

ENERGETICS

MUR DM 117/Stellantis - Modeling and experimental validation on test bench of innovative PEMFC stack for mobility applications

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Context of the research activity	Fuel Cells for mobility applications Modeling Experimental assessment Progetto finanziato nell'ambito del PNRR - DM 117/2023 - CUP E14D23001950004
Objectives	<p>The objective is centered in the evolution of PEMFC stack towards better performing and cheaper solutions though the operation at higher temperature (HT-PEMFC).</p> <p>The approach will be based on the modeling of innovative solutions for PEMFC: high temperature polymeric membranes as electrolyte, catalyst layers with reduced quantities or absence of PGM materials, more efficient thermal management, use of stack exhausts at higher enthalpy to drive a turbocharger for the cathode inlet air.</p> <p>Then, the simulation model of the stack will be validated through experimental tests in a test bench at laboratory scale of a stack, with performance tests in different operating conditions, dynamic tests, stress tests, durability tests.</p> <p>Finally, the validated model will be used for an optimized design of the stack, and for the design of the Balance of Plant components around the stack (anode circuit, cathode circuit, thermal circuit).</p>
Skills and competencies for the development of the activity	Fuel Cells Hydrogen technologies CFD modeling

