Artist's illustration: Hydrogenus Energy Transportable Power Station to be contained within a 40-foot shipping container.

HYDROGENUS
Energy Limited

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

Introductory Presentation

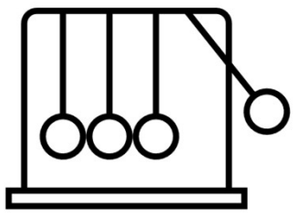
By Earle Harper
Chief Commercial Officer
+61 407 345 180 | earle.h@hydrogenus-energy.com

At Hydrogenus Energy, we are enabling a renewable energy future.

...by providing reliable, affordable, dispatchable renewable energy.

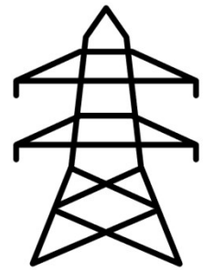
Problem: The structural headwinds of renewable energy

Adding more renewable energy production capacity is not the problem, the problem is:



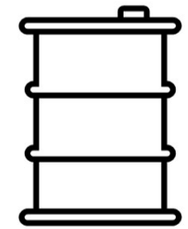
Maintaining grid frequency/stability

There is a global inertia deficit



Legacy infrastructure leads to curtailment

Transmission is not fit for purpose and lacks long-duration storage



No one size fits all

Diesel dependency remains high in many remote locations

Solution: We need an engineering solution

An engineering solution where stakeholders have actionable and practical steps to:

Maintain Grid Stability
(Grid forming)

When using renewable energy (including rooftop solar)

Optimises transmission

To drive Return on Investment

Long-term affordable storage

When the sun don't shine, and the wind don't blow

Viable options for remote locations

To meet renewable energy targets

Market Validation

Australia is at the forefront of the renewable energy transition and encounters ongoing headwinds.

Circa 7,500 Mw inertia deficit in NSW & Vic 2027/28 alone

AEMO, December 2025

“As much as 65% of renewable energy is curtailed in Australia”

AEMO, December 2025

“Utility-scale batteries are not long-duration, dispatchable power sources; they are energy sinks that carry significant economic and environmental costs”

National Center for Energy Analytics, December 2025

“1.7% of the total Australian energy mix is diesel”

Department of Climate Change, Energy and Environment. 2024

“41% of Australian miners are dependent on diesel”

ARENA, May 2024

Market Size

This is a global opportunity.

Grid Forming Mkt

USD 1.2 t

by 2034

Energy Transmission Line Mkt

USD 158.62 b

by 2032
CAGR of 5.2%
(2024-2032)

Utility Battery Mkt

USD 75.29 b

by 2032
CAGR of 18.6%
(2024-2032)

Global diesel generator Mkt

USD 200.03 b

by 2032
CAGR of 7.45%
(2024-2032)

"Grid forming solutions are invaluable"

Source: Please go to disclaimer page

Product – Core IP

Hydrogenus Energy ("HYE") has developed and patented modifications to an Internal Combustion Engine ("ICE") that enable it to operate safely, effectively, and efficiently using hydrogen of almost any purity as its fuel.

Affordable
Price competitive to any PV (BESS), hydrogen fuel cell and diesel backup solution

Virtually instantaneous Response
Engine can perform grid forming function

Superior fuel efficiency and operates on any purity hydrogen
Financially cheaper than diesel and operates on virtually any purity of hydrogen

Low pressure injection
Using low-pressure hydrogen avoids the need for exotic materials and compression

No carbon particulates
Emissions are only (pure) water ; Zero CO2, Zero particulates, Zero NOx, Zero SOx

No bore glazing and ease of maintenance
Zero carbon in the fuel means less wear, and the oil has a longer life;

Product Roadmap – Transportable Power Stations

The HYE-ICE solution will be contained in a 40-foot container and certified to Australian standards.

Hydrogenus Energy – Internal Combustion Engine
- Core IP that generates zero-carbon dispatchable power.
- Solution to grid stability (grid syncing/forming & inertia).

New Electrolyser Technology
- Take curtailed electricity to store energy as hydrogen.
- Solution for grid optimization.

New Ammonia Technology
- Long-term (perpetual) energy storage. An ammonia cracker directs hydrogen directly into the engine.
- Solution for long-duration storage.

Modular and scalable
- Increase energy output by adding additional boxes. Relatively simple exercise to incorporate into existing manufacturing capacity to increase production

Power Stations Two-Tiered Output

500 Kw – Power Station
5 x 100 Kw Hydrogenus Gensets

1 Mw – Power Station
4 x 250 Kw Hydrogenus Gensets

Product demonstration and certification

Grid forming to zero carbon distributed energy solution.

Completed ✓

Phase One

September Qtr 2026

First grid-forming demonstration using hydrogen as a fuel in the Australian Energy grid.

The engine will be certified to meet Australian market standards

Phase Two

3 - 4 months from phase One

Ammonia as the energy source.

Adapt existing cracking technology to be smaller and lower cost.

Fuel cost similar to diesel generator, but overall cost lower due to HYE technology plus zero carbon fuel and zero fuel shrinkage.

Superior performance to diesels, especially with cold starts (nature of back-up), cold to full load and major variations in load.

Phase Three

6 – 9 months from Phase Two

New technology ammonia synthesiser – produce ammonia in regional areas to use locally.

New electrolyser technology – more efficient, lower cost and able to process low quality water to provide hydrogen for ammonia produced locally.

Electrical power provided by either grid or local renewable energy for Green Ammonia at delivered cost similar to or less than grey ammonia.

Shift stranded electricity in both time (ie. storage) and place, reducing transmission and distribution cost.

Phase Four

3 – 6 months from Phase Three

1MW Transportable Power Station

Synchronised to grid

Use grid power to produce hydrogen when grid use is low, return electrcity when demand is high, so balancing grid, or grid firming.

Provide grid forming services due to mechanical inertia.

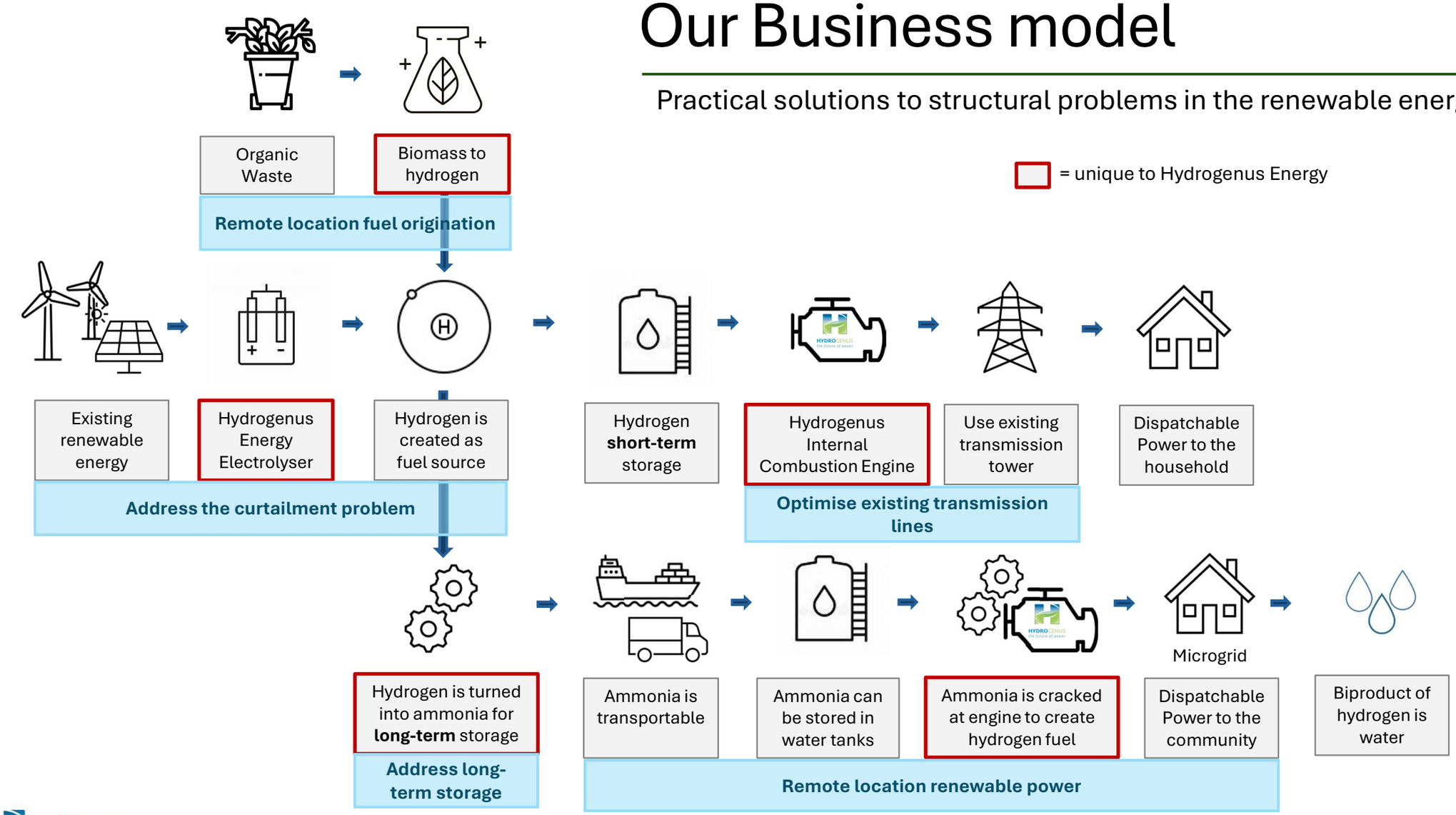
Avoid further investment in grid by improving utilisation of existing capacity.

Target

- Data Centres – power and water (from engine exhaust)
- Built environment – communities, commercial and industrial
- Remote communities
- Islands
- Mining

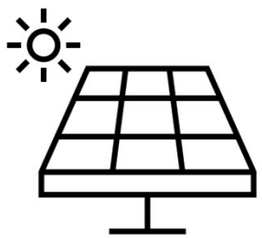
Our Business model

Practical solutions to structural problems in the renewable energy transition

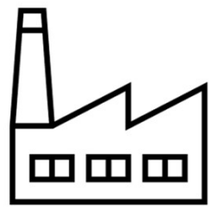


Adoption Strategy

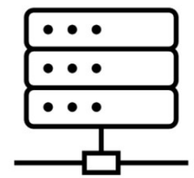
Industry Verticals: Expressions of interest



Grid syncing/forming for the global renewable energy market



Built environment such as industrial precinct, hospitals, and hotels



Data Centres

Mine operations

Remote and island communities are dependent on diesel oil for dispatchable power

Team

Mark Smith	**Marcus Clayton**	**Shay O'Brien**	**Pieter Bruinstroop**	**Earle Harper**
Non-Executive Chairperson	**Chief Technology Officer & Executive Director (Founder)**	**Chief Executive Officer**	**Executive Director, CFO & Company Secretary**	**Chief Commercial Officer**
Mark has over 40 years' experience in management and geoscience in energy with BHP, and Karoon Energy, of which he was a founder. Mark was Executive Director & Exploration Manager with Karoon, growing its value from $5m to $1,500m.	Marcus is formally trained in electronics. He joined John Bennett to form Bennett Clayton in 1990, developing an Internal Combustion Engines to operate using alternative fuels, including alcohol fuels, LPG for diesel buses and natural gas for back-up generators.	Shay has a background in accounting, HR, and senior management in small and medium sized enterprises across a range of business sectors. Prior to Hydrogenus Energy, he was General Manager of a group of business in the scientific instrumentation and supplies industries.	Pieter has degrees in economics and finance and a long history as an analyst in energy and mining Markets. Peter has extensive experience in business case and viability modelling in wind and solar power in the 1980s and as a fund manager and corporate adviser since 1996.	Earle has over 30 years of corporate, ASX and commercialisation experience across multiple industry verticals. Prior to joining Hydrogenus, Earle was the CCO of ClearVue Technologies, a nanotechnology within the renewable energy sector.

Contact Details

Pieter Bruinstroop
Director and Company Secretary
+61 400 315 935
pieter.b@hydrogenus-energy.com

Earle Harper
Chief Commercial Officer
+61 407 345 180
earle.h@hydrogenus-energy.com

Contact Details
Hydrogenus Energy Limited
Block Arcade, Suite 324,
96 Elizabeth Street,
Melbourne Victoria 3000
Australia
info@hydrogenus-energy.com

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ACN 163 460 884

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Reference source from page 6:

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