ATENA GREEN STEP
Clean and Digital Technologies for the Green Deal

Title

ATENA Green STEP – Clean and Digital Technologies for the Green Deal

Project

ATENA Green STEP aims to establish an integrated experimental and manufacturing infrastructure for the development, prototyping, testing and pre-industrial validation of critical technologies for the green and digital transition. The project combines clean and resource-efficient technologies, digital and deep-tech solutions, and bioelectrochemical processes. It seeks to strengthen European technological autonomy, reduce reliance on critical materials and external suppliers, and accelerate the transfer of research results towards industrial applications.

The initiative includes the development of fluorine-free, PFAS-free polymer membranes for fuel cells and electrolysers; catalysts with reduced platinum-group-metal content and high-performance membrane electrode assemblies (MEAs); and modular fuel cell/battery hybrid power units for maritime propulsion and airport ground operations, including tow tractors and ground power units. Digital technologies are embedded throughout the development process, combining predictive energy management, artificial intelligence, digital twins, Hardware-in-the-Loop simulation and SCADA/IoT monitoring to improve efficiency, reliability and operational flexibility.

A new multifunctional facility in San Marco Evangelista (Caserta, Italy) will host specialised laboratories for materials and electrochemical characterisation, membrane and MEA fabrication, electronics, modelling and advanced prototyping. The experimental infrastructure will include dynamic testing of heavy-duty vehicles, power-unit test benches up to 400 kW, climatic testing, and a semi-anechoic chamber for electromagnetic compatibility and acoustic testing. These capabilities will support the validation and pre-qualification of components and integrated systems under representative operating conditions.

The project also addresses bioelectrochemical systems for energy recovery from organic waste and residual biomass, together with circular approaches to materials recovery, reuse and recycling. Expected outputs include advanced materials and components, demonstrator power units, digital control platforms, scalable manufacturing processes and specialised prototyping and testing services for companies and research organisations. Training and technology-transfer activities will support the development of technical skills and the uptake of the proposed solutions across sustainable energy and mobility value chains.

Info:

Type of action: Productive investment, industrial research and experimental development

Timing: To be confirmed (dates not specified in the application)

Institutional website: www.atenaweb.com

Budget: € 6,735,340.00

Requested contribution: € 4,840,196.00

Call:

Regione Campania – "Disciplina degli interventi regionali di Aiuti per lo sviluppo e la fabbricazione di tecnologie critiche – STEP".

Funding

European Regional Development Fund (ERDF) – Regione Campania, STEP framework.

Coordinator / Proponent

ATENA Scarl – Distretto Alta Tecnologia ENergia Ambiente

Sole applicant and implementing organisation.

Partner (scientific collaborations)

ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development

Università degli Studi di Napoli Federico II – Departments of Chemistry and Physics

Università degli Studi di Napoli "Parthenope" – Department of Engineering

Source: ATENA GREEN STEP project application, submitted 21 July 2025, pp. 18 and 25–31. Amounts refer to the submitted application; implementation dates and grant award details are not provided.