STORAGE RESEARCH INFRASTRUCTURE ECO-SYSTEM

RI Information sheet 2022

University of Lleida, UDL

Technology(ies) of Energy Storage - Infrastructure at University of Lleida

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Project Acronym	StoRIES
Call	H2020-LC-GD-2020
Grant Agreement No.	101036910
Project Start Date	01-11-2021
Project End Date	31-10-2025
Duration	48 months

1. Photo

2. Geographical coordinates (˚, “, … N/S, E/W)

41°36'22.3"N 0°37'23.7"E

3. Description of the research infrastructure for the webpage

The infrastructure is divided in four areas, three of them related to testing at different scales and one related to computing facilities:

1. Laboratory equipment
   A. Characterization:
      - DSC 3+ Mettler Toledo, from -50 ºC to 500ºC
      - Compact climatic chamber INECC-30/300 Intelec from -50 ºC to 500 ºC;
      - Thermal cycler Ristretto CYCL06, from 4 ºC to 105 ºC;
      - Unique home-made test box to thermally cycle heterogeneous samples (15x15x3 cm) from 5ºC to 45 ºC.
   B. Corrosion experiment:
      - electrochemical impedance spectroscopy (EIS) for high temperature corrosion testing;
      - unique vacuum corrosion testing for thermochemical salts.

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2. Test rigs
   A. Test-rig for PCM testing from -20 ºC to 100 ºC, with advanced control of temperatures and mass flow rates
   B. Test-rig for water testing, from 5 ºC to 90 ºC.
   C. Test-rig for thermochemical TES testing, from 20 ºC to 120 ºC

3. Pilot plants

   A. Pilot plant for high temperature TES. Potential to test solid sensible TES materials/systems, molten salts testing (materials, components, system operation), and PCM (up to 200 kg of materials). From 20 ºC to 380 ºC.
   B. Pilot plant for testing of TES in buildings: materials, HVAC systems with TES, geothermal storage, PCM storage, TCM storage.

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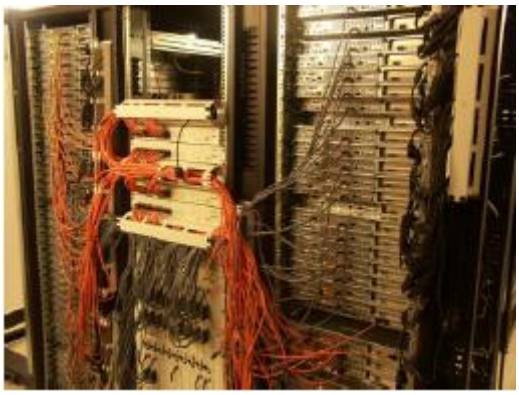
C. Pilot plant for testing of TES technologies and systems in buildings: Connected to two different real buildings (residential and non residential), with PV, Fresnel collectors, ORC, PCM, and sorption system.

4. Computation cluster:

Computation cluster to test and validate computational models, with 384 CPU (x64), 740 GB RAM, and Sun GridEngine/PBS/MPI capable.



4. Availability of the research infrastructure

(Please indicate time periods in which infrastructure <u>will not be available</u> for StoRIES in the next 2 years – if already known)

The UDL infrastructure will not be available August and from December 15th to January 15th of each year

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5. Special considerations (confidentiality / NDA agreements, insurance requirement, special training, HSE training)

Users will receive an infrastructural contract granting their admission to the facility and they will sign confidentiality agreement. They will be allowed to perform experimental activities within the UDL premises as any other UDL member having full access to the available facilities and equipment.
UDL will also provide consumables needed to run the equipment and trained staff to help with managing the equipment. At all times, the trained members of the UdL will supervise the use of the equipment used and will be available to help or carry out some operations.
When desired by both UDL and the visiting researcher, joint publications will be planned.

6. Energy storage technology that can be analysed/studied by using the research infrastructure

- Electrochemical ☒
- Chemical ☐
- Thermal ☒
- Mechanical ☒
- Superconducting Magnetic ☐
- Cross-cutting ☐ (Specifically: ...)

7. Key words for the webpage

Thermal energy storage, materials characterization-development, materials with low environmental impact, pilot plants, modelling of components/systems, energy efficiency, energy use optimization, artificial intelligence for energy systems optimization

8. TRL level (if applicable):

- 1-3 ☐
- 4-6 ☐
- Above ☐

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