

# ATTanalyzer



ATTanalyzer - Acoustic Breakdown Location

Instruments

The Power Diagnostix ATTanalyzer is a simple and effective stand-alone tool to aid in commissioning tests of gas-insulated switchgear (GIS) systems and power transformers. The ATTanalyzer reduces delays in commissioning and maintenance by locating flaws in GIS systems and transformers acoustically.

Gas-insulated switchgear systems occasionally contain flaws that go unnoticed during installation or maintenance but that lead to immediate breakdown when high voltage is applied. These flaws can include floating particles, gaseous impurities, faulty insulator discs, sharp metal burrs, or other defects. If a gas-insulated switchgear system contains such a flaw when brought on-line, sparking and breakdown occurs at the flaw, forcing de-energization and repair. Without diagnostic aids, location of the flaw can lead to costly delays and unnecessary opening of unflawed gas chambers bearing the risk of causing new imperfections, while searching for the chamber containing the flaw.

Using the ATTanalyzer, the flaw can be located by mounting acoustic sensors to the outside of the GIS or transformer tank in several locations. When high voltage is applied to the GIS, if a breakdown occurs, the acoustic sensors pick up the disturbance and transmit a correspond-

ing optical signal to the ATTanalyzer acquisition unit. The ATTanalyzer then compares the relative travel times of the sound signals to determine which sensor is the closest to the flaw. Following initial location of the break-



Fiber optic connectors of the ATTanalyzer

down's origin, the acoustic sensors can optionally be repositioned closer to the flaw to narrow the location further, to within a few centimeters. Comparing the resulting display with the display of the breakdown while using a hammer to trigger a similar pattern on the ATTanalyzer, further helps to narrow down the location of the flaw.



ATTAnalyzer monitors a long-term test on GIS spacers and insulators (SIEMENS)



### System Components

The ATTAnalyzer consists of a compact central acquisition unit, acoustic sensors, and sturdy fiber optic cable to connect the sensors to the acquisition unit.

The stand-alone ATTAnalyzer acquisition unit, mounted in a half-19-inch rack, receives and internally processes signals picked up by the sensors. The acoustic sensors for external mounting on the GIS system can be easily attached and removed for reuse. Up to sixteen sensors can be connected to the ATTAnalyzer.

Fiber optic cables, up to 200 meters in length, provide galvanically isolated connection of the sensors to the ATTAnalyzer acquisition unit.

### Features

The ATTAnalyzer's embedded LCD panel displays the relative travel times from the sensors as horizontal bars. Cursors and settings are manipulated through pushbuttons and on-screen menus.

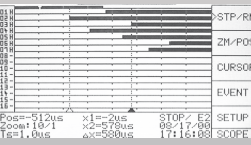
The display screen also shows relevant quantities such as sampling rate, time between cursors, time and date stamp, etc.

Using simple menus, users can adjust the sampling rate of the acquisition unit appropriately depending on how widely or closely spaced the sensors are to each another. The ATTAnalyzer features storage of up to sixteen GIS fault events with time and date stamps. Users can choose one of three operating modes:

**AUTO** This mode considers each trigger event. Thus, the instrument's memory contains the *most recent* 16 events.

**NORM** Using this mode, the unit changes to the STOP mode after 16 events captured. Therefore, the memory contains the *first* 16 events.

**SINGLE** This mode changes after each captured event into STOP mode. Changing manually back into RUN mode re-enables triggering.



Offering easy implementation and convenient data analysis, the Power Diagnostix ATTAnalyzer aids in cost-efficient location and repair of gas-insulated switchgear and transformer defects during commissioning tests.