

STASHH

STANDARD-SIZED HEAVY-DUTY HYDROGEN

STASHH

Project ID	101005934
PRR 2024	Pillar 3 – H ₂ end uses: transport
Call topic	FCH-01-4-2020: Standard sized FC module for heavy duty applications
Project total costs	EUR 14 303 172.80
FCH JU max. contribution	EUR 7 500 000.00
Project start - end	1.1.2021–31.12.2024
Coordinator	SINTEF AS, Norway
Beneficiaries	Aktiebolaget Volvo Penta, Alstom Transport SA, AVL List GmbH, Ballard Power Systems Europe AS, Centro per gli Studi di Tecnica Navale SpA, Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Damen Global Support BV, Damen Research Development & Innovation BV, FCP Fuel Cell Powertrain GmbH, FEV Europe GmbH, FEV Software and Testing Solutions GmbH, Freudenberg FST GmbH, Freudenberg Fuel Cell e-Power Systems GmbH, Future Proof Shipping BV, Hydrogenics GmbH, Hyster-Yale Italia SpA, Hyundai Motor Europe Technical Center GmbH, Intelligent Energy Ltd, Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, Nedstack Fuel Cell Technology BV, Plastic Omnium New Energies Wels GmbH, Proton Motor Fuel Cell GmbH, Scheepswerf Damen Gorinchem BV, Solaris Bus & Coach Sp z.o.o., Symbio, Toyota Motor Europe NV, VDL Enabling Transport Solutions BV, VDL Energy Systems, VDL Special Vehicles BV, Volvo Construction Equipment AB, Volvo Technology AB, WaterstofNet VZW

<https://stashh.eu>

PROJECT TARGETS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?
Project's own objectives	Number of sizes	pcs	3	3	
	Number of FC module partners	pcs	7	7	✓
	FC module power rating	kW	30–100	30–125	

PROJECT AND GENERAL OBJECTIVES

Stashh's objectives are to agree on a standard for fuel cell modules across the heavy-duty sector (trucks, buses, ships, generators, trains, etc.), to build prototypes in accordance with this standard and to test them in accordance with agreed-upon methods. The project has produced three documents for standards, covering sizes, interfaces and communication; most fuel cell module suppliers have provided their prototypes, and some have already undergone testing.

NON-QUANTITATIVE OBJECTIVES

- The project aims to disseminate the standard. It has established contact with the Society of Automotive Engineers and the International Organization for Standardization.
- Stashh plans to update the standard in 2024, based on experience.

PROGRESS AND MAIN ACHIEVEMENTS

- A standard definition has been agreed.
- Stashh has created a comprehensive overview of regulations, codes and standards.
- All fuel cell modules have been designed, and two of the eight have been tested in accordance with the project's protocols.

- A truck prototype has been deployed at VDL.
- A best practices manual for original equipment manufacturers has been created.

FUTURE STEPS AND PLANS

- The final FCM testing campaigns will be conducted in 2024.
- The system will be demonstrated in the field.
- X-in-the-loop testing software will be created, and standard and designs will be finalised.

