
MISCELLANEOUS

Photos on Front and Rear Covers

Front Cover:

Commissioning of 22.9kV, 3-phase Superconducting cable (Gochang, Korea)

As a case study on the practical application of superconducting technology, the Korean Electric Power Corporation (KEPCO) has started to conduct research on the operation method of superconducting cables if they are put into practice, assuming a voltage of 22.9 kV, which is the power distribution level in Korea; a current of 1,250 A, which is five times the standard capacity of 250 A; and cables that can be installed in underground ducts with $\phi 175$ mm in urban areas.

The cable was manufactured and installed by Sumitomo Electric Industries, Ltd (SEI). The cable conductor and superconducting shield are formed by winding with bismuth-based superconducting wires manufactured according to the new “controlled over pressure (CT-OP)” method, which was also developed by SEI. For electrical insulation, the composite insulation method impregnating liquid nitrogen into PPLP[®] (Polypropylene Laminated Paper) is adopted. Three cable cores are stranded in a cryostat, which is composed of a double stainless steel corrugated pipe and thermal insulator maintained in a high vacuum state. The diameter of the cable including

the outer sheath installed along the outer circumference of the cryostat is 135 mm.

The cable is installed in a tunnel in Gochang testing yard, located in with two 3-phase terminations at both cable ends. Cooling system is also installed to cool the cable with sub-cooled Liquid Nitrogen.

The cable passed a test after installation as applying at nominal voltage and current in April, 2006. and then was taken over to KEPCO. KEPCO is now planning to conduct long-term operations, heat cycle tests, etc. for technical and economic assessment of the cable.

In Korea, power transmission needs are growing extensively, especially in urban areas. Superconducting cable is considered to be one of the most promising ways to improve the stability and capacity of electrical transmission and distribution lines.

Takato Masuda
Sumitomo Electric Industries, Ltd. Osaka, Japan

Rear Cover:

Time-resolved simultaneous measurement of successive partial discharge (PD) light emission and current pulses in SF₆ gas mixture

(Kyusyu Institute of Technology, Japan)

Four successive PDs were generated between a needle to plane electrode system in SF₆/N₂/CO₂ gas mixtures at 0.4 MPa. As shown in Figures A and B, we have successfully obtained electrical and optical information on successive PDs with ns order time resolution. Namely, we have simulta-

neously measured PD current pulses, still image and intensity waveform of PD light emission, and time-resolved spectroscopy of the third and fourth PDs that took place at the slit position of the streak camera. From these simultaneous measurements of PDs, we can discuss and clarify the discharge

phenomena and mechanism leading to breakdown in gaseous dielectrics, especially in SF₆ gas and gas mixtures. These findings would contribute to development of insulation diagnosis technique for gas-insulated power apparatus and new gaseous

dielectrics with low environmental impact.

Shinya Ohtsuka
Kyusyu Institute of Technology, Japan

Transactions of IEEJ

Six kinds of transactions are published. Five kinds of transactions are edited by five societies* in IEEJ. The other one (IEEJ Transactions on Electrical and Electronic Engineering) is bimonthly published in English, which are edited by editorial committees in IEEJ and five societies in turn.

(*) five societies* in IEEJ:

- A: **Fundamentals and Materials Society** (This magazine is published from EINA Committee under this society.)
- B: Power and Energy Society
- C: Electronics, Information and Systems Society
- D: Industry Applications Society
- E: Sensors and Micromachines Sub-Society

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(Themes of the recent issues published in English)

- Vol. 125-A No. 7 (Jul., 2005) Special Issue on Electromagnetic Compatibility
- Vol. 125-A No. 9 (Sept., 2005) Special Issue on Pulsed-Power Technology and Applications
- Vol. 125-A No. 11 (Nov., 2005) Special Issue on Spherical Tokamak (ST Workshop 2004, Kyoto)
- Vol. 125-A No. 12 (Dec., 2005) without special theme
- Vol. 126-A No. 1 (Jan. 2006) Special Issue on Technology 2006 : Reviews & Forecasts
- Vol. 126-A No. 2 (Feb., 2006) Special Issue on Physics of Lightning and Related Phenomena
- Vol. 126-A No. 4 (Apr., 2006) Special Issue on Recent Progress in Seismo-Electromagnetics
- Vol. 126-A No. 11 (Nov., 2006) **Special Issue on Nanocomposites**

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The Institute of Electrical Engineers of Japan
8F HOMAT HORIZON Bldg., 6-2, Goban-cho, Chiyoda-ku, Tokyo 102-0076, Japan

(Planning & General affairs Dept.)

E-mail: member@iee.or.jp

(Business Promoting Dept.)

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