

Development of nanostructured electrodes for innovative electrolyzer

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SAMOTHRACE 2nd Year:
Experimental Prototypes Demo Showcase

SAMOTHRACE PROJECT ECS00000022

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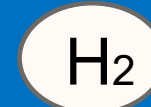
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Green hydrogen is gaining increasing attention as a promising solution for the reduction of carbon dioxide emissions in various sectors of the economy.

Opportunities for hydrogen uses up to 200kton/year in 2030



- Industrial applications (Hard To abate sectors)
- Mobility application (trains and trucks)
- Hydrogen mixing in the gas grid (blending)



H₂

About 2% penetration of hydrogen in the final energy demand



About 5GW of electrolysis capacity for hydrogen production



Up to 10mld investment for H₂ from appropriate resources and funds



Creation of thousands of jobs



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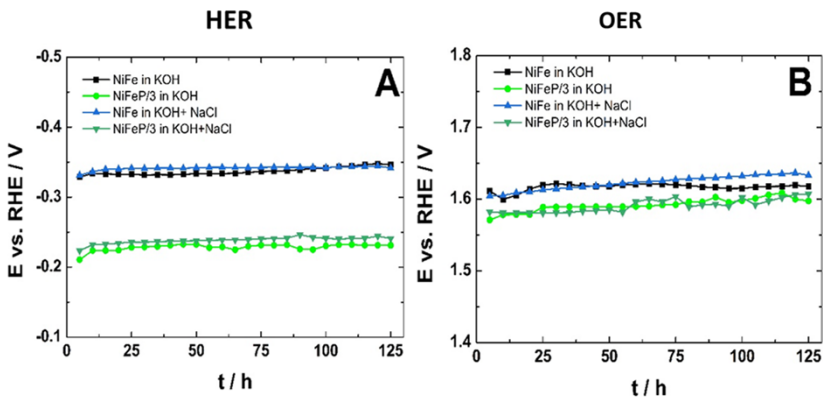


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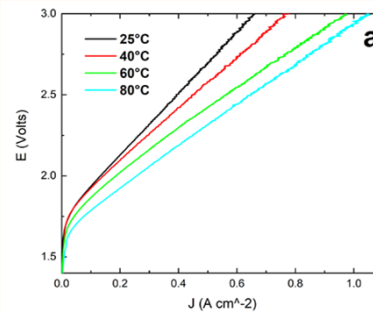
Development high-performing nanostructured catalytic electrode and seawater electrolyzer components

Long-Test Stability Test in NaCl + KOH

Time: 125 hours Current Density: 50 mAcm⁻²



Cheap lab-scale modular alkaline electrolyzer



Goals

- Reduction of costs (~600€/KW)
- Innovation that can be developed and exploited locally
- Hydrogen energy production with surplus energy
- Energy self-sufficiency



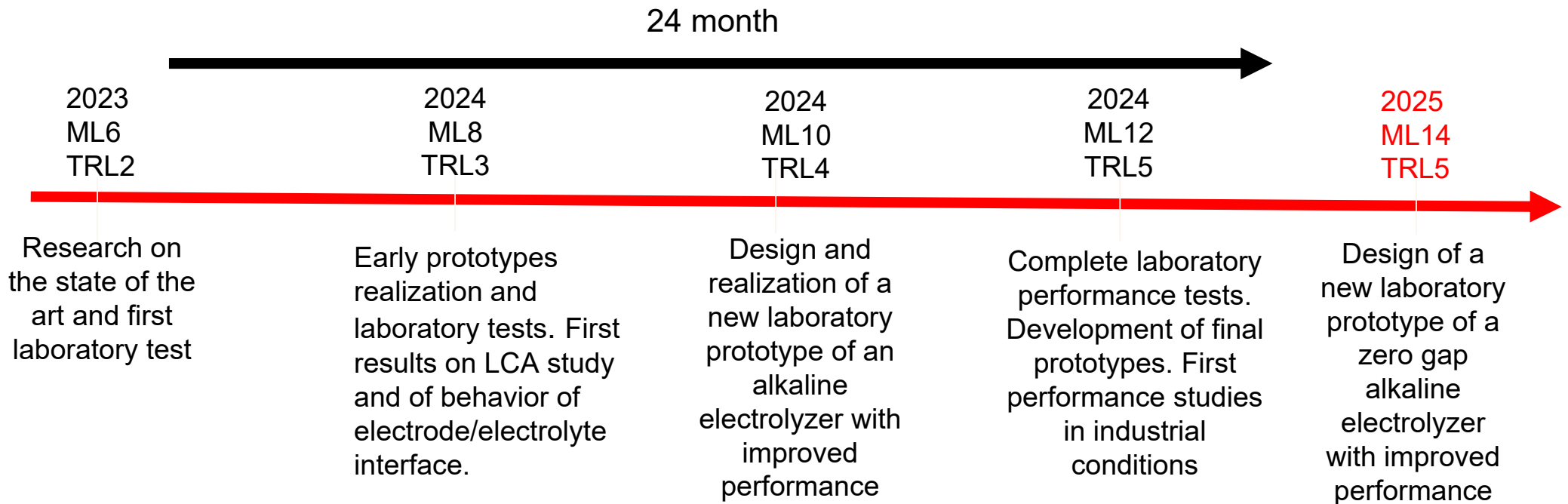
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Realization of a device characterized by a new design of the flow plate to eliminate any machining costs

Evaluate the stability of materials under operating conditions of temperature, salinity and contaminants

Optimization of low-cost nanostructured electrodes with high efficiency and stability for seawater alkaline electrolyzers

Current status TRL 5: Prototype
1.9V@100mA 80 °C 30wt% KOH for 600h
4 cm² active area

TRL 6: Stack three-cell zero-gap electrolyser to investigate the scalability



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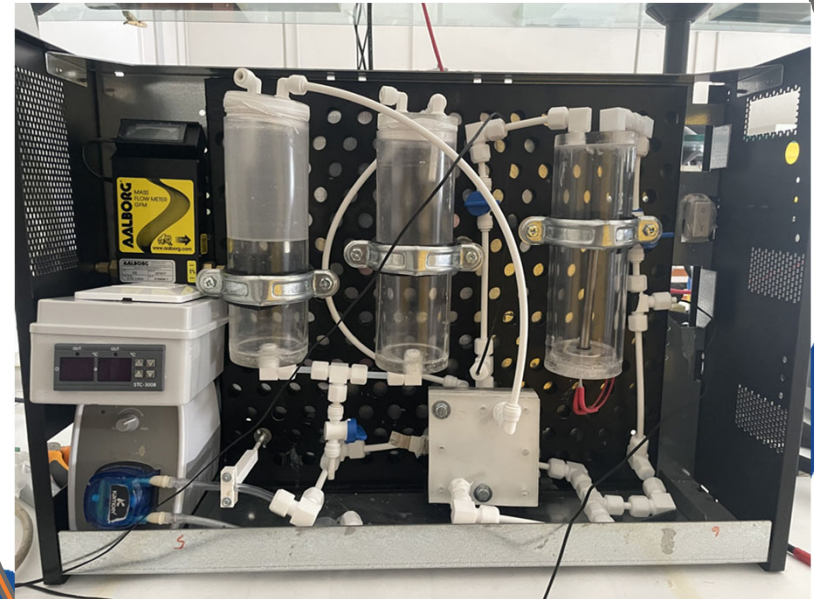
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THANK YOU

**VISIT OUR DEMO AT
Booth # 12
and at University of Palermo
Build 6, 2 floor**



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