Case Study:

Installation of TP10 devices in Opole Power Plant

Branch:
Power utility

Customer:
Polska Grupa Energetyczna

Country:
Poland

Project target:

Fast, reliable and secure communication of control and protection systems for the status of disconnectors and circuit breakers between the 5th and 6th blocks of the Opole power plant and the Dobrzeń substation, including power lines for own power consumption.

Solution:

TP10 -Teleprotection terminal unit

Result:

A fast and reliable communication between control and protection systems is ensured between the substation and the power plant. The PGE SCADA system monitors all statuses via IEC 61850. PSE control systems have all the necessary information available quickly and reliably at the binary level.

Customer: Polska Grupa Energetyczna

It is one of the largest energy companies in Poland. The group's activities are currently organized in five main areas: conventional energy, renewable energy, electricity wholesale and related products and fuels, electricity distribution and retail sales of electricity. In addition to the five major business activities outlined above, the PGE Group also operates in other areas, including telecoms. The Group also includes companies whose main activity is the implementation of strategic activities related to the preparation and implementation of the project for the construction of nuclear power plants.

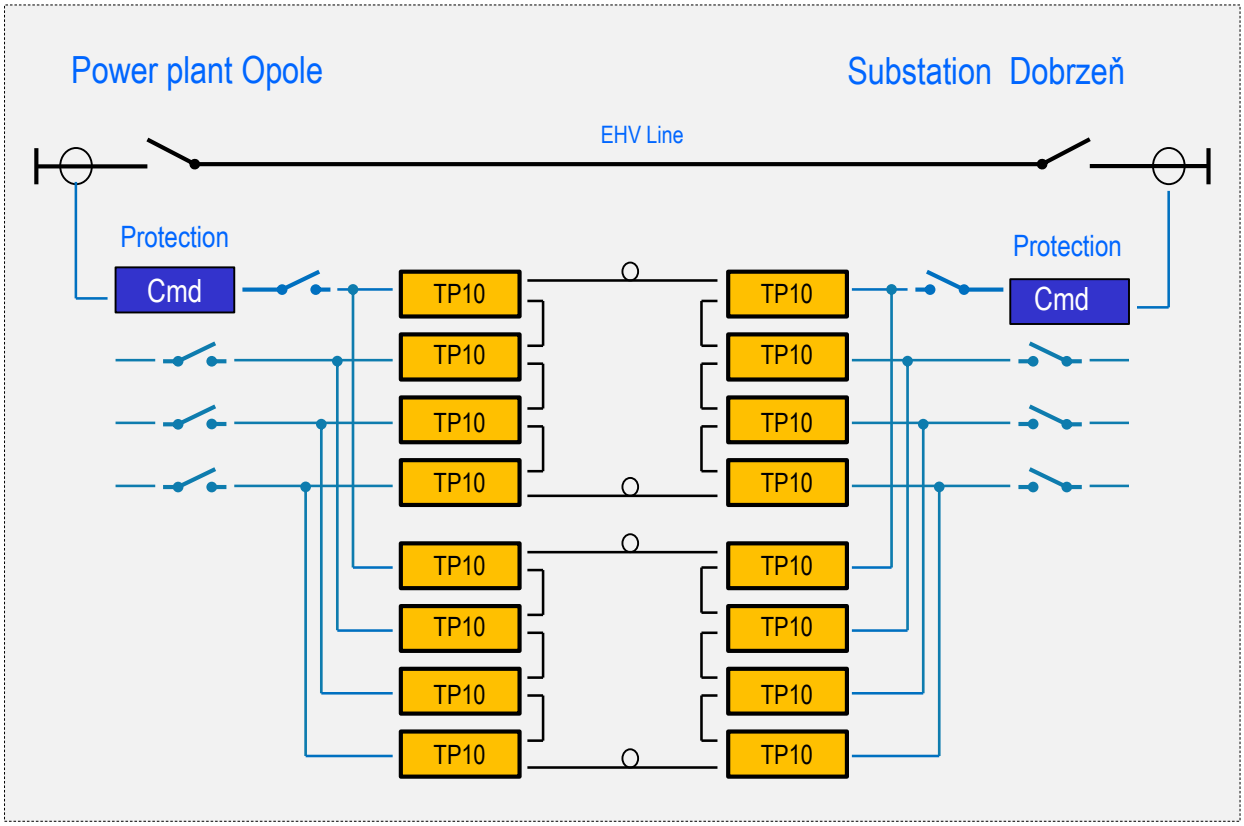
40 + 40 + 20
commands

The line between a substation and a power plant requires maximum protection because in the event of a failure the power plant has no place where to supply energy to and must restrict or completely stop production. The restoration of production then takes place in the order of hours, which entails large financial losses. In the case of such a large installed power, this puts great demands on security of supply from other sources.

The customer needs to provide binary communication to protect the line between the 5th and 6th blocks of the power plant and the substation (40 commands for each block) and the own consumption line (20 commands).

The customer requires a redundant transmission over fiber optic and back-up systems. In order to ensure the maximum possible protection of the line, the customer requires the transmission time of the commands (binary statuses) up to 5 ms including the interference filtering to be guaranteed.

For the communication with a modern control system in the substation, the transmission device must communicate with the SCADA system using IEC 61850.



The transfer of commands and binary statuses between the 5th and 6th blocks of the Opole power plant and the Dobrzeń substation provides a cascade of four TP10 sessions, backed by an identical set. The devices on each side are interconnected at electrical interface E1, the transmission to the opposite side being provided by two optical paths for each assembly. When one optical path is broken, the entire transmission within the device assembly is redirected to the remaining one. Loss of transmission does not occur even when any TP10 device fails, all commands and binary states being transmitted simultaneously on both the main and backup devices. One type of spare parts with a simple and fast replacement is also an advantage to the customer.

"Thanks to the installation of our TP10 together with our partner's (Mikronika) converter, the customer will quickly and securely transfer the necessary communication between the power plant and the substation, including detailed monitoring of the statuses of transmission lines and equipment, precise time and speed of the transferred commands or fault database."

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