

Joint Press Release from Siemens Gamesa and Siemens Energy

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Siemens Gamesa and Siemens Energy to unlock a new era of offshore green hydrogen production

- Projects target a total investment of approximately EUR 120 million over five years in developments leading to a fully integrated offshore wind-to-hydrogen solution
- Projects are first major step to develop an industrial-scale system capable of harvesting green hydrogen from offshore wind
- Developments will enable decarbonization of hard-to-abate sectors such as transport and heavy industry
- Implementation within the framework of the ideas competition "Hydrogen Republic of Germany" of the Federal Ministry of Education and Research

To reach the Paris Agreement goals, the world will need vast amounts of green hydrogen and wind will provide a large portion of the power needed for its production. Siemens Gamesa and Siemens Energy announced today that they are joining forces combining their ongoing wind-to-hydrogen developments to address one of the major challenges of our decade — decarbonizing the economy to solve the climate crisis.

The companies are contributing with their developments to an innovative solution that fully integrates an electrolyzer into an offshore wind turbine as a single synchronized system to directly produce green hydrogen. The companies intend to provide a full-scale offshore demonstration of the solution by 2025/2026. The German Federal Ministry of Education and Research announced today that the developments can be implemented as part of the ideas competition "Hydrogen Republic of Germany".

“Our more than 30 years of experience and leadership in the offshore wind industry, coupled with Siemens Energy’s expertise in electrolyzers, brings together brilliant minds and cutting-edge technologies to address the climate crisis. Our wind turbines play a huge role in the decarbonization of the global energy system, and the potential of wind to hydrogen means that we can do this for hard-to-abate industries too. It makes me very proud that our people are a part of shaping a greener future,” said Andreas Nauen, Siemens Gamesa CEO.

Christian Bruch, CEO of Siemens Energy, explains: “Together with Siemens Gamesa, we are in a unique position to develop this game changing solution. We are the company that can leverage its highly flexible electrolyzer technology and create and redefine the future of sustainable offshore energy production. With these developments, the potential of regions with abundant offshore wind will become accessible for the hydrogen economy. It is a prime example of enabling us to store and transport wind energy, thus reducing the carbon footprint of economy.”

Over a time frame of five years, Siemens Gamesa plans to invest EUR 80 million and Siemens Energy is targeting to invest EUR 40 million in the developments. Siemens Gamesa will adapt its development of the world’s most powerful turbine, the SG 14-222 DD offshore wind turbine, to

integrate an electrolysis system seamlessly into the turbine's operations. By leveraging Siemens Gamesa's intricate knowledge and decades of experience with offshore wind, electric losses are reduced to a minimum, while a modular approach ensures a reliable and efficient operational set-up for a scalable offshore wind-to-hydrogen solution. Siemens Energy will develop a new electrolysis product to not only meet the needs of the harsh maritime offshore environment and be in perfect sync with the wind turbine, but also to create a new competitive benchmark for green hydrogen.

The ultimate fully integrated offshore wind-to-hydrogen solution will produce green hydrogen using an electrolyzer array located at the base of the offshore wind turbine tower, blazing a trail towards offshore hydrogen production. The solution will lower the cost of hydrogen by being able to run off grid, opening up more and better wind sites. The companies' developments will serve as a test bed for making large-scale, cost-efficient hydrogen production a reality and will prove the feasibility of reliable, effective implementation of wind turbines in systems for producing hydrogen from renewable energy.

The developments are part of the H2Mare initiative which is a lighthouse project likely to be supported by the German Federal Ministry of Education and Research ideas competition "Hydrogen Republic of Germany". The H2mare initiative under the consortium lead of Siemens Energy is a modular project consisting of multiple sub-projects to which more than 30 partners from industry, institutes and academia are contributing. Siemens Energy and Siemens Gamesa will contribute to the H2Mare initiative with their own developments in separate modular building blocks.

About hydrogen and its role in the green energy transition

Currently 80 million tons of hydrogen are produced each year and production is expected to increase by about 20 million tons by 2030. Just 1% of that hydrogen is currently generated from green energy sources. The bulk is obtained from natural gas and coal, emitting 830 million tons of CO₂ per year, more than the entire nation of Germany or the global shipping industry. Replacing this current polluting consumption would require 820 GW of wind generating capacity, 26% more than the current global installed wind capacity. Looking further ahead, many studies suggest that by 2050 production will have grown to about 500 million tons with a significant shift to green hydrogen. The expected growth will require between 1,000 GW and 4,000 GW of renewable capacity by 2050 to meet demand, which highlights the vast potential for growth in wind power.

About Siemens Gamesa Renewable Energy

Siemens Gamesa is a global leader in the wind power industry, with a strong presence in all facets of the business: offshore, onshore and services. The company's advanced digital capabilities enable it to offer one of the broadest product portfolios in the sector as well as industry-leading service solutions, helping to make clean energy more affordable and reliable. With more than 107 GW installed worldwide, Siemens Gamesa manufactures, installs and maintains wind turbines, both onshore and offshore. The company's orders backlog stands at €30.2 billion. The company is headquartered in Spain and listed on the Spanish stock exchange (trading on the Ibex-35 index).

About Siemens Energy

Siemens Energy is one of the world's leading energy technology companies. The company works with its customers and partners on energy systems for the future, thus supporting the transition to a more sustainable world. With its portfolio of products, solutions and services, Siemens Energy covers almost the entire energy value chain – from power generation and transmission to storage. The portfolio includes conventional and renewable energy technology, such as gas and steam turbines, hybrid power plants operated with hydrogen, and power generators and transformers. More than 50 percent of the portfolio has already been decarbonized. A majority stake in the listed company Siemens Gamesa Renewable Energy (SGRE) makes Siemens Energy a

global market leader for renewable energies. An estimated one-sixth of the electricity generated worldwide is based on technologies from Siemens Energy. Siemens Energy employs more than 90,000 people worldwide in more than 90 countries and generated revenue of around €27.5 billion in fiscal year 2020. www.siemens-energy.com.

Contacts for journalists

Siemens Gamesa Renewable Energy

Úrsula Guerra

Phone: + 34 677 940 665

ursula.guerra@siemensgamesa.com

Siemens Energy

Alfons Benzinger

Phone: +49 174 155 9447

alfons.benzinger@siemens-energy.com

For more information: www.siemensgamesa.com

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