

DEVELOPMENT AND CONSTRUCTION OF 345KV POWER-OPTICAL FIBER COMPOSITE XLPE 2500MM² WITH PREFABRICATED JOINTS

Hyung-hee YOON, Nam-yeol PAIK, Koan-seong LEE, Soo-hwan KIM, Korea Electric Power Corporation, Seoul, Korea, yoonhyh@kepco.co.kr, nam10@kepco.co.kr, seonglee@kepco.co.kr, lulukim@kepco.co.kr
Jong-ok OH, Seung-hyun LEE, LS Cable & System, Anyang, Korea, jongok@lscns.com, shlee1@lsc.com

ABSTRACT

Due to the increasing demand of replacing large capacity overhead lines with underground cables in Korea, we have developed 345kV optical fiber composite XLPE 2,500mm² cable system. This system has been installed in Cheongna district of Incheon city. We are also planning to build the cooling system in a tunnel in order to reduce the ambient temperature caused by currents.

In this paper, the process of development, field installation, and final inspection test of the complete system will be described.

KEYWORDS

Power Cable, Underground, Tunnel, large capacity, Cooling System, Distributed Temperature, Prefabricated Joint, Optical fiber

INTRODUCTION

As of March 2011, KEPCO has installed 254c-km of 345kV and 2,756c-km of 154kV underground transmission cables. Among these transmission cables, 952c-km is oil-filled cable and 2,058c-km is XLPE cable. In 2011, KEPCO is planning to construct additional 83c-km of

345kV and 176c-km of 154kV underground transmission cables. Nowadays many local governments are asking for replacing overhead transmission lines with underground cables in a bid to construct new towns in their area.

Particularly, the province on outskirts of Seoul needs to make it and they are content to pay huge money for removing overhead transmission lines and constructing underground cables.

In this case, we have no choice but to substitute large capacity cable for meeting the Ampacity of existing overhead lines.

Therefore, the large capacity cables, 345 optical fiber composite XLPE 2,500mm² cables and its' prefabricated joint have been developed, some cables have been installed or is under construction.

In this paper, we will explain on the development and installation of 345kV optical fiber composite XLPE 2,500 mm² cables with prefabricated joint, and the monitoring system using various sensors in a tunnel including optic fiber sensor and the cooling system etc which will be installed in Cheongna FEZ (Free Economic Zone).

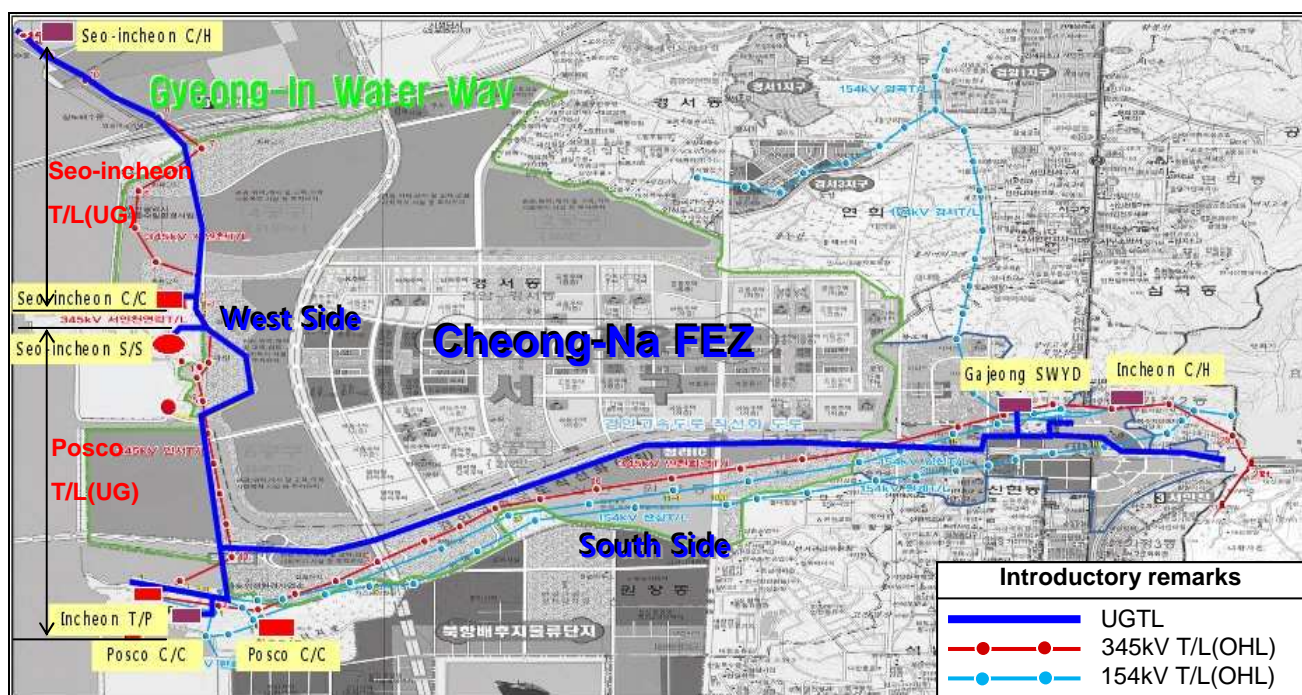


Fig. 1 : Configuration of Cheongna Area