

## **Hitachi Energy and Gulf Cooperation Council Interconnection Authority (GCCIA) sign contract to upgrade high-voltage direct current transmission system**

*Upgrading the Al-Fadhili high-voltage direct current (HVDC) converter station will ensure power security and grid stability*

**Zurich, 20 March 2023** – Hitachi Energy and Gulf Cooperation Council Interconnection Authority (GCCIA) announced today the signing of a contract to upgrade the Al-Fadhili high-voltage direct current (HVDC) converter station under the GCCIA authority in Saudi Arabia. Its mission is to create a resilient interconnected grid, ensuring power security, and economic benefits.<sup>1</sup>

The Al-Fadhili converter station started its operations in 2009 as part of a project to interconnect the power grids of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. Once upgraded, the Al-Fadhili station will be able to exchange up to 1,800 megawatts of electricity between these states.<sup>2</sup> Additionally, the station serves a special purpose of maintaining the stability of the connected grids. This upgrade project will replace hardware and software with Hitachi Energy's cutting-edge MACH™ control and protection system, the brain behind HVDC links.<sup>3</sup>

The GCCIA allows the sharing of the operational and spinning reserve, which achieves higher efficiency in the use of operating capacities and higher efficiency in the operation of electric power production stations, leading to great improvements in the regions' power security and reliability. Power security in the Gulf countries is especially critical due to extreme weather conditions. Furthermore, the link will allow optimization in electricity generation resulting in reduced CO<sub>2</sub> emissions by minimizing the need for additional power generation, ensuring a secure power supply between the member countries.

"Security of electricity is something society often takes for granted, but it's special systems like the Al-Fadhili converter station which keeps the power flowing, is essential for the economy and well-being of the local society," said Niklas Persson, Managing Director at Hitachi Energy's Grid Integration business. "With this upgrade, Hitachi Energy will deliver significant value with a real impact improving the system performance and further expanding its lifetime."

In this occasion, Ahmed bin Ali Al-Ibrahim, CEO of the Gulf Electrical Interconnection Authority, said that the project will contribute to strengthening the electrical interconnection expansion projects adopted by the authority, which aims to increase the reliability of energy in the Gulf network and make it more efficient. "The project represents great opportunities to exchange energy, especially in light of the increase in the capacity of the electrical connection to achieve economical operation of the network, especially during the summer, and also to increase the security and stability of the network and reduce interruptions."

HVDC systems are commonly used for large-scale transmission and exchange of electricity over large distances between two HVDC converter stations, but the Al-Fadhili HVDC converter station is a back-to-back system in a single location.<sup>4</sup> Back-to-back stations utilize the sophisticated, digital controllability of an HVDC system to precisely manage the flow and properties of the electricity supply, providing many benefits for grid control and stability.

In addition to this upgrade and the other ongoing projects, Hitachi Energy and GCCIA are strengthening their collaboration to build a resilient interconnection grid by ensuring power

security and economic benefits. This will accelerate GCCIA's journey to become a global hub in grid interconnections and create a dynamic electricity market for the region and beyond. Initial areas of focus for the collaboration include developing standardized base designs to be applied for high-voltage direct current (DC) and alternating current (AC) transmission systems to interconnect countries. This includes grid connections and power quality solutions, in particular STATCOMs, which provides significant benefits throughout the assets' plan, build, operate and maintain life cycle.

1 [GCCIA About Us](#)

2 Estimate based on per capita electricity consumption in Saudi Arabia <https://www.worlddata.info/asia/saudi-arabia/energy-consumption.php>

3 [Modular Advanced Control for HVDC \(MACH™\)](#)

4 [Back-to-back HVDC systems](#)

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#### **Note to editors:**

Hitachi Energy's HVDC solution combines world-leading expertise in HVDC converter valves; the MACH™ digital control platform, converter power transformers and high-voltage switchgear; as well as system studies, design and engineering, supply, installation supervision and commissioning.

HVDC Light® is a voltage source converter technology developed by Hitachi Energy, which was launched over 25 years ago. It is the preferred technology for many grid applications, including interconnecting countries, integrating renewables and "power-from-shore" connections to offshore production facilities. HVDC Light's defining features include uniquely compact converter stations and exceptionally low electrical losses.

Hitachi Energy pioneered commercial HVDC technology almost 70 years ago and has delivered more than half of the world's HVDC projects.

#### **HVDC website:**

<https://www.hitachienergy.com/offering/product-and-system/hvdc>

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Hitachi Energy is a global technology leader that is advancing a sustainable energy future for all. We serve customers in the utility, industry and infrastructure sectors with innovative solutions and services across the value chain. Together with customers and partners, we pioneer technologies and enable the digital transformation required to accelerate the energy transition towards a carbon-neutral future. We are advancing the world's energy system to become more sustainable, flexible and secure whilst balancing social, environmental and economic value. Hitachi Energy has a proven track record and unparalleled installed base in more than 140 countries. Headquartered in Switzerland, we employ around 40,000 people in 90 countries and generate business volumes of approximately \$10 billion USD.

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Hitachi drives Social Innovation Business, creating a sustainable society with data and technology. We will solve customers' and society's challenges with Lumada solutions leveraging IT, OT (Operational Technology) and products, under the business structure of Digital Systems & Services, Green Energy & Mobility, Connective Industries and Automotive Systems. Driven by green, digital, and innovation, we aim for growth through collaboration with our customers. The company's consolidated revenues for fiscal year 2021 (ended March 31,

2022) totaled 10,264.6 billion yen (\$84,136 million USD), with 853 consolidated subsidiaries and approximately 370,000 employees worldwide. For more information on Hitachi, please visit the company's website at <https://www.hitachi.com>.

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