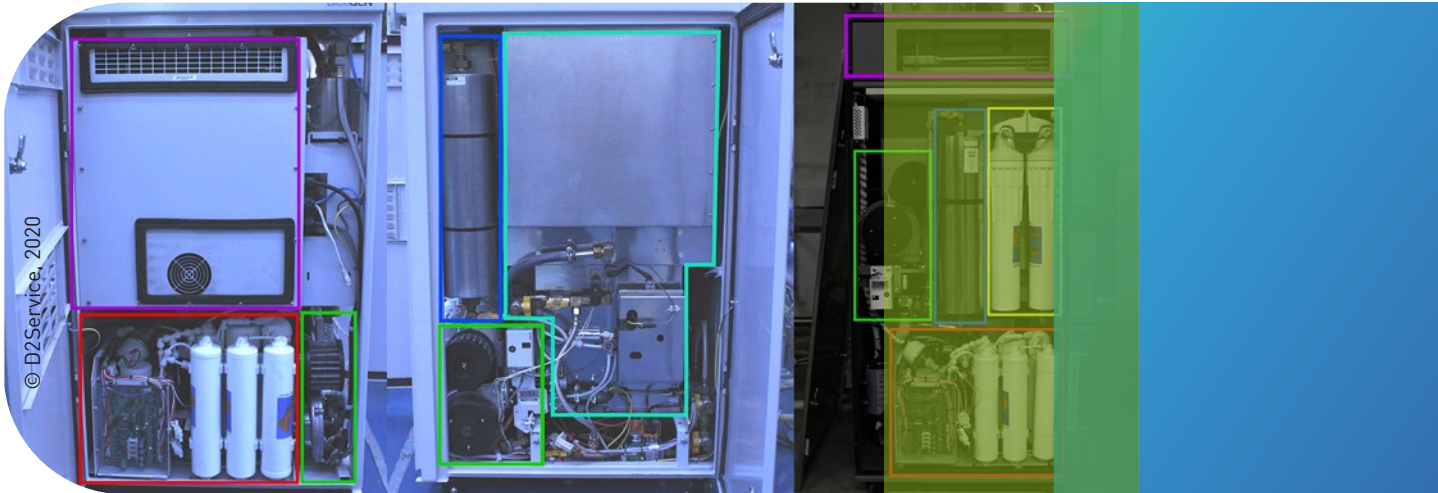




**Making an impact
on the clean
energy transition**

ENERGY

LOW-MAINTENANCE FUEL-CELL SYSTEMS FOR WORK AND HOME



New generation of products offer streamlined servicing

Micro-combined heat and power (μ CHP) systems operated by fuel cells can convert 95 % of input natural gas or hydrogen into reliable heat and power supplies. Similarly, back-up power systems using fuel cells offer a zero-emission solution to securing power supply to essential infrastructure. They can also reduce heat and power CO_2 emissions by 30-50 %. In addition, back-up power systems using fuel cells offer a zero-emission solution to securing power supply to essential infrastructure. However, units are still expensive and require frequent maintenance, increasing their total cost of ownership.

Solid-power fuel-cell (SOFC) and proton-exchange membrane fuel-cell (PEMFC) systems have been adapted in the FCH JU-funded D2Service project to make them cheaper and easier to maintain. Modular layouts enable technicians to replace defective sections easily, while individual components have been improved and standardised to last longer and be faster to replace. Simpler manuals also allow non-specialised technicians to install and maintain the units. Finally, a remote monitoring system detects failures early, for fewer service visits and unit breakdowns, and supports customers to perform service tasks. Field tests of four improved SOFC μ CHP systems at commercial sites in Italy and two PEMFC back-up power systems at critical telecommunications infrastructure sites in Denmark have shown that the units are easy to install, reliable, and require fewer and cheaper services.

Carbon-efficient technology for all

The reduced operation costs and increased efficiency make climate-friendly μ CHP and back-up power fuel-cell systems more accessible to customers. By enabling more non-specialist technicians to install and service units, the FCH JU is helping to better disseminate the technology. Manufacturers are adapting the project enhancements to their next generation of products, with one improved and cheaper μ CHP unit already commercially available throughout Europe.

Fuel-cell systems that generate heat, power or back-up energy in homes, SMEs and essential infrastructure are becoming cheaper to service and maintain, thanks to the FCH JU project D2Service. Design and service innovations make the low-emission systems more affordable for homeowners and businesses alike.



FCH JU Success Stories



KEY ACHIEVEMENTS

>12 MONTHS

operation in trials for each of the units tested

100 %

availability and reliability throughout the test period

20 % AND 30 %

lower service frequency and costs thanks to remote monitoring

60 000 HOURS

possible operating time for critical components for SOFC

1 YEAR

service interval for SOFC – 2 to 4 times longer

<4 HOURS

SOFC SERVICE TIME

48 HOURS

total SOFC service downtime

>40 %

total service cost reduction for SOFC

IMPACT

MORE READILY AVAILABLE

products that reduce carbon emissions by 30-50 %

LOWER COSTS

of ownership for homes and businesses

LONGER SERVICE LIFE

from more efficient systems

NON-SPECIALISED TECHNICIANS

can install and service systems using [simplified manuals](#) *

CUSTOMERS

can perform some service tasks with remote support

* <https://project-d2service.eu/documents/>

CUTTING OWNERSHIP COSTS

Fuel-cell systems must become cheaper to service and maintain if they are to attract more consumers.

SIMPLER TECHNOLOGY FOR HIGHER UPTAKE

To reduce total costs of owning fuel-cell systems, the FCH JU brought together commercial manufacturers and research organisations. **The goal?** To identify ways to reduce service and maintenance expenses. **The results?** Simplified components, unit layouts and service manuals, along with remote monitoring, that are being adopted by industry to increase uptake of fuel-cell technology.



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