Hydrogenus Energy News

Issue #17

11 June 2025

What's New

In May, we received our first Purchase Order.

The 100kW generator set is to be installed in August and by September connected to the grid.

After successful commissioning, there is a contracted order for a further 400kW, to increase the power station to a 500kW unit.

More orders to come!!

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First Order milestone achieved

We have our first Purchase Order! This is for a single 100kW engine plus generator and is part of a total order for 500kW. The other 400kW of engines plus generators is to be ordered after the first has been developed, tuned, commissioned and connected to the grid. We expect the first unit will be installed and operational in September and the subsequent 400kW soon after.

Our first order is intended to be a ‘proof of concept” and a demonstration of the engine connected to the National Energy Market, including to fuel the Hydrogenus Energy (“HYE”) modified Internal Combustion Engine (“ICE”), using hydrogen produced on-site. The hydrogen will be produced using grid power when grid prices are low with an efficient low-cost electrolyser that has only very recently become available.

It is part of an agreement that we have for our engine and generator sets to be fully compliant with all relevant Australian Standards, with insurances and warranties.

This order is from a company that has a long-established business with significant experience in connecting diesel fuelled generators to the grid for both grid forming and grid firming, both of which are necessary as renewables become a larger contributor to the electricity grid.

Commercially, the grid operator makes capacity payments for generators to be in place and available, that can be rapidly brought online when the grid needs extra power and / or to correct voltage, helping to stabilise the grid and prevent grid collapse. This is a rapidly growing market with many opportunities that we are ideally placed to fill with a carbon neutral option.

This ability is a very welcome supplement to our primary design aim, to provide a practical zero carbon replacement for diesel generators and engines and an enabler of sustainable power for islands and remote communities.

A second Proof of Concept

One of our partners, Accesstel, has been requested to provide a Proof of Concept (“PoC”) for a similar operation, but using ammonia as a store of energy, from which hydrogen can be cracked.

The PoC proposal was submitted on 4 June, outlining also the expected improvement in the offering over the course of the next 12 months as other technologies become available.

The sponsor is seeking project completion before June 2026 which is easily achievable if we start with the simplest option and progressively improve the offering as complementary technologies become proven.

Projects Pipeline

Both projects above are demonstration projects with the potential for many further, follow-on orders and projects.

Pacific Islands

In March, our CTO, Marcus Clayton, visited Fiji and was taken by our local partner, IDA Pacific to many meetings, including

- United Nations Development Program.
- Global Green Growth Initiative.
- Fiji Minister of Energy.
- Sugars of Fiji.
- Fiji Ports and Airports.
- Pacific Island Forum; and
- Irwin Allsop Pacific, which is a key energy / engineering adviser to many private resorts.

All meetings were positive, and some very enthused.

Since then, IDA has responded to Expressions of Interest; one for 3MW and 2 others which were for, effecitvely, 100kW pilot operations, with the potential for very large, on-going orders to follow.

However, while there is very positive interest, in all cases the desire was to be able to observe an existing operation. We expect to be able to demonstrate our first operation in September, for the 100kW unit and very soon afterwards for the 500kW power station.

Northern Territory

In April we were invited to present at an Innovation Seminar in Darwin which Pieter & Shay attended and presented to interested parties.

Subsequently we have entered into an agreement with an NT based business with existing business interests in energy and sustainability. Together we are investigating many prospects including,

- for roadhouses and remote properties
- For indigenous communities in northern Australia, though these will take a bit more time to mature as they need to be self-sustaining and so we need more proof of complementary technologies.

Others

We have commenced discussions with the Australian Department of Defence Renewable Energy Team and had a representative attend a demonstration at our Ringwood workshop.

We have also received very strong interest for other projects in,

- South-East Asian islands.
- European islands.
- Central America and Canada

Roger Walker

Roger Walker has joined us to assist with long-term strategy including sourcing and managing prospects and projects. Roger has extensive experience in many areas of the commercial property sector particularly regarding the development of comprehensive solutions to implement and improve sustainability.

Complementary technologies

HYE-ICEs are the enabling part of an energy supply system comprising solar and/or wind power, electrolysers, hydrogen storage, our engines and generators and the necessary hardware and software to integrate the power supply to the client.

Our engine is powered by hydrogen, and we are quite agnostic as to how it is stored and will often be site specific. Tubes, Metal Hydride, Hydrogenated oils, and many other technologies are all possible

As such we are working with our partners to identify the optimal technologies to fit into these energy systems.

Ammonia Cracker

Ammonia is widely available and can be used to transport and store hydrogen, which needs to be “cracked” out of the ammonia to be used to fuel our HYE-ICE.

We have been in contact with 2 companies that manufacture and sell ammonia crackers, as well as another than supplies catalysts for the process.

The ammonia crackers that are commercially available are not ideally suited to our purposes and need some modification to simplify them and lower costs as we do not need,

- The high purity hydrogen that the devices have targeted, which means the device we require can be simpler and cheaper; nor

- Output in the order of 100s of kg of hydrogen an hour, as out 100kW HYE-ICE requires only 7kg H an hour at 100kW.

Rather than an ammonia cracker that is for large scale projects, we seek a simpler device that will fit within the envelope of our engine. We are awaiting a proposal from a manufacturer after a factory visit by Hydrogenus and are now very confident that we will be able to source a suitable device and have this demonstrated at our Ringwood workshop in 2025

Photo voltaic

PV technology continues to improve incrementally.

Wind Turbines

HYE has been introduced to a patented design for a blade for a wind turbine that improves output by up to 40% at low wind speeds. This technology continues to be improved, especially at a modest scale which is suited to our projects.

Conclusion

Hydrogenus Energy will continue to evaluate complementary technologies to further optimize technical and commercial outcomes for our customers.