

ADVANCED METALLIC MATERIALS AND PROTECTIVE COATINGS

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Expertise in

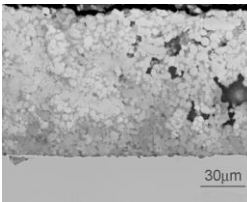


- **High temperature corrosion protection for:**
 - * Chemical Industry: Metal dusting
 - * Power generation: high temp. oxidation and hot corrosion
 - * Renewables such as solar concentration and biomass
 - * Aeronautic Turbine engines
- **Atmospheric corrosion protection for aeronautic materials**
- **Wear resistance (landing gears)**
- **Anti-icing and de-icing methods**
- **Ice sensors**

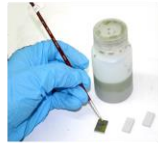
1. Your organization and capacities

Coating development / Surface Engineering

- Thermal spray:
 - HVOF, Flame
- Electroplating
- Pack Cementation
- Laser
- Slurry
- Sealants



On Austenitic Steels



By brush



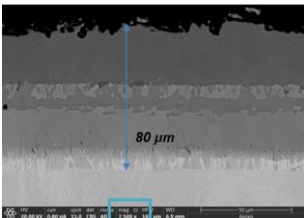
By spraying



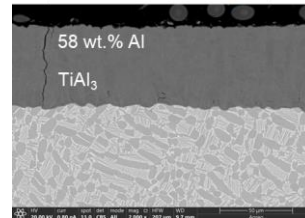
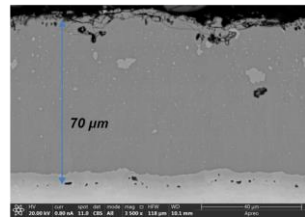
By immersion



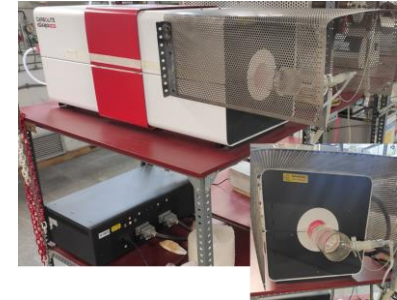
on Ti-based alloys



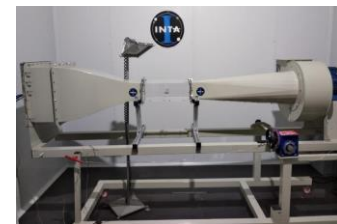
On Ferritic-martensitic Steels



Lab Testing



- Oxidation testing in air, wet air and 100% steam
- Corrosion in complex model atm. (O_2 , H_2O , CO_2 , ...)
- Cyclic oxidation rig in air and controlled atm.
- Molten salt corrosion tests
- Icing Wind Tunnels



1. Your organization and capacities

Participation in National and European Projects

Project	Project title	Grant Agreement	Numbers of partners	Budget	Date
RAISELIFE	Raising the lifetime of functional materials for Concentrated Solar Power Technology	H2020-NMP-16-2015 GA 686008	15	10 M€	2016-2020
BELENUS	Lowering costs by improving efficiencies in biomass fueled boilers: new materials and coatings to reduce corrosion	H2020-LC-SC3-11-2018	14	4.9 M€	2019-2024
COCO	Development and optimization of high temperature corrosion resistant coatings for thermo-solar plants with molten salts and supercritical CO ₂	PID2020-115866RB-C21	2	400 k€	2021-2024
SENS4ICE	Sensors and certifiable hybrid architectures for safer aviation in icing environment	H2020-SEP-21050695	20	12 M€	2019-2023
SOUNDofICE	Sustainable Smart De-Icing by Surface Engineering of Acoustic Waves	H2020-EU.1.2.1. FETOPEN-01-2018-19-20	9	4 M€	2020-2025
HERWINGT	Hybrid Electric Regional Wing Integration Novel Green Technologies	Clean Aviation Joint Undertaking	28	21.8 M€	2023-2025
CoMeTES	Performance study of innovative Corrosion and Mechanically resistant coated materials against molten salts for next-generation CSP and TES systems	HORIZON-MSCA-2022- PF-01	1	165 k€	2023-2025
HELIOTROPE	Highly Efficient and Low-impact Innovative Thermal Storage system for enhanced dispatchability in Concentrated solar tower plants	HORIZON-CL5-2023-D3- 02-02 GA 101147455	10	3 M€	2024-2028
TINI	Innovative and novel high temperature corrosion protection Coatings for new generation H ₂ fueled engines and their behaviour study under harsh operating conditions	PID2023-1469810B-C21	2	350 k€	2024-2027
CHIMERA	Understanding the mechanisms and sensing of corrosion on Mars	PID2023-1508380A-C22	2	380 k€	2024-2027



2. Topics of interest in calls 2025

Topic	Experience and Contribution
HORIZON-JU-CLEANH2-2025-01-01: Improvements in lifetime and cost of low temperature electrolyzers by introducing advanced materials and components in stacks and balance of plant	* Experience: in metallic materials and coatings, protection and degradation mechanism, projects on MCFC, PEM, energy and H ₂ combustion in aircraft engines. * Contribution: study of materials behaviour, development of coatings, lab testing at high-temperature.
HORIZON-JU-CLEANH2-2025-01-02: Improved lifetime and cost of high-temperature electrolyzers by introducing innovative materials and components in stacks and BoP	
HORIZON-JU-CLEANH2-2025-02-02: Development of cost effective and high-capacity compression solutions for hydrogen	

Topic	Project idea and partners sought
HORIZON-JU-CLEANH2-2025-01-01: Improvements in lifetime and cost of low temperature electrolyzers by introducing advanced materials and components in stacks and balance of plant	* Project idea: new Coatings based in Ni and/or Co (or other elements of interest), deposited on low-cost metallic substrates. * Partners sought: consortiums with interest in advanced materials and Coatings + lab HT testing.
HORIZON-JU-CLEANH2-2025-01-02: Improved lifetime and cost of high-temperature electrolyzers by introducing innovative materials and components in stacks and BoP	
HORIZON-JU-CLEANH2-2025-02-02: Development of cost effective and high-capacity compression solutions for hydrogen	



Thank you for your attention



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