WiDD
Wiring Defect Detection
Control & Monitoring
Repair & Maintenance
INNOVATIVE TOOL FOR WIRING DEFECT INVESTIGATION

What maintains both security, performance and availability of equipment with hundreds of kilometres of cables?

What do you use to meet the growing requirements of ever larger and complex wiring installations without losing competitiveness?

What proactive method do you use to anticipate wiring failures, and to perform repairs during scheduled maintenance interventions?

The Wiring Defect Detector (WiDD) is the sole solution currently on the market to detect and characterize failures with high speed and precision on your cabling installations. WiDD enables you to anticipate failures before they affect both operation and overall integrity of your equipment.

WiDD is an innovative solution developed and patented by NEXEYA FRANCE based on a unique multipoint reflectometry technology.

**WIDD Main Features**

- **STANDALONE PORTABLE OR RACK-MOUNTED EQUIPMENT**
- **DETECTION AND LOCATION OF PERMANENT AND ELUSIVE CABLEING DEFECTS**
- **SUPPORT OF ALL KINDS OF CABLES AND HARNESSES**
- **CHARACTERIZATION AND CONTROL OF HUNDREDS OF POINTS PER SECOND**
- **REDUCTION OF BREAKDOWN SEARCH TIMES**
- **MONITORING AND DETECTION OF LATENT FAULTS FOR PREVENTIVE ACTIONS**
- **POSSIBILITY OF DAISY CHAINING INSTRUMENTS FOR LARGE HARNESSES**
- **VARIOUS VERSIONS AND OPTIONS TO MEET CUSTOMERS’ NEEDS**

WiDD is an autonomous system both compact and portable to characterize electrical harnesses and to detect and locate wiring faults.

WiDD capabilities are extensive, ranging from simple failures like opens, ground faults, and short circuits; to more complex ones such as defect localization, insulation problems, bad clamping, inappropriate bend radii, and non-declared repair operations...

It operates on harnesses from a few wires to hundreds of wires and on all types of cables: single wire, coaxial, twin axial, twisted pair, shielded...

With the combined action of an LCR meter and its high quality switching matrix, WiDD is the most efficient to characterize test equipment (for Inductance, Capacitance, and Resistance); achieving significant time savings during control operations.

Based on advanced reflectometry technology, WiDD detects and finds both permanent and elusive faults (like intermittent opens) with significant accuracy (fault localized to +/-1% for a 100m cable).

Among its major features, WiDD performs an automatic archiving of measurements according to an original value (or reference), this is important to keep track of the cables or electrical harnesses life and thus anticipate failures.

WiDD offers a true solution for predictive analysis in industries (space, aerospace, transport, energy...) where wiring reliability is a key concern.

It considerably reduces the costs related to human and material resources for repair and maintenance operations.
**TWO COMPLEMENTARY CORE FUNCTIONS**

**C-WiDD - LCR characterization:**

WiDD performs L, C, and R measurements and characterization of all the points of the harness under test (Inductance, Capacitance, and Resistance).

The combined action of an LCR meter and its high quality switching matrix allows the characterization and the control of hundreds of points in a very short period of time. Faults are detected in real time by comparing the measurements to reference values and displaying them on the MMI.

**I-WiDD - Reflectometry and furtive defect detection:**

WiDD allows detection and localization of any elusive cabling failures (like intermittent faults) based on the reflectometry technology. Failures can be detected with an accuracy of less than one meter within:

- 2 msec. for a 1024-points harness of 100 meters,
- 1 msec. for a 512-points harness of 100 meters,
- 250 to 500 µsec. for lower channel count (localization of the failure is performed within a fixed time).

Intermittent or permanent failures are displayed on the MMI (ground faults, short circuits, or opens).

**TYPICAL APPLICATIONS**

**MAINTENANCE:**

With its integrated reflectometer, WiDD detects failures that are invisible to the naked eye or to traditional cable testers. WiDD compares measured parameters with reference values and detects and locates any deviation within few seconds.

WiDD can also be used for non-regression analysis between programmed maintenance operations such as A-B-C-D Checks for aircrafts.

**REPAIR:**

Using the multipoint function of the reflectometer, WiDD locates defects by testing the harnesses and comparing measurements made with reference measurements or with adjacent cables and wires. It traces and resolves intermittent faults, even small ones such as crimping faults, by sending an electrical wave giving a precise measurement of the defective area.
WiDD Benefits

- Reduces time for breakdown search
- Accelerates diagnosis and repair efforts based on accurate and reliable failure information
- Reduces repair downtime due to detection of latent errors (predictive approach)
- Improves maintenance servicing by reducing visual inspections
- Facilitates and accelerates test procedures
- Minimizes maintenance costs, time and enhances safety
- Improves the overall wire system integrity
- Preserves electrical system value during its entire life cycle

WiDD Product Range and Options

**WiDD 100** - Portable case
64 reflectometry channels (i-WiDD functions)

**WiDD 200** - Portable case

- Standard Version: 64 RLC channels + 64 reflectometry channels (C-WiDD + i-WiDD functions)
- Full RLC Version: 128 RLC channels (C-WiDD function)
- Full Reflectometry Version: 128 Reflectometry channels (i-WiDD function)

**WiDD 500** - 19” rack or transportable chassis
512 channels / I-WiDD & C-WiDD functions

WiDD also adapts to specific customer needs (number of channels, functionalities).

Sample of Interventions: Aircraft On Ground (AOG) Cases

- **Inspection of wiring of an airliner in Paris Orly (France)**
  - Method: compared signature of adjacent cables,
  - Default detected: metal parts (rivets) affecting a cable,
  - Gain: complete control, issue resolved in half a day.

- **Investigate an intermittent defect on landing gear in Hungary – Test wiring state**
  - Method: detection of intermittent faults,
  - Defect detected: connection fault of a sensor resulting in contact failure,
  - Latent defect also identified: difference in length of the sensor connecting cables,
  - Gain: complete control of the wiring in less than 1 hour (manual test requires 1.5 day).