

## Thermal Exergy Storage Lab

The ThermExS Lab is designed for testing and evaluating medium sized thermal energy storage systems. Four temperature controlled baths circulate heat transfer fluid at up to 250°C to cycle storage devices at rates of up to 10 kW.



**Pilot scale thermal energy facility**

Funded by an EPSRC Capital Grant of £300,000 this facility allows testing and evaluation of a range of thermal energy technologies. The facility is sized so as to provide a test bed for equipment at pilot plant scale. This gives us the ability to validate the performance of materials and systems developed on the lab bench in machines designed for domestic or industrial scale applications. In this way, a “pipeline” is developed that provides rapid progression of technologies as they are scaled-up from materials into devices and systems. This “pipeline” is essential for developing workable solutions to our energy needs in a timely way to address global issues of climate change.

Two technologies currently being developed and tested in this lab are thermo-chemical energy storage technology for storing heat and thermally powered heat pump technology.

In thermo-chemical energy stores, heat causes a chemical reaction, driving fluid out of a material and into a storage vessel. In this way, heat can be stored at ambient temperature. When the heat is required, the fluid is returned to the material, reacting and releasing the heat.

Thermally powered heat pumps operate using the same principle as a heat store but make use of the heat that is released or absorbed by the fluid in the storage vessel. The heat pump works like a heat multiplier, using high grade heat to extract further lower grade heat from the environment.

Research work is being funded by EPSRC and further information can be found at [i-stute.org](http://i-stute.org)