

Pollution Monitor

Insulator Current Leakage Monitoring System

DMS



- Overhead & Substation Insulators
- AC & DC Networks up to 500kV
- Automated Condition Monitoring
- Remote Communications
- Scalable & Modular



The Pollution Monitor is used by utilities world wide to monitor the performance of ceramic, glass and polymer insulators.

The system monitors the surface leakage and discharge currents of insulators help utilities with:

- Scheduling insulator washing programs
- Preventing unnecessary flashovers and outages
- Maximizing insulator reliability
- Improving overall network performance
- Determining insulation performance in a polluted environment

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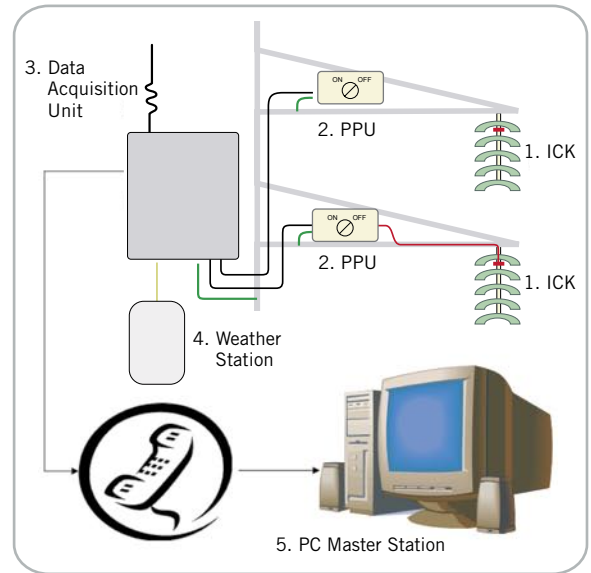
Pollution Monitor

Insulator Current Leakage Monitoring System

The Pollution monitor, which has been used since 1992, measures the surface leakage and discharge currents to ascertain the level of insulation pollution. The data is transferred via cellular, radio, or fiber to the PC master station. An automatic alarm is issued to identify regions that require insulator cleaning in order to prevent flashovers and reduce unplanned outages.

System Architecture & Components

- 1. Insulation Connection Kits (ICK's):** Metal band electrodes that collect the currents flowing over the insulators surface. The electrode bands are fitted to the insulator nearest to the tower, or just above the base plate for post insulators.
- 2. Primary Protection Unit (PPU):** Contains a surge arrestor, high-speed semiconductor, spark gap, and an earth switch to protect the pollution monitor from any high voltages such as lightning.
- 3. Data Acquisition Unit:** Powered by solar cell and battery, or a local power supply, the DAQ processes the steady and peak current data, along with data from the weather station and wirelessly transmits it to the PC master station.
- 4. Weather Station:** Provides temperature and humidity measurements to the DAQ unit. Other options include rainfall, barometric pressure, solar radiation, wind speed and direction measurements.
- 5. PC Master Station:** Collects and analyzes field data from many sites to predict when insulator pollution is at a critical level and is at risk of flashover. The intuitive software clearly displays the level of insulation pollution and generates an alarm.



TECHNICAL SPECIFICATION

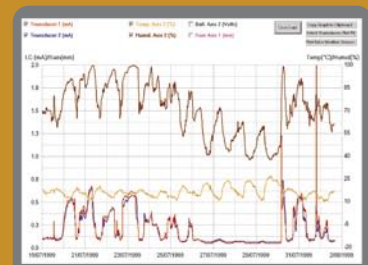
Voltage Range	11 to 500kV (AC or DC)
Typical Insulator Usage	HV Steel Towers HV Wood Poles Substation post insulators
Measurement	
Leakage current	100µA to 30mA
Surface discharge	30, 60 & 90mA
Input Channels	1 to 6
Recording Memory	70 days typical (rolling memory)
Remote Communications	GSM or CDMA cellular, satellite or fiber optic cable
Power Source	
Mains supply	110 to 250V ac, 50/60Hz; or 12 to 24V DC
Solar & Battery	40 or 80W solar panels
Environmental	
Enclosure	Stainless steel
Weatherproof	IP66 rating
Temperature range	-10°C (14°F) to +50°C (122°F)
Weather Station Sensors	Temperature, relative humidity, rainfall Solar radiation, barometric pressure Wind speed and direction
PC Master Station	Microsoft Windows 2000 or XP Modem or fibre-optic interface



Pollution Monitor on 132kV Wood Pole



Insulation Status Screen



Charting and Analysis software