

CIGRE Technical Brochure “Common Characteristics and Emerging Test Techniques for HTS Power Equipment”

August 16, 2016 (HP114U). The technical brochure “Common characteristics and emerging test techniques for high temperature superconducting (HTS) power equipment” has been published by the Working Group D1.38 of CIGRE (International Council on Large Electric Systems). Prof. Mathias Noe from KIT was the convenor of this working group, which included 24 members representing manufacturers, R&D institutions and universities from 14 countries.

WG D1.38 focused on the study of issues common in superconducting power equipment: electrical insulation, HTS material, and cryocooling. This report shows that there exists a variety of options for these common issues that have been applied successfully to large-scale demonstrators and prototypes.

The impressive progress towards power applications of devices using HTS materials has been possible due to:

1. Availability in large quantities of HTS materials with steadily improved properties,
2. Electrical insulating materials being adapted and used appropriately,
3. Progress already attained in cryocooling and related cryogenic issues.

The HTS material, electrical insulation, and cryogenics, are critical factors for successful application, and all three have to be seriously taken into account in the ongoing research and development. For that reason, the new CIGRE Working Group “Electrical Insulation Systems at Cryogenic Temperatures” (WG D1.64) has been created this year, under the coordination of Prof. Naoki Hayakawa from Nagoya University.

A liaison between CIGRE and IEC TC 90 has been established, with the participation of Dr. Ken-ichi Sato, former secretary of IEC TC 90, in WG D1.38. TC 90 is the Technical Committee of the International Electrotechnical Commission (IEC) dedicated to the preparation of international standards for superconducting materials and devices.

The WG D1.38 Technical Brochure (TB 644) is available to CIGRE non-members at a fee and can be searched at:

http://www.e-cigre.org/Search/ru_se.asp.

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