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Circular solutions for sustainable thermal energy storage systems

Abstract

Thermal energy storage (TES) plays a critical role in the energy system to enhance efficiency and flexibility by storing thermal energy for later use. TES allows a better integration of renewable energy sources, reduces peak energy demand, and supports decarbonization across different sectors. Nevertheless, conventional TES materials often rely on resources which may have significant carbon and energy footprints especially during the manufacturing and end-of life stage. Integrating circularity into TES systems is important to reduce the environmental impact of energy infrastructure and become more sustainable, cost-effective, and resource efficient. This presentation dives into the integration of circularity principles in TES, focusing on the innovative use of by-products and low impact materials as alternative storage medium. This session will highlight practical case studies that demonstrate how circular strategies can be integrated to reshape the future of thermal energy storage in building applications.

martedì 27 maggio 2025 - Ore 15.30

Aula Magna
Polo di Ingegneria

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Luisa F. Cabeza is Full Professor at the University of Lleida. She graduated at Institut Químic de Sarrià (Universitat Ramon Llull, Barcelona) on Chemical Engineering in 1992 and on Industrial Engineering in 1993. She obtained the Master on Industrial Management in 1995, and her PhD on Industrial Engineering in 1996. She was a post-doctoral researcher at the USDA, ERRC in Philadelphia from 1996 to 1998, and in 1999 she joined the University of Lleida where she created the research group GREA (now GREiA) with international prestige in the field of thermal energy storage. She has published more than 500 indexed articles and has participated in more than 340 conferences. She has edited or co-edited 12 research books and is the author of one, as well as publishing 24 book chapters. Her entire research career led her to become the Spanish representative in the Horizon 2020 Energy Challenge Committee 2020 3, in the ECES Implementation Agreement of the International Energy Agency, and she has participated in the preparation of 3 IPCC reports, the last of which, as coordinator of the chapter.