

# News Release

## 2023.4.26

New Energy and Industrial Technology Development Organization (NEDO)

Hitachi, Ltd.

Electricity Generating Authority of Thailand

### Demonstration Operation of Optimized Performance Enabling Network for Volt/Var(Q) (OPENVQ) of Power Transmission Network Commences in Thailand

–200 tons of CO<sub>2</sub> Emissions Reduction confirmed–

New Energy and Industrial Technology Development Organization (NEDO) and the Ministry of Energy of the Kingdom of Thailand (MoEN) are carrying out a demonstration project with the aim of achieving low carbonization and enhancements in power system operations. Hitachi, Ltd. (Hitachi), contractor of the project, and the Electricity Generating Authority of Thailand (EGAT) jointly installed optimized performance enabling network for volt/var(Q) (OPENVQ) and commenced its demonstration operation in February 2023.

In this demonstration operation, the OPENVQ system was linked to SCADA used to monitor and control the power system in the regional control center operated by EGAT in northeastern Thailand. And we already confirmed that the loss of power in the transmission network had been curbed and approximately 200 tons of CO<sub>2</sub> emissions had been reduced by operating those advanced and efficient power systems in the period from February 21<sup>st</sup> through March 10<sup>th</sup>. Future plans include registration of the project with the joint committee of the Joint Crediting Mechanism (JCM), and issuance of CO<sub>2</sub> credits through TPE (third party entity) verification based on the results to be monitored until December 2023.

On April 26<sup>th</sup>, an opening ceremony was held at the head office of EGAT in Nonthaburi attended by all the parties concerned from both countries to celebrate the start of the demonstration operations.

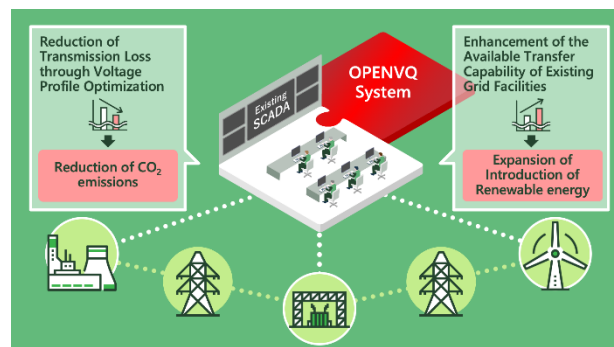


Fig. Image of OPENVQ system

## 1. Background

Electricity demand in Thailand is growing as its economy develops, and the country is now faced with a challenge to reduce the loss of power in the transmission network (hereinafter called “ transmission loss”). In addition, with the amount of fossil fuels, such as natural gas, also rising because electricity is generated mainly by thermal power plants in Thailand, the country needs to introduce renewable energy to realize the energy mix that could mitigate environmental impacts.

Under these circumstances, the purchase of electricity from neighboring countries and construction of new power generation facilities, such as hydroelectric power plants and/or photovoltaics (PV), are being considered as alternatives in northeastern Thailand. In the current grid operation, there is a challenge of supplying electricity stably while reducing transmission loss because no technology for voltage optimization has been installed in the current transmission network with various power sources connected.

## 2. The Project Overview

Against this background, NEDO and MoEN agreed to implement a demonstration project<sup>\*1</sup> for the purpose of low carbonization and enhancements in power system operation, and signed a Letter of Intent for cooperation in December 2020. In parallel, Hitachi, contractor of the demonstration project and Electricity Generating Authority of Thailand (EGAT), a state enterprise operating power generation and transmission in Thailand, concluded a Project Agreement (PA).

Based on the PA, Hitachi and EGAT installed optimized performance enabling network for volt/var(Q) (OPENVQ)<sup>\*2</sup>, an online-based optimal voltage/ reactive power control system, in the power transmission system owned by EGAT in northeastern Thailand and started the demonstration project to achieve reduction of CO<sub>2</sub> emissions<sup>\*3</sup> by curbing transmission loss through more advanced and more efficient operation of the electric power system.

Hitachi completed the installation of the OPENVQ in November 2022 and started to manually control the voltage, in collaboration with the EGAT operator, based on the control command of the OPENVQ in January 2023 as Phase 1.

This time, as Phase 2, we commenced demonstration operation of the OPENVQ system linked to SCADA<sup>\*4</sup> used in the regional control center operated by EGAT, as from February 21<sup>st</sup>. OPENVQ enables automatic control of the EGAT's power grid via SCADA without EGAT's manual operation.

After analyzing the monitoring data using the methodology approved by the joint committee of the Joint Crediting Mechanism (JCM)<sup>\*5</sup>, we confirmed that CO<sub>2</sub> emissions had been reduced by approximately **200** tons until March 10<sup>th</sup>. Furthermore, we prepared Project Design Document (PDD)<sup>\*6</sup> based on JCM's procedures and received TPE (third party entity) validation<sup>\*7</sup> on March 15<sup>th</sup>.

Future plans include registration of the project with the joint committee of JCM, and issuance of CO<sub>2</sub>

credits through TPE verification based on the results to be monitored until December 2023.

### 3. Ceremony to celebrate the start of operation

On April 26th, an opening ceremony was held at the head office of EGAT in Nonthaburi attended by all the parties concerned from both countries to celebrate the start of the demonstration operations. During the ceremony, the representatives made speeches, and Hitachi and EGAT introduced the outline of the demonstration project and the introduction effect.

**This news release was corrected on August 7th, 2023. Please see below for the details.**

#### **Correction Notice**

[Notes]

\*1 Demonstration project

Project name: Program to Facilitate Overseas Promotion of Low Carbon Technology Through the Joint Crediting Mechanism (JCM) / Program to Promote Market Creation Using Low- Carbon Technology / Low-Carbonized Operation of a Power Grid Utilizing Online Voltage-var (Q) Optimal Control "OPENVQ" with ICT (Thailand)

Project period: FY2020 – FY2023

\*2 optimized performance enabling network for volt/var(Q) (OPENVQ)

(reference) Online system for optimum control of voltage and reactive power: Hitachi, Ltd.

[https://www.hitachi.com/products/it/control\\_sys/ems/opencvq.html](https://www.hitachi.com/products/it/control_sys/ems/opencvq.html)

\*3 start of demonstration project

(reference) NEDO News List (January 12, 2021)

Thailand's First Demonstration Project of Optimized Performance Enabling Network for Volt/Var(Q) (OPENVQ) in Power Transmission Networks

[https://www.nedo.go.jp/english/news/AA5en\\_100431.html](https://www.nedo.go.jp/english/news/AA5en_100431.html)

\*4 SCADA

Stands for Supervisory Control and Data Acquisition and refers to a system in which power systems are monitored and controlled through computers.

\*5 Joint Crediting Mechanism (JCM)

A scheme for reducing greenhouse gas emissions in cooperation with JCM partner developing countries, in which the result of reduction is allocated as per contribution between partner country and Japan.

\*6 Project Design Document (PDD)

This document is part of the JCM process and describes the outline of the project and the methodology to calculate the volume of emission reductions.

\*7 validation

This is a document in which a third party entity evaluates and certifies whether a proposed project meets the eligibility requirements.

**4. For more information, please contact:**

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Contact persons: Tada, Tanso

<https://www8.hitachi.co.jp/inquiry/control/en/main/form.jsp>

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.

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