



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



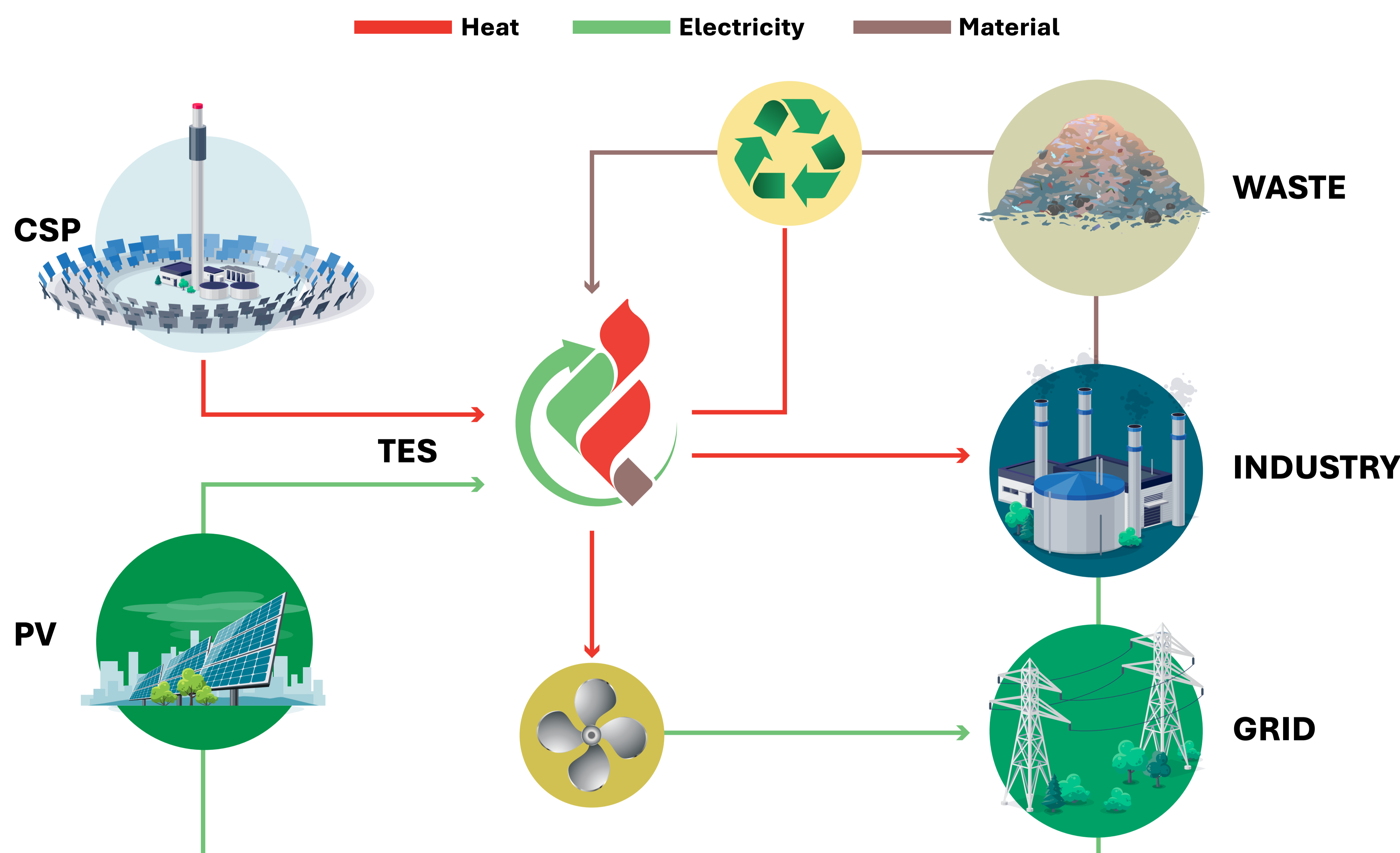
6 countries



€ 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 $\geq 400h$ 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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This project has received funding from the European Union's Horizon Europe program under grant agreement No. 101147257.



This project is funded by the European Union Horizon Europe Grant Agreement No 101147257 and it is supported by UKRI with project No xxx

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