LAVO™
FOR LIFE

Power your life with LAVO |™

Introducing the next generation of energy storage.

Renewable
Stores green energy from your source

Durable
Operational in conditions -10° to +50°C

Australian
Owned

The LAVO | Energy Storage System

LAVO's metal hydride hydrogen storage solution is a 'gamechanger' in the race to achieve decarbonisation. It is a clean, cost-effective, sustainable and safe solution for widespread distributed use. The alloy filled containers can be directly integrated with electrolysers and fuel cells to store hydrogen at low pressure without the need of compressors.
Furthermore, the storage container can be carried by standard heavy vehicle and sea vessels for usage at hydrogen refueling stations or for a range of industrial use where high quality hydrogen is required.

www.lavo.com.au

What is Metal hydride? And How does it work as a hydrogen storage solution?

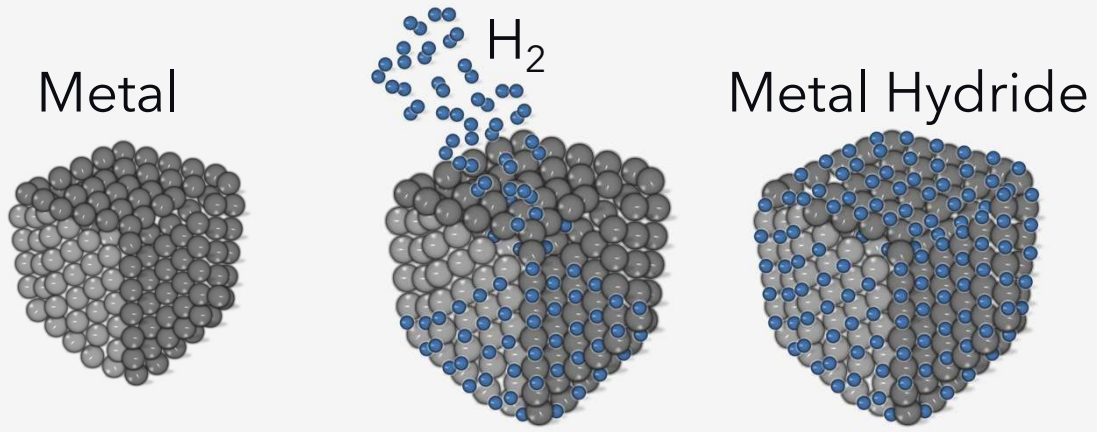
LAVO's innovative approach to hydrogen storage is distinguished by its use of room temperature metal hydrides. These are materials that can absorb and release hydrogen gas at around normal room temperature. This makes them promising candidates for hydrogen storage applications, especially in fuel cell vehicles and other clean energy technologies.

These materials work like sponges for hydrogen. When hydrogen gas is introduced to the metal hydride at a certain pressure (around 30 bar in our case), the metal atoms in the material act like tiny magnets, attracting and binding the hydrogen atoms to themselves. This process is called absorption, and it's a bit like squeezing a sponge to soak up water.

The hydrogen atoms are now stored within the metal hydride structure, forming a stable compound. When you want to release the hydrogen, you can do so by either lowering the pressure or slightly heating the material. This reverses the absorption process, causing the metal atoms to release the hydrogen atoms, which then combine to form hydrogen gas again. This is called desorption, and it's like squeezing the sponge to release the water.

The key advantage of room temperature metal hydrides is that they can store and release hydrogen under relatively mild conditions, without requiring extreme temperatures or pressures. This makes them safer especially non-explosion proof and more energy-efficient than other hydrogen storage methods, such as liquid hydrogen or compressed hydrogen gas. This also avoids the need of having a compressor in the system and designing a system using electrolyser and fuel-cell pressure requirements.

LAVO has been uniquely designing systems such that no heat management is necessary by ensuring the natural release of hydrogen gas from metal hydride matches with the electrolyser and fuel-cell power requirements. If however, the customer prefers a higher flow-requirements, heat from external source such as fuel-cell heat or electrical heat can also be provided to the vessels to increase the flow. The amount of heat required is 4 kWh for every 1 kg of hydrogen to be realised from the alloy.

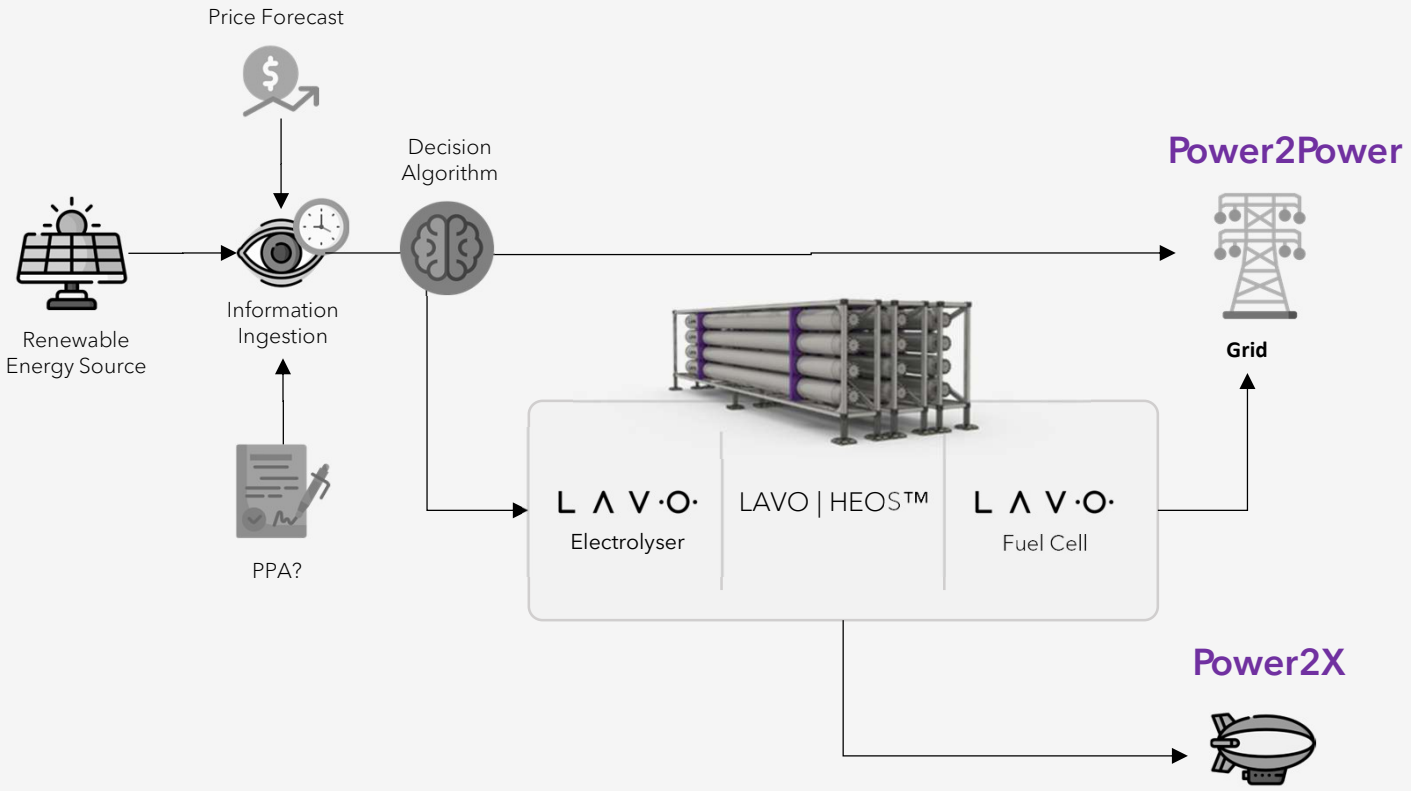


[1] Per Australian Building Code regulations.

LAVO | HEOS™ Integrated Solution Offering Use-Case

Work with our world class technical team to receive a complete hydrogen package for your application.

LAVO | HEOS™ enables low-cost, high density commercial and utility projects for Power2Power and Power2X applications. The Hydrogen Energy Operating System integrates electrolysers, storage, fuel cells and balance of plant components built to suit the site requirements. Our team can guide you on the journey from feasibility study, to system design, delivery, installation and O&M.



Use case example:

Electrolyser

Built to specification

Example:	
Nominal Power:	500kW
Hydrogen Capacity:	9 kg/h
Power consumption:	62 – 69 kWh/kg H_2
Size container:	2 off 40ft ISO full size

LAVO | HEOS™

Built to specification

Example:	**4 to 12 Vessels**
H2 mass:	280 to 840 kg
Energy Density:	9.3 to 27.9MWh
Size container:	40ft ISO footprint 1m – 3m high

Fuel Cell

Built to specification

Example:	
Nominal Power:	500kW
Max H2 consumption:	30 - 45 kg/h
Size container:	20ft ISO full size

Want to know more? Receive a free first consultation with our sales team: sales@lavo.com.au