

Production, Installation and Commissioning of two 380kV underground lines for the Pump-Storage Plant project of Linth Limmern (Swiss Alps)

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ABSTRACT

Axpo (a Swiss DSO) is currently completing a 1GW Pump Storage Plant project in the central Swiss Alps. It will work between the Limmern dam and Lake Muttssee at 1850m and 2470 meters over see, respectively. The underground power plant will be connected to the grid via two 380kV underground feeders installed in a tunnel. Nexans Switzerland was in charge of the fabrication of these two lines, the tunnel installation and the commissioning.

This paper describes the techniques used for installation, the design of a specific laying system, and the jointer training in such a very confined environment.

KEYWORDS

HV AC cables and accessories, Laying methods

INTRODUCTION

Axpo (a Swiss DSO) is currently completing a 1GW Pump Storage Plant project in the central Swiss Alps, in the region of the Limmern lake. This plant will work between the 50 year old Limmern dam at 1880 meter of altitude (480MW installed) and a natural lake (Muttssee) at 2474 meter. The underground power plant will be connected to the grid via two 380kV underground feeders. They consist of six 380kV-1600mm² copper cables laid inside the 3.6km long funicular tunnel connecting the Tierfehd base station (811 meter altitude) to the power plant installed in a cavern at 1700 meter of altitude close to the Limmernsee dam. Taking into account the horizontal portions to connect the feeder to the aerial grid on one side and to the power plant on the other side, the total feeder length is of 4.5km.

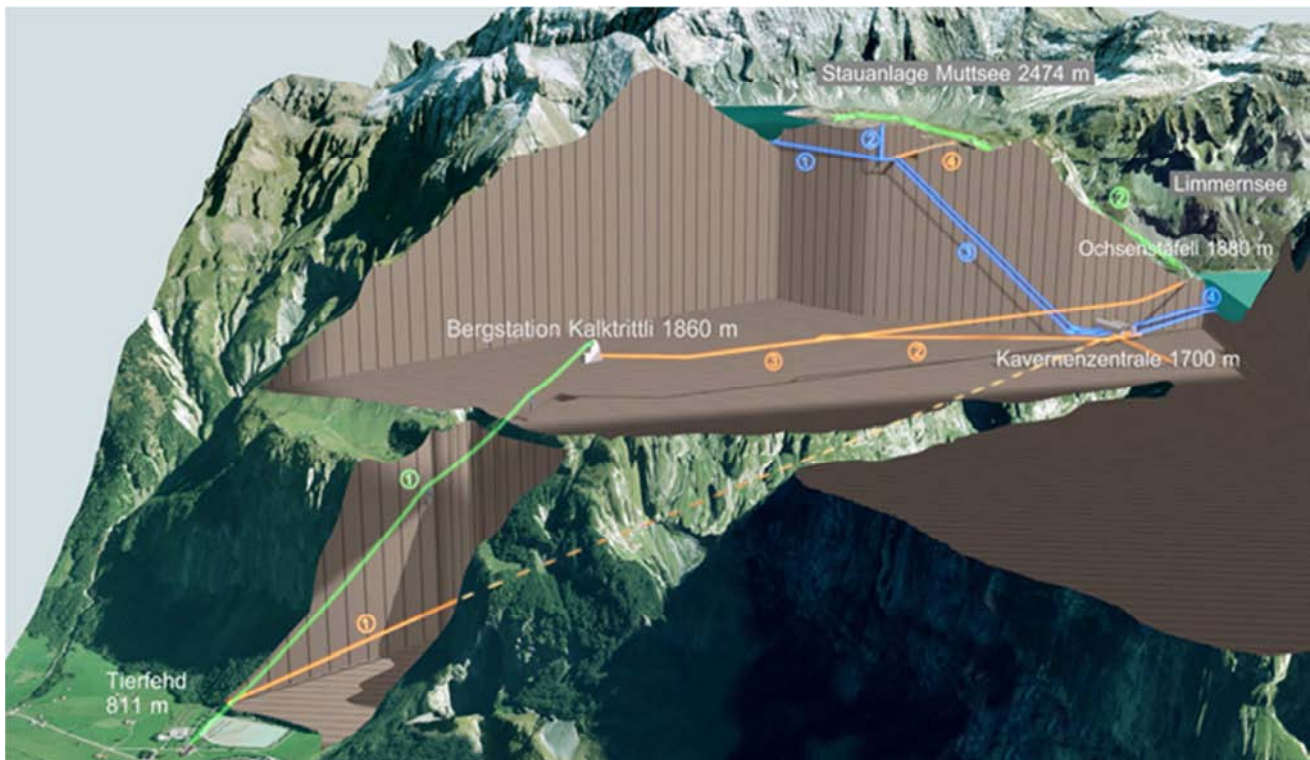


Fig.1: General view of the Linth-Limmern project showing the lower and upper reservoirs, the power plant cavern at 1700 m altitude and the base station at 811m altitude. The yellow line labeled 1 is the funicular railway along which the HV cable was installed.