

Talent Pass

€ **3**
million
funding

10
partners

7
countries

48
month
duration

Empowering Innovation

Through Mobility

**&
Collaboration**

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HOW DO WE IDENTIFY OURSELVES?

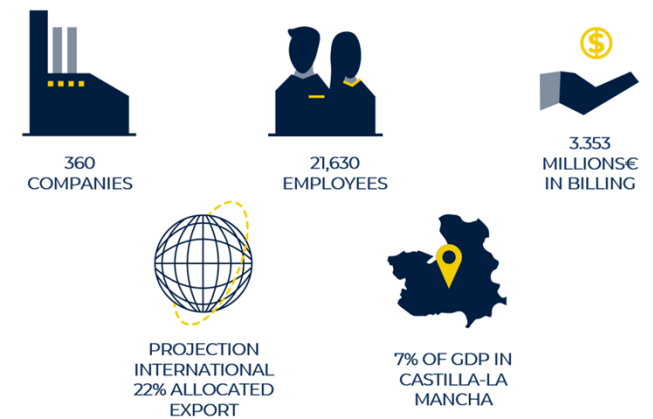
For our services and specialized means...



TECHNOLOGY CENTER
(CIT National Reg.: No. 123)



For the companies that form it means...



INDUSTRIAL CLUSTER

GEOGRAPHICAL LOCATION WITH EXCELLENT COMMUNICATIONS



Current Facilities 3,050 m2
3 Buildings:
Offices, laboratories and training
center



ACTIVITY AND APPLICATIONS SECTORS



DEPARMENTS AND LABORATORIES

Tech Units: Digital design, Simulation, Materials, Environment and Hydrogen/Synthetic fuels

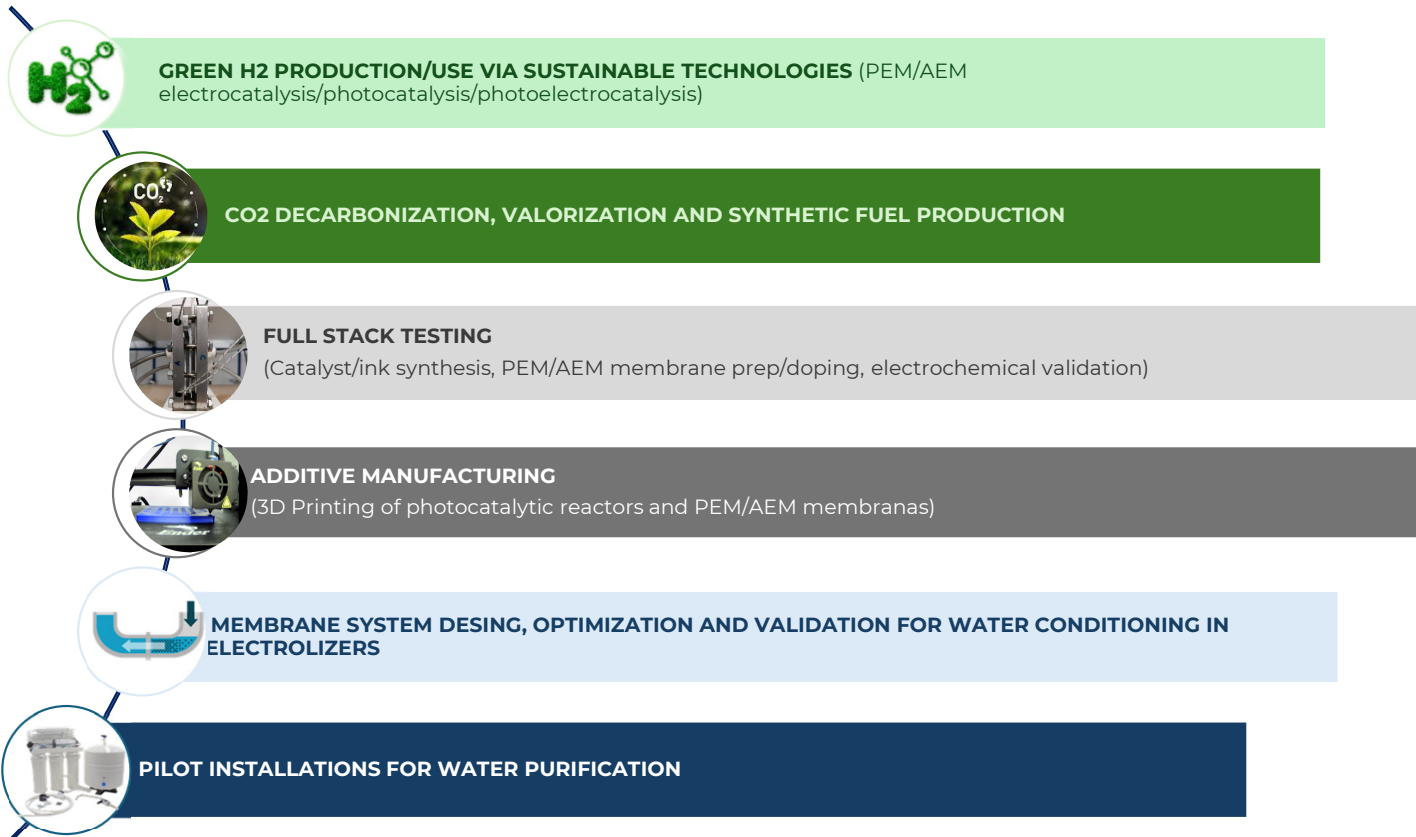
Transversal Units: Knowledge Technology transfer, European and National R&D consulting, Digital Transformation

Laboratories: Metrology, H2, Technical office and materials , Acoustics



DEPARTMENT OF HYDROGEN TECHNOLOGIES & SYNTHETIC FUELS

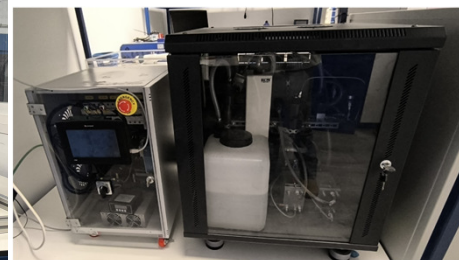
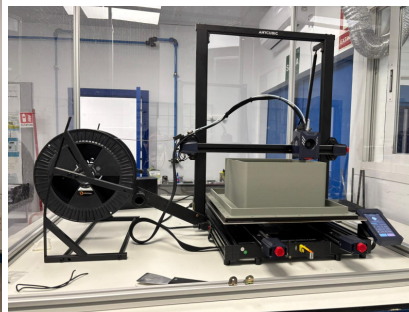
Capabilities



DEPARTMENT OF HYDROGEN TECHNOLOGIES & SYNTHETIC FUELS

H2 Laboratory:

- 3 workstation desks equipped with monitors
- 2 experimental setup areas, 1 area with fume hood
- Equipment for photo and electrocatalysis
- 3D printing equipment



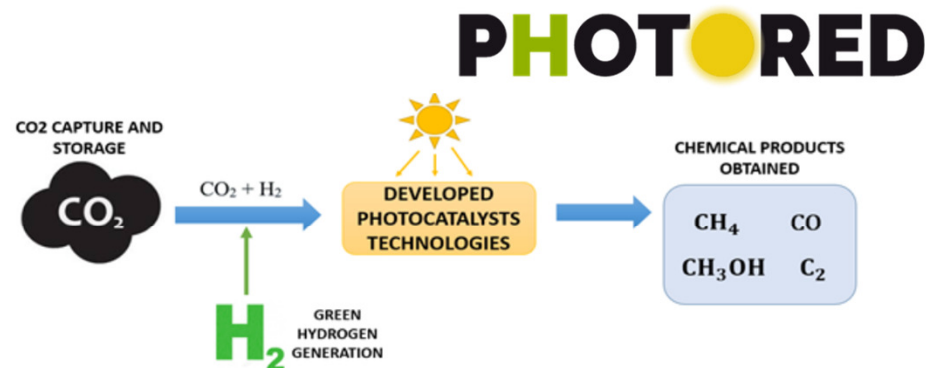
COMPLETED R&D PROJECT

AEI – PHOTORED

Development of Photocatalytic Technologies
for Biofuel Production from CO₂
Hydrogenation

Objectives:

- Create selective photocatalyst to convert CO₂ into specific biofuels (CALF-20, MUF-16, TAMOF).
- Development of membranes for CO₂ capture
- Optimize membrane filtration systems for wastewater
- Integrate green H₂ for CO₂ reduction.
- Replace industrial chemical processes with more sustainable technologies
- Build/test a pilot-scale photocatalytic reactor



Innovation:

- CO₂ capture and valorization into high-value chemicals and synthetic fuels
- Cost-effective photocatalyst synthesis
- Pilot reactor development and validation

Impact:

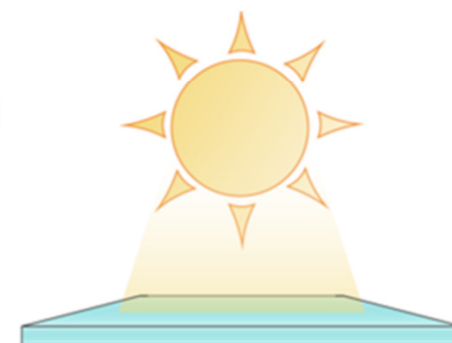
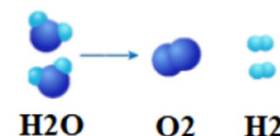
- Lower CO₂ emissions via renewable fuel production
- Reduced cost of catalyst and biofuel production
- Dissemination at international conferences (XLIII RSEQ, PhotoIUPAC2024)

COMPLETED R&D PROJECT

JCCM – H₂PHOTOPROD

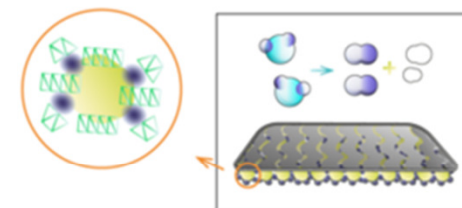
New Development Paths & Optimization of MOF Photocatalysts for Green Hydrogen Production Using Additive Manufacturing

H₂PHOTOPROD



Support
(Additive manufacturing)

Photocatalyst
MOF



Objectives:

- Study and developing photocatalytic water-splitting processes for green hydrogen production
- Optimize metal-organic framework photocatalysts (MOF MIL-125)
- Use additive manufacturing to create support plates, reactors, and associated equipment

Innovation:

- Design & optimization of novel photocatalyst (MOFs based on Pt-MIL-125(Ti)-NH₂)
- Evaluate transparent materials for 3D-printed solar plates
- Photoelectrochemical water splitting under UV/visible light for hydrogen production.

Impact:

- Advances in additive manufacturing and advanced materials
- Driving energy transition and decarbonization
- Dissemination at international conferences (PhotoIUPAC2024, ICC24 Lyon, IIIWMPECE 2025)

ONGOING RESEARCH PROJECT

AEI – HYLIOS

Innovative Photocatalytic Systems for Green Hydrogen Production from Wastewater



Objectives:

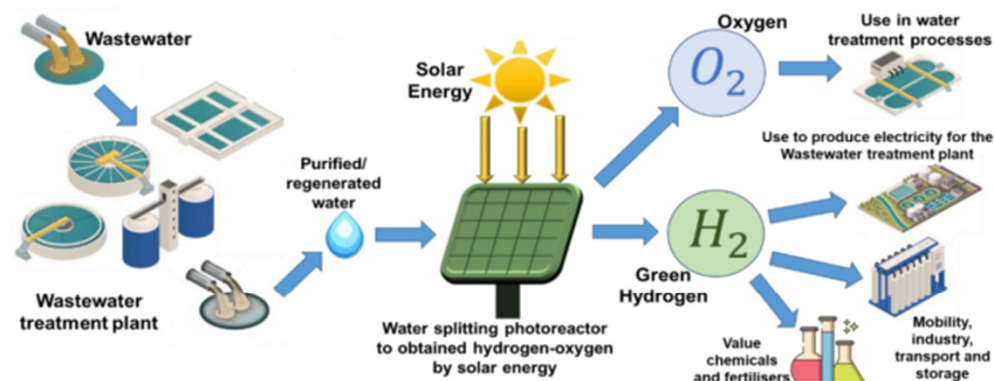
- Develop and optimize photocatalytic systems to produce green hydrogen
- Synthesize new MOF-based photocatalysts (MOF (Ti)IEF-11)
- Design and scale novel photoreactors
- Use additive manufacturing in reactor development
- Build pilot test units for real-world validation

Impact:

- Scale up sustainable, efficient green hydrogen from wastewater
- Valorize wastewater and water treatment plants as an energy resource
- Contribute to circular economy and energy transition

Innovation:

- Photocatalytic water splitting using treated wastewater and visible light
- Advanced catalyst development
- Testing in innovative reactors built via 3D printing. Use of transparent materials for printing photoreactors



ONGOING RESEARCH PROJECT

JCCM – AEMIOS

Optimization of H₂ Production in Anion-Exchange Membrane (AEM) Cells:
Multidisciplinary Study of Materials & Numeric Modeling

Objectives:

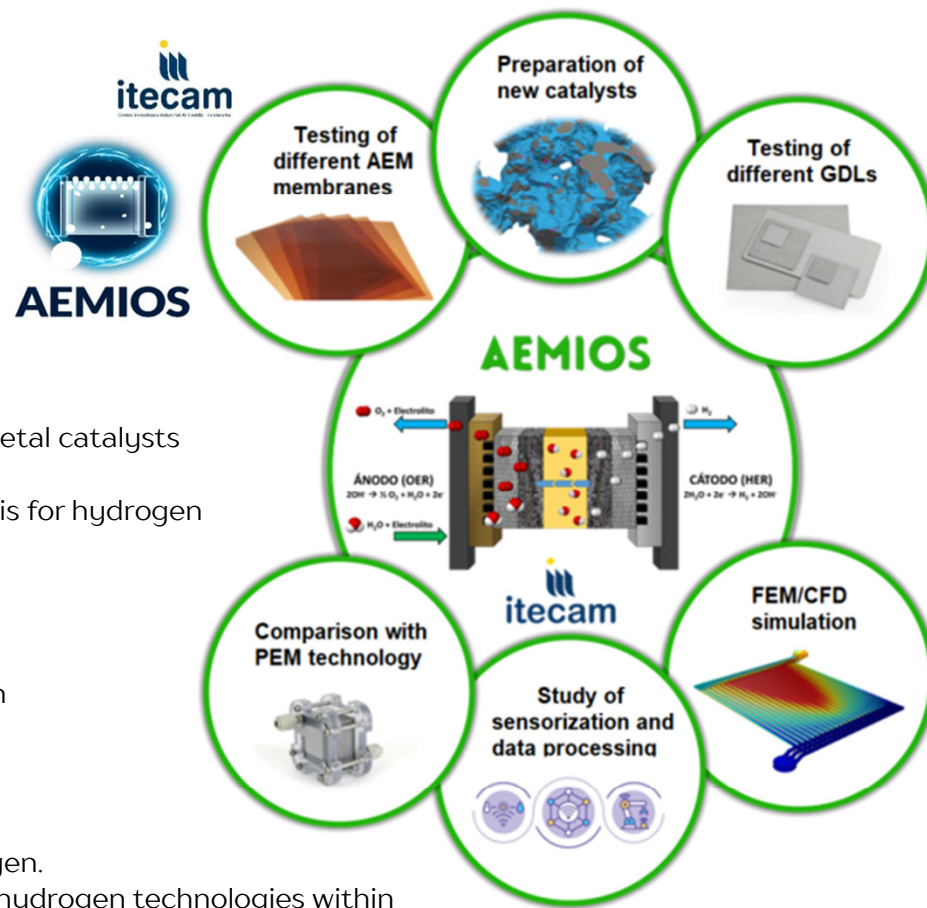
- Investigate and optimize green hydrogen production in AEM cells
- Study various AEM membranes and GDLs; synthesize novel non-noble-metal catalysts
- Integrate sensor systems and CFD/FEM simulations in AEM electrolyzers
- Perform a techno-economic analysis comparing AEM and PEM electrolysis for hydrogen production

Innovation:

- Optimized AEM cells as alternatives to conventional hydrogen production
- Sustainable energy solutions tailored for industrial integration

Impact:

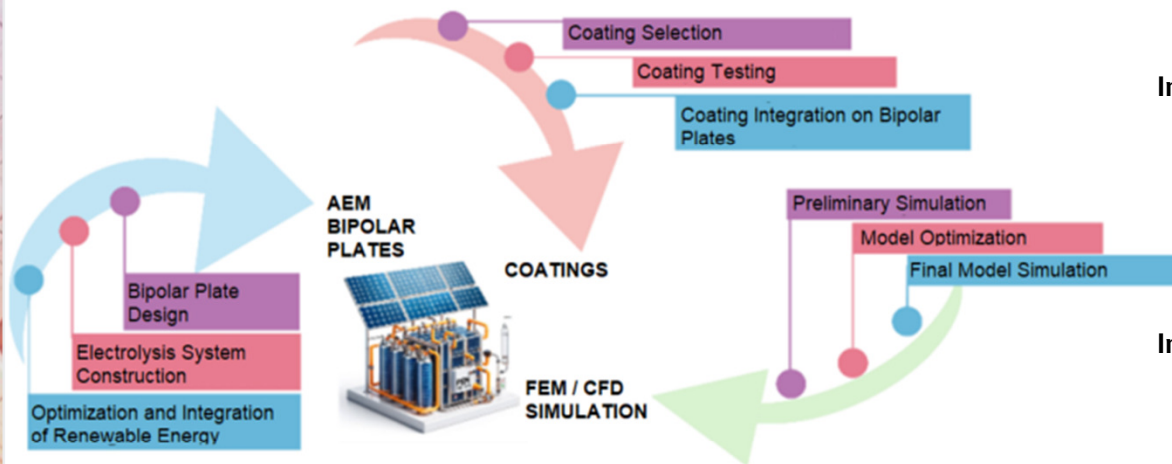
- Development of in-house technological capabilities in the field of hydrogen.
- Strengthening the sector by promoting knowledge and the adoption of hydrogen technologies within the business ecosystem.
- Reduction of fossil fuel dependency through scalable and decentralized technologies.



ONGOING RESEARCH PROJECT

AEI – THAMESIS

Development and optimization of a New-
Generation Bipolar Plates for AEM
Electrolyzers



Objectives:

- Development and optimization of AEM technology for hydrogen production.
- Development of new coatings for bipolar plates (BPs).
- FEM/CFD simulation for the optimization of AEM technology.

Innovation:

- Use of saline water for hydrogen production via AEM technology.
- Sensor integration in AEM cells.
- Innovation in the design, materials, and coatings of AEM system bipolar plates.

Impact:

- Boosting the energy transition and contributing to industrial decarbonization through hydrogen as an alternative to fossil fuels.
- Strengthening technological and competitive capabilities in the field of renewable energy.

ONGOING RESEARCH PROJECT

AEI – VALHAGRO

DEVELOPMENT AND OPTIMIZATION OF SUSTAINABLE MATERIALS
FOR THE PRODUCTION AND USE OF GREEN HYDROGEN FROM THE
VALORIZATION OF AGRICULTURAL RESIDUES

Objectives:

- Develop sustainable electrocatalysts from agricultural residues for green H₂ production.
- Reduce reliance on critical materials (Pt, Ir) in PEM electrolysis.
- Design and validate HT-PEMEC and LT-PEMEC electrolyzers using new catalysts.
- Create a filtration system to reuse agro-industrial wastewater in electrolysis.
- Integrate all solutions into a pilot system (TRL 5).

Impact:

- Transforms agro-industrial residues and wastewater into valuable resources for hydrogen production.
- Reduces environmental footprint and material dependency of PEM technology.
- Supports EU hydrogen strategy with scalable, circular, and cost-efficient solutions.
- Generates catalysts, filtration prototypes, and a pilot system with strong commercialization potential.

**Innovation:**

- Waste-to-energy approach converting diverse agro-residues into catalyst materials.
- Advanced synthesis methods: pyrolysis, hydrothermal processing, microwaves.
- Development of metal-free / low-critical-metal catalysts with heteroatom doping or transition metals.
- Modular filtration technologies (UF, RO, EDI) tailored to different wastewater streams.
- Full integration and testing in both high- and low-temperature PEM systems.

ONGOING RESEARCH PROJECT

IH-MIE I3-2024-INVI

DEVELOPING AN INTERREGIONAL HYDROGEN
INITIATIVE FOR EUROPE

Objectives:

- Establish an Interregional Hydrogen Mobility Hub (MHIH) to foster innovation and coordinate investments.
- Support SMEs through cascade funding, training, and mentoring to advance technologies from TRL 6 to TRL 9.
- Deploy 7 pilot projects demonstrating real-world technological applications.

Innovation:

- Collaborative innovation along the interregional hydrogen value chain.
- Advanced technical training and knowledge transfer to SMEs.
- Integration of less developed regions into European innovation ecosystems.

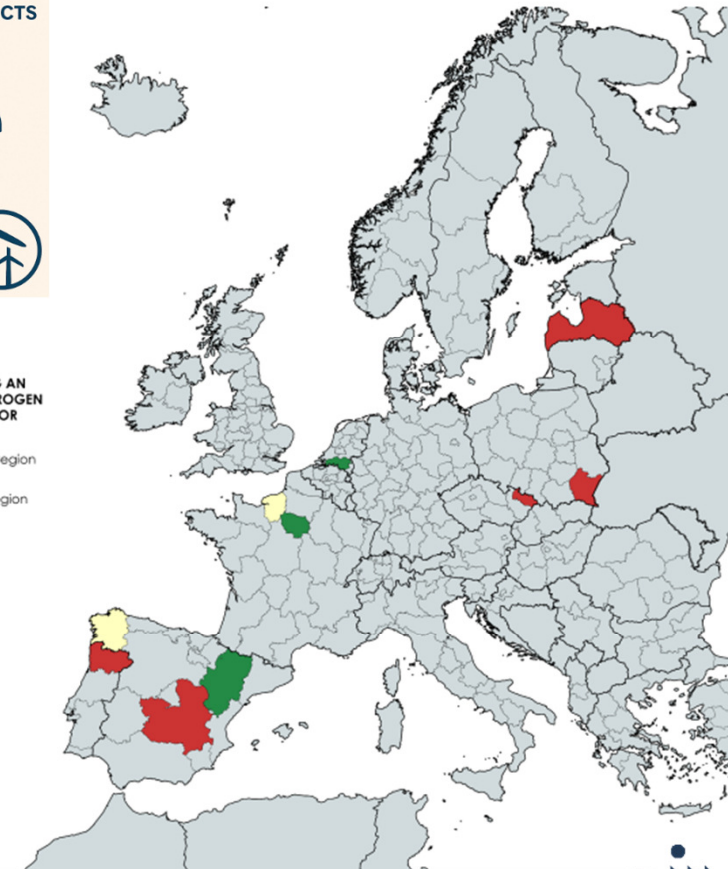
Impact:

- Reduction of transport emissions, contributing to the European Green Deal.
- Increased competitiveness and resilience of participating regions.
- Establishment of a network of 150 entities connected to sustainable hydrogen mobility.



IH - MIE: DEVELOPING AN
INTERREGIONAL HYDROGEN
MOBILITY INITIATIVE FOR
EUROPE

■ More Developed Region
■ Transition Region
■ Less Developed Region



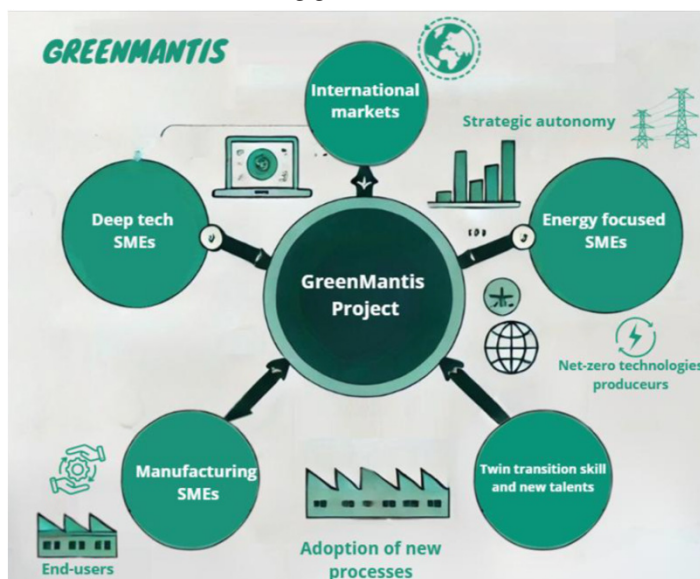


ONGOING RESEARCH PROJECT

GREEN MANTIS

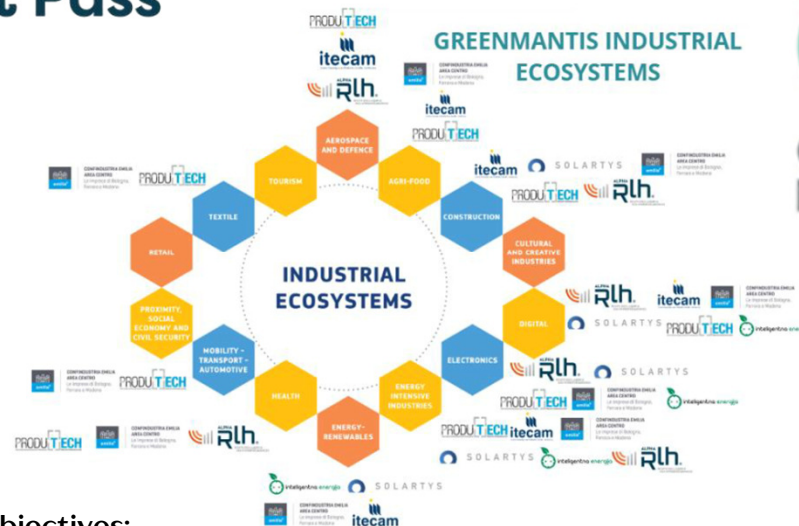
SMP-COSME-2024-CLUSTER

Green Manufacturing and Advanced Net-zero
Technology Innovations



Impact:

- Up to 10% reduction in energy consumption and 5% in carbon emissions in granted projects.
- Strengthened EU-wide industrial resilience and sustainability.



Objectives:

- Support SMEs in manufacturing and energy sectors to develop, scale and adopt net-zero technologies (TRL 6–8), by offering free training and internationalization services
- Provide financial support to third parties (FSTP) for SMEs through innovation vouchers.
- Promote the twin transition (green + digital) by facilitating training, upskilling, and business model innovation.

Innovation:

- Smart grid technologies: enable flexible, efficient energy usage and renewable integration.
- Digital tools to support process innovation and sustainability.
- Use of cross-sectoral cluster collaboration to create tailor-made solutions.



COMPLETE KNOWLEDGE TRANSFER PROJECT

KNOWLEDGE TRANSFER PROJECT IN
ECODESIGN & CIRCULAR ECONOMY

Tech2nicians: training of vocational training students to acquire technical and business skills to enter the hydrogen market.



Co-funded by the
Erasmus+ Programme
of the European Union

Objectives:

- VET trainings in hydrogen technologies
- Develop specialized technical toolkits for H₂ production, storage, installation, and maintenance
- Facilitate vocational students entering the hydrogen market

Innovation:

- Develop entrepreneurial skills among technical students
- Align vocational training with hydrogen market demands

Impact:

- Promote the active involvement of qualified technicians in the energy transition.
- Create an innovative and hands-on training environment for hydrogen specialization
- Align with the European strategy for energy transition and green employment.
- Strengthen the labor market with specialized professionals for the hydrogen industry.

ON GOING KNOWLEDGE TRANSFER PROJECT

TALENT PASS
HORIZON-WIDERA-2024-TALENTS-03

Fostering European Talents for widening circular economy.

Objectives:

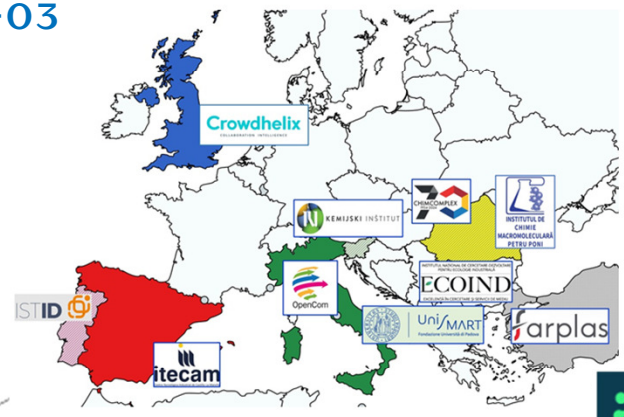
- Strengthen European talent in the circular economy
- Foster academic/non-academic collaboration
- Boost researcher mobility and training
- ITECAM offers training in hydrogen tech, additive manufacturing, circular economy, and EU funding

Innovation:

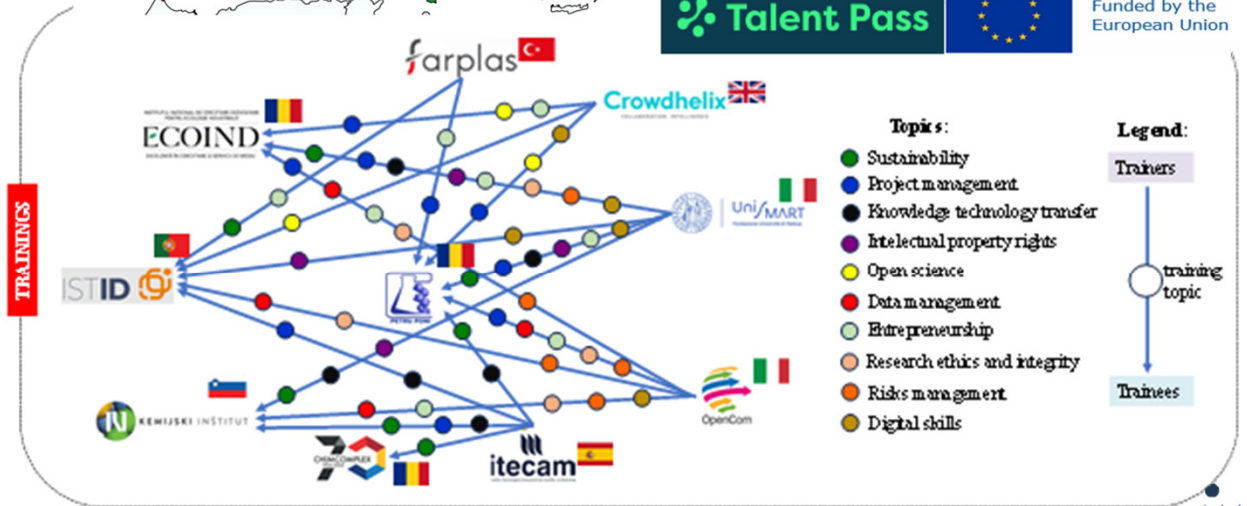
- Apply circular economy strategies across sectors
- Use innovative methodologies for talent management
- Build international cooperation networks

Impact:

- Improve researcher employability in circular economy related areas.
- Diverse geographic/multidisciplinary collaborations: 4 academic + 6 non-academic partners across 3 widening (RO, PT, SK), 3 non-widening (ES, IT, UK) and 1 associated country (TR)
- Enhance knowledge transfer between widening and non-widening EU countries



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LET'S SHAPE FUTURE TOGETHER!



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