



IDRIST project progress report

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Progress and achievements

1. Based on Work Package 3.1., Short-listing salt-refrigerant pairs or adsorbent pairs is undertaken for both resorption cooling and resorption power generation through ideal thermodynamics.
 - Different types of adsorbent pairs is being studied for resorption power generation;
 - SrCl_2 as a representative of medium temperature salts has been studied experimentally.
2. Methods to improve thermodynamic resorption cycle for power generation and also for overall integration of the system have been studied through theoretical investigation.
 - An extended study just started to conduct a theoretical comparison between adsorption power generation, pumpless ORC and other similar cycles.
 - A lab-scale adsorption prototype system is being designed.



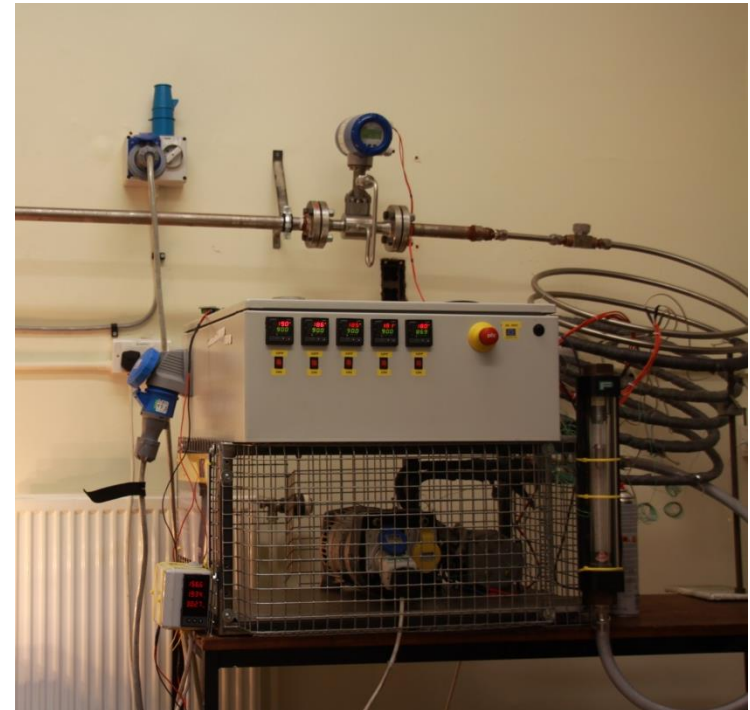
Adsorption test bench for equilibrium property and adsorption capacity

Progress and achievements

1. Based on Work Package 3.3., some work on turbomachinery has been started.
 - An oil-free scroll compressor is being modified to expander and experimentation will start soon using an organic fluid first.
 - The dynamic model of the scroll expander is under development.



Picture of the Sanden TRSA09 Scroll Compressor



Test bench for scroll expander

Outputs and work plan

1. Outputs

- Presentations on integrated adsorption energy storage system made to Siemens, Arup and other interested stakeholders.
- Further tests on SrCl_2 adsorption capacity will be carried out and a research paper will be prepared to report all the experiment results.
- Another research paper on the improved thermodynamic cycle based on resorption power generation is also being prepared for journal publication.

2. Work plan for next 6 months

- Conduct a theoretical comparison between several thermal-driven power generation cycles;
- Continue lab-scale adsorption prototype system design;
- Modify oil-free scroll expander and design experimentation;
- Produce dynamic model of scroll expander and explore other type of power generation devices.