

# Hydrogenus Energy News



**HYDROGENUS**  
the future of power

ABN : 56 163 460 884

## Board

Mark Smith  
Chairperson

Martin Sheahan  
Executive Director and  
Chief Executive Officer  
0408 506 656

Marcus Clayton  
Executive Director and  
Chief Technology Officer

Pieter Bruinstroop  
Executive Director, CFO  
and Company Secretary  
0400 3159 35

Rob Tindall  
Non-Executive Director

## Contact

[pieter.b@hydrogenus-energy.com](mailto:pieter.b@hydrogenus-energy.com)

<https://hydrogenus-energy.com/>

## WHAT'S NEW

Engine developments improve performance beyond commercial level previously achieved and opens new markets

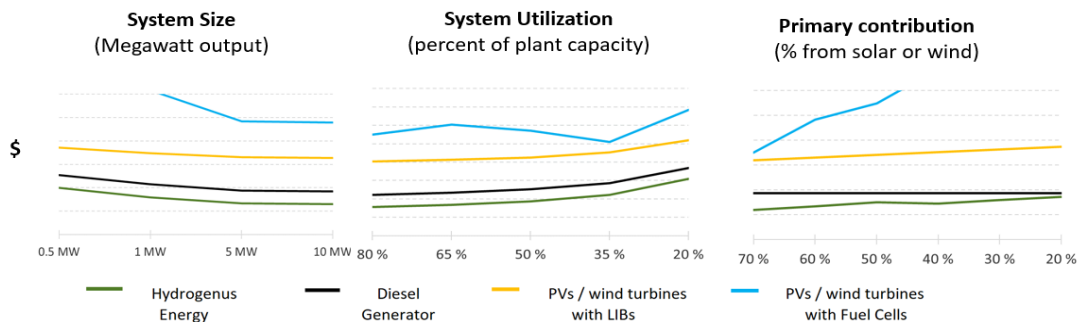
- Fund raise partially complete now with interest from larger funds
- Unsolicited interest from large engineering organisation looking to include our technology in their projects with their clients
- Increased interest from prospective clients for our 'Energy As A Service' business model
- Detailed preparations underway for construction of the Demonstration Facility where our engine and generator is integrated with all compents and controlled by the Hydrogenus Integrated Energy Management System (HIEMS)

## Hydrogenus Energy Has Developed Valuable IP

At our workshop in Ringwood, we can demonstrate an Internal Combustion Engine that we have developed which

- Operates safely, effectively and efficiently using Hydrogen as its only fuel;
- Emits zero carbon, zero SOx, zero NOx and zero particulate matter;
- Has been developed to be robust and easy to maintain, using low pressure hydrogen injection;
- Has a block load capability better than 70%, more than 2x the capability of gas or diesel engines, providing a low cost high efficiency 'end of grid backup energy supply option'.
- Achieves an efficiency of 42% of electrical output compared with the energy of the fuel consumed which is already better than any combustion engine, and we believe we can improve this further.

Our analysis shows that a system using our engine provides lower cost electricity on demand than any other system for off-grid areas for the bulk of the Australian land mass. The following diagram, from our presentation shows this :



As well as lower cost dispatchable off-grid supply, there are other applications for our IP:

- Utilising by-product hydrogen to produce electricity, reducing net energy consumption.
- As a store of energy, for periods longer than 6 hours.

## Revenue

The Hydrogenus System offers 5 different potential revenue streams :

- (i) Modification to engines, which
  - Is essential to protect our IP, which consists of some physical changes to an engine and associated code for the Engine Control Unit
  - Will provide revenue in the early stages of a project, reducing the working capital required;
- (ii) The supply of IP / Management services to each project
  - Each project will require secure communications to our hub to continually monitor, manage and update;
  - This revenue is included in the costs of the Hydrogenus System in the chart, and we are still the lowest cost
- (iii) The returns to an investor in projects
  - A fair return, based on 75% debt funding, at 6.0% interest charge, re-paid over 10 years and 7.5% equity return
  - The finance cost, which is included in the cost estimates in the charts, is over 70% of the total cost
- (iv) The value of Green Certificates, which is NOT reflected in the cost estimates
  - HYE has had introductory discussions with fledgling marketplaces for Green Certificates
- (v) The share of the margin between our costs and those of the next lowest cost form of supply.

It is possible that in some projects the energy users will get a share of this margin, with the balance shared between HYE as manager / investor and other equity investors in the project.

## Funding

We have revised our IM and are now seeking up to \$A 3.0m in funding.

We have already raised about \$390k.

HYE participated in the Venture & Capital conference held in Sydney on 3 August. That has put us in contact with over 50 possible investors and we are having further discussions with nine and have follow-ups to do.

Also, two other potential investors with whom we have been in discussion for a few months have advised that they have now received written commitments, and some of the cash, and both expect to advise us of their intended amount "soon".

We recently presented to one investor who advised they could come in for USD 1m, but only after another investor has come in as a Lead. That investor has a track record of coming in at later rounds at good multiples of the initial investment.

Our revised presentation is available on our web-site.

## Technical

Our last HYE News advised that we had achieved a stable 80kW from our engine. We have since developed a twin injector to increase output.

As we increase output, our efficiency continues to improve, which is very attractive to the technical people to whom we market.

We have re-tuned the engine up to 100kW and are now moving to higher output.

Recently, our team executed a heat test, running the engine for nearly 6 hours with the doors to the test cell closed.

Our engine was running very well at 50°C, but at 70°C ambient temperature the performance began to decline, as expected.

It is standard practice to de-rate an engine for temperatures above 50°C.

This test demonstrated the robustness of our engine, which is very important for remote area power.

## Corporate

As we are a public company, we need to present audited accounts to a general meeting to which all our shareholders are invited.

We expect to distribute our Annual Report with audited accounts at the end of October and hold the AGM, at our workshop in Ringwood, in late November.

We will advise details next month.



Registered Office  
Block Arcade, Suite 324  
96 Elizabeth Street  
MELBOURNE, VIC 3000

Workshop  
17 Eugene Terrace  
RINGWOOD VIC 3134