

Cable replacement in a generation plant

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EDF Generation Division manages in France 370 output substations located in generation plants. The thermal power plant, Le Havre, in Normandy, was composed of 4 units, three of them being coal-fired, the last one being fuel-oil fired. It was decided to extend the lifetime of the 600 MW coal-fired unit #4 commissioned in 1983 up to 2035. As this unit will be the only one staying in operation on the site in the coming years, it was decided to guarantee the feeding of the auxiliary system through a cable system up belonging to EDF from a GIS belonging to the TSO, RTE. This was done by using the cable route of unit #3 output commissioned in 1973, presently definitely out of service.

After a cable expertise, it was decided to replace the 40 years old cable during the main refurbishment of the power plant to be sure to cope with the end of life of the power plant.

The initial cable was an OF cable with a 6 bar internal pressure. As it is more and more difficult to maintain this type of cable technology due to the important reduction of expertise, spare parts and of maintenance teams able to deal with, it was decided to guarantee the reliability of the auxiliary connection by changing the existing cable to a 225kV 400 mm² aluminum XLPE cable system.

The paper will describe the main problems faced to replace this cable:

- To work in an overcrowded and limited space with up to around 1500 workers during the peak period
- To lay cables in the old fuel storage where the soil was polluted
- To find the best cable construction technique and installation design according to the route allowed by the thermal generation engineering unit, crossing the foundations of the existing power plant, using cable trays where existing LV and telecom cables were already laid
- To adapt the cable termination to the existing GIS in RTE substation.
- To find solutions at the transitions between the different construction techniques and between rigid and flexible installation.
- To reach the goal "0 accident" despite the difficulties mentioned and the use of specific and heavy equipment (crane, winch, mechanical digger...)

Compared with cable works in TSO networks, this installation was really difficult and unusual.

Key words: Cable installation, generation plant