

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

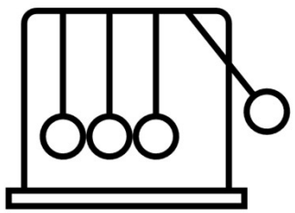
By Earle Harper
Chief Commercial Officer
+61 407 345 180 | earle.h@hydrogenus-energy.com

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

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

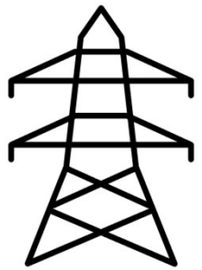
Problem: The structural headwinds of renewable energy

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



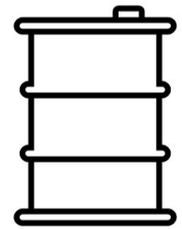
Maintaining grid frequency/stability

Photovoltaics and wind turbines do not provide inertia for the grid to stabilise the grid frequency



Legacy infrastructure leads to curtailment

Transmission is becoming costly and difficult to construct, and falling utilisation increases consumer costs



No one size fits all

Diesel dependency remains high in many remote locations and for backup

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

Why Now?

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 158.6 b

by 2032
CAGR of 5.2%
(2024-2032)

Utility Battery Mkt

USD 75.3 b

by 2032
CAGR of 18.6%
(2024-2032)

Global diesel generator Mkt

USD 200.0 b

by 2032
CAGR of 7.45%
(2024-2032)

"Grid forming solutions are invaluable"



Source: Please go to disclaimer page

Our Product

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.



Grid Forming Solution

Demonstration site, Ballarat, Victoria

100kW engine



Micro Grid Solution

Ringwood, Victoria

100kW engine



Electrical Control Unit (ECU)

Proprietary code to control fuel burn and synchronise to the grid

Australian Provisional Global Patent Application No. 2024900658

Product – Core IP

HYE-ICE presents a practical and actionable solution to fuel security, grid security and long term energy storage at an affordable price.



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 working life

Product Roadmap

Growing from a niche product massive addressable market



Completed MVP and patented IP. Suitable for microgrid applications

Completed pilot demonstration in Ballarat, Victoria. Connected and synchronised to the grid via bottled hydrogen

Use ammonia as a fuel source rather than hydrogen. Development of an ammonia cracker solution, plus different engine sizes

30kW | 250kW | Single Cylinder

Fuel produced on site and low cost.

Development of a 40-foot Transportable Power Station (TPS)

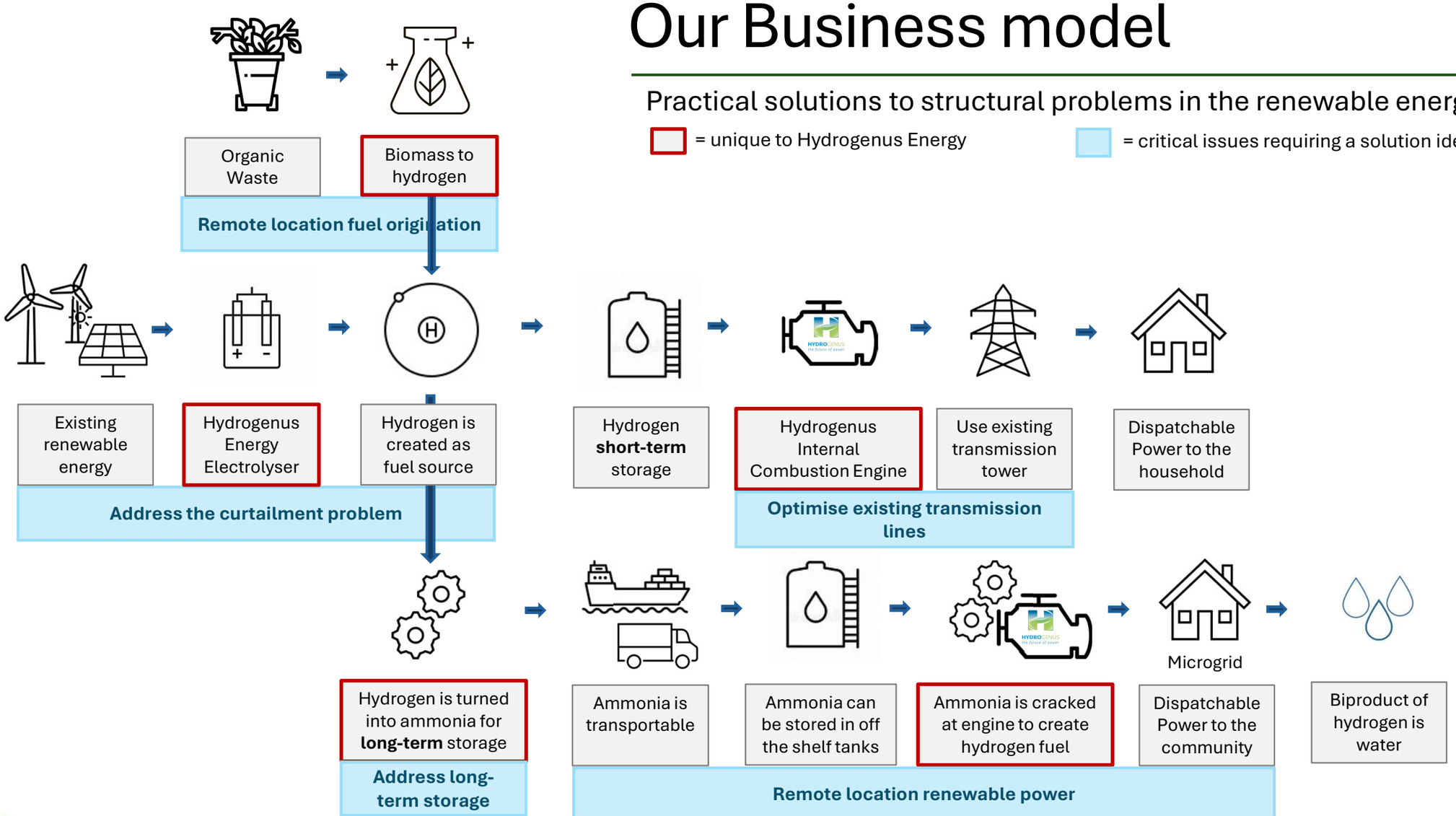
Business sells energy to customer as a service

Our Business model

Practical solutions to structural problems in the renewable energy transition

= unique to Hydrogenus Energy

= critical issues requiring a solution identified by AEMO



Revenue Model

Multiple revenue opportunities. Long term objective is to sell energy as a service.

Commercial Margin on supply equipment

Part of the project margin between cost & revenue

Ongoing maintenance/servicing and IP Fees per MWh

Annualised Recurring Revenue (ARR)

Green bonus “carbon credits”

Project Ownership *

Selling energy as a service

Return on debt + equity investment per project

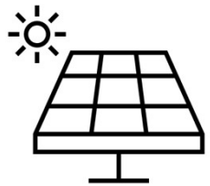
* Will require significant investment.

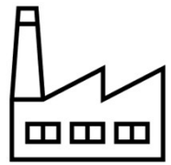
Market Traction

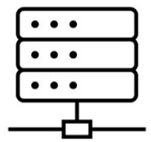
Industry Verticals: Expressions of interest

- Letters of Intent (LOI) from South Africa, Western Australia, the Northern Territory and Victoria. Strong interest from targeted Pacific Islands and ASEAN countries.
- 10.0 MW conditional purchase orders plus 20 x 30kW engines per month, conditional purchase orders (total order in the hundreds).
- State & Federal Government engagement has commenced. International interest is high.

Industry Verticals that have expressed interest


Grid Syncing/Forming


Built Environment


Data Centres


Mine Operations


Remote Communities

Export Strategy

Export curtailed renewable energy as ammonia to generate electricity in international markets



Team



Mark Smith

Non-Executive Chairperson

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 Clayton

Chief Technology Officer & Executive Director (Founder)

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 O'Brien

Chief Executive Officer

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 Bruinstroop

Executive Director, CFO & Company Secretary

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 Harper

Chief Commercial Officer

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



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

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Reference source from page 6:

- 7 July 2025 : World needs 1.4 TW of grid-forming batteries by 2034, Max Hall, PV Magazine: Wood Mackenzie research says investments of $1.2 trillion in battery energy storage systems (BESS) will be required to support the installation of over 5.9 TW of new wind and solar capacity globally through 2034.
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- https://www.fortunebusinessinsights.com/industry-reports/diesel-generator-market-100587#:~:text=Diesel%20Generator%20Industry%20Analysis%202024%2D2032&text=The%20global%20diesel%20generator%20market,infrastructure%20all%20over%20the%20globe.

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