

# INTRODUCING *ENERGIZED* MEDIUM & HIGH VOLTAGE CABLE TESTING

Formerly, reliable results required de-energizing and grounding the system, then disconnecting primary feed cables, all of which takes time:

- Traditional “Hi-Pot” testing could cause damage and extend an outage
- VLF - Very Low Frequency is the alternative method but still requires an outage and over-voltage could cause damage and extend an outage
- Avoid the costs and risks of older technology by utilizing online PD-testing.



## ONLINE NON-DESTRUCTIVE PARTIAL DISCHARGE TESTING

- Data acquisition without shutdown at operating voltage
- Signal analyses & pattern recognition at high frequencies determine defect type
- Measures both pre-discharge and partial discharge
- Evaluate age\* differences between sections of cable
  - \* age is not chronological age but accounts for duty use

### Results: Accurate CapEx planning by ranking sections from 1-5

1. A-OK, no worries .....	Retest every 3rd year
2. < 5% chance of failure within 2 years .....	Retest every 2nd year
3. 18% chance of failure within 2 years .....	Retest every 2nd year
4. 34% chance of failure within 2 years .....	Plan replacement soon
5. 89% chance of failure within 2 years .....	Plan replacement now

Level 1 - The system is not degraded
Level 2 - There is a small amount of aging related signals
Level 3 - Component has a low to moderate level of deterioration
Level 4 - Component has a medium probability of failure
Level 5 - Component is at the end of its economic life



The Atlanta airport experienced a complete 10-hour power outage on Sunday, December 17, 2017. You can imagine that this cost \$10's of millions for passengers, the airlines, the airport, and the utility.



Photo from FOX 5 News showing the damage on the electrical equipment.

## THE ATLANTA AIRPORT POWER OUTAGE COULD HAVE BEEN AVOIDED

**IEEE, NETA, and NFPA 70B** standards all have recommended scope and frequency of electrical preventive maintenance that helps to detect electrical hazards and potential failure points. Anything detected could then be addressed before failure, for pennies on the dollar.

### Testing frequency standards for medium voltage cables:

Visual Inspection .....	Every 2 Months
Mechanical Inspection .....	Every Year
Infrared Testing (IR) .....	Every Year
Ultrasonic Testing (UT) .....	Every Year
Visual Mechanical & Electrical (Hi-Pot, VLF, or PD) Testing .....	Every 3 Years

### This electrical testing schedule has been proven to detect:

- Cable integrity
- Support integrity
- Environmental conditions in cable vault
- Condition of cable insulation jacket
- Verify correct installation methods

**Performing the electrical testing schedule that is recommended by IEEE, NETA, and NFPA 70B would have detected the electrical failure point and identified a relatively inexpensive repair.**

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*Transworld, Inc. Electrical Contractor specializes in electrical predictive & preventive maintenance.*

**Let us develop a customized electrical testing program for you.**