

## Recent Progress and the Research Activities on the HTS Power Cable Projects in Korea

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**Abstract**—Recent research and development of the superconducting power cable for commercialization is still ongoing over the world. Many demonstration of superconducting power cables connected to real power grid had already been conducted with various designs depending on the voltage levels of distribution and transmission lines. In Korea, the first commercial project of the high temperature superconducting (HTS) power cable, ‘Shingal Project’ fully funded by Korea Electric Power Corporation (KEPCO), is under construction to connect two substations with a 23 kV HTS distribution line of 1 km-long distance.

In addition, KEPRI has initiated the tri-axial project to develop the 23 kV and 2 km-long HTS power cable including the cooling system for 3 km-long distance since 2017. KEPCO is establishing a gradual strategy for Superconducting Smart platform by utilizing tri-axial HTS power cable to cope with Nimby syndrome which takes substations apart from the middle of loads.

In this paper, we introduce the recent progress and research activities on the two projects of the superconducting power cables. And the business models of the HTS power cable are presented for commercialization by considering their economics and social issues.

**Keywords (Index Terms)**— HTS cable, distribution, economics.

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