

CLEAN HYDROGEN PRODUCTION PLANT

CompassH2

The Right Path to a Sustainable Future



SAMSUNG E&A

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Navigating Your Hydrogen Journey

Unlocking Project Viability and Mitigating Risks with a Reliable Clean Hydrogen Plant

As the energy sector undergoes rapid transition towards cleaner sources, many organizations are exploring the potential of clean hydrogen. While there is little doubt about its promise, implementing large-scale clean hydrogen projects can pose significant challenges, including ensuring plant quality, stability, and profitability.

To address these challenges, SAMSUNG E&A has partnered with Nel, a leading hydrogen technology company. With SAMSUNG E&A's proven track record in developing and executing gigawatt-scale clean hydrogen and ammonia projects and Nel's cutting-edge electrolyzer technology, SAMSUNG E&A has developed a standardized clean hydrogen plant, CompassH2, utilizing Nel's cutting edge electrolyzer technology.

CompassH2 is a reliable clean hydrogen plant that puts clients' needs first. By choosing CompassH2, you can enjoy a total service from early work to project execution and maintenance, and move confidently into a sustainable future powered by clean hydrogen and its derivatives.



Reliable Solution from a Strong Combination

Combination of SAMSUNG E&A's proven experience in hydrogen projects and modularization with Nel's decades of electrolyzer OEM experience



Integrated Design and Leveled Cost

20% footprint reduction and CAPEX/OPEX optimization through integrated BOP/BOS designs



TRUE Client-oriented Approach

Total solution from FEL to EPC with full-wrap guarantee for overall plant performance, while offering clients extensive options in electrolyzer types and downstream applications.

Strong Combination: SAMSUNG E&A and Nel

By combining SAMSUNG E&A's unparalleled EPC expertise with Nel's cutting-edge electrolyzer technology, we offer our customers a reliable solution.

SAMSUNG E&A maximizes project viability by leveraging our proven module expertise and project experience from FEL to EPC. Through our unique experience in the development and execution of gigawatt-scale clean hydrogen/ammonia projects, we have developed an in-depth understanding of electrolysis plant requirements.



Development of the World's Largest Clean Hydrogen/Ammonia Project (FEED)

Plant capacity : **1.1GW**

H₂ Production: **150,000** tonnes annually



Extensive Modularization Expertise

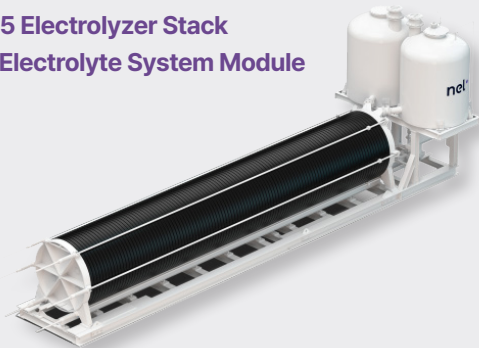
Over **180,000** tonnes of modulization structures delivered

Maximum module size: **1,841** tonnes

17 projects completed across **10** countries

Nel has been at the forefront of both commercially available platforms, alkaline and PEM, with more than 3,800 electrolyzer installations worldwide. With decades of experience tracing back to 1927, Nel currently offers some of the most energy efficient and reliable electrolyzer technology available today.

A485 Electrolyzer Stack and Electrolyte System Module



Net Production Rate: **485** Nm³/h

Turndown Range: **15** to 100%

Power consumption at Stack (100% load @ BoL) = **49** kWh/kg

CompassH2-A

powered by Nel Alkaline Electrolyzer

CompassH2-A is the alkaline version of CompassH2 that incorporates Nel A-Series units. By integrating Nel's stack design with SAMSUNG E&A's BOP design (not just adding one to the other), we have improved overall plant performance and lowered the Levelized Cost of Hydrogen. In addition, CompassH2-A provides seamless scalability to meet the unique sizes and specifications of each project by optimizing designs based on the standard model.

Optimize Overall Footprint

15,000~19,000m²

By incorporating technologies and project experience of both SAMSUNG E&A and Nel, we have developed an advanced BOS/BOP design and optimized the entire plant's footprint by up to 20%.

Achieve the Best-in-Class Lead Time

EPC within 30 months

Our standardized approach enables us to complete Pre-FID in within 5 months and EPC within 30 months while maintaining a high level of engineering quality.

Maximize Plant Hydrogen Production

19,400 Nm³/h

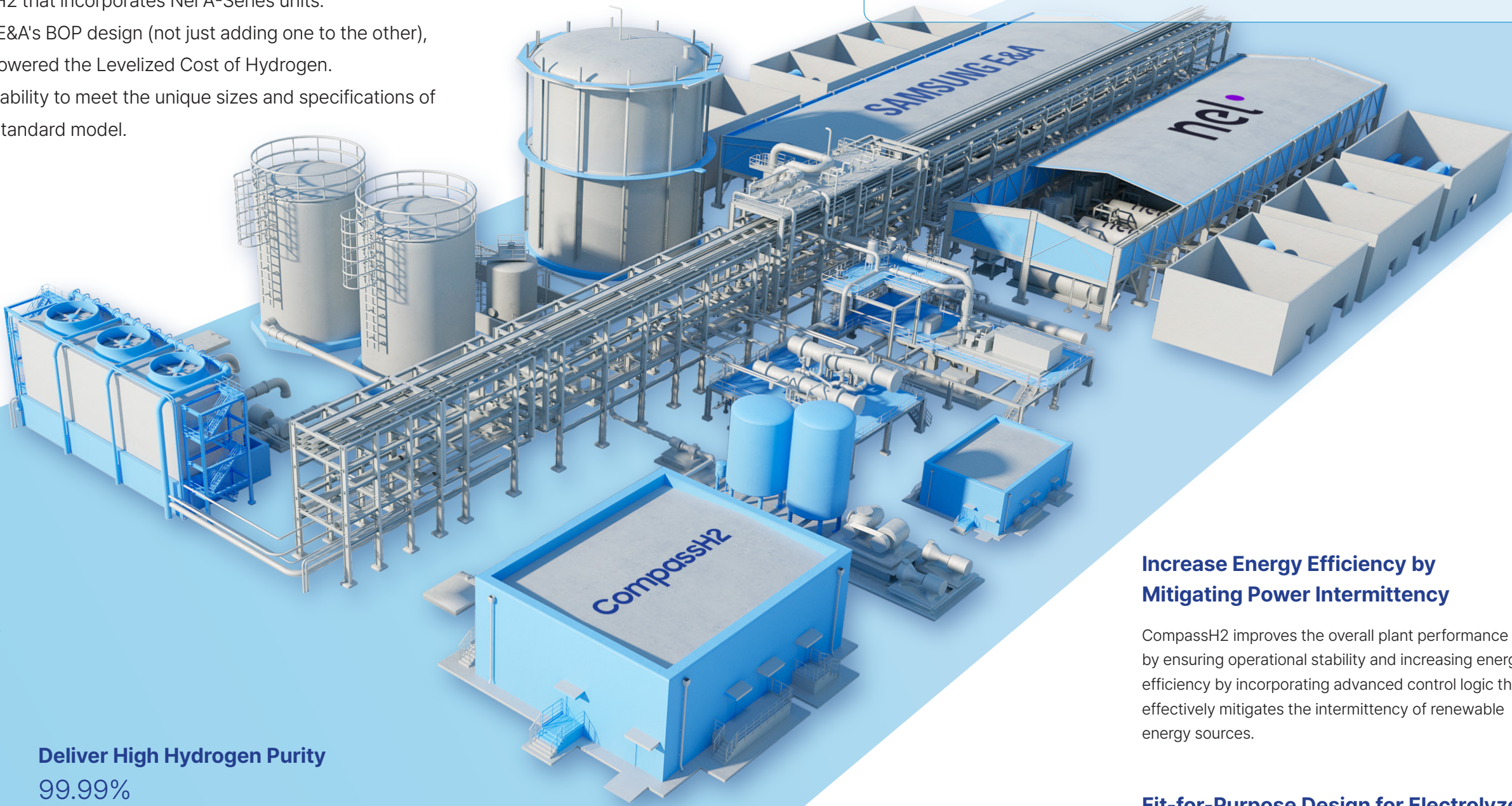
The BOS/BOP design allows us to maximize clean hydrogen production with a capacity of 19,400 Nm³/h.

Deliver High Hydrogen Purity

99.99%

Inherent in the design is the delivery of hydrogen purity levels exceeding 99.99%, making it ideal for use in almost all products made from hydrogen.

CompassH2-A Key Features		Hydrogen Production Efficiency	51.1 kWh/kg
Capacity	100MW	Plant Availability	96%
Hydrogen Production	19,400 Nm ³ /h	Footprint	15,000~19,000m ²
Hydrogen Purity	99.99%	Lead time	within 5 months (Pre-FID) / 30 months (EPC)



Increase Energy Efficiency by Mitigating Power Intermittency

CompassH2 improves the overall plant performance by ensuring operational stability and increasing energy efficiency by incorporating advanced control logic that effectively mitigates the intermittency of renewable energy sources.

Fit-for-Purpose Design for Electrolyzers

CompassH2 ensures cost competitiveness by applying fit-for-purpose design codes and standards for safe and reliable operation

Client-oriented solution comes TRUE

The best solution starts with understanding our client's needs. At SAMSUNG E&A, we work closely with our clients to deliver total solutions tailored to each customer's needs. We offer reliable assurance of process performance and unified efforts with key suppliers to increase project viability. We also provide our clients with extensive options in electrolyzer types and downstream applications.

Total end-to-end services

With a proven project track record as an EPC expert, SAMSUNG E&A is committed to providing total end-to-end service throughout the life cycle. From initial concept development (FEL) and front-end engineering design (FEED), through the EPC phases, followed by ongoing operation and maintenance (O&M), SAMSUNG E&A stands ready to leverage its expertise and resources to ensure exceptional results.

Reliable assurance of process performance

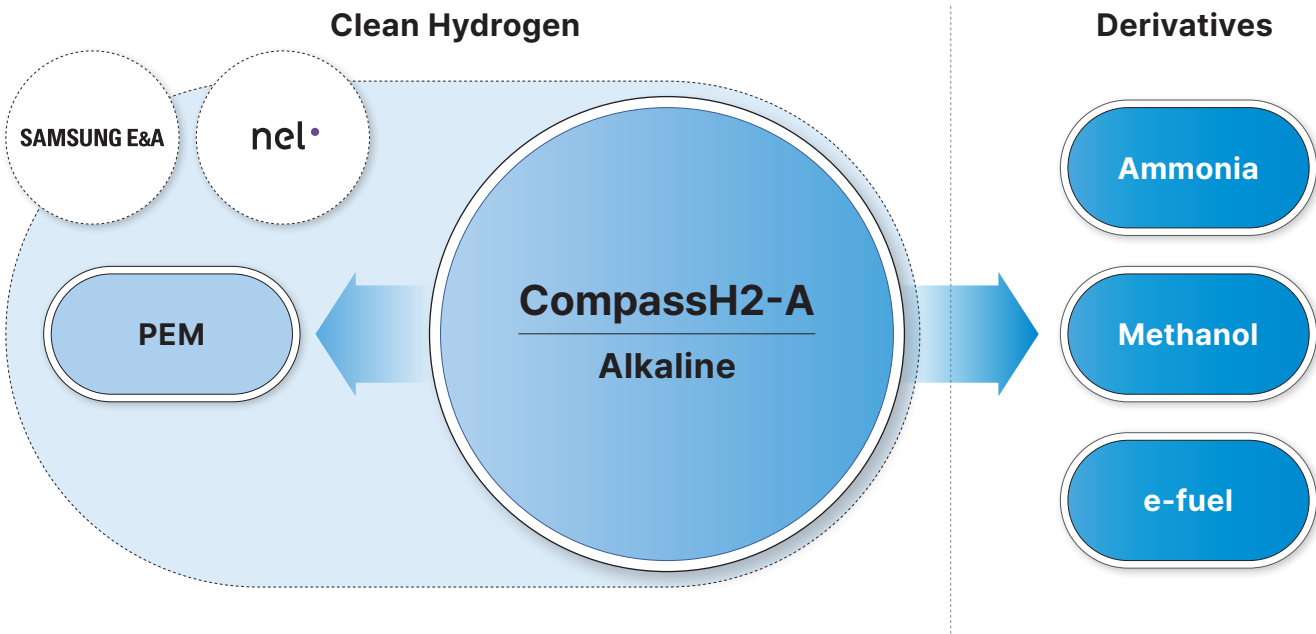
We provide full-wrap guarantees for the performance of the entire plant (including electrolysis) and offer total engineering services backed by over 54 years of EPC experience, giving our clients confidence in the outcome of their projects.

Unified efforts with key suppliers

SAMSUNG E&A forges strong alliances for key components with leading technology providers in the industry to maintain high performance, cost competitiveness and secure supply chain. We also strive to be competitive in sourcing by leveraging our strategic partnership with the most qualified suppliers worldwide.

Extensive options in electrolyzer types and downstream applications

SAMSUNG E&A adds value to its clients by continuously expanding CompassH2 in electrolyzer types and downstream applications. To provide a wider range of solutions, SAMSUNG E&A and Nel will develop CompassH2 from alkaline to proton exchange membrane (PEM) and even to next-generation electrolyzers. We will also expand its application to various hydrogen derivatives such as ammonia, methanol and e-fuels.





CompassH2

The Right Path to a Sustainable Future

CompassH2 is the ultimate clean hydrogen solution, tailored to client needs from FEL to EPC. This solution minimizes risks to project developers and delivers safe and stable performance in the operations phase, thus achieving the best-in-class Levelized Cost of Hydrogen.

At SAMSUNG E&A, we are committed to supporting your hydrogen journey.
Embrace a cleaner tomorrow with CompassH2—the right path to a sustainable future.
