





# The SOLPART project

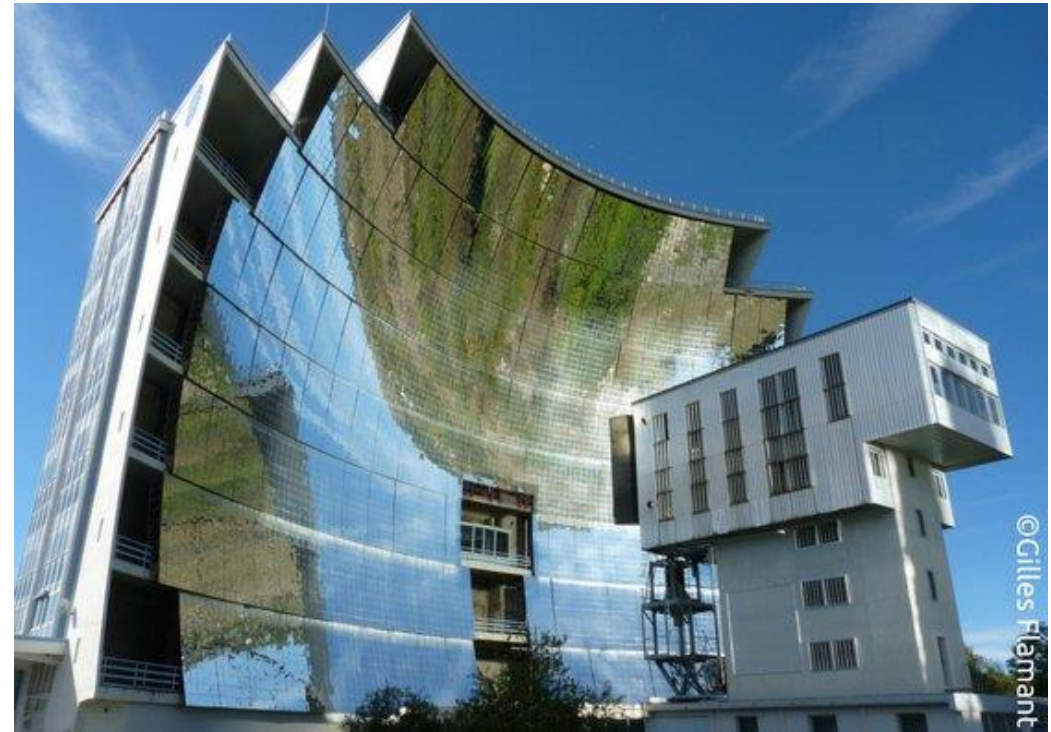
## Harnessing the sun to clean up industrial processes

### What is the problem to solve?

**Energy intensive industries** (i.e. the cement sector) need the major part of their energy input as thermal heat (for high-temperature chemical reactions) and are (behind the power industry) the biggest **energy consumers and CO2 emitters**.

### What could be the solution?

To develop a technology that can use **solar power for high-temperature industrial processes** instead of using fossil fuels to produce the thermal heat needed by these energy intensive industries.



Test location of the SOLPART demonstrator – CNRS-PROMES concentrated solar infrastructure (Odeillo, France)



# The SOLPART project

## Harnessing the sun to clean up industrial processes

### Facts and figures about SOLPART : High Temperature Solar-Heated Reactors for Industrial Production of Reactive Particulates

- Horizon 2020 funded EU project
- Coordinator: Gilles Flamant - France - CNRS 
- 10 Partners from France, Switzerland, Germany, Spain, UK, Belgium, Morocco
- Total costs: € 4 558 687 (EU contribution: € 4 366 562)
- Duration 4 years: January 2016 - December 2019
- Website: <http://www.solpart-project.eu/solpart-project-factsheet/>
- LinkedIn: <https://www.linkedin.com/groups/8596449>



Visit of the SOLPART partners to the OCP phosphate plant in Morocco





# The SOLPART project

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### Project objectives

- To supply totally or partially by solar heat the **thermal energy requirement** for  $\text{CaCO}_3$  calcination, which is 60% of the total required energy in a cement plant and 100% of it in a lime plant.

### Project Results

- To demonstrate a **pilot scale concentrated solar reactor** (about 30 kWth) operating 24h/day at about  $900^\circ\text{C}$  and suitable for reactive particle thermal treatment – high-temperature processes used in the cement or lime industries for example.



DLR lab-scale rotary solar reactor to be tested for the SOLPART project



# The SOLPART project

## Harnessing the sun to clean up industrial processes

### Project main expected impacts

- **New applications**/fields for solar heat
- **Market transformation** - Huge potential for adaptation of the technology to other industry sectors

### What is the concentrated solar energy technology to be used in the SOLPART project?

- **Concentrated Solar Power (CSP)** plants use mirrors to concentrate sunlight onto receivers where it is converted into heat. Generally, a heat transfer fluid transports the thermal energy to a storage system and then to a power block where it is used to generate electricity.

- **A strong reduction in the environmental footprint**
- By integrating solar energy into industrial high-temperature processes, to reduce by 40% CO<sub>2</sub> emissions in the lime and cement industry and by 100% if the CO<sub>2</sub> capture and sequestration are applied.



CNRS-PROMES solar tower (Targassonne, France)

# THANK YOU!

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