

MORELIFE

MATERIAL, OPERATING STRATEGY AND RELIABILITY OPTIMISATION FOR LIFETIME IMPROVEMENTS IN HEAVY DUTY TRUCKS



Project ID	101007170
PRR 2024	Pillar 3 – H ₂ end uses: transport
Call topic	FCH-01-2-2020: Durability-lifetime of stacks for heavy duty trucks
Project total costs	EUR 3 499 913.75
FCH JU max. contribution	EUR 3 499 913.75
Project start - end	1.9.2021–31.8.2024
Coordinator	AVL List GmbH, Austria
Beneficiaries	EKPO Fuel Cell Technologies GmbH; Mebius, Raziskovalno Razvojna Dejavnost, Zastopanje In Trgovina d.o.o.; Nedstack Fuel Cell Technology BV; Technische Universität München; Technische Universiteit Eindhoven; Univerza v Ljubljani

<https://morelife-info.eu/>

PROJECT AND GENERAL OBJECTIVES

The MORELife project addresses the need for highly efficient material utilisation, maximised durability and the optimised matching of operational conditions for proton-exchange membrane fuel cells in heavy-duty applications. Its objectives are to:

- perform accelerated stress tests for the shortened test duration for lifetime verification;
- make improvements at the material and operational strategy levels;
- create advanced degradation models;
- determine the optimal operating conditions and validate them based on the improved materials;
- achieve a predicted lifetime for fuel cells of 30 000 hours.

PROGRESS AND MAIN ACHIEVEMENTS

- Accelerated stress test and accelerated durability test protocols and aftertreatment systems for state-of-the-art and advanced catalyst material have been created.
- A third generation of novel catalyst material has been developed with promising first results of rotating disc electrode investigations.
- Post-mortem analyses on aged SOA material have been performed in order to improve mechanistic degradation models created in this project.

FUTURE STEPS AND PLANS

If proven sufficient, the third-generation catalyst will be integrated in a 5- to 10-cell short stack for validation in order to prove its durability and performance.

PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
Project's own objectives and SRIA (2021–2027)	Power density per cell	W/cm ² at 0.675 V / cell	1.2	
	PGM loading	g/kW	0	