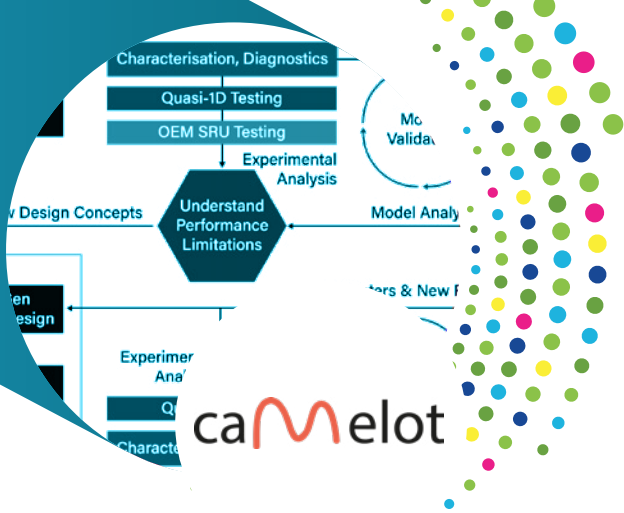
CAMELOT

UNDERSTANDINGCHARGE,MASSANDHEATTRANSFER IN FUEL CELLS FOR TRANSPORT APPLICATIONS



Project ID:	875155
PRD 2023:	Panel 3 – H2 end uses – transport
Call topic:	FCH-01-4-2019: Towards a better understanding of charge, mass and heat transports in new generation PEMFC MEA for automotive applications
Project total costs:	EUR 2 589 273.50
Clean H_2 JU max. contribution:	EUR 2 295 783.50
Project period:	1.1.2020–31.12.2023
Coordinator:	Sintef AS, Norway
Beneficiaries:	Albert-Ludwigs-Universitaet Freiburg, Bayerische Motoren Werke AG, Fast Simulations UG, FCP Fuel Cell Powertrain GmbH, Johnson Matthey Hydrogen Technologies Limited, Johnson Matthey plc, PowerCell Sweden AB, Pretexo, Technische Universität Chemnitz

http://camelot-fuelcell.eu

PROJECT AND OBJECTIVES

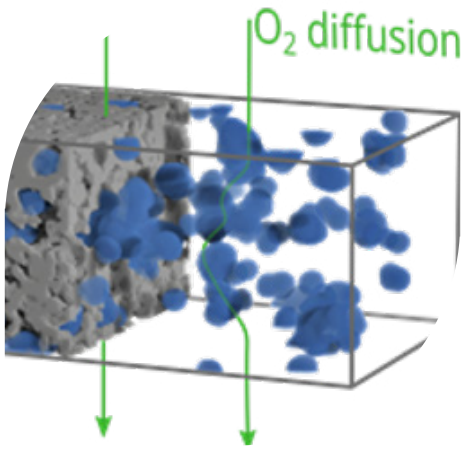
Camelot brings together highly experienced research institutes, universities, fuel cell membrane electrode assembly suppliers and transport original equipment manufacturers to improve understanding of the limitations of fuel cell electrodes. The purpose of this is to provide guidance on the next generation of membrane electrode assemblies required to achieve the 2024 performance targets.

PROGRESS AND MAIN ACHIEVEMENTS

- Ultra-thin membrane electrode assembly construction: the target is < 10 µm; it is currently stable down to 8 µm, with ongoing testing down to 6 µm.
- X-Y-Z graded catalyst-coated membrane layer construction: the initial catalyst-coated membranes have been made with graded catalyst content and graded ionomer content.
- The membrane permeability test set-up has been established.
- X-ray fluorescence and high-resolution scanning electron microscope characterisation of graded catalyst layers have been carried out.

FUTURE STEPS AND PLANS

- The project was on hold for 10 months in 2021 and restarted on 1 January 2022.
- The project timeline was extended by 12 months.



QUANTITATIVE TARGETS AND STATUS

Target source	Parameter	Unit	Target	Achieved to date by the project	Target achieved?
Project's own objectives	Membrane thickness	µm	< 10	6	✓
AWP 2019	Total MEA Pt loading	mgPt/cm²	< 0.08	0.18	⚙
	Power density	W/cm²	> 1.8	0.75	⚙

Clean Hydrogen Partnership
Co-funded by the European Union