

# Portable generators to power a range of activities



The EVERYWH2ERE project has integrated proton exchange membrane fuel cell stacks with lightweight, safe, pressurised hydrogen technologies to create an easy-to-install, transportable generator. They offer a reliable, low-noise, low-emission power supply that can be used in environments such as construction sites, ports, and social and cultural events.

## Preparation for market

Around 20 % of Europeans are exposed to unhealthy levels of noise. Reduction of noise and air pollution, including from temporary events and construction sites, have become priorities for public authorities. Moreover, the increase in construction work and events like markets and festivals stimulates demand for portable power sources.

EVERYWH2ERE has developed and tested six 'plug-and-play' fuel-cell generators (gensets) and investigated the legal framework to ensure their conformity with regulations. Environmental and logistical analyses have been performed, and hydrogen supply points in the EU have been mapped. In addition, contractual and business models have been defined, along with a replication strategy.

## Demonstrations around Europe

EVERYWH2ERE, funded by the Clean Hydrogen Partnership, was a 'demonstration-to-market' project that aimed to prove the reliability of fuel-cell gensets via an EU-wide campaign. The gensets were demonstrated at events such as music festivals, on construction sites and at the Port of Tenerife, where one genset powered a rescue vessel. The stacks had already been trialled before their integration into the gensets.

The demonstrations were backed by strong communication and dissemination activities, including regular updating of the website and participation in public events. EVERYWH2ERE won awards for its outreach work.

## CLEAN, RELIABLE ENERGY

Environments like construction sites, ports or festivals need a clean, reliable, low-noise power supply, and EVERYWH2ERE has developed transportable hydrogen-based generator sets that can meet this need.

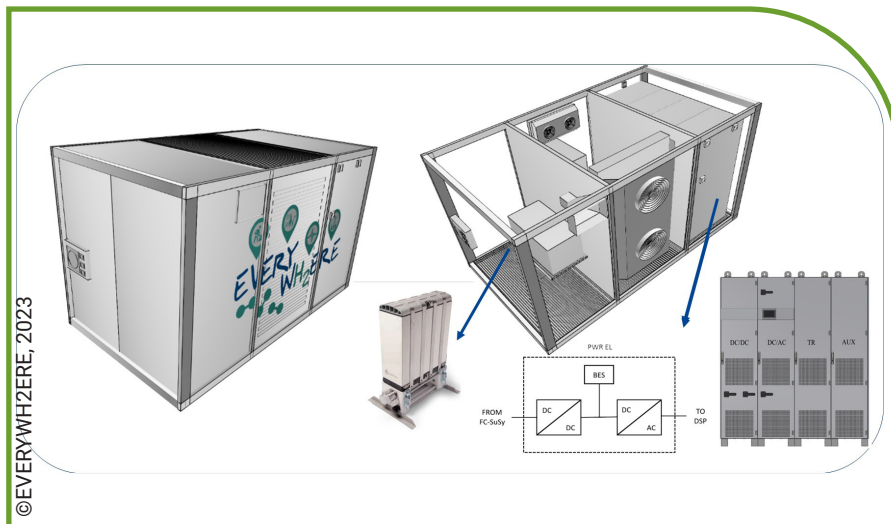
## EXPLORING NEW USES

EVERYWH2ERE used cities as living labs to demonstrate its technology, starting with niche, but every day, applications.

External stakeholders are now interested in replicating the gensets for use at sea, and project partners are exploring further deployment and research. EVERYWH2ERE should also feed into the demand for powering critical infrastructure with portable fuel cells during natural disasters.

**The goal?** EVERYWH2ERE aims to make hydrogen gensets sufficiently affordable to enable them to replace diesel models across Europe.

**Key results?** The project has helped to increase acceptance of fuel cell and hydrogen technologies.



## KEY ACHIEVEMENTS

**6 GENSETS DEVELOPED** – 25 kilowatts (kW) and 100 kW

**50 % STACK** efficiency achieved.

**NOISE EMISSIONS** reduced by 60 decibels.

**6 HOURS** installation time

**UP TO 20 000** hours lifetime

**-20 °C MINIMUM TEMPERATURE** for use of gensets

**DEMONSTRATORS TESTED** at construction sites, events and a port

**100 KW GENSET** conforms with regulations

## IMPACTS

**EUR 2 400/kW** manufacturing capital expenditure estimated for the 100 kW genset, EUR 5 500/kW for the 25 kW genset

Costs are estimated at **10 % LOWER** compared to solutions on the market

**OVER 2 500 KG** emissions reductions achieved compared with fossil fuel-based gensets.

**ENVIRONMENTAL ANALYSIS** of the gensets demonstrated better performance than diesel-fuelled models.

**HYDROGEN SUPPLY POINTS** were mapped and a logistical analysis performed.

**SHORT-TERM RENTAL** identified as most promising market for the gensets.

**BUSINESS MODELS** and a replication strategy were defined.

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