

Siemens Energy and Mitsubishi Electric sign MoU to move faster to develop gas solutions with zero global-warming potential in the high-voltage power transmission industry

Munich/Tokyo, June 8, 2021 – On June 5 (World Environment Day*), Siemens Energy and Mitsubishi Electric signed a Memorandum of Understanding (MoU) to conduct a feasibility study on the joint development of high-voltage switching solutions with zero global-warming potential (GWP) that substitute greenhouse gases with clean air for insulation. Both companies will research methods for scaling up the application of clean-air insulation technology to higher voltages. They'll start with a 245-kV dead-tank circuit breaker that will speed up the availability of climate-neutral high-voltage switching solutions for customers around the globe. Both partners will continue to manufacture, sell, and service switchgear solutions independently.

In most of the world's substations, sulfur hexafluoride (SF₆) – the most potent greenhouse gas in the world, with a potential for global warming roughly 23,500 times greater than CO₂, – is still the insulating gas of choice. Even with a very low number of leakages, the impact on global warming is significant. In light of the drive toward global decarbonization, the demand for alternatives is growing as operators seek future-proof technologies that significantly reduce the carbon footprint of their systems. At the same time, regulations to reduce or prohibit the use of fluorinated gases in the electrical industry are being reviewed and implemented in various parts of the world.

Siemens Energy and Mitsubishi Electric are pioneers in the development of high-voltage switching solutions. Both companies have been working on the development of SF₆-free gas-insulated switching solutions that replace the greenhouse gas with clean air, a pure mixture of nitrogen and oxygen, in order to contribute to global carbon-neutrality goals. To date, clean-air insulation is the only alternative to greenhouse gases and therefore poses zero health and safety risks. In conjunction with vacuum interrupters, a higher performance for switching applications is ensured, even compared with all known SF₆ circuit breakers.

Siemens Energy's Blue Portfolio offers future-proof and environmentally friendly solutions for high-voltage power transmission. It comprises F-gas-free gas-insulated switchgear, circuit breakers, and instrument transformers. The combination of vacuum-switching technology and clean-air insulation enables a significant reduction of emissions, while the lifetime of the products can also be increased. While circuit breakers that use clean-air and vacuum-switching technology have been available for at least 15 years for voltage levels up to 72.5 kV, the outstanding technical performance and low lifecycle costs also make it a perfect choice for other substation products, including gas-insulated switchgear up to 145 kV, with absolutely zero CO₂ equivalent emissions over the lifetime of the equipment. Siemens Energy's Blue products lie outside the scope of any conceivable F-gas regulation.

Mitsubishi Electric provides a variety of high- and medium-voltage products to ensure the safe and reliable operation of modern power networks. With its state-of-the-art, best in the industry vacuum-interruption and dry-air insulation technology, Mitsubishi Electric is contributing to society by providing (SF6-free) and zero CO₂ equivalent emission, energy-efficient, and low lifecycle-cost solutions. Mitsubishi Electric has manufactured high-quality vacuum tubes and products since 1965 and started providing its 72.5-kV vacuum interrupter in 2002. The company is extending its vast experience with vacuum and dry-air technology to create a new lineup of higher-voltage circuit breaker and switchgear products.

*United Nations day for encouraging worldwide awareness and action to protect our environment.

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This press release is available at

www.siemens-energy.com/press and <https://www.MitsubishiElectric.com/news/index.html>

For further information on Siemens Energy Blue portfolio, please see

<https://www.siemens-energy.com/global/en/offerings/power-transmission/innovation/blue-high-voltage-products.html>

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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.

Mitsubishi Electric. With 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its “Changes for the Better.” The company recorded a revenue of 4,191.4 billion yen (U.S.\$ 37.8 billion*) in the fiscal year ended March 31, 2021. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥111=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2021