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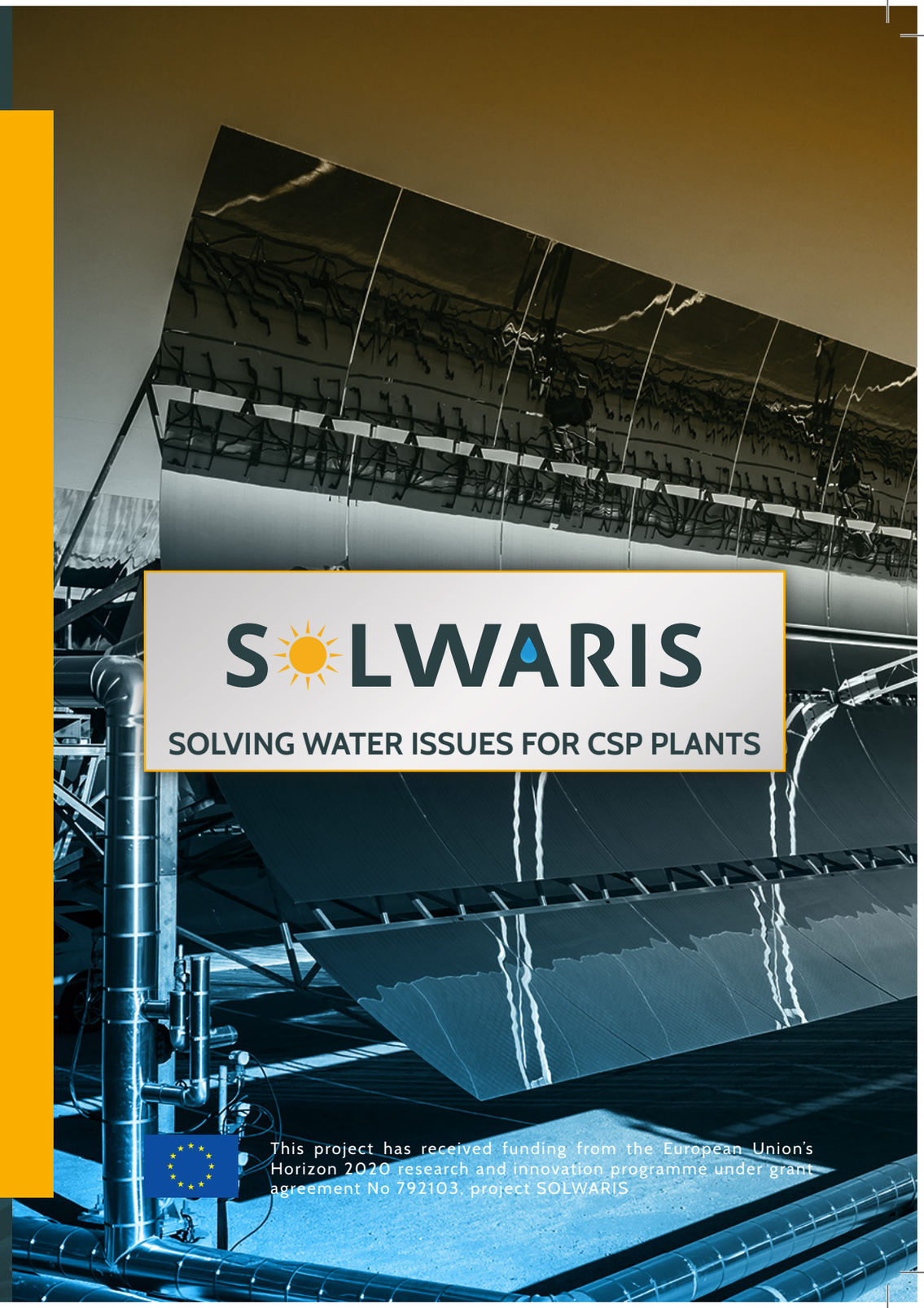


SOLWARIS

SOLVING WATER ISSUES FOR CSP PLANTS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 792103, project SOLWARIS

Solving Water Issues for CSP plants

PROJECT AMBITION:

The overall purpose of the SOLWARIS project is to upscale, implement and demonstrate cost-effective technologies and strategies that bring about a significant reduction of water of CSP plants while ensuring excellent performance of electrical power production. The SOLWARIS approach proposed will tackle all segments of water consumption in a CSP plant by:

- 90 % for reduction of cleaning operations
- 15 to 28 % for cooling of turbine condenser
- 90 % for recovery and recycling of water.

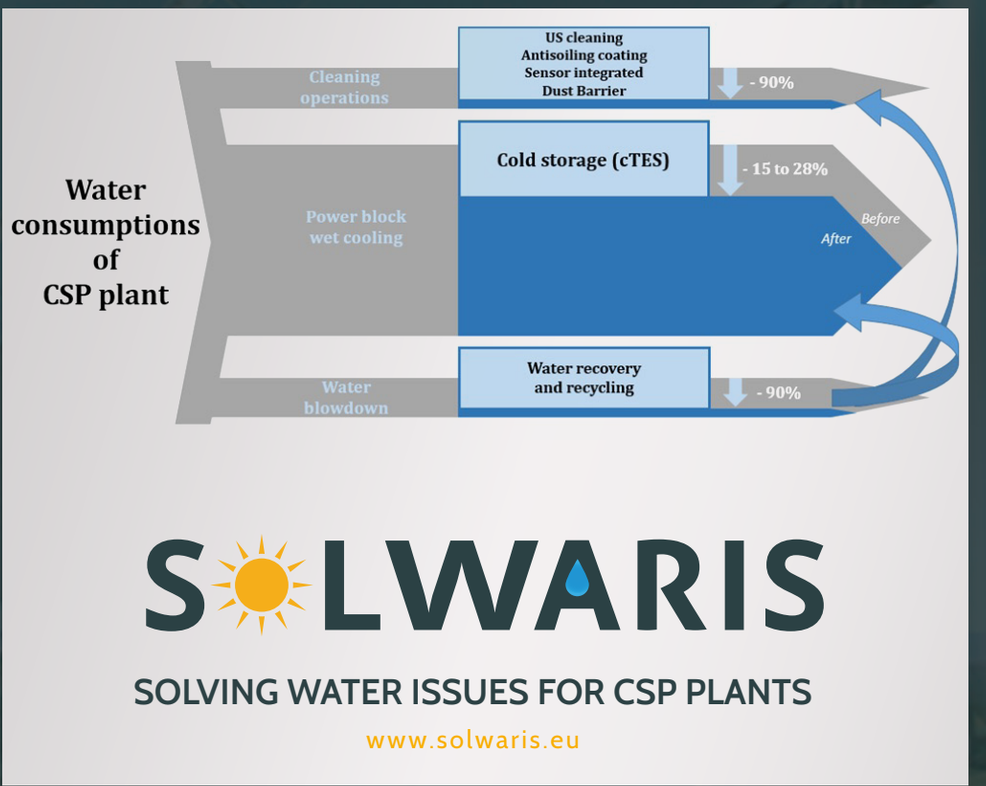
The continuous online determination of optimal plant operation, including water consumption criteria, will contribute towards achieving water consumption reduction and subsequently the LCOE (Levelized Cost of Electricity) reduction. To facilitate the social acceptance of CSP plants and of the technical solutions proposed by SOLWARIS, socio-economic, environmental studies and humanitarian issues and their impact on CSP plants will also be assessed using comprehensive and detailed case studies in representative locations for CSP plant deployment. This overall approach of the project will maximize the opportunities for the emergence of our innovative technologies and near-to-market solutions for CSP plants.

PROJECT OBJECTIVES:

- SOLWARIS targets a reduction of water consumption of cleaning operations by 90%, i.e. savings nearly 0.25 m^3/MWhe depending on the soiling rate and the location of the solar field.
- To keep a low temperature at the turbine condenser, i.e. a high efficiency while reducing the water consumption, SOLWARIS will demonstrate the efficiency of a cold storage reservoir, regenerated by the lower temperatures that occur at night.
- SOLWARIS will demonstrate the efficiency of using a Multiple Effect Evaporation (MEE) system to recycle and re-use 90% of these waste water streams (0.5 m^3/MWhe) using thermal energy otherwise dumped by defocusing parts of the solar field, achieving a water consumption reduced to 0.05 m^3/MWhe.
- The probabilistic treatment of forecasts for the following days is essential for optimisation of CSP plant operations. SOLWARIS will demonstrate the efficiency of the optimized global control of the plant thanks to a dedicated application.
- Social, economic and environmental impacts on local communities close to CSP plants are a point of concern.
- All technologies will be installed, demonstrated and validated under real conditions at "La Africana" and "SEDC" CSP plants.

PROJECT WORKPLAN

The SOLWARIS project workplan consists of several phases. First phase of the project will be focused on development of individual technologies – Operations & Maintenance Optimizer; cleaning means and methods related to solar field components, cooling technologies and water recovery system. Common objective for all technologies is to upscale previously developed solutions and prepare them for the installation in the testing site. All proposed technologies will be deployed and validated under the real conditions at testing sites. In addition to technology development, there are several activities running in parallel with the whole project covering socio-economic and environmental aspects of the CSP including also practice-oriented training activities as well as dissemination and exploitation of the project results.



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