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SYDNEY



Solid-State Hydrogen Technology for Advanced Energy Storage

Hydrogen is a clean energy vector that can enable storage of any form of energy including renewable with high density. Development of suitable technology to store hydrogen safely and with high efficiency will enable the transition to a new economy based on the use of hydrogen.

Competitive advantage

- Unique world class expertise in solid-state hydrogen storage from fundamental material design to implementation in the field. Hydrogen is a versatile energy carrier that can provide both heat and electricity.
- Commercialisation of solid-state hydrogen solutions:

Impact

- Potential to revolutionise the way energy is generated, distributed and used at a small, intermediate and large scale.

Successful applications

- Storage and transport of renewable energy
- Integration to the grid for load levelling or long term electricity storage
- Heat and/or cooling for applications that require both energy storage and heat recovery

Capabilities and facilities

- State of the art research facility for designing and testing solid state hydrogen materials
- Prototype solid-state hydrogen tanks design and optimisation capability
- Integration of solid-state solutions in existing infrastructures
- The most effective energy storage solution enabling both high volumetric and gravimetric energy density (6 times that of Li-ion batteries)
- Long cycle life (> 30,000 cycles of hydrogen uptake and release)
- No memory effect and recoverable stored hydrogen > 90%
- Simple and robust technology enabling increased safety in the use of hydrogen
- Pre-commercialisation cost comparable to existing technologies such as batteries
- Solid-state materials heat and cool upon hydrogen uptake and release. This provides additional energy in the form of heating/cooling owing the unique properties of solid state hydrogen storage materials

More Information

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