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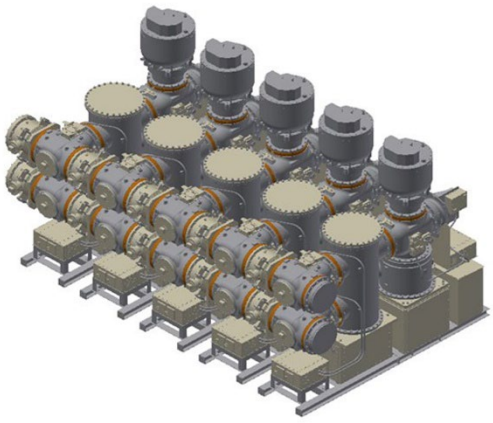
Mitsubishi Electric Receives Order for 84kV Dry Air Insulated Switchgear from Electric Power Company in Japan

Expands the company's lineup of greenhouse gas-free products, helping to achieve carbon neutrality



84kV dry air insulated switchgear (image)

TOKYO, July 17, 2024 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has received an order from Kansai Transmission and Distribution, Inc. (Osaka, Japan) for its 84kV dry air insulated switchgear, a new environmentally friendly, greenhouse gas-free product for use in gas-insulated switchgear (GIS) to be installed in substations. Mitsubishi Electric is the first company in Japan to develop GIS which does not utilize greenhouse gases,[1] with two of the main components—vacuum interrupter (VI) and vacuum circuit breaker—developed in-house.

GIS and other types of switchgear are used to switch power routes and protect equipment from current spikes that may occur during system faults. Since delivering Japan's first 84kV GIS in 1968, Mitsubishi Electric has supplied switchgear for use in electric power grids all over the world, helping to provide stable electric power supplies for over half a century. However, current switchgear uses sulfur hexafluoride (SF_6) gas, which has a

[1] As of July 17, 2024, according to Mitsubishi Electric's research

global warming potential (GWP) approximately 24,300 times that of CO_2.[2] Although SF_6 gas emissions from equipment have been minimized, the development of switchgear that does not use SF_6 gas has been progressing in response to the recent demand for a reduction in environmental impact and the establishment of regulations to limit the use of SF_6 gas.[3]

The 84kV dry air insulated switchgear that Mitsubishi Electric has developed uses VI to interrupt current and dry air insulation as an alternative to SF_6 gas. These have been in production since 1965, and have excellent insulation performance. Synthetic dry air, which has zero GWP, is used as insulation medium. This ensures high safety, helps to reduce environmental impact, and improves the efficiency of operation and maintenance. This first order for the new product recognizes its advanced technology and its reduced environmental impact. Delivery of the equipment is scheduled for March 2026.

Mitsubishi Electric will continue expanding the company's range of products that do not utilize greenhouse gases, supporting the stabilization of power systems across the world, thereby helping to achieve carbon neutrality and creating safe, reliable environments where electricity can be used with peace of mind by many.

Product Features

1) ***Reduces environmental impact by adopting dry air insulation with zero GWP***
   - Adopting synthetic dry air with zero GWP as an insulating medium and as an alternative to SF_6 gas helps to reduce environmental impact.
   - The adoption of VI helps achieve an interruption performance equivalent to that of SF_6 gas while GWP is zero.

2) ***The use of dry air and VI reduces the need for gas management tasks and extends internal inspection cycles, helping enable more efficient maintenance***
   - The adoption of dry air insulation eliminates the need for gas emission recording, reporting, and gas recovery during disposal, all of which are necessary with conventional SF_6 gas equipment; this helps to improve the efficiency of maintenance and inspection operations. In addition, the adoption of VI results in reducing electrode consumption during current interruption compared to that of SF_6 gas switchgear, thereby extending interval open/close inspection periods.
   - Adopting dry air with a low liquefaction temperature (approximately -190°C) eliminates the need for low-temperature countermeasures and maintenance to prevent liquefaction of SF_6 gas, which is required in cold climates (-30°C or lower).
   - Locating the operating mechanism on the inspection aisle side gives the on-site operability of the switchgear, ensuring the same ease of maintenance and inspection as before.

[2] Source: Worldwide Governance Indicators Report

[3] In Europe and the United States, regulations for the use of SF_6 gas have been announced ahead of the rest of the world. In the EU, the use of SF_6 gas is expected to be banned by the revision of the Fluorine Gas Regulations (Regulation No. 573/2024), and in the State of California in the United States, phasing out is expected with the implementation of the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear.

3) Compact layout allows easy equipment replacement and extension

- By minimizing the width of the equipment through the use of high-pressure gas and placing it in a highly integrated configuration, the dimension between bays is equivalent to those of SF_6 gas equipment.[4]
- Optimizing equipment layout allows full assemble transportation to reduce installation period.

Main Specifications (JEC)

Ratings based on	JEC-2350:2016
Rated voltage	72/84kV
Rated frequency	50/60Hz
Rated nominal current	800/1200/2000A
Rated short time withstand current	31.5kA, 2sec
Rated lightning impulse voltage	400kV
Environment	Indoor/Outdoor

Main Specifications (IEC)

Ratings based on	IEC
Rated voltage	72.5kV
Rated frequency	50/60Hz
Rated nominal current	2000A
Rated short time withstand current	31.5kA, 3sec
Rated lightning impulse voltage	325kV
Environment	Indoor/Outdoor

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About Mitsubishi Electric Corporation

With more than 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 5,257.9 billion yen (U.S.$ 34.8 billion*) in the fiscal year ended March 31, 2024. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥151=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2024

[4] SF_6 GIS first generation equipment in the 1970s