University of South Australia

Barbara Hardy Institute

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University of South Australia | Barbara Hardy Institute

Great Research into Sustainability

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Research Profile

Research Area Specialisation

Phase change thermal energy storage system for various applications

Contributing to a better and sustainable environment

Thermal energy storage technology allows improved dispatch-ability of the concentrated solar power plant and increases the plant's annual capacity factor. A high performing and highly responsive thermal storage system will reduce the cost of the storage system and thus, reduce the cost of energy. Through Steven's research it is estimated that by using a phase change storage system in a concentrated solar thermal power plant, the cost of thermal storage will be reduced by over 30% and the cost of electricity will be decreased by five to eight per cent. The success of this project will lower electricity cost for the consumer and most importantly, reduce the carbon emission to the environment.

Following Steven's postdoctoral training he will undertake an integration of solar thermal research into industry development; by being actively involved in the translation of research findings into practical applications.

Through Steven's research at the Barbara Hardy Institute he is confident that with his specialised knowledge, experience and skills he can impart and foster these traits to other researchers, teach and share his knowledge with university students and disseminate it to the community.

People

- Our researchers are scientists, engineers and social scientists
- We work collaboratively on real-world issues
- Over 100 researchers and 130 research students

Projects

- Multidisciplinary projects focused on sustainability
- We work in partnership with government, industry and academia
- Extensive testing and evaluation services and consultancy expertise
- Our work is underpinned by community participation and education

Research Abstract

Steven's research into dynamic Phase Change Material (PCM) systems for high temperature thermal storage challenges conventional research on PCM, which has previously focussed on using PCM in 'static' storage systems. The project investigates PCM in dynamic storage systems, which are systems where the PCM is transportable in the storage system, in comparison with static systems; dynamic systems can use PCMs which are unstable in conventional PCM storage systems.

Research areas of interest

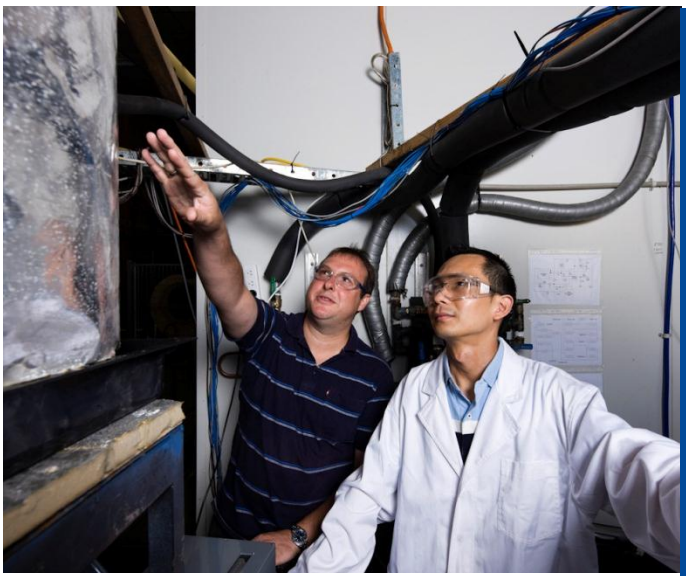
- Phase change thermal energy storage system
- Computational fluid dynamics analysis
- Concentrated solar thermal power plant

Barbara Hardy Institute

Barbara Hardy Institute brings together professionals from different fields and schools to enable connections with other like-minded researchers.

Keywords to describe Steven's research

- Thermal energy storage system
- Phase change material
- Concentrated solar power plant
- Heat transfer enhancement



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