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Shingal Project ; The 1st Commercial Application of 23 kV HTS Power Cable System in Korea

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High temperature superconducting (HTS) cables have the advantage of being able to transmit much more power than that of the same size cable. Therefore, it is expected that HTS cables will be able to replace conventional XLPE transmission cables or multiple distribution cables and, consequently, will have the effect of enhancing reliability or minimizing substation construction. Based on a couple of successful demonstration projects of R&D, KEPCO, Korea's only electric utility, implemented a plan to put 23 kV HTS power cables into actual power system and use them for commercial operation, which was the birth of Shingal Project.

Shingal project was to connect the secondary buses of the two 154 kV substations Shingal and Heungdeok with a 23 kV HTS power cable. It consists of AC 23kV HTS cable system with the capacity of 50 MVA composed of 1 km long cable embedded with HTS tapes, 2 sets of normal joint and 2 sets of termination. The 23 kV HTS cable with a return pipe was installed along with existing cable conduits. It started its commercial operation successfully from July, 2019.

After the successful commercial operation of Shingal project, KEPCO is developing other projects in order to apply not only 23 kV superconducting cables but also 154 kV superconducting cables to real power system, such as Onsu project, Munsan project, etc. These projects will be introduced in this conference.

