

II. Research Activities in Fiscal 2008

Principal New Equipments

High-voltage & Electrical Insulation Testing Laboratory

(Assessment facility of electric power apparatus insulation maintenance standard)

Purpose:

Large numbers of electric power apparatus were installed in the period of high economic growth from the late 1960s to 70s. Although many of them are still being used, they are approaching their supposed lifetimes. Therefore, an important issue is how to effectively maintain, manage, and replace so many pieces of aged electric power apparatus. Hence, it is necessary to develop a method to confirm their insulation integrity and to diagnose their aging based on the condition monitoring technique. Consequently, the establishment of a maintenance standard for such aged power apparatus, which can ensure prolonged safe operation and predict the replacement time with satisfactory reliability, is required. Therefore, it is concluded desirable to evaluate the insulation performance of actual power apparatus aged in service in a proper assessment facility built for this purpose.

Outlines:

The new laboratory comprises three areas, consisting of the main hall area, sub-hall area, and environmental test area, and high voltage tests under various conditions such as those to simulate fog and rain can be performed. In this multi-purpose high voltage testing facility, a wide range of high voltage tests can be carried out. Namely, internal insulation tests can be performed on electric power equipments in the 6-to500-kV classes such as transformers, gas-insulated switchgears, and XLPE cables and external insulation tests on porcelain and polymeric insulators in the same classes.

Specifications:

(1) Construction

Main hall: $35 \times 31 \times 30 \text{ m}^3$ (height)

Sub-hall: $7 \times 7 \times 7 \text{ m}^3$

Both halls are equipped with steam fog generators.

Environmental test area: $7 \times 16 \times 5 \text{ m}^3$

(2) Testing transformer in the main hall

All weather type, Maximum voltage: 900 kV, Capacity: 2 MVA, Frequency: 50 Hz.

(3) Impulse voltage generator in the main hall area

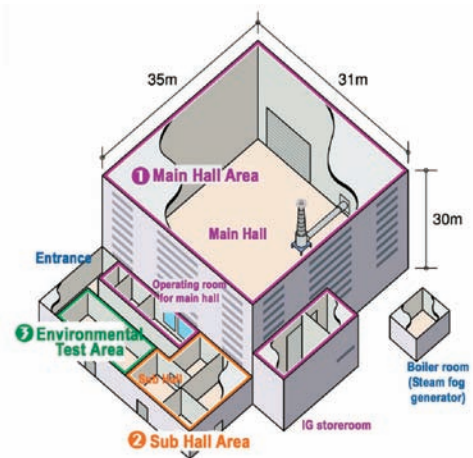
All weather type, Maximum charging voltage: 2600 kV, Maximum charging energy: 260 kJ.

Location and Date of Installation:

Yokosuka Area, July 2008



A whole view of the Laboratory



Layout of the laboratory



Inside of the main hall