

Main Experimental Facilities

1. FACILITIES FOR INSULATION TESTS

- (1) 12MV impulse generator
 - Voltage Lightning impulse : 12MV (switching impulse : 2.6MV)
 - Waveform $1/40 \mu s$ (1/7ms)
 - Energy 1.8MJ
- (2) 10MV impulse generator
 - Voltage Lightning impulse : 10MV (switching impulse : 2.3MV)
 - Waveform $1/40 \mu s$ (1/7ms)
 - Energy 1.5MJ
- (3) Distribution lines
 - Voltage 6kV
 - Length 430m (11 units)
 - Height 13m
- (4) Others
 - Capacitor and testing tower

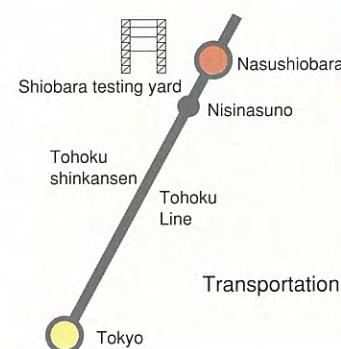
2. FACILITIES FOR TEST LINE

- (1) Test transformer (3 units)
 - Primary voltage 6.6kV
 - Secondary voltage 350kV
 - Maximum voltage 1,050kV (cascade 3 units)
 - Capacity 1,500kVA
- (2) DC voltage generator
 - Output voltage $\pm 360 \sim 800kV$
 - Output current 1A continuously
- (3) Test line
 - Length 1,500m (750m for DC)
 - Number of circuits 2
 - Variable range of DC test line

Height	Lower conductor 15~29m	Upper conductor 26~48m
Horizontal distance	Lower conductor 12~30m	Upper conductor 14~30m
- (4) Others
 - Measuring facilities for corona effects and ion flow effects, computerized data acquisition system

3. CORONA CAGE (TEST FACILITY ON CORONA EFFECTS)

- Dimension 8m×8m×24m
- Test conductor Single conductor~12 conductors
- Applied voltage Max. 700kV (Equivalent to line voltage of 1200kV)



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Transportation : Get off at Naushiobara Station on the Tohoku Shinkansen
and take a taxi (about 20 minutes running time)
(about 140 km north from Tokyo)



2006. 12
1999. 2
1991. 10

SHIOBARA TESTING YARD



FOR THE DEVELOPMENT OF MORE REFINED ECONOMIC POWER TRANSMISSION AND DISTRIBUTION LINES

The Shiobara Testing Yard was established in 1961 to develop 500 kV class AC transmission lines. Since then, intensive researches on corona effects and on electrostatic induction below the line had been conducted by using the test line. Also the 10 MV impulse generator, which was the largest in the world, had been used for the research on the insulation design.

In 1970, the test line and power source were modified for developing DC transmission lines and the research was started on the corona effect of DC

lines. The study for protecting facilities against lightning strokes was continued in the period.

In 1982, the 12 MV impulse generator and the UHV DC test line were installed for developing AC and DC UHV transmission lines. Results of the research have been reflected on the design of the UHV transmission line.

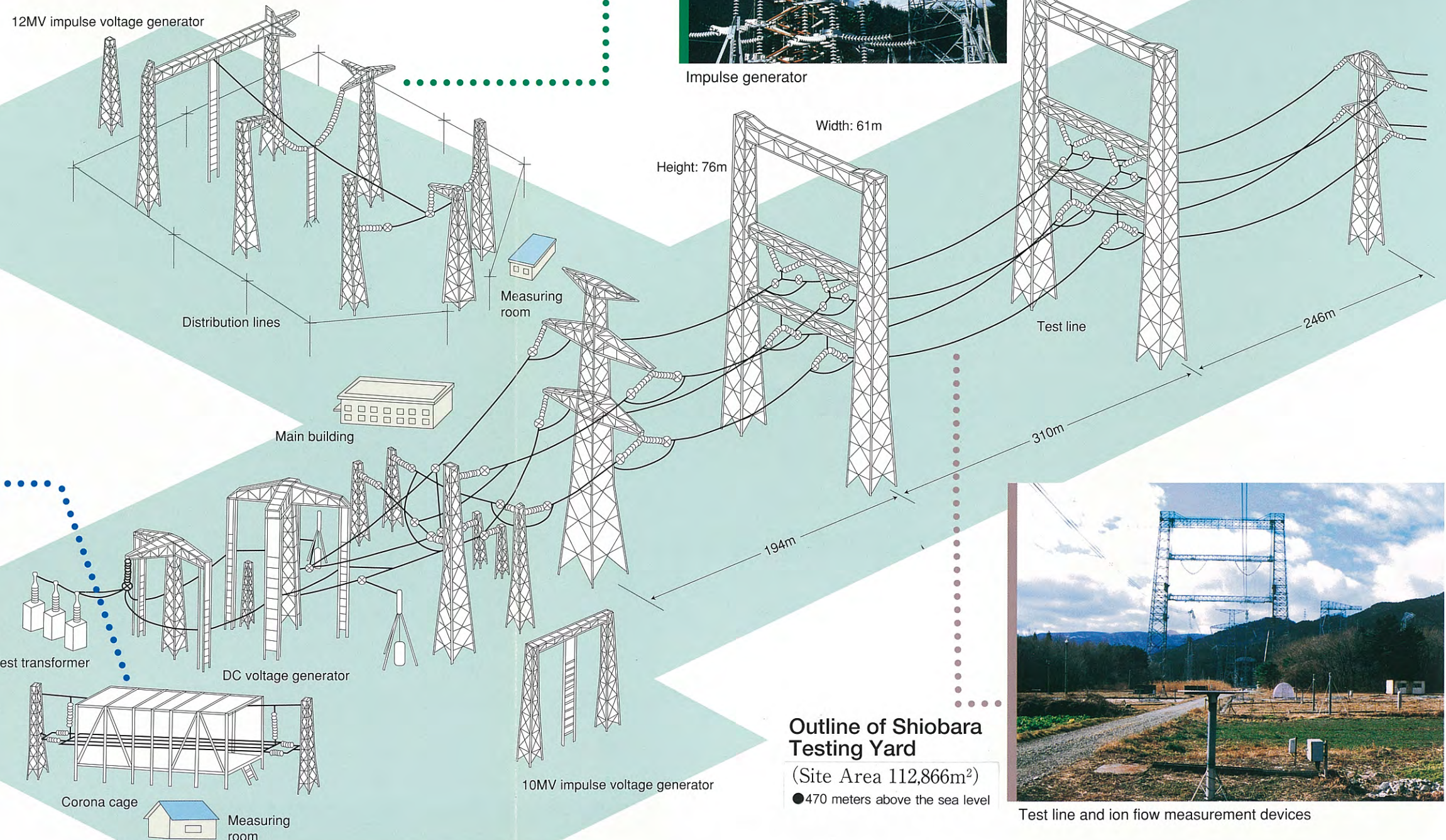
Now, studies are going on to prevent damages from lightning strokes for power transmission and distribution lines, to develop a compact them and to improve electrical environment.



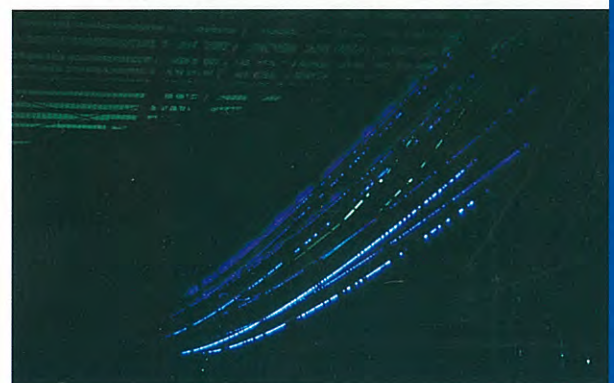
Impulse generator



Experiment on protection of power distribution lines from lightning strokes



Corona cage



Corona discharge test with corona cage



Test line and ion flow measurement devices

Outline of Shiobara Testing Yard
 (Site Area 112,866m²)
 ●470 meters above the sea level