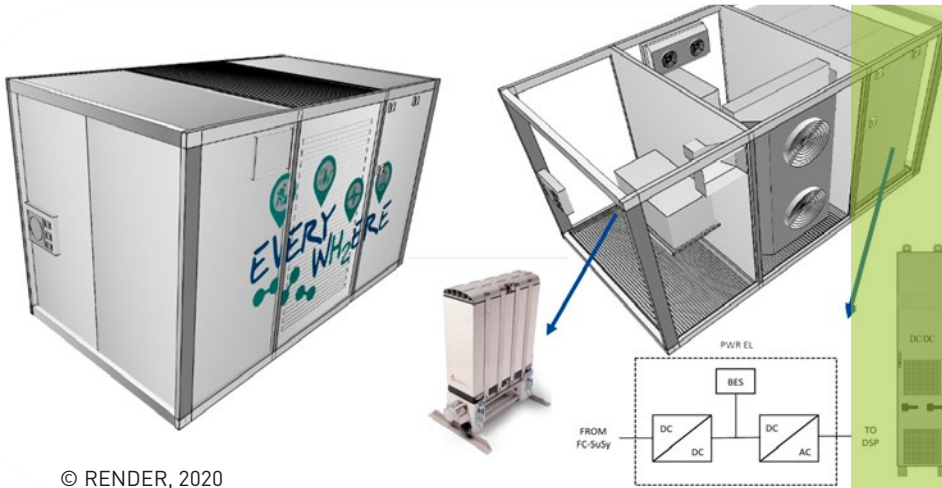




**Making an impact
on the clean
energy transition**

ENERGY

CLEAN AIR EVERYWHERE WITH HYDROGEN POWER



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Zero-pollution generators

Although most urban air pollution comes from transport, other activities make a significant contribution. Diesel generators – or gensets – used for construction sites, outdoor events and off-grid locations are one such polluting source, producing harmful particles, greenhouse gases and noise. Fuel cells can be a disruptive solution, providing clean, silent mobile power.

The EVERYWHERE project, funded by the Fuel Cells and Hydrogen Joint Undertaking (FCH JU), has designed light, low-pollution 25-kWe and 100-kWe generators with proton-exchange membrane (PEM) fuel cells and safe pressurised-hydrogen technology. The consortium is integrating EU-manufactured components into four low-carbon 'plug and play' gensets for each size. In the ALKAMMONIA project, FCH JU-funded researchers have produced components for a European version of efficient alkaline-fuel-cell mobile generation. The project's transportable cost-effective units use hydrogen they 'crack' from high-energy density ammonia and are 60 % recyclable, making them a sustainable source of zero-carbon power, particularly in remote areas.

Demand demonstration

EVERYWHERE plans to tour its eight gensets around construction sites, music festivals and events in Europe to demonstrate their economic viability and safety. Project partners will use the results to fine-tune the prototype devices before moving to commercialisation in 2025. Meanwhile, a life-cycle analysis by ALKAMMONIA has demonstrated a business case for different applications of alkaline fuel-cell generators. Project partner AFC Energy has since launched and demonstrated a scalable 20-kW electric-vehicle fuel cell charger using alkaline fuel-cell technology capable of using hydrogen from cracked ammonia to provide affordable off-grid power.

Events, construction sites and off-grid infrastructure could soon run on quiet, clean power. Two FCH JU projects are paving the way to the deployment of fuel-cell generators that can replace mobile diesel generators, for less polluted, quieter cities and events and sustainable low-carbon energy in remote areas.



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FCH JU Success Stories



LOW-IMPACT MOBILE POWER

Safe, accessible alternatives to mobile diesel generators, to reduce the significant amounts of harmful air and noise emissions they produce.

READY-TO-USE SOLUTIONS

The approach? Research, industry and local authority partners joined forces in two FCH JU projects for mobile power generators, one based on PEM fuel cells, the other on alkaline fuel cells using hydrogen from ammonia. **The goal?** To develop and demonstrate sustainable, cost-efficient, hydrogen-fuelled gensets using 100 % European technology. **Key results?** Zero-carbon, silent mobile generators that can supply clean, quiet 'plug and play' power in cities and off-grid regions, with PEM models ready for demonstration at construction sites and festivals, and ammonia-fuelled models close to commercialisation.

KEY ACHIEVEMENTS

EVERYWH2ERE

2 SIZES
of generator – 25 kW_e and 100 kW_e

20 000 HOURS
targeted generator lifetime

50 %
targeted genset power efficiency

COMPARABLE OPERATING COSTS
relative to diesel gensets

ALKAMMONIA

EUROPEAN WORLDWIDE LEADERSHIP
in alkaline fuel-cell technology

60 %
stack power efficiency

> 90 %
ammonia cracker efficiency

<150kg / kW
stack weight

60 % FUEL CELL WEIGHT

80 % MATERIALS
can be recycled or reworked

IMPACT

EVERYWH2ERE

EUR 5 500/kW_e
predicted capital expenditure

EUR 110 MILLION/YEAR
potential EU market

150-200 UNITS
expected to sell in Europe 2025-2030

ALKAMMONIA

< EUR 3 000/kW_e
forecasted supporting system costs

< 100 % PURE
hydrogen tolerated for more flexible and cheaper source

COMMERCIAL ALKALINE FUEL CELL SOLUTIONS DEVELOPED
for a diverse range of applications



www.fch.europa.eu/page/fch-ju-projects
<http://www.everywh2ere.eu/>
<http://alkammonia.eu/>



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**FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING**

A partnership dedicated to clean energy and transport in Europe