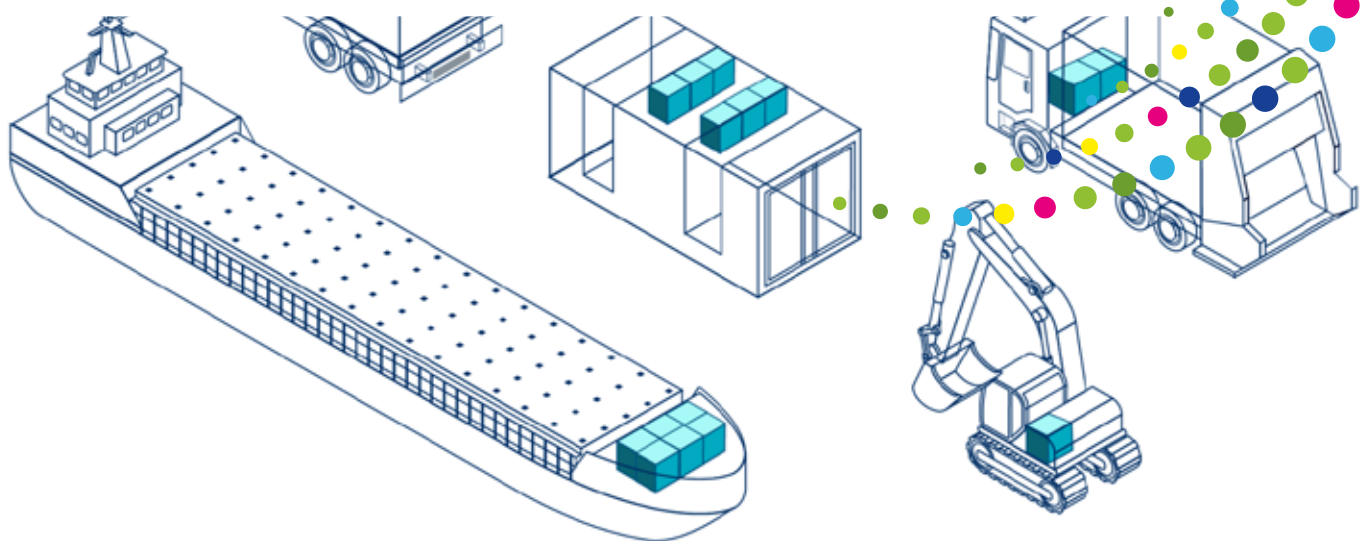


# Standardised fuel cell components for heavy-duty vehicles



**Fuel cell and hydrogen technologies are expected to play a key role in decarbonising transport. The standardisation of fuel cell system components is vital for mass production of such technologies at competitive prices. Funded by the Clean Hydrogen Partnership, the STASHH project is standardising fuel cell module for heavy-duty applications.**

## Setting the standards

The development of fuel cell system components is currently fragmented. Producers work to different designs, requiring vehicle manufacturers to modify their vehicles depending on their fuel cell supplier.

Moreover, differences exist between products for buses, lorries, rail and ships. STASHH addresses this fragmentation by devising standards for fuel cell modules – the boxes containing fuel cell stacks.

The project has formulated initial versions of standards for the dimensions, interconnectors and application programming interface (API) software of modules for heavy-duty transport. The standards ensure scalability so that the modules can be easily adapted for different modes of transport (up to 1 MW).

## Making an impact

The standards, which are available at the project website, were agreed upon following discussion involving the entire STASHH consortium, especially fuel cell module and vehicle manufacturers.

Following definition of the standards, the consortium will focus on construction, testing and evaluation of prototype modules. Based on this, the standards will be refined and submitted to international standard-setting bodies.

Another area of focus will be dissemination of the standards to industry. STASHH has already received significant attention from vehicle manufacturers and has worked to maintain contact with all interested companies.

## EASIER FUEL CELL ADOPTION

To help decarbonise transport, STASHH has formulated standards for fuel cell modules that will make it easier to adopt fuel cell technology for heavy-duty mobility.

## KICK-STARTING FUEL CELL USE

By concentrating on modules, STASHH allows suppliers to continue developing stacks based on their own designs, provided that they comply with the module standards.

**The goal?** STASHH should kick-start fuel cell use in the heavy-duty mobility sector, reducing its environmental impact.

**Key results?** The main results are the three documents defining standards for module dimensions, interconnector placement and API software. Another result is a review of rules in various markets and their implications for implementation of the STASHH standards.

## KEY ACHIEVEMENTS

**DIMENSION STANDARDS**  
for fuel cell modules

**FLOW INTERFACE STANDARDS**  
for air, hydrogen, coolant and power interconnections

**DIGITAL INTERFACE STANDARDS**  
for API control, monitoring and diagnostics software

**PROTOCOLS AND WORK PACKAGES**  
for system testing and safety

**OVERVIEW REPORT**  
on regulations, codes and standards in different markets

## IMPACTS

**LOWER PRODUCTION**  
costs of fuel cell systems as a result of easier automation

**A STRONGER SUPPLY CHAIN**  
with increased reliability and availability of parts

**A LARGER MARKET**  
for fuel cell suppliers thanks to a single product for all heavy-duty applications

**ABILITY TO SCALE UP**  
for applications such as passenger ferries

**FAIR COMPETITION**  
among fuel cell suppliers due to ease of switching supplier

**LOWER RESEARCH, DEVELOPMENT AND INNOVATION COSTS**  
for transport sector manufacturers

**LOWER COST OF OWNERSHIP**  
of heavy-duty fuel cell vehicles

**INCREASED ACCEPTANCE**  
of fuel cell technology in the heavy-duty transport sector

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