

SOLARSCO2OL Project: The new era of CSP plants, more flexible, less expensive and with less water needs thanks to solar supercritical CO₂ plants.

Around 10 M€ financed by the EU Commission to unlock the potential of integrating sCO₂ in all kinds of CSP plants

On the 1st of October, the SOLARSCO2OL project officially started and the kick-off meeting was organised on the 7th October 2020 in Stockholm.

Boasting an industry-driven Project Consortium made up of 15 international partners, coordinated by RINA Consulting S.p.A. and located in 6 EU countries (Italy, Spain, Germany, Greece, Belgium, Sweden) and 1 extra-EU country (Morocco), the Project Consortium will strive to demonstrate an innovative, economically viable and easily replicable supercritical CO₂ power block.

Innovative SOLARSCO2OL plant layout, coupled with fast-reactive electric heaters and efficient heat exchangers (HEXs), will enable the operation and design of a novel integrated power plant layout. The SOLARSCO2OL project will achieve a first-of-a-kind, MW-scale sCO₂ cycle operating with molten salts in an existing Concentrated Solar Power (CSP) plant. It also aims at demonstrating the use of sCO₂ cycles as potential future key technology to un-tap the potential flexibility of CSP plants and reduce their Levelised Cost of Electricity (LCOE) to values below 10 c€/kWh in Europe, with the goal of promoting an innovative power plant cycle layout not requiring water.

SOLARSCO2OL Project opens a potential new era for CSP plants: according to the JRC CSP platform, indeed, with an increased efficiency of component and price reduction, it could be feasible that 11 % of the EU electricity will be produced by solar thermal electricity by 2050. In parallel, sCO₂ is globally attracting more and more industrial interest, but also the EU stakeholders have not had the opportunity to test MW scale turbomachinery in real operating plants yet in Europe.

For this reason, SOLARSCO2OL will gather all the technological and non-technological evidences to unlock the potential of integrating sCO₂ in all kinds of CSP plants towards higher efficiency and higher responsiveness to grid flexibility requests, demonstrating them on the field and planning next steps towards technical maturity and marketability within 2030, also studying sCO₂ application in other market segments (industrial application, waste heat, other thermal RES).

By 2024, SOLARSCO2OL technological solution will be deployed and demonstrated in a real CSP plant in Spain (La Africana) and studied for replication also in extra-EU countries for example in “Noor III solar tower plant” in Morocco, thanks to MASEN’s support.

It is relevant to highlight that most CSP Plants in Europe are similar to La Africana (parabolic trough plants with a 50 MW capacity), and Noor III is a larger version of the Gemasolar solar tower plant – EU’s FOAK MW-scale molten salt tower plant, thus unlocking a strong replication potential in EU and worldwide.

The innovative **SOLARSCO2OL layouts will enable lower LCOEs, which is in line with SET Plan targets of <10c€/kWh and it will guarantee shorter payback periods also by diversifying revenues for plant owners by maximizing the sale of ancillary services.**

Last but not least, SOLARSCO2OL will overcome non-technical barriers that prevent stakeholders from installing sCO₂ solutions paving the ground for **new investment by energy utilities through dedicated replication feasibility studies and business models.**

Follow us on [Twitter/LinkedIn](#) (@solarsco2ol) or [project website](#) (www.solarsco2ol.eu) to stay tuned about the development of this project!

Project FactSheet

Start Date: 01/10/2020

End Date: 30/09/2024

Overall budget: € 13 419 700,71

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