

China Substation Using High-Temperature Superconductor Wire



An electrical substation in China is using high temperature superconductor (HTS) wire. Located in the city of Baiyin in the Gansu province of China, and built by the [Institute of Electrical Engineering, China Academy of Science](#) (IEE CAS), the Baiyin substation was celebrated earlier this week on the 25th

anniversary of the discovery of HTS materials. IEE CAS is a scientific research base in the electrical engineering field focused on high tech research and development of new electrical engineering and energy technologies.

“The Baiyin superconductor substation is one of the most ambitious superconductor projects undertaken to date anywhere in the world,” said Dr. Xiao Liye, head of IEE CAS. “This is a holistic project that demonstrates how superconductors will be applied in substations throughout China in the years ahead. As China’s electricity needs continue to increase, these solutions will be essential to maintain a high level of efficiency and reliability for our homes and businesses.”

The Baiyin substation began operation in February 2011 under a cooperation contract signed by Baiyin Municipal State Assets Supervising and Administration Committee, IEE CAS and Gansu Changtong Cable Company. The substation includes the following systems, all of which were developed by IEE CAS using American Superconductor’s HTS wire:

- A superconductor fault current limiter (FCL): Superconductor FCLs act as

high-voltage surge protectors for the power grid;

- A superconductor power cable system: HTS power cables are able to transmit up to 10 times more power than copper cables in the same footprint with high efficiency to support new sources of generation and load growth;
- A superconductor magnetic energy storage (SMES) system: SMES systems provide backup electric power that is able to respond instantly to power fluctuations on transmission and distribution grids; and
- A superconductor transformer: Superconductor transformers increase and decrease voltage with less power loss than traditional copper-based systems.

American Superconductor's wire is also being used by Shanghai Electric Cable Research Institute to develop new superconductor power cable solutions.

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