

2021 June

Feature Energy Solutions for the Future



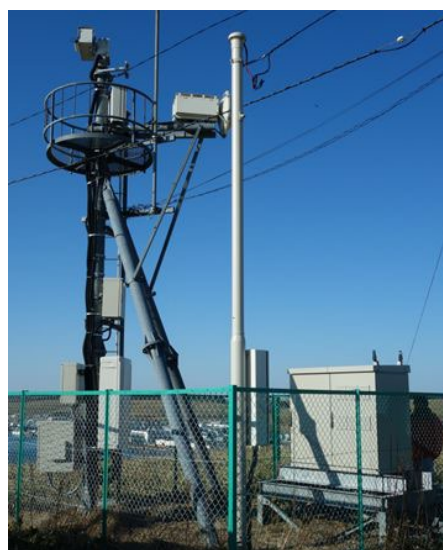
Mitsubishi Gas Chemical

DMFC Power Supply System in Development

Mitsubishi Gas Chemical (MGC) is in the process of developing a Direct Methanol Fuel Cell (DMFC) system which, using methanol aqueous solution as the fuel, allows the direct production of electricity without going through an intermediate hydrogen generation stage. Because it provides more than a week of backup power, the system is already in use in Japan as an uninterruptible power supply at unmanned radio base stations and in live camera installations. Even when installed in remote locations, the operator can ascertain the working status of the system by connecting to the cloud server over a mobile phone line. In addition, methanol aqueous solution is a non-hazardous material and can be stored for long periods without degradation. Clean and quiet, the DMFC system provides a friendly power supply for urban and domestic applications.



Inside the DMFC cabinet



DMFC in use as live camera uninterruptible power supply

<https://www.mgc.co.jp/eng/csr/rc/eco-friendly/#ac02>



For more information about the Mitsubishi companies, see "mitsubishi.com"

 <https://www.mitsubishi.com/en/>



The Mitsubishi Monitor is published by the Mitsubishi Public Affairs Committee

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Tokio Marine & Nichido Fire Insurance Green Transformation Taskforce

Tokio Marine & Nichido Fire Insurance on February 1, 2021, established a Green Transformation Taskforce as a group-wide unit contributing to the further development of industry by supporting customers in moving to a carbon-neutral, decarbonized society. The taskforce is working to develop and provide insurance products and services that target renewable energy and to build a risk consulting services supply system. The taskforce will be accelerating its work by setting up internal project teams to study storage batteries; hydrogen; carbon capture and storage (CCS); carbon capture, utilization and storage (CCUS); and other new decarbonization technologies.

A vision of the new organization

- 1 Development of insurance products that contribute to the promotion of offshore wind farms in Japan
- 2 Study and development of insurance products that contribute to the deployment of storage batteries, to the promotion of hydrogen use, and to the establishment of CCS/CCUS and other new technologies
- 3 Support for local authorities and corporations in the creation of decentralized energy systems
- 4 Employment and training of specialists from outside the taskforce
- 5 Creation of a one-stop supply system for the consulting services required for evaluation of commercialization prospects



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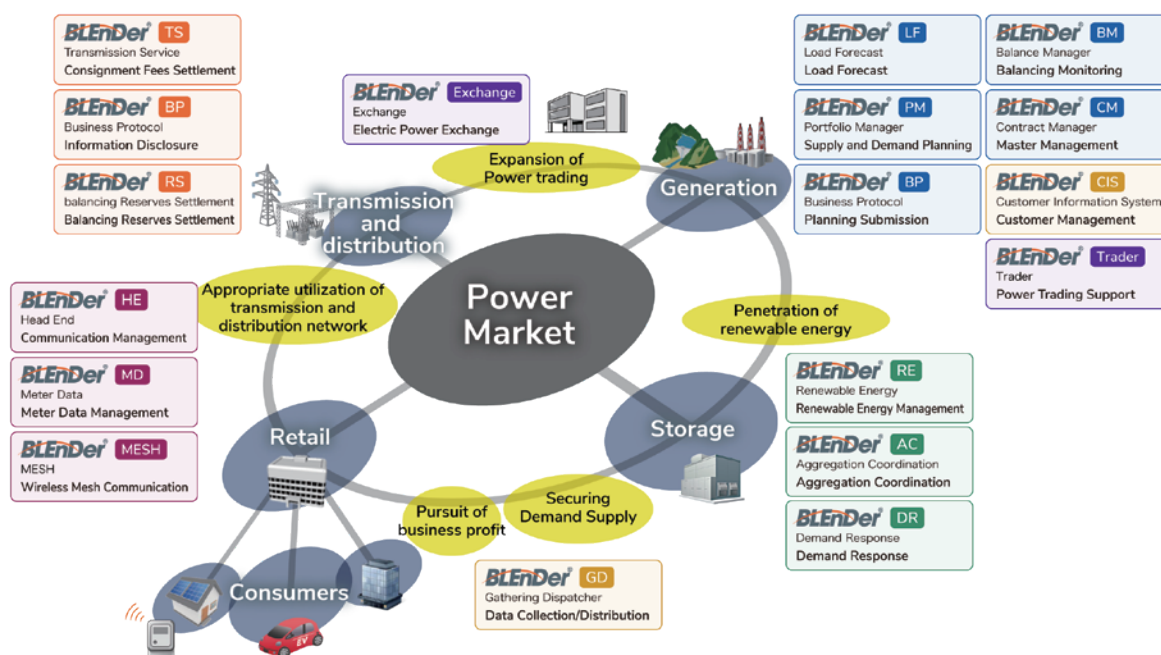
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Mitsubishi Electric

The BLEnDer® Software Package for the Power Market

Mitsubishi Electric, to align with the growth of renewable energy and other global developments in the power industry, has been marketing the BLEnDer® series of packaged software designed to comprehensively address the needs of power trading and supply-demand control. Since the launch of the series in 2003, its lineup has been enriched to manage distributed power sources such as solar energy and storage batteries. Covering the entire power market, the company presently offers a total of 19 packaged software products and has a solid track record in supplying power producers and energy retailers. The packaged software can be used off-the-shelf or can be customized for individual needs and operational styles.



The BLEnDer® power market ICT solution package covering the entire power market

<https://www.mitsubishielectric.com/eig/energysystems/ictpowersystem/solutions/BLenDer.html>



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Mitsubishi Materials

A Devotion to Renewable Energy

The **Mitsubishi Materials (MMC)** group of companies has been engaged in renewable energy in various ways since it started using hydropower for its mines in 1898. With over 120 years in hydroelectric, over 50 years in geothermal and, since 2013, in solar power generation, the group has been creating surprising quantities of power. In recent years, the group has also been looking at expanding into new areas, including the addition of food-waste biogas power stations and the utilization of wood-derived biomass thermal energy. The group is also focusing on business models that combine renewable energy's three values: as an energy source; its environmental value in reducing CO₂ emissions; and its value to the local community.



The Komatagawa No. 4 Hydroelectric Power Plant, completed in 1953, and Moriyoshi dam



The Onuma Geothermal Power Plant completed in 1974, Japan's third geothermal power plant

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Mitsubishi UFJ Financial Group

A New Renewable Energy Fund

The **Mitsubishi UFJ Financial Group (MUFG)**'s core banking subsidiary MUFG Bank is to establish a fund to invest in renewable energy in Japan with the ultimate goal of obtaining 100% of its electricity requirements from clean, renewable energy sources. This is the first integrated scheme by a Japanese entity that covers the whole green energy production-to-purchase process. The company anticipates that this initiative will reduce CO₂ emissions by approximately 200,000 tons, or around 100,000 households' worth. In the future, the fund aims to contribute to solving environmental and societal issues by further growing the renewable energy market by supporting innovation, regional revitalization and local employment through investments in projects using technologies still in the demonstration stage, such as distributed power supply, the virtual power plant (VPP) and hydrogen power generation.



Members of MUFG Bank's sustainable business team

<https://www.bk.mufg.jp/global/newsroom/admin/newse0219.pdf>



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