Case Study:

Phase aligning of insular operation of Ledvice Power Station

Branch:
Power engineering

Customer:
České energetické závody ČEZ

Country:
Czech Republic

Project target:
Replacement of metallic cable for 50 Hz phase transmission, distance protection signals transmission, binary statuses and difference protection signals transmission

Solution:
PCM30U-OCH teleprotection equipment

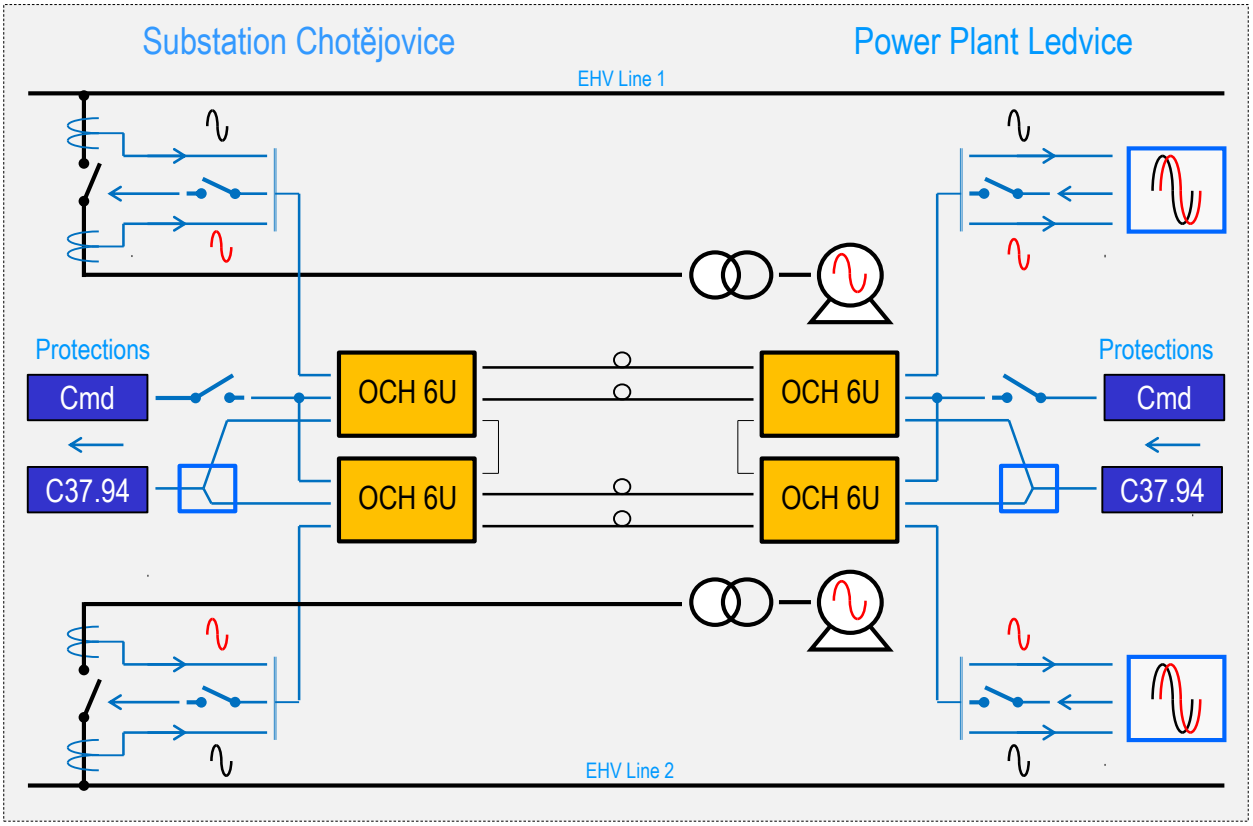
Result:
Contemporary transmission of all necessary signals between power station and substation. Using a single equipment is a cost effective and advantageous solution for the customer.

Customer: ČEZ

SKUPINA ČEZ

ČEZ is the biggest power engineering group of the Czech Republic, a parent company of ČEZ Group that involves tens of other companies. ČEZ is an owner of the most of big power stations in the Czech Republic as well as of two nuclear power stations Temelín and Dukovany. On the other hand, the ČEZ brand also represents power suppliers and producers of altogether seven countries. Thus, it maintained a strong position among power companies of Middle and Eastern Europe.

Thermal power station of Ledvice is a part of ČEZ Group. It burns brown coal from the neighbouring Bílina mine and, besides electric energy, it also produces heat it supplies to cities in its surroundings. Older blocks with a total output of 330 MW have been recently supplemented with the most advanced supercritical (600 °C steam) and highly efficient (42.5 %) 660 MW block whose emissions are 20% lower than current technologies.



At Ledvice thermal power plant, apart from standard transmissions of distant and differential protection signals used for more than ten years, the unique feature of the PCM30U-OCH device is 50 Hz signal transmission for phase alignment in insular operation. Feeder switches of the Ledvice thermal power plant are located outside the premises, two kilometers away from the Chotejovice substation. When a shutdown block was started, the phase of the external network was transferred from a substation to the power plant by a metallic cable that was already beyond its service life. The metallic cable replaced the PCM30U-OCH assembly, allowing phase transfer from both ends of the power switch (public network, generator) to the phase aligning circuits of the power plant. After aligning the phase of the generator with that of public network, the device transfers a command from the power plant to connect the power switch in the substation. In addition to the 50 Hz phase transfer, the device is also used to couple several pairs of distance and differential protections, and dozens of binary statuses between the substation and the power plant. The device consists of two redundant PCM30U-OCH / 6U sessions; the security of transmission is also increased by the use of two independent optical paths connecting each session.

"Thanks to the unique capability of our device - 50 Hz phase transfer with the required maximum fidelity, the customer has solved the problem of a metallic cable failure, and at the same time gained an economical and secure solution for the transmission of distance and differential protection signals in one PCM30U-OCH"

Jan Němec
Product manager TTC Marconi

TTC MARCONI, s.r.o
Třebohostická987/5, 100 00 Praha 10
@ info@marconi.cz
www.teleprotection.eu