

## Impulse Voltage Generators

300 kV, 7.5 kJ Impulse Generator



800 kV, 40 kJ Impulse Generator



The Impulse Generator is an apparatus which produces very short high voltage or high current surges. High impulse voltages are used to test the strength of electric power equipment like insulators, Lightning arresters, alternators, instrument transformers, high voltage cables, power transformers, condenser bushings etc., as per relevant national and international standards.

**Design :** The Impulse Generator is based on the MARX multiplier circuit. The impulse generator is fitted with castors to increase the mobility. The design is compact & flexible and occupies less space. It consists of the following main components namely;

1. High Voltage Test transformer,
2. Control panel
3. Silicon rectifier with motorized polarity reversal System
4. Energy Storage capacitors
5. Impulse Firing system
6. Wave shaping Resistors.

and other components like measuring resistor, Automatic Earthing System on power off, measuring device and other assembly components for constructing the test setup.

**Resistors :** Resistors built into the impulse circuit are wire wound and protected with heat shrink sleeve against mechanical damage. Each resistor value has a specific colour for easy identification. These resistors have plug-in connection for quick and easy reconfiguration.

The high impulse voltages are generated by charging Energy storage Capacitors to required high voltages and discharging it through controlled firing system and wave shaping components.

Depending upon the design of the multi-stage impulse generator, various components like capacitors, resistors etc. are decided to achieve the standard lightning impulse wave shape of 1.2/50  $\mu$ s as per IEC: 60060-1.

**Impulse Voltage measurement:** The high Impulse voltages are normally measured using high voltage impulse dividers and Digital Impulse Peak Voltmeter (DSTM).

The technical specification of various impulse generators are tabulated below:

Type of IVG	IMP-100	IMP-300	IMP-400	IMP-500	IMP-800	IMP-1000	IMP-1200
No. of Stages	1	3	4	5	8	10	12
Energy/Stage	2.5 kJ 5 kJ	2.5 kJ 5 kJ	2.5 kJ 5 kJ	2.5 kJ 5 kJ	2.5 kJ 5 kJ	2.5 kJ 5 kJ	2.5 kJ 5 kJ
Total Energy	2.5 kJ 5 kJ	7.5 kJ 15 kJ	10 kJ 20 kJ	12.5 kJ 25 kJ	20 kJ 40 kJ	25 kJ 50 kJ	30 kJ 60 kJ
Impulse Capacitance/stage	0.5 $\mu$ F 1.0 $\mu$ F	0.5 $\mu$ F 1.0 $\mu$ F	0.5 $\mu$ F 1.0 $\mu$ F	0.5 $\mu$ F 1.0 $\mu$ F	0.5 $\mu$ F 1.0 $\mu$ F	0.5 $\mu$ F 1.0 $\mu$ F	0.5 $\mu$ F 1.0 $\mu$ F
Efficiency	Approx.90%						