

The background features a detailed technical illustration of industrial electrolyser components, including circular fan-like structures at the top and a large, complex assembly of pipes, valves, and structural frames below. The entire scene is rendered in a monochromatic green color scheme with white outlines and text.

ansaldo | green tech

AEM ELECTROLYSERS MODULAR SOLUTIONS

**Shaping the Future of Sustainable Hydrogen
at industrial scale**

HYDROGEN WHERE IT CREATES REAL INDUSTRIAL VALUE

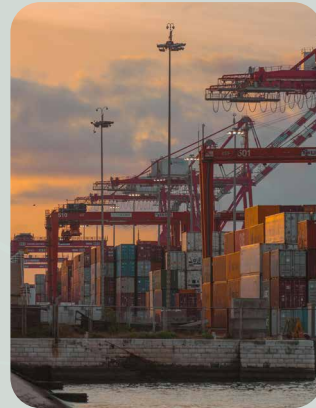
Electrolysers are no longer about adding new infrastructure. They are a practical way to extract more value from existing assets.

Hydrogen applications are consolidating around hard-to-abate sectors with measurable industrial fundamentals. Steel manufacturing, refineries, HVO (hydrogenated vegetable oils), e-fuels, chemicals and logistics can benefit from access to low cost decarbonized hydrogen.

On site or near site hydrogen production improves supply security and reduces exposure to imported molecules. In parallel, electrolysers support grid stability by converting intermittent renewable electricity into a storable molecule, helping reduce curtailment.

Decarbonized hydrogen allows industries to decouple their core processes from carbon intensity while preserving operational flexibility.

Stronger supply RESILIENCE



Industrial DECARBONIZATION

Better use of RENEWABLE POWER



WHY NOW

GREEN HYDROGEN IS NO LONGER ONLY A CLIMATE TOPIC.

It has become a strategic lever for **energy security, industrial competitiveness,** and **system resilience**—reducing **dependence on imported fuels** and exposure to geopolitical and **fuel price volatility**.

Where direct electrification is not sufficient, hydrogen provides a reliable and scalable solution to keep critical industries operating while cutting emissions. By enabling domestic, diversified and dispatchable energy supply, hydrogen strengthens national and industrial **energy sovereignty**.

This is why electrolyzers are emerging as **strategic infrastructure assets** in the new energy landscape.

More than decarbonization: hydrogen underpins industrial continuity, strengthens energy security, and reinforces long-term energy resilience.



**Energy
security**



**System
resilience**



**Industrial
competitiveness**



**Dependence on
imported fuels**

DESIGNED FOR REAL PROJECT CONFIGURATIONS

Ansaldo Green Tech electrolyzers address the needs of energy producers, industrial operators and infrastructure developers across a wide range of project configurations.

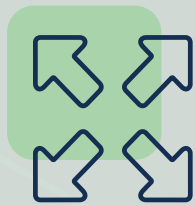
Their modular architecture supports phased investment, progressive scale-up and adaptation to changing market and regulatory conditions. It is designed to integrate with variable renewable generation as well as stable low-carbon baseload power, enabling flexible hydrogen deployment across a wide range of project configurations.

Ansaldo Green Tech AEM technology offers a pragmatic compromise between cost, flexibility and material availability, making it particularly suited for large scale industrial deployment.

ONE PLATFORM, MULTIPLE DEPLOYMENT PATHS



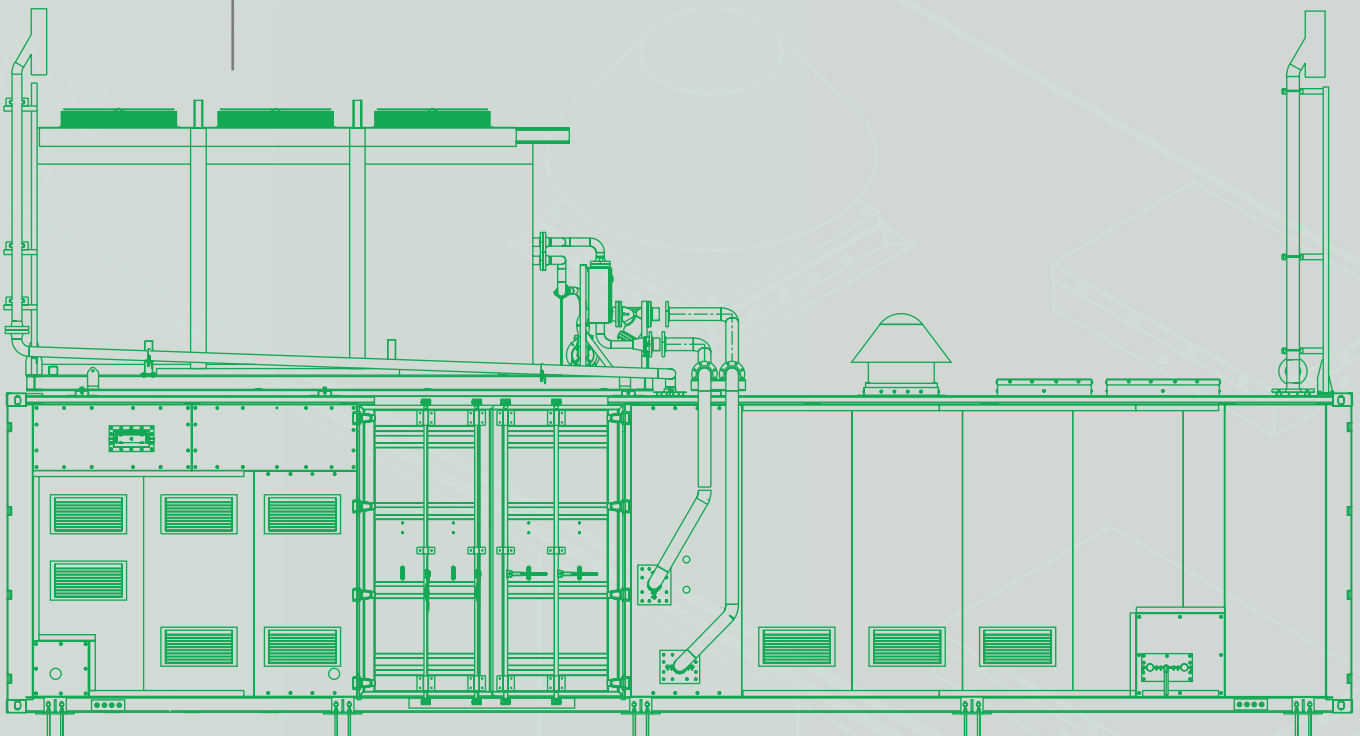
**Phased
deployment**



**Scalable
architecture**



**Industrial
integration**



USE CASES



PRODUCING HYDROGEN FOR INDUSTRIAL CONTINUITY

From **steel manufacturing** to **refineries, chemical and fertilizers industries**, facilities requiring hydrogen as feedstock can benefit from on site or near site production. Electrolysers reduce exposure to volatile supply chains and support realistic, economically sustainable decarbonization strategies.



UNLOCKING VALUE FROM VARIABLE RENEWABLE GENERATION

Renewable operators can transform variable **solar and wind generation** into a stable, high value hydrogen stream. The broad operating window and strong partial load efficiency of Ansaldo Green Tech AEM electrolysers allow seamless adaptation to fluctuating renewable output. This reduces curtailment, optimizes asset use and converts surplus electricity into a revenue generating molecule.



SUPPORTING PORTS, LOGISTICS AND FUEL HUBS

Electrolysers support ports and logistics hubs by enabling local hydrogen production for **transport, mobility and emerging clean fuel value chains**, strengthening supply security and accelerating the transition to low-carbon logistics

Hydrogen offers a scalable, zero-emission solution for local transport, enabling clean, reliable **mobility** without compromising range, **refueling** speed, or operational flexibility.



STABILIZING NUCLEAR BASELOAD WHILE SUPPORTING INDUSTRIAL HYDROGEN DEMAND

As power systems integrate increasing shares of non dispatchable generation, **nuclear plants** face growing demands for load modulation. Electrolysers can act as effective electric sinks, absorbing excess output and providing a controllable demand profile. Rapid load transitions and stable efficiency allow nuclear operators to produce decarbonized hydrogen while minimizing operational impact on their assets.



**steel
manufacturing**



**supporting
ports**



**fuel
hubs**



**chemical
industries**



refineries



**nuclear
plants**

AEM TECHNOLOGY FOR FLEXIBLE INDUSTRIAL DEPLOYMENT

Ansaldo Green Tech electrolyzers are based on Anion Exchange Membrane (AEM) technology, combining selected strengths of alkaline and PEM systems while addressing key constraints of large-scale hydrogen deployment. The result is a balanced solution designed for **flexibility, scalability** and **seamless integration** into industrial energy systems.

AEM technology enables a reduced reliance on scarce and critical raw materials, such as precious metals typically used in PEM electrolyzers. This supports long-term cost stability, supply-chain robustness and improved project bankability. Ansaldo Green Tech electrolyzers efficiently support rapid load transitions and flexible operation, making them suitable for both intermittent renewable generation and low-carbon baseload electricity.

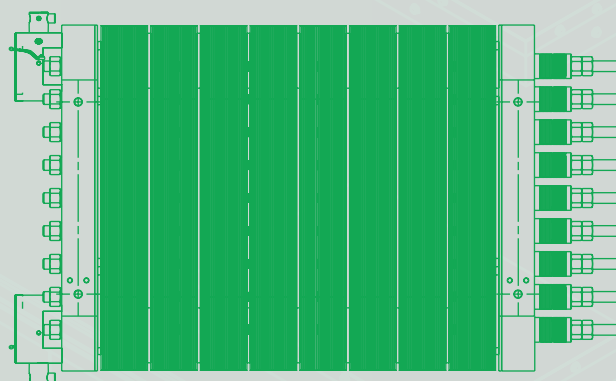
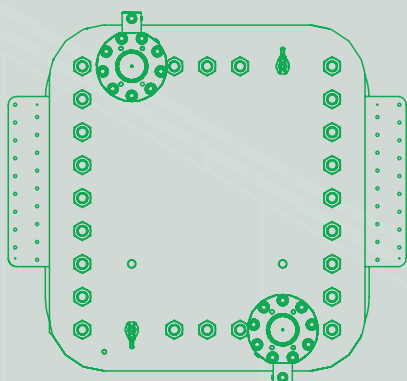
The forward-looking materials strategy is aligned with evolving environmental and regulatory standards. Ansaldo Green Tech solutions aim to minimize the use of fluorinated materials, supporting a PFAS-aware approach consistent with emerging regulatory trends and long-term sustainability requirements.

Compared with traditional alkaline systems, AEM electrolyzers operate with lower-molarity electrolytes and a membrane-based architecture. This simplifies handling and system integration, while reducing chemical aggressiveness and operational complexity in industrial environments.



MODULAR BY DESIGN. FLEXIBLE IN OPERATION. BUILT FOR INDUSTRIAL INTEGRATION.

- ▶ Flexible operation
- ▶ Reduced reliance on critical materials
- ▶ Scalable architecture



ONE MODULAR PLATFORM, MULTIPLE PROJECT SCALES

The Ansaldo Green Tech electrolyzers are designed for industrial environments requiring high purity hydrogen, operational flexibility and consistent efficiency. Hydrogen is produced at elevated pressure, reducing downstream compression requirements and simplifying system design.

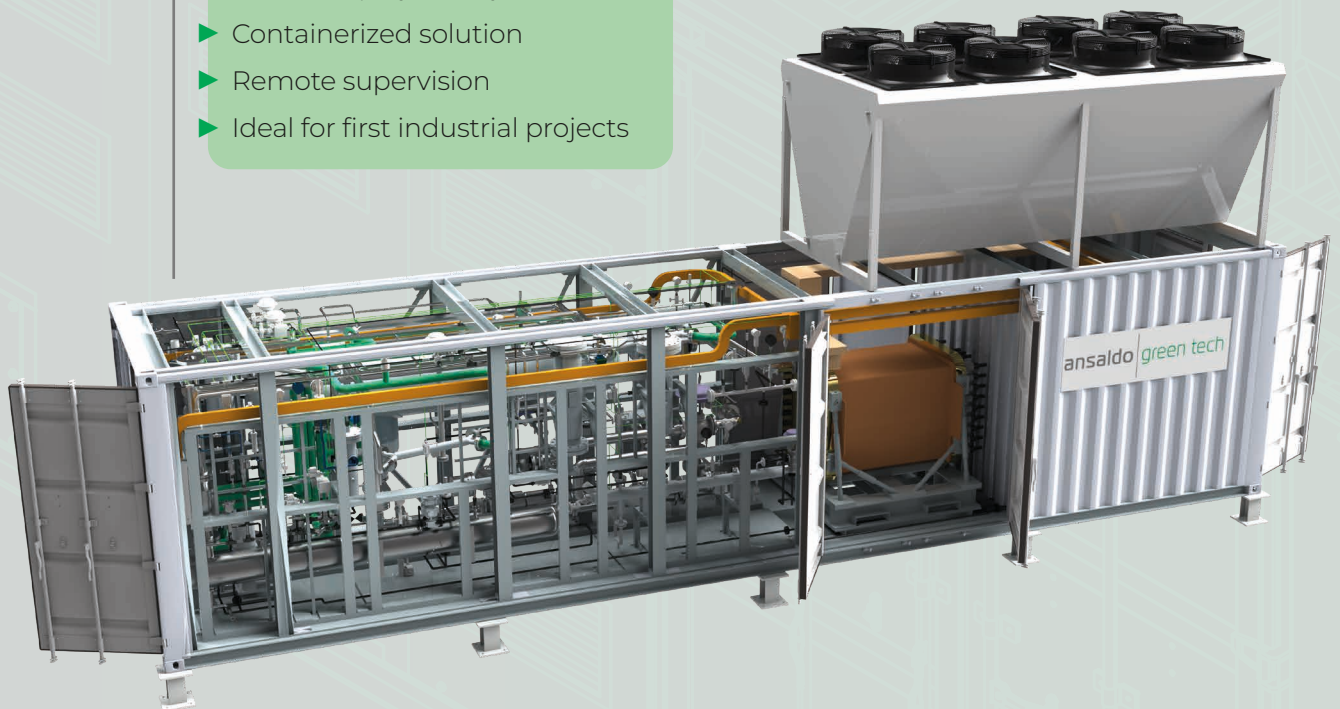
The stack features next generation membranes and optimized catalysts to minimize gas crossover and ensure strong electrochemical performance. FEM-based (Finite Element Method) stack refinement and CFD-driven (Computational Fluid Dynamics) electrolyte flow design contribute to overall energy efficiency.

Comprehensive process monitoring and predictive diagnostics ensure that all critical parameters — temperatures, pressures, gas purity and crossover phenomena — remain within optimal ranges. The result is a flexible, efficient and robust platform enabling predictable long-term operation and bankable project execution.

1 MW ELECTROLYSER

Fast to deploy. Ready to scale.

- ▶ Containerized solution
- ▶ Remote supervision
- ▶ Ideal for first industrial projects

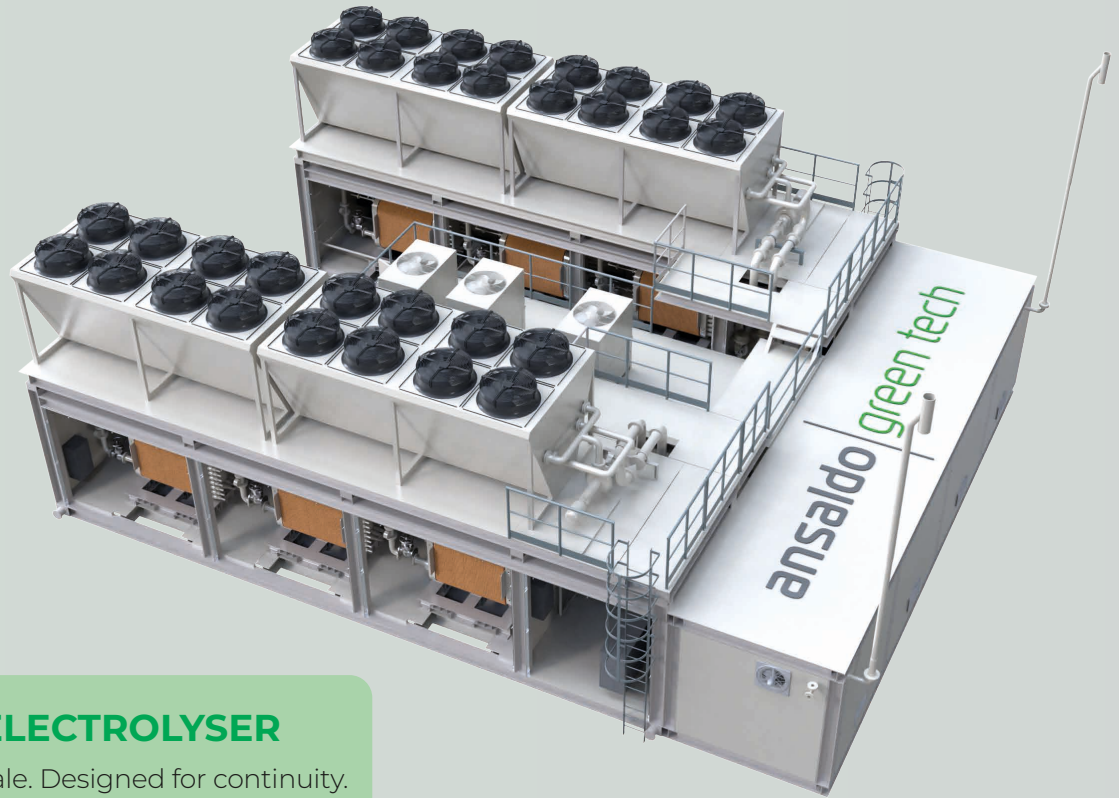


1 MW ELECTROLYSER

A flexible entry point for industrial hydrogen projects

The 1 MW Electrolyser is designed for fast deployment and flexible integration across distributed energy and industrial applications. It provides a practical starting point for customers entering the hydrogen market or building the first step of a scalable project.

Delivered in a standard 40-foot ISO container, it supports remote supervision and can also serve as a modular building block for larger installations.



6 MW ELECTROLYSER

Built for scale. Designed for continuity.

- ▶ Industrial scale-up
- ▶ Hub-ready architecture
- ▶ Flexible installation options

6 MW ELECTROLYSER

Scaling up to larger industrial hydrogen demand

The 6 MW Electrolyser extends the AGT platform to larger industrial projects, combining higher hydrogen output with the same modular and scalable approach.

Designed for larger sites and hydrogen hubs, it supports flexible operation, reliable performance and installation options suited to multi-unit industrial environments.

Performance	Units/reference	1MW	6MW
Single Stack power consumption (BoL)	MW	1	1
Number of stacks	#	1	6
System power consumption	MW	1.16	6.60
Hydrogen production (base load)	kgH ₂ /h @30barg	21	123
Oxygen Production (base load)	kg/h @0.3/30barg	168	990
Energy consumption	kWh/kgH ₂	55	53.5
Startup time (warm)	min	<2	<2
Load range	%	30-100	15-100
Demi water consumption	Cubic meter/hour	0.2	1.1
Demi water quality	µS/cm	5	5
Hydrogen quality	% (higher purity with dryer)	99.9	99.95
Operating temperature	°C	-5 ÷ +40	-5 ÷ +40
Sound Pressure Level	dB(A)@1m	85	85
Footprint	m	12x2.5	12x16



1853

Giovanni Ansaldo
& Co. Established

1923

First
Power Plant

1962

First Supercritical
600 MW Power Plant

1966

Ansaldo Nucleare
established

1991

Ansaldo Energia
established

2005

Total Technological
Independence

2020

First GT36
563MW gas turbine

2021

Ansaldo Green Tech
established

2023

Successfully tested GT36
burner at 100% H₂

2024

First AEM
electrolyser tested

ANSALDO GREEN TECH: INDUSTRIAL STRENGTH BEHIND INNOVATION

Ansaldo Green Tech operates within Ansaldo Energia Group as a platform for emerging energy solutions, building on the Company's long-standing leadership in power generation engineering and complex industrial systems. This industrial heritage provides a solid foundation in **manufacturing, quality** and **long-term service** capability and reflects the Group's experience across multiple energy domains and complex low-carbon systems.

Electrolysers are conceived, engineered and produced in Italy, leveraging decades of experience in energy technologies, advanced materials and system integration. The company focuses on the development of practical hydrogen solutions, delivering modular, scalable and industrial-grade electrolysers designed to support real deployment scenarios and to evolve alongside customer needs.

Technology innovation backed by industrial execution.





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more information and
the AEM Electrolysers

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