

## 7.5MV Impulse Generator

### Purpose:

Efficient promotion of the research besides assuring safety work is attempted by renewing 10MV impulse generator. Moreover, this surely responds to the needs of electric utilities and society.

### Outline:

As the information-oriented and computerized society progresses in recent years, promotion of the research of lightning protection design different from the past is considerably requested, for example, lightning protection design of intelligence buildings or customer equipment where electric power, information, and communication equipment exist together. It is also necessary to reduce costs by making grounding design more accurate

To respond to the request, it is necessary to enhance impulse testing on real scale that employs impulse generator.

There were two impulse generators (IG) of 10MV and 12MV in Shiobara Testing Yard of CRIEPI, but the utilization rate of the 12MV-IG has become extremely high because the 10MV-IG is superannuated.

### Specifications:

7.5MV- IG consists of the following devices.

(1) Outline of the main circuit of 7.5MV-IG.

The maximum charge voltage: 7500 kV

The maximum energy: 0.51 MJ

Ratings of capacitor: DC 75 kV, 1.8  $\mu$ F, 100 pieces

Charge resistor, Neutral resistor: 12.5 k $\Omega$

Damping resistor: 8.4  $\Omega$ /piece (Internal inductance is 10  $\mu$ H )

Generating waveform: Positive and negative, standard impulse waveform (1.2/50  $\mu$ s)

(2) Support tower and incidental equipment of IG

(3) DC voltage generation circuit

- Transformer for DC voltage generation

Primary voltage: 400 V

Secondary voltage: 100 kV

Frequency: 50 Hz

Rating capacity: 100 kVA

- Rectifier for DC voltage generation

- Smoothing circuit of DC voltage

- Earthing device

(4) Charge control circuit

### Location and Date of Installation:

Shiobara Testing Yard, November 2008



DC voltage generation circuit



Internal structure of impulse generator



Arrangement of examination that uses impulse generator