

Recent Progress of Large-scale Application in China

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Abstract— In this talk, recent progress of large-scale application of superconductivity in China will be reviewed. Firstly, we will briefly review of progress of superconducting materials such as YBCO, Iron-based wires and BSCCO wires developed in China. Then, we will report progress of power application in China: A 40kV/2kA Fault current limiter (FCL) for DC power grid was developed and tested, by consisting of this FCL as an unit, FCL for high voltage could be developed; A 10m, 10kV/1kA superconducting energy pipeline prototype was developed and tested, this energy pipeline is cooled by LNG and can be operated at 90~100K, transporting electricity and LNG to the end-user; A new cable project was approved in Shanghai, and a 1.2km, 35kV/2.2kA HTS power cable will be developed and demonstrated in Shanghai downtown, connecting 2 power substation. Finally, we will report the developments of high field magnet technology in China: A 27.2T superconducting magnet with HTS insert coil was tested, and now a 30T magnet is being fabricated and would be used for a scientific experimental facility; Besides, high field MRI magnet with field up to 9.4T has been fabricated and tested, and a 14T magnet for MRI is being designed; The magnets for fusion and accelerator were also well developed in China last few years, such as conceptual design of HTS magnets for China fusion test reactor and future collider.

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Keywords (Index Terms) — YBCO, Fe-based wires, BSCCO wires, FCL, LNG, high-field magnet technology.

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