AMPS

workshop

Unlocking the Potential of SOC Technologies for a Decarbonized Future

in the framework of the AMPS project

webinar
10.00 - 12.30

May 30, 2025

Save the Date

The project is supported by the Clean Hydrogen Partnership and its members.

Clean Hydrogen Partnership

Co-funded by the European Union

10.05 **Presentation of the AMPS project.**
Marta Gandiglio, Politecnico di Torino

10.15 **SOC products: technology, applications and innovation.**
Somjai Isotalo, ELCOGEN

SOC applications: research and industrial experiences

10.30 **SOEC for hard-to-abate sector: decarbonizing ammonia production in Europe.**
Alessandro Magnino, Politecnico di Torino

10.45 **SOEC for hard-to-abate sector: experience from the industry.**
Andreas Mai, TOPSOE

11.00 **Integrated DRI-SOEC systems for green steel.**
Roberto Scaccabarozzi, Laboratorio Energia e Ambiente Piacenza (LEAP)

11.15 **SOFC for electricity generation: field operation of EU-funded installations.**
Paolo Marocco, Politecnico di Torino

11.30 **SOFC for electricity generation: experience from the Italian biogas industry.**
Andrea Chiabrando, Consorzio Monviso Agroenergia (CMA)

11.45 **Sustainable shipping with SOFCs: experience from the NAUTILUS project and future outlook.**
Santiago Salas Ventura, The German Aerospace Center (DLR)

Future perspectives and Q&A session

12.00 **Future perspectives for high-temperature electrochemical systems.**
Massimo Santarelli, Politecnico di Torino

12.15 **Q&A session.**

Automated Mass Production of SOC Stacks

Marta Gandiglio & Jari Kiviaho

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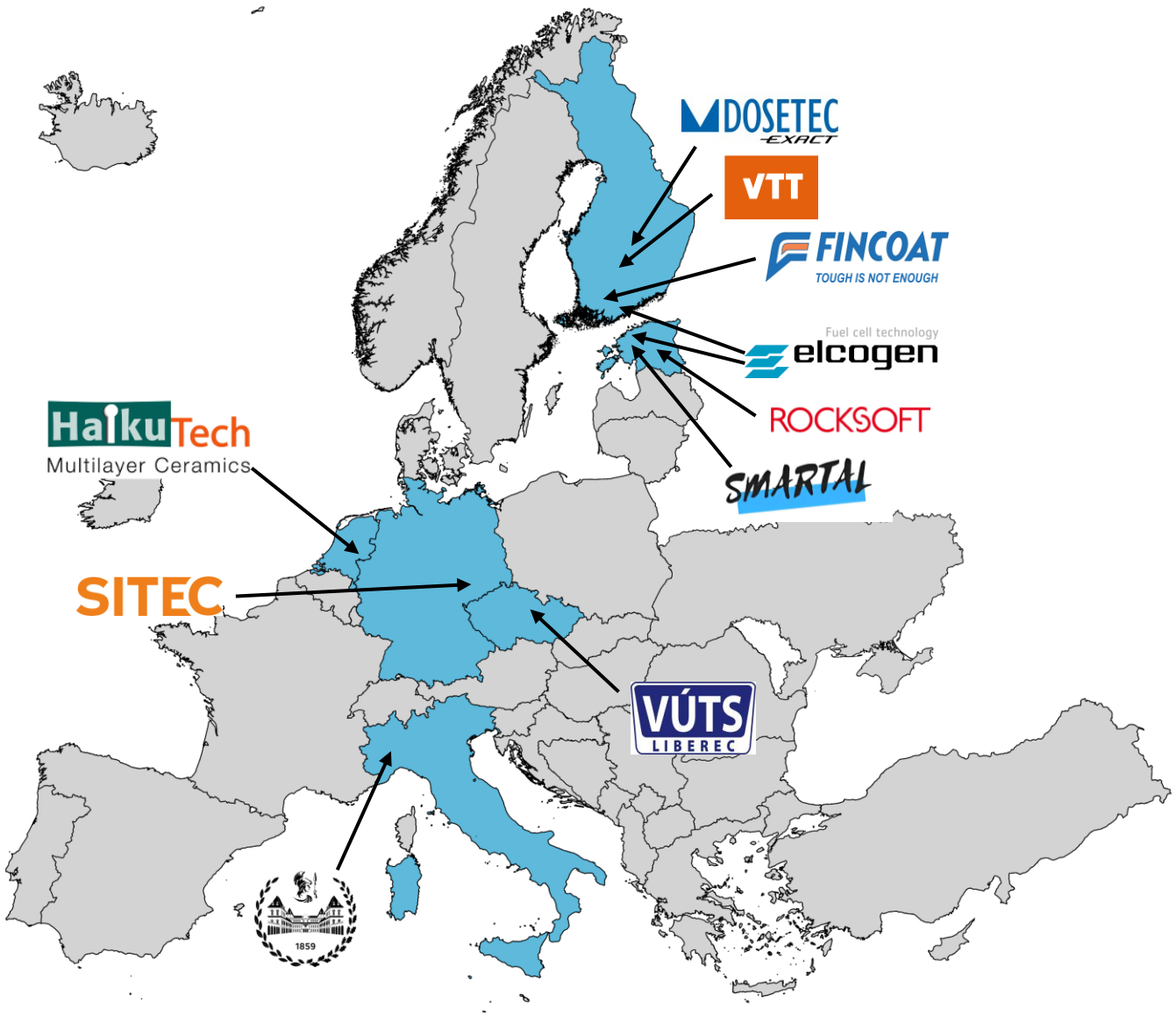
AMPS



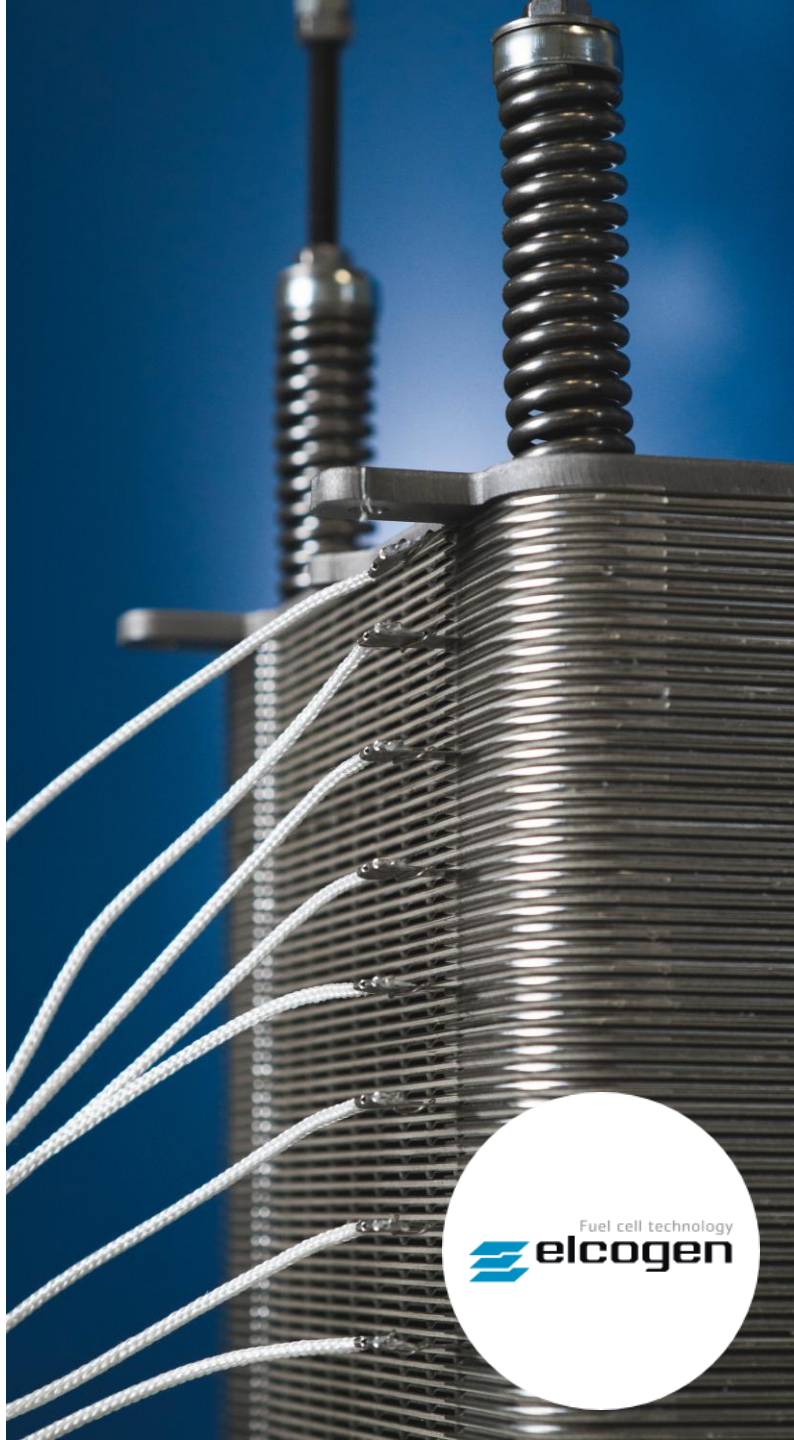
11 partners, 6 countries

June 2023 – May 2027

Total budget: 8.7 M€
EU funding: 6.6 M€

The AMPS project develops, demonstrates and validates in actual production lines **key methods and technologies for mass-manufacturing Solid Oxide Cell (SOC) stacks and stack components**.

- Automated **high-speed cell production** with integrated quality control
- Automated **high-speed interconnect plate production and coating** with integrated quality control
- Automated **high-speed stack assembly** with integrated quality control
- Complete component tracking and optimized mass-manufacturing by using **virtual twins**
- Assessment and demonstration of **target stack manufacturing cost of <800 €/kWel at production volume of 100 MW/year**
- Establish **European supply chain of SOC manufacturing equipment**



AMPS

Component tracking and digital twin

ROCKSOFT

VÚTS LIBEREC

Fuel cell technology elcogen

DOSETEC EXACT

HaikuTech Multilayer Ceramics

SMARTAL ENGINEERING OÜ

VTT

Cell manufacturing

Fuel cell technology elcogen

SITEC

Automated stack assembly

Fuel cell technology elcogen

SITEC

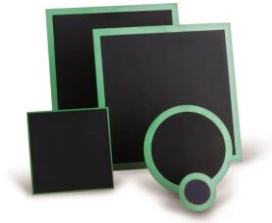
FINCOAT TOUGH IS NOT ENOUGH

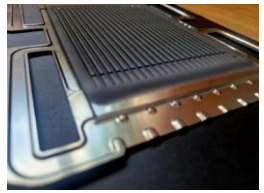
Interconnect manufacturing

Economic and environmental impact, safety and regulations

Politecnico di Torino

VTT





Cell manufacturing

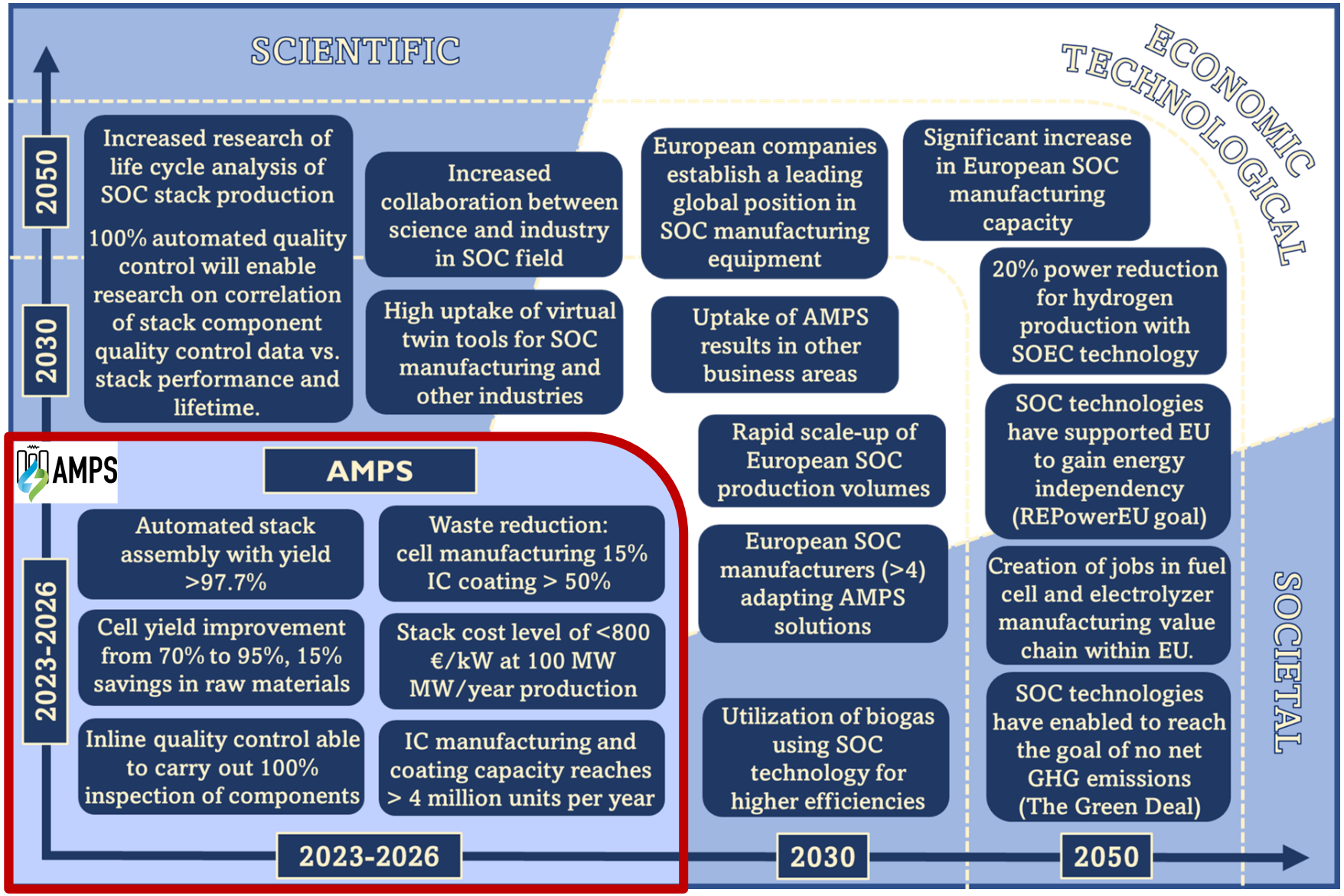
- Substrate
- Paste
- Raw material handling
- Handling
- Quality control

Stack manufacturing

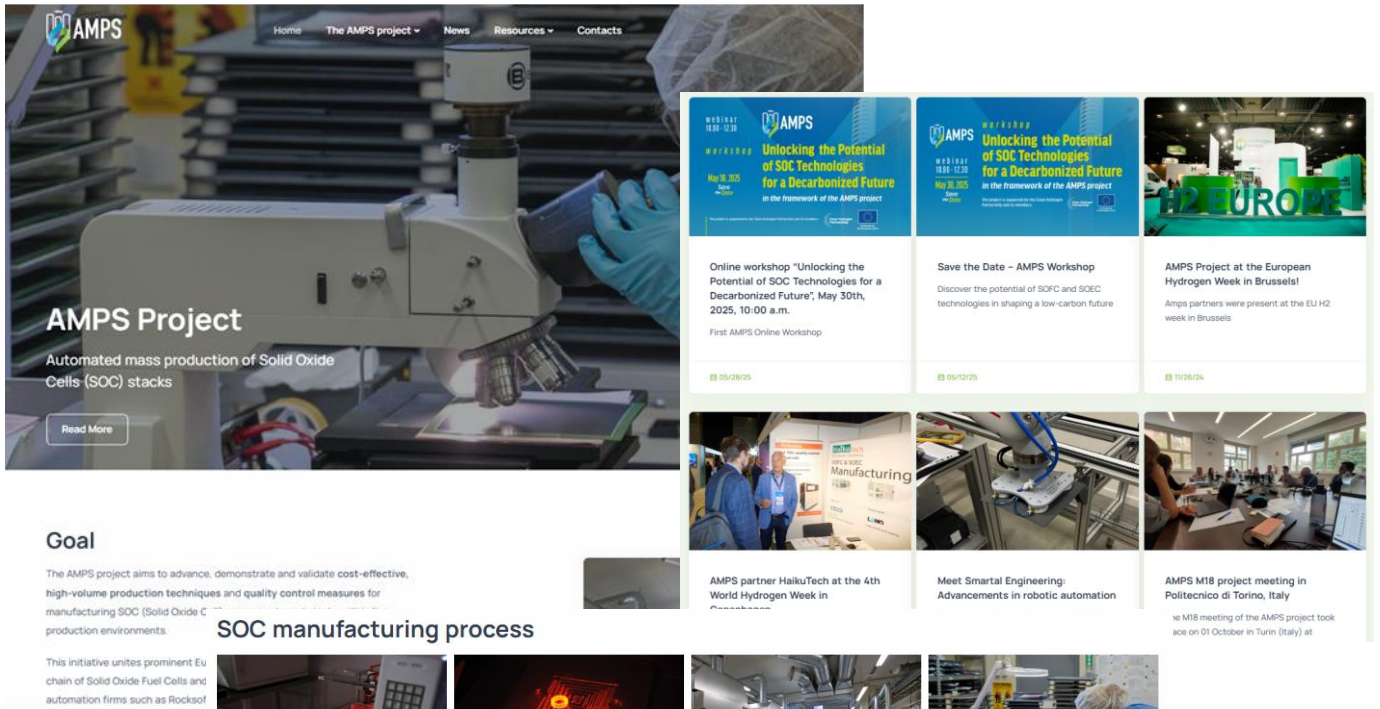
- Gasket, Endpart, Mesh
- Handling, Positioning
- Quality control
- Assembly

Interconnect manufacturing

- Steel
- Forming & cutting
- Welding
- Handling
- Quality control
- Coating


SCIENTIFIC
ECONOMIC
TECHNOLOGICAL
SOCIETAL
2050
2030
2023-2026
Increased research of life cycle analysis of SOC stack production
100% automated quality control will enable research on correlation of stack component quality control data vs. stack performance and lifetime.
Increased collaboration between science and industry in SOC field
High uptake of virtual twin tools for SOC manufacturing and other industries
European companies establish a leading global position in SOC manufacturing equipment
Uptake of AMPS results in other business areas
Significant increase in European SOC manufacturing capacity
20% power reduction for hydrogen production with SOEC technology
SOC technologies have supported EU to gain energy independency (REPowerEU goal)
Creation of jobs in fuel cell and electrolyzer manufacturing value chain within EU.
SOC technologies have enabled to reach the goal of no net GHG emissions (The Green Deal)
AMPS
Automated stack assembly with yield >97.7%
Waste reduction: cell manufacturing 15% IC coating > 50%
Cell yield improvement from 70% to 95%, 15% savings in raw materials
Stack cost level of <800 €/kW at 100 MW MW/year production
Inline quality control able to carry out 100% inspection of components
IC manufacturing and coating capacity reaches > 4 million units per year
Rapid scale-up of European SOC production volumes
European SOC manufacturers (>4) adapting AMPS solutions
Utilization of biogas using SOC technology for higher efficiencies
2023-2026
2030
2050

The **AMPS website** is updated constantly (www.amps-project.eu)



Social media from the **STEPS Research group** are used to publish advancements on the project (https://www.linkedin.com/company/steps-steps-synergies-of-thermo-chemical-and-electro-chemical-power-systems/)

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