News Release

July 18, 2025
Nissin Electric Co., Ltd.

A New, High-Capacity Power Voltage Transformer (PVT) Developed and Installed in India's First Micro Substation With a PVT
—Helping to achieve stable power supply for areas off the grid—

Nissin Electric Co., Ltd. has developed a new, high-capacity power voltage transformer (PVT) and installed it in India's first micro substation with a PVT as part of a demonstration research project that has been carried out with funding from the New Energy and Industrial Technology Development Organization (NEDO).

Micro substation with a PVT

New PVT

[Overview of the new PVT]

Electricity that travels through power transmission lines is very high voltage. It is usual for such power to build large substations to step down the voltage in stages using transformers. In this connection, a voltage transformer (VT) is used to convert high voltage to low voltage in order to measure the voltage of the transmission line. Nissin Electric has a track record of delivering approximately 40,000 units to over 60 countries. Moreover, in 2012, the company developed a 25 kVA PVT that converts high voltage to low voltage for the purpose of providing control power sources in switchyards for renewable energy generation, and this has been on the market since 2016.

To build micro substations that solve the cost, space, and environmental issues associated with installing power infrastructure equipment that are encountered in non-electrified areas and areas with undeveloped power grids, Nissin Electric developed a new high-capacity PVT in October 2024 and made the first delivery to India in June 2025.

The newly developed PVT can handle voltages from 66 kV to 275 kV and can directly convert them down to a minimum of 200 V line. Compared to the previous model with an output capacity of 25 kVA, the new model has a larger capacity of 100 kVA. This will not only help spread the use of renewable energy but also expand the use of PVTs to ensure a stable supply of electricity to non-electrified areas, contributing to the creation of a social infrastructure that delivers energy to more people.

To achieve a higher capacity, Nissin Electric designed the coils to minimize the internal loss so as to suppress temperature rise.

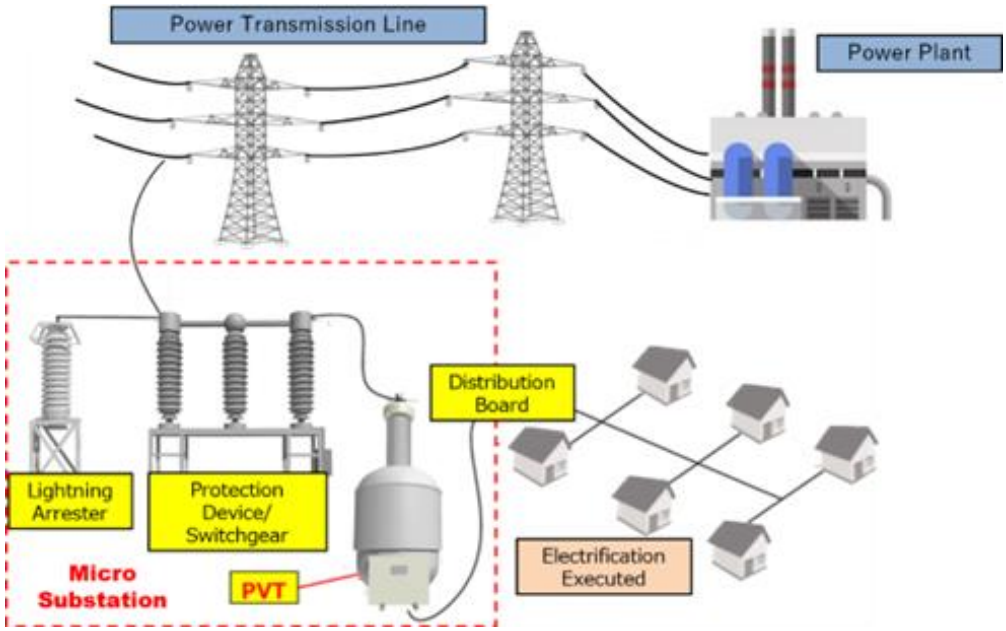
[Overview of the micro substation]

With funding from NEDO, Nissin Electric is conducting demonstration research aimed at a stable supply of electricity. The goal of the project is to supply a stable, cost-effective, and environmentally friendly power supply to rural areas, such as North India and northeast India, where transmission lines are laid but the power grid is not fully developed, by installing micro substations but without the need to build large-scale substations.

In the future, a micro substation capable of directly taking low-voltage electricity (240 V) from extra-high-voltage transmission lines (66 kV or higher) with a PVT will be installed at a substation on the outskirts of Delhi, and the acquired data will be used to verify the environmental compatibility, reliability of the power supply, effectiveness of the power quality, and local load characteristics. The project is scheduled to run until March 2026.

A micro substation consists of protective devices, switchgear, lightning arresters, and a distribution board, as well as a PVT. A PVT makes it possible to take about 100 kVA of low voltage power, enough to supply roughly 50 to 100 households per micro substation, directly from transmission lines.

This demonstration research project aims to establish technology to supply stable power to areas where the grid is underdeveloped or non-existent. Additionally, Nissin Electric plans to expand this technology to other regions in India and other countries facing similar issues.



How power is supplied from a micro substation with a PVT

The Nissin Electric Group has been stepping up its efforts to promote the SDGs through its business operations. This accomplishment is related to the following goals among the 17 SDGs.

7. Affordable and Clean Energy
9. Industry, Innovation and Infrastructure