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Hydrogenus Energy News

HYDROGENUS
the future of power

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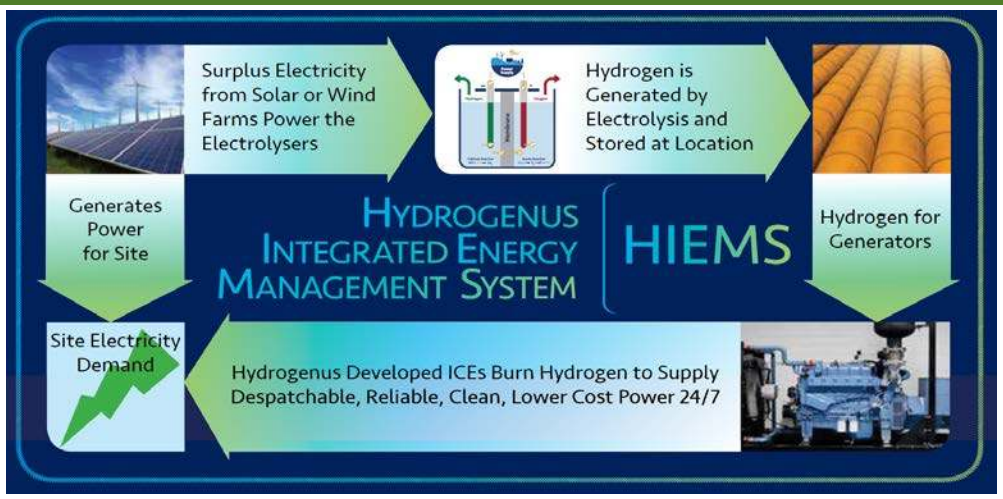

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PHASE 1 OF R&D PROGRAMME – DONE !!

- The Phase-1 R&D program is now completed, with the engine and generator meeting all the performance requirements for commercial deployment.
- Our test engine is now producing 80kW in stable operation, easily staying within RPM tolerance levels required for 50Hz AC power generation, even under rapid load variance conditions that occur in field operations.
- The development of an Internal Combustion Engine for AC power generation, that operates safely and efficiently using Hydrogen as its only fuel is a major achievement.

DEMONSTRATION SYSTEM PROGRAMME

- Our focus is now the development of a demonstration system, integrating the motor and generator with the solar, electrolyser and storage components using Hydrogenus's Integrated Energy Management System software.
- With our demonstration operation we will be able to improve our technology for commercial roll out and test other devices, such as electrolysers and the Nano-Dissociator.
- The Nano technology offers the potential to dramatically reduce the cost of hydrogen production increasing economic value of projects and opening new markets.
- We have already received indicative interest for a demonstration operation at two or possibly three sites.

ENGINE RESEARCH and DEVELOPMENT DETAIL

We will continue to gather more data over longer test runs to optimize performance and efficiency. We expect it will be able to get more improvements in efficiency through this process. This will lower costs and improve economics of projects.

Phase 2 of our R&D programme will be to test a direct injection engine and other technologies, again with the objective of improving efficiency and lowering costs.

Engine Performance

Our engine is now operating very well at a load of 80kW. We are confident we can get more out of the engine, with additional capacity providing protection against over-load.

The optimal load for a diesel engine is about 80% of its capacity. This is what we have achieved.

Some of our tasks for the commercial engines will be to reduce the number of sensors, while having redundancy and to be able to maintain operations remote from the engine.

Block load

Block load is the change in load tolerated by an engine.

Higher block loads means that less additional equipment and associated costs are required to provide stable DC power supply. This improves economics.

There are 2 dimensions to Block Load:

(i) The amount of the change, or the size of the load change; and

(ii) The response time of the engine to the change.

As an example, in the testing, an additional load of 50kW was successfully added to a 20kW engine load. This is a 50% block load, as the theoretical capacity of our engine is 100kW.

In contrast a gas-powered ICE copes with a block load of up to 25%, far less than the 50% achieved with our engine.

A diesel engine copes with a block load of up to 40%, however the associated variable engine responses are very noticeable and the output is interrupted. Again, inferior to our results.

Our technical people report they were unable to detect any change in the engine's operations with changes in load.

The impact could only be seen on the electronic data, while engine speed remained within the 1,500+/2 rpm band as loads changed.

This parameter will make our engine very useful and valuable in operations as significant load changes with our engines, can be relatively easily managed without the additional costs of ancillary equipment require with diesel and gas engines.

Engine response

The impact of load variance was not noticeable on engine RPM which responded nearly instantaneously.

This very favourable feature opens new markets for our IP in management of network frequency as we are much cheaper than batteries which are used nearly exclusively for this purpose.

If the Nano Dissociator works as well as presented to us, then we will also be competitive with batteries in round trip energy efficiency.

Projects Development

In addition to the approach reported in our recent newsletter from an electricity supply company, we have received other approaches to test / pilot our system.

We have received an approach from a company with a water treatment process that produces wet or low-grade hydrogen as a by-product and they are seeking to realize value from the by-product hydrogen. The Hydrogenus engines are likely to be able to use this by-product hydrogen to produce power, greatly improving the value of this operation.

All these potential projects will take more work and some time to turn into real prospects, but the trend is very encouraging.

Finance

While we have raised some equity, we still have some way to go to get to our $2m target to

- Develop our demonstration operations;
- R&D phase 2;
- Engineering and possibly funding for a commercial pilot operation;
- Testing of the Nano Dissociator using our demonstration facility; and
- Possibly developing a unit combing the Dissociator and our engine(s).

In view of the state of the equity markets, Directors have agreed that the price for this equity raising will now be $2.00 for each new share (including for the equity already raised in this round).

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