

OFFICIAL PRESS RELEASE SCO2OP-TES

EU Pioneers in Revolutionizing Energy Storage: Introducing SCO2OP-TES's Groundbreaking "Carnot Batteries"

In a bold move to revolutionize energy storage and transition towards renewable energy sources, the European Union has intensified its efforts through the innovative SCO2OP-TES project. This initiative is a pivotal part of the EU's strategy to reduce emissions in the energy and industrial sectors, further propelled by the recent REPowerEU Plan. The plan sets an ambitious goal of achieving 1236 GW of installed renewable energy source (RES) power capacity by 2030, a significant increase from the 1067 GW target set in the "Fit for 55" package. But this huge amount of RES need a proper energy storage solution, that can guarantee both grid stability and the possibility to exploit RES all over the day and the year

Addressing the Challenges of Energy Transition

The transition towards 100% RES by 2050 is indeed not without its challenges.. Current inverter-driven storage methods, like batteries and power-to-hydrogen systems, fall short in covering specific grid flexibility services that only rotating machines can provide. In this sense the estimated 780 TWh electricity storage needed for EU RES transition cannot be provided only by battery, thus the EU is on the lookout for novel energy storage solutions that are not only cost-effective but also provide extended storage durations and grid services.

SCO2OP-TES: A Step Towards Sustainable Energy Future

Enter SCO2OP-TES, a project that aims to develop and validate the next generation of Power-to-Heat-to-Power (P2H2P) energy storage solutions. This project is a collaborative effort of 16 partners from 10 European countries, combining their expertise in advanced energy systems and turbomachinery, with a particular focus on sCO₂ ones. The SCO2OP-TES project focuses on developing a new type of Carnot Battery that valorising freely available heat from thermal RES or waste heat from industries and fossil-based power plants, can guarantee high Round trip efficiency and make industrial/power plants . more grid-flexible.

Empowering Europe's Energy Transition

SCO2OP-TES is more than just an energy storage project. It represents a technological paradigm shift, integrating Thermally Integrated-Pumped Thermal Energy Storage (TI-PTES) with supercritical CO₂ (sCO₂) cycles. This approach promises affordable long-duration (>10hrs) and large-scale storage solutions, crucial for integrating bulky RES into the EU energy systems and transforming traditional power plants into flexible renewable energy plants.

Project Kick-off and Future Path

The project officially begins with a kick-off meeting on December 14th, demonstrating the consortium's commitment. Following this, a technical workshop on December 15th will delve into the specifics of the project's pilot site and key components of the energy storage system.

Consortium Partners

The SCO2OP-TES project brings together a diverse group of partners, each contributing unique expertise:

1. UNIVERSITA DEGLI STUDI DI GENOVA (UNIGE) and its affiliated entity SIT Technologies (SIT)
2. RINA CONSULTING S.p.A. (RINA-C)
3. KUNGLIGA TEKNISKA HOEGSKOLAN (KTH)
4. ENOGIA
5. POLITECNICO DI MILANO (POLIMI)

6. CNET CENTRE FOR NEW ENERGY TECHNOLOGIES SA (EDP NEW) and its affiliated entity EDP Producao (EDPP)
7. CENTRUM VYZKUMU REZ SRO (CVR)
8. HERON II THERMOILEKTRIKOS STATHMOSVOIOTIAS ANONYMI ETAIREIA (HERON)
9. RPOW CONSULTING SL (RPOW)
10. KYOTO GROUP AS (KYOTO)
11. FUNDACION CARTIF
12. ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS (CERTH)
13. ALFA LAVAL VICARB SAS (AL)
14. THE UNIVERSITY OF BIRMINGHAM (UOB)

Joining Forces for a Sustainable Future

The consortium partners, including leading universities, research centers, and industry experts, are united in their mission to develop sustainable, technically viable, and environmentally friendly energy storage solutions. Together, they are paving the way.

Genova, 4th December 2023



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