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Completion of 500 kV XLPE cable links for the Okutataragi power generating station

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Résumé

Pour satisfaire à la demande croissante d'énergie, la Compagnie d'Energie Electrique du Kansai (KEPCO) a commencé la construction de nouvelles installations supplémentaires à la Centrale Electrique existante d'Okutataragi. Une extension de 720 MW augmentera la capacité de la centrale jusqu'à 1932 MW, rendant Okutataragi la centrale électrique à accumulation par pompage la plus importante du Japon. KEPCO a décidé d'employer pour la première fois un câble en PR de 500 kV dans la centrale électrique. Il a été fabriqué par la S.A. Sumitomo Electric Industries(SEI) sous des conditions de contrôle de qualité très sévères. Le câble PR d'une longueur de 1,1 km a été construit sans jonction. Les extrémités, immergées dans l'huile, ont été nouvellement conçues et assemblées sur place. Ce rapport résume la construction du câble et son achèvement.

Abstract

To meet growing power demand, the Kansai Electric Power Co., Inc. (KEPCO) began to construct the new additional plants in the existing Okutataragi Generating Station. An extension of 720MW will increase the station's capacity to 1932MW, making Okutataragi the biggest pumped storage power station in Japan.

KEPCO decided to employ the first 500kV XLPE cable in the power station. It was manufactured by Sumitomo Electric Industries, LTD. (SEI) under strict quality control conditions. The XLPE cables of 1.1km length were constructed without joint. The oil-immersed terminations were newly designed and assembled in site. This report summarizes the construction of the cable and its termination.

1. INTRODUCTION

Due to their superior electrical characteristics and their ease of maintenance, XLPE cables are being increasingly employed in extra-high-voltage (EHV) underground transmission lines. They are widely used in long-distance 275kV underground transmission lines. XLPE cable for 500kV begins to be used.

KEPCO decided 500kV XLPE cable to Okutataragi Power Generating Station. This cable was manufactured by SEI. This is the first 500kV XLPE cable which KEPCO has employed. It was manufactured and installed under strict quality control conditions.

This report summarizes the cable specifications, termination specifications, test results, construction

and commissioning test.

2. Cable route

KEPCO has a plan to expand the capacity of the Okutataragi Power Generating Station, which is a pumped-storage power station, by increasing current output of 1212 MW by 720 MW in order to meet continually increasing power demands.

After its completion, it will have a maximum output of 1932 MW which is the largest pumped-storage power station in Japan. All the equipment of this power station are to be constructed under the ground except GIS and overhead wires. This power station is connected by 500kV XLPE cables with substations constructed on the ground.