

August 11, 2017

New Energy and Industrial Technology Development Organization (NEDO)

Hitachi, Ltd.

Hitachi Systems, Ltd.

ITOCHU Corporation

## **Commencement of Demonstration for Microgrid System Using Photovoltaic (PV) Power Generation in India — Demonstration Aims to Verify Provision of Reliable Power Supply and System Effectiveness —**

**NEDO, Hitachi, Ltd., Hitachi Systems, Ltd. and ITOCHU Corporation, in cooperation with the Delhi-Mumbai Industrial Corridor Development Corporation Ltd. (DMICDC) under the Japan-India Delhi-Mumbai Industrial Corridor (DMIC) project, have begun a demonstration of a microgrid system designed to provide reliable power using PV power generation technology. The system will supply power to Mikuni India Private Limited, a company operating in the Neemrana Industrial Park of Rajasthan, India.**

**A microgrid system was built using a PV power generation system combined with several diesel generators. A demonstration of the microgrid system will now be carried out over the next two years to verify that the system provides reliable power and curbs diesel fuel consumption.**

**The aim of the demonstration is to verify the effectiveness of Japan's microgrid technology and encourage its dissemination throughout India.**



Figure 1. Microgrid system using PV power generation

## 1. Overview

As a result of its economic growth and increasing demand for electricity (with annual demand increasing by an average of 4.9 percent), India is expected by 2025 to become one of the world's largest consumers of energy, just behind China and the United States but surpassing the EU. Chronic power shortages, however, have left the country with an unreliable power supply at a time when companies that operate production facilities in India have a pressing need for reliable power to ensure stable operations. In addition, the Indian Government has set a target of introducing 175 GW of power supply from renewable sources by the year 2022 (100 GW from solar power, 60 GW from wind power, 10 GW from biomass power, and 5 GW from microhydro power).

Against this backdrop, the Japan-India Delhi-Mumbai Industrial Corridor (DMIC) project\* has been launched. NEDO, Hitachi, Ltd., Hitachi Systems, Ltd. and ITOCHU Corporation built a microgrid system using PV power and several diesel generators in the Neemrana Industrial Park in Rajasthan, India, in cooperation with Delhi-Mumbai Industrial Corridor Development Corporation Ltd. (DMICDC) of India. The demonstration of the microgrid system has been initiated to verify that the system will provide a reliable power supply and curb diesel fuel consumption.

The microgrid system will enable a reliable power supply by combining and controlling a 1 MW PV power generation system used in combination with diesel power generators. The commissioning of the microgrid system was successfully completed prior to the demonstration, which will be carried out for the next two years to verify a reliable power supply for Mikuni India Private Limited, a company operating in the industrial park. The aim of the demonstration is to verify the effectiveness of Japan's microgrid technology and encourage its dissemination throughout India.

In the meantime, 5 MW PV power generation facilities equipped with thin-film PV modules have been installed in the industrial park with power generation performance and other demonstration tests conducted since July 2015 to verify that Japanese thin-film PV modules, having been exposed to India's severe solar radiation, are still able to properly function according to design specifications and provide a stable power supply.

Planned demonstration period: FY2017-FY2019

Budget: Approximately 3.9 billion Japanese yen (of which 3.4 billion is provided by NEDO)

Participant companies: Hitachi, Ltd., Hitachi Systems, Ltd., ITOCHU Corporation

Benefits to be demonstrated: (1) Practicality and energy efficiency of microgrid control technology in providing a reliable power supply  
(2) Effectiveness of Japanese PV modules

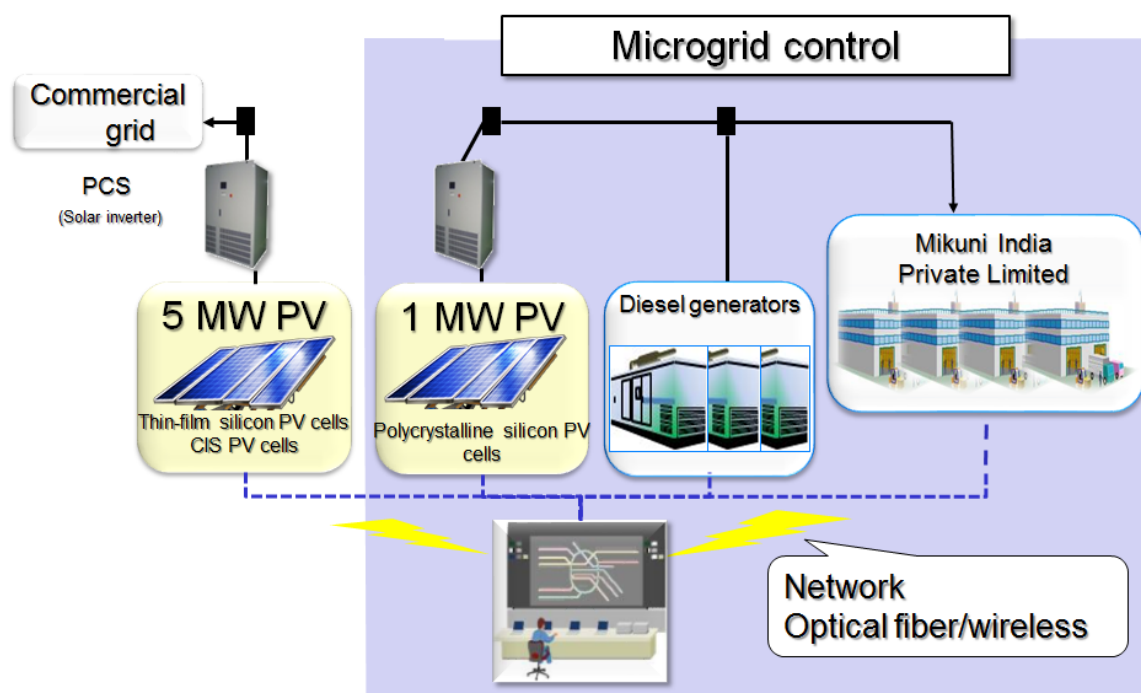


Figure 2. System configuration at Neemrana Industrial Park in Rajasthan

## 2. Commencement Ceremony

On August 11, 2017, a ceremony was held at the Neemrana Industrial Park to commemorate the start of the demonstration. On the Japanese side, the ceremony was attended by Mr. Kazuo Furukawa, Chairman of NEDO, Mr. Kenji Hiramatsu, Ambassador of Japan to India, and other persons involved with this project representing Hitachi, Ltd., Hitachi Systems, Ltd., and ITOCHU Corporation. On the Indian side, attendees included Mr. Ramesh Abhishek, Secretary of the Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Mr. Anand Kumar, Secretary of the Ministry of New and Renewable Energy, and many other persons concerned with this project.

\*Note: Delhi-Mumbai Industrial Corridor (DMIC) project

This is a joint infrastructure development project between Japan and India focusing on the Delhi-Mumbai regional corridor. A freight corridor – namely a railway dedicated to freight – will be constructed between Delhi and Mumbai with yen-loan financing of 450 billion Japanese yen. Industrial complexes, logistics bases, power plants, roads, ports, residential housing, commercial facilities, and other infrastructure will be built mainly using private investment funds. (Source: Asia and Pacific Division, Japan's Ministry of Economy, Trade and Industry "Delhi-Mumbai Industrial Corridor Project")

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