



"Zero Carbon Electricity, On Demand at a lower cost"

The Hydrogenus Energy (HYE) modified Internal Combustion Engine (ICE) or "HYE-ICE", delivers :

- Zero CO₂, Zero particulates, Zero NO_x, Zero SO_x;
- Emissions are only (pure) water
- Using low-pressure hydrogen, avoiding the need for exotic materials and compression;
- Using less than pure Hydrogen, giving a much lower fuel cost;
- As it is easy to operate, like a diesel making it ideal for remote locations;
- Responding very easily to changes to load, from 20% to 100% virtually instantaneously;
- Maintaining very tight control on output; always 1,500rpm +1%/-2%;
- Lower maintenance; zero carbon in the fuel means less wear and the oil has a longer life;
- Our modifications do not involve any moving parts;
- Operates very well at low load; NO bore glazing as no carbon in the fuel

Our Competitive Advantages

- Lower operating cost;
- Fuel security, when HYE has finished developing its ammonia cracker, then use either hydrogen produced on site or ammonia imported, or both;
- Ease of maintenance;
- Price competitive;
- Long duration storage lower cost if need at least 3 hours.

Hydrogenus Energy Limited

The "HYE-Forming Box"

September 2025

Hydrogenus Energy ("HYE") has developed and patented the Intellectual Property of the modifications to be made for an Internal Combustion Engine ("ICE") to be able to operate safely, effectively and efficiently using Hydrogen, of almost any quality, injected at low pressure, as its fuel.

HYE announces the "HYE Forming Box", exploiting:

- HYE-ICE's outstanding block load and control capabilities (from 20% to 100% of load virtually instantaneously, while staying within ± 1 Hz of 50Hz);
- Grid syncing and forming IP developed by D W Controls; and
- Cost effective ammonia cracking is currently in development by HYE with Kapsom.

HYE-Forming Box - Applications

The HYE-Forming Box can be operated to

- Provide immediate back-up electricity supply, for the grid, data centres or any other significant load requiring high quality electrical power;
- Perform grid forming, syncing to the grid and providing inertia to the grid to keep the current stable and avoiding voltage surges and tripping;
- Assist in balancing load, as one application can be to draw power, when prices are low, to produce hydrogen to re-inject electricity when prices are high;
- Provide Long Duration Energy Storage, using our cracker to crack hydrogen from ammonia stored on site as ammonium hydroxide;
- Be environmentally friendly by using "Green" ammonia, as the only emissions are pure water, which can be used for other purposes, with no SO_x or NO_x (as our exhaust gas temperature remains too low for NO_x to form) or particulates.

HYE-Forming Box - Description

The HYE-Forming Box is a transportable power station, housed in a forty-foot (shipping) container that can be soundproofed.

Energy can be transported to site in the form of ammonia, which is injected into water tanks 66% full of water to form ammonium hydroxide. When required, the ammonia is separated from the water by waste engine heat, with the water being returned to water tanks with no ammonia.

A plastic slim-line water tank, of 2,500 litres capacity, can yield nearly 150kg of hydrogen, which can provide up to 2.0MWh of electrical energy. This means that long-duration capacity can be added at very low cost.

To provide an instantaneous response, the HYE-ICE needs to be operating at 20% load, which, for the 500kW power station, consumes about 100kg of NH₃ an hour; at full-load 500kW, the HYE-Forming Box consumes about 430kg of NH₃ an hour.

500kW Power Station : early 2026

The 500kW HYE-Forming Box is expected to be available by the end of 2025, when an appropriate ammonia cracker has been developed by HYE in conjunction with Kapsom. Kapsom has developed a commercial ammonia cracker, but this device is large and expensive as it was designed for fuel cells, which need high pressure and very high purity hydrogen, neither of which is required by the HYE-ICE.

Workshop

17 Eugene Terrace
RINGWOOD VIC 3134

Contact Details

Shay O'Brien | CEO
m: +61 409 210 634
e: shay.o@hydropogenus-energy.com

Pieter Bruinstroop | Director
m: +61 400 315 935
e: pieter.b@hydropogenus-energy.com

e: info@hydrogenus-energy.com
m: +614 400 315 935
w: www.hydrogenus-energy.com



Hydrogenus Energy Limited
ACN 163 460 884

HYE-Forming Box - Enhancements

1 MW Power Station – 2026 Q2

The 1.0MW HYE-Forming Box is expected to be available about April 2026.

Efficient Electrolysers : 95%⁺

To help balance the grid, the Box can add load to the grid to produce hydrogen, which can be stored for later use or sold.

There are 2 companies that have developed highly efficient and cost-effective electrolysers, meaning efficiencies of at least 95% and costs around AUD 30k per kg H produced an hour.

One of these companies is delivering a 4kg/hr model as its first sale in 2025 Q3. It expects its 10kg/hr model to be available by the end of 2025.

The other company, which is able to process water of almost any quality, expects to have first production in mid-2026 and full-scale production by the end of 2026.

Green Ammonia cost competitive with grey Ammonia

At present, “grey” ammonia costs about AUD 6/kg, while “green” ammonia costs about AUD 12 - 13/kg.

A technology that has been developed and is expected to be commercially available in 2026 Q3 claims to be able to produce green ammonia at cost comparable to grey ammonia, at a modest scale, so that it can be produced in regions near to consumption.

Possible Energy self sufficiency

HYE has an option to test a device that has been shown, at lab scale, to significantly reduce the amount of electrical energy required to produce 1kg of H, down to as little as 10 – 15kWh, by using other forms of energy, including heat, magnetism and sound waves.

This device promises the possibility of a box that requires no external energy inputs, except for some water. Development depends on funding; target is end 2026.

Mine Site Water Re-use, rather than store and / or release

Using the electrolyser that is able to operate using water of almost any quality means that any mine site can use process water to produce stackable tailings and avoid off-site release of water, while producing hydrogen for its own energy needs and oxygen for process needs.

Cost

The HYE-Forming Box is the lowest cost device able to provide back-up power with grid syncing / grid-forming capabilities, which is able to store energy for 3 hours or more.

For truly long-term storage, it is much cheaper. It is also more robust and is easy to maintain.

The lowest cost box, without the electrolysers to enhance the grid by shifting the time of electrical energy, is estimated to cost about AUD 1.0m, including 10MWh of energy storage in terms of electrical output.

The area required for energy storage, including the recapture of water used to host ammonia, is 12m long by just under 2m in width, the same area as the forty-foot container of the 500kW power station.

The estimated cost of the 1.0MW power is 2x that of the 500kW power station.

For a virtual tour, please see:

<https://www.youtube.com/watch?v=FaQ067dqltQ>

<https://www.youtube.com/watch?v=0216UrCFVLI>