



Solar energy on demand using upcycled ceramic waste

The Project

FLUWS is a European Union-funded R&D project aimed at creating a more flexible, reliable, environmentally friendly, and cost-effective thermal energy storage system. The project focuses on supporting next-generation concentrating solar power plants that operate at higher temperatures and are hybridized with photovoltaic technology to enhance cost-efficiency.



12 partners



36 months



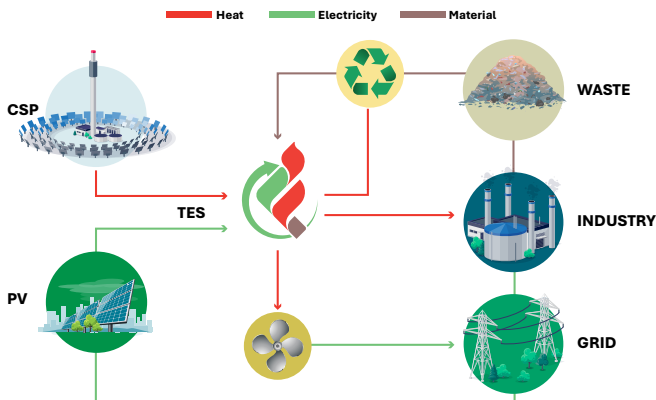
6 countries



€ 2.5 M

Our mission

FLUWS aims to tackle key technological challenges in high-temperature thermal energy storage. The project goals are to develop thermal energy storage materials by upcycling waste from the ceramic industry and to design and validate a sensible heat based thermal energy storage with embedded electric heater and using air as a heat transfer fluid. Bricks-shaped thermal energy storage materials are created using low-energy processes. This storage design aims to enhance performance, minimize environmental impact, alleviate structural challenges, and promote commercial adoption.



Expected results

- Promotion of more efficient, flexible, cost-effective and environmentally friendly CSP plants
- Validation at TRL5, via ≥ 400 h campaign, of more flexible, reliable, environmentally friendly and cost-effective TES systems futureproofed for next gen high temperature hybrid PV-CSP plants
- Development of materials, components and integrated solutions according to ‘circularity by design’ approach reducing CSP life-cycle environmental impact by more than 45% with respect to commercial plants.
- FLUWS assessment in EU and extra-EU in different CSP systems and industrial contexts
- Assessment of the regulatory framework and environmental performances to identify a roadmap to TRL 9

Impacts

- **Scientific:** boosting knowledge on high temperature sensible TES, mineral materials waste upcycling and next-gen hybrid CSP-PV
- **Economic/Technological:** Key technologies to boost the EU CSP industry, attract investments for FLUWS development, and apply components in energy-intensive sectors.
- **Environmental/Societal:** Lowering CSP’s environmental impact with eco-friendly materials, enhancing its role in reducing greenhouse gases and industrial waste through upcycling.
- **Stakeholders:** high acceptability of FLUWS innovations from a regulatory, cost and O&M.

FLUWS Contacts



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