

**Superconducting Power Transmission Cable
started to operate 2006, in Korea and United States.**

Ryosuke Hata, Sumitomo Electric Industries, Ltd., Osaka, Japan

Abstract

Three Bi-based cable projects, which are in the real network, have started in US under international collaborations. Also, Asian HTS cable projects are on-going in Korea and China.

Sumitomo Electric Industries, Ltd. (SEI) received order from the Korea Electric Power Research Institute (KEPRI) for a superconducting cable system. This is the world's first commercial contract for power transmission high-temperature superconducting (HTS) cable. The 22.9kV-1250Arms-100m HTS cable was fabricated using the bismuth-based superconducting wires manufactured by Sumitomo Electric's proprietary production technique, that is CT-OP (Controlled Over Pressure) sintering method. The cable system was installed in Gochang test site of Korean Electric Power Company (KEPCO). The initial test was successfully finished and KEPRI has been learning the operation and maintenance of HTS cable.

Also, SEI along with SuperPower Inc., National Grid (formerly, Niagara Mohawk), the BOC Group, is conducting an HTS cable project in Albany, NY, funded by Dept. of Energy (DOE) and New York State Energy Research and Development Authority (NYSERDA). The 34.5kV-800Arms-350m HTS cable system was fabricated and exported to US, last summer. The cable system was installed between two substations in the National Grid's real grid in Albany, New York. In this Project, SEI developed and produced a Bi-based HTS cable, terminations and a cable joint which demonstrates the utilization of the real power cable longer than several hundred meters. The HTS cable joint was the world's first demonstration.

For these two HTS cable projects, SEI's unique technologies of 3-in-One Cryostat type superconducting cables, 3-in-One Terminations and 3-in-One Joint have been developed. The concept of 3-in-One is compact and so, it is the best candidate of the HTS cable for limited installation space of the urban area.

HTS Cables with Large Transmission Capacity and Low Loss are environmentally friendly, hence indispensable for 21st Century's Power Grid, especially for Renewable Energy and Distributed generation, and the innovated Bi-based wire is leading the HTS cable!