

High-capacity generator set (350kVA) powered by renewable hydrogen for data centers as an on-grid backup solution in case of power outage

Summary

Profile type	Company's country	POD reference
Technology offer	France	TOFR20220721016
Profile status	Type of partnership	Targeted countries
PUBLISHED	Commercial agreement with technical assistance	• World
Contact Person	Term of validity	Last update
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General Information

Short summary

A French company developed a genset for data centers to produce decarbonated electricity from renewable hydrogen. The fuel cell (FC) power can be sized according to the needed nominal power. The genset meets energy challenges by providing independence/reliability in addition to the data center information security, from the cooling system up to the entire building in the event of a power cut. Commercial agreement with technical assistance is sought with partner aiming to secure its data center.

Full description

In many industrial sites, data centers must ensure the total availability of their electrical power supply. These sites are equipped with generators, mostly with diesel engines, as well as UPS (Uninterruptible Power Supply) and batteries to ensure uninterrupted switching between the electricity grid and emergency generators.

Moreover, the Covid-19 crisis and the war in Ukraine raised the need to declare energy independence for the benefit of companies and to develop flexibility levers faster than expected. The use of renewable and carbon-free hydrogen plays a key role in making data centers smarter and adapted to these changes: fossil fuels cost increasing, and local energy independence.

The high-capacity 350 kVA genset is powered by renewable hydrogen. Electrical energy is produced from H2 gas via

a Fuel Cell. The genset has been designed to warrant 24/7 availability to the user network during the operating period. To ease setup, all the equipment is integrated into a 30-foot high cube container, i.e. 20m² of footprint.

The container is made up of 4 compartments isolated from each other by partitions:

- The 1st compartment accommodates the hydrogen circuit and the heat pump system air cooler.
- The 2nd compartment accommodates a FC system which produce electrical energy. The nominal power of the FC system is 220 kVA (250 kVA peak)
- The 3rd compartment accommodates an electrical energy storage system and an electrical conversion system. The function of electrical energy storage is to enable the genset to periodically deliver to the data center network electrical power greater than the power that can be supplied by the heat pumps alone, within the capacity of the conversion and transformation systems.
- The 4th compartment accommodates the air conditioning system and the electrical transformation system.

The French company seeks partners aiming to secure their data centers (existing or new data centers) by supplying decarbonated electricity. Commercial agreements with technical assistance are sought with partners aiming to secure their data center.

Advantages and innovations

Emitting only water, the genset has independent modules (Domestic Hot Water, Pulsed Air, Solar farm) that can be added to the system and offer several applications. Heat losses from the fuel cell can be reused.

- Zero carbon emissions
- Electrical + thermal energy
- Independence from fluctuating fossil fuel prices
- Noiseless solutions

Fuel cell power can be sized according to the nominal power to be reached 500 kVA or 1MW for example. The fuel cell is directly linked to the sizing of the H2 storage and the autonomy the data center is willing to achieve.

- 24-hour availability
- Ecologically responsible
- Stationary
- Modularity

Stage of development

Already on the market

Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 12: Responsible Consumption and Production**
- **Goal 7: Affordable and Clean Energy**
- **Goal 13: Climate Action**

IPR Status

Secret know-how

Partner Sought

Expected role of the partner

The partner could be:

- Data center
- Data center constructor
- Private organisation with data center (telecom operator, bank, stock exchange, data center hosting, industrial or non-industrial company)
- Public infrastructure (Municipality....)

The innovative high-power ecological generator set can be rented or purchased under a commercial agreement with technical assistance.

The French company can help with the implementation and maintenance activities of the genset.

Type of partnership

Commercial agreement with technical assistance

Type and size of the partner

- **Big company**
- **SME 50 - 249**

Dissemination

Technology keywords

- **10002007 - Environmental Engineering / Technology**
- **004002001 - Fuel cell, hydrogen production**
- **04005004 - Photovoltaics**
- **04002005 - Generators, electric engines and power converters**
- **004006001 - Energy management**

Targeted countries

- **World**

Market keywords

- **08002001 - Energy management**
- **06008 - Energy Storage**
- **06009 - Energy Distribution**
- **06010002 - Energy for the community/public sector**
- **06003008 - Other alternative energy**

Sector groups involved

- **Intelligent Energy**
- **Environment**

Media

Images



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