**Displacement of Gas by Thermal Energy Storage**

**$103k** Funded by ARENA

**$229k** Total project cost

* **Lead Organisation** University of South Australia

**Location** Mawson Lakes, South Australia

* **Start Date** November 2019

**Summary**

The Displacement of gas by thermal energy storage project aims to demonstrate a scalable system that can displace gas use for process heating using energy from renewable resources and thermal energy storage.

**Need**

The Displacement of Gas by Thermal Energy Storage project acknowledges that traditionally, process heat has been generated using gas, which was once the cheapest form of electricity generation. With prices continuing to rise and renewables now being the cheapest form of generation, companies are looking to renewables to not only reduce energy costs, but lower emissions in the process. However, the variable nature of wind and solar generation, is an issue most commercial and industrial processes are ill-adapted to cope with. Therefore, storage is needed to fill in these gaps to provide flexible, on-demand, process heat deliverance.

**Action**

This research will pursue the concept of converting low-cost, renewable electricity to heat and storing it thermally. A design that is simple, low-cost, and delivers heat as required is crucial for commercial uptake.

This project will work with commercial customers to design, develop, and test a scalable thermal energy storage system to deliver process heat. Research will also be conducted on better characterising the storage material to minimise costs and maximise storage density.

**Outcome**

The successful demonstration of a low-cost, scalable thermal energy storage system will help de-risk this technology and increase potential returns for customers, while better validating performance and cost metrics.

It is expected that a renewably-driven system, capable of delivering process heat at up to 700°C, will be developed, while suitable storage material will also be identified.

**Additional impact**

Strong partnerships are expected to be created between Australian and international partners to potentially use and export this technology.