ENERGETICS

Green Independence - Design, prototyping and testing of an innovative Electrochemical Module (ECM) for AEM electrolysis technology (DESAEM)

Funded By	GREEN INDEPENDENCE SRL [P.iva/CF:02631640741]
Supervisor	SANTARELLI MASSIMO - massimo.santarelli@polito.it
Contact	MONTEVERDE ALESSANDRO HUGO ANTONIO - alessandro.monteverdevidela@polito.it FERRERO DOMENICO - domenico.ferrero@polito.it
Context of the research activity	Low Temperature electrolysis tecnologies based on AEM membranes
Objectives	Design, manufacture and test under variable conditions a highly efficient, low-cost Alkaline Exchange Membrane Electrolysis (AEMEL). In the first stage, the PhD will assess the AEMEL cell technology in terms of designs, components and materials, to outline a preliminary benchmark definition of the Electrochemical Module (ECM). Secondly, it will focus on identifying one or more baseline-designs based on initial ECM specifications and results gained from testing different SRUs (Single Repeating Units) baseline constructed from commercial components. Finally, after the selection of design and component materials, a final stage SRU prototype will be constructed and tested to assess its characteristics and performance in real conditions, including investigation of possible areas of improvement.
Skills and competencies for the development of the activity	• Polymeric materials • Electro-catalysis • Kinetic • Thermodynamics • Heat transfer • Experimental capabilities on electrochemical technologies and processes • Modeling capabilities in terms of multi-physics phenomena (electrochemical, thermal, mass transport)