



**NEXEYA**  
A Hensoldt Company.



**ROLLING STOCK & RAIL  
SYSTEM PRODUCTION &  
MAINTENANCE SOLUTIONS**

Nexeya designs, manufactures and supports products and services used in the design, development, validation and verification of sub-assemblies, assemblies and complete systems. We cater to a variety of industries, with a focus on space, aviation, transportation and high-tech manufacturing. Our embedded and stand-alone solutions are designed for capital intense and mission critical environments and are deployed across the globe and into space.

Our strength lies in our ability to collaborate in combining leading edge technologies and best practices to create highly effective and reliable engineered solutions. Our customers choose Nexeya for our flexible and easy to use products and our dedication to outstanding customer support.

## OUR MISSION

We strive to help our customers optimize their operations and save time and money by delivering engineered solutions that are cost effective, flexible and easy to use.

## OUR VISION

- Designing effective, reliable and powerful products and solutions
- Creating intuitive software that naturally fits the operator's environment
- Providing customers with prompt responses and customized solutions

## THE NEXEYA

# DIFFERENCE

- Modular solutions that can be configured to meet current needs and 'built up' over time to address future customer requirements
- Open architecture enables interaction with a variety of third party products and current installations
- Proven and competitively priced solutions
- Local resources, global reach
- Complete command of the product development process
- Regulatory agency approved
- Ease of use and flexibility
- Dedication to outstanding customer service

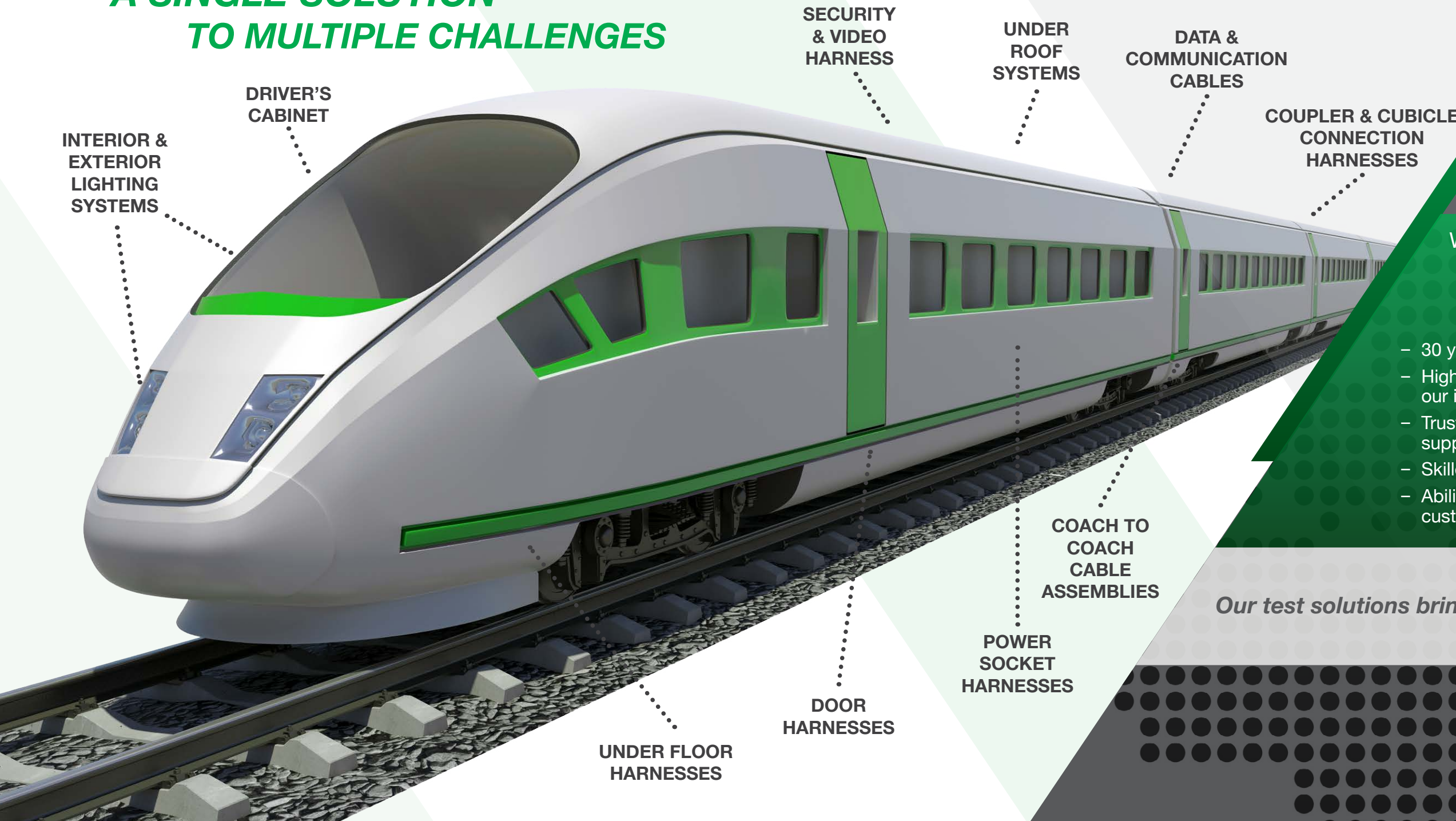
Nexeya has been delivering electrical interconnect test solutions, helping our customers **reach new heights** in rolling stock and rail system manufacturing efficiencies and maintenance practices.



## Manufacturing & Maintenance

HENSOLDT is a global high-tech pioneer in the sector of defence and security electronics and a market leader in civilian and military sector solutions. In addition, HENSOLDT is developing new products for data management, robotics and cybersecurity by combining existing skills through software solutions.

## A SINGLE SOLUTION TO MULTIPLE CHALLENGES



### WHAT SETS NEXEYA APART FROM THE COMPETITION

- 30 years of experience in the railway industry
- High build quality confirmed by the longevity of our installed base
- Trusted cable testing technology and engineering support
- Skilled customer service and application support
- Ability to customize applications to meet our customers' needs

*Our test solutions bring simplicity to a complex process.*

### TEST

- General and signal circuits
- LAN cables
- High voltage systems
- Main circuits
- Jumper cables

As railway systems continue to advance, and the demand and complexity of cables and harness increases, railway vehicle assembly becomes more and more challenging.

Nexeya helps customers overcome these challenges with cable and harness testing solutions which optimize test protocols, reduce cycle times and trouble shooting downtime, and increase production throughout.

- HIGH SPEED
- METRO
- LRT
- SUBWAY

# SOLUTIONS AND SERVICES

## 3 LEVELS OF INTERCONNECT TESTING



MANUFACTURING VERIFICATION OF INDUSTRIAL & COMMERCIAL CABLES, HARNESSSES, COMPONENTS & SUB-ASSEMBLIES

PERFORMANCE VALIDATION OF RAIL CAR CABLES & HARNESSSES, CABINETS & SUB-ASSEMBLIES

MAINTENANCE/TROUBLESHOOTING DURING ACTIVE OR PREVENTATIVE MAINTENANCE



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A LOOK AT NEXEYA'S

# SOLUTIONS IN ACTION



## COMMERCIAL & MILITARY AVIATION

From aviation OEMs through the entire supply chain NEXEYA delivers test equipment, validation and verification solutions and embedded hardware to virtually every make and model.



## NAVAL VESSELS

From test equipment, imbedded power distribution systems to command and control / mission management solutions to civilian ship protection systems, NEXEYA sails with the world's navies and commercial vessels.

## RAIL & ROLLING STOCK

NEXEYA is an industry leader in Rail for delivering test solutions that optimize the manufacturing process and push the capabilities of verification and validation.



## HEAVY VEHICLES

NEXEYA supports the manufacturing, production, assembly and servicing of the power distribution and interconnect systems of everything from heavy industrial equipment to road transport to military land vehicles.



## SATELLITES

NEXEYA offers a variety of satellite solutions. From large satellite structures, to wiring harnesses and power distribution systems, active and passive thermal controls and full small sat design and build projects.



## AUTOMOTIVE

With the dawn of electrical vehicles, NEXEYA's automotive electrical test solutions are expanding to further support the entire lifecycle of personal and commercial transportation.

## MANUFACTURING

NEXEYA offers a variety of test equipment solutions for all types of manufacturing environments, support all stages of the manufacturing process.



## MEDICAL

From pacemakers to MRI systems, NEXEYA's test solutions are testing a variety of life saving technologies.



## ELECTRICAL INTERCONNECT PRODUCT OFFERING



### EZX SERIES

Based on over 30 years of success, EZX series is the latest in our benchtop analyzers and is NEXEYA's response to customers seeking economical yet powerful and expandable solution for their cable and wire harness test requirements.

### CTX SERIES

For customers seeking an economical yet powerful and expandable solution for their cable and wire harness test requirements, NEXEYA offers the CTX series. With industry leading accuracy, high voltage and energization capabilities required in production assembly lines to validate complex cable and wire harnesses for aircrafts, ships and trains.



### MPT SERIES

The most powerful, versatile and flexible product offering in the catalog, the MPT series offers customers the ability to adapt and optimize the system to their every need. Ideal for complex assemblies, distributed systems, larger scale manufacturing of everything from submarines to satellites.

### WIDD

When faced with permanent or intermittent wiring defects, the WIDD product offering is ideal to identifying and locating electrical faults. Designed for troubleshooting and service tasks, the WIDD offering addresses unplanned maintenance, increases asset availability and lost revenue by keeping downtime to a minimum.



## TODAY'S ADVANCED ELECTRICAL SYSTEMS REQUIRE INNOVATIVE TEST SOLUTIONS & FEATURES



The MPT/C product line offers enhanced modular software, improved test speeds, virtually unlimited integration and expansion options, and a complete suite of operator guidance tools to make testing even easier and more automated than ever before.

### TEST OPTIMIZATION AND TIME SAVING FEATURES

**Test Re-engage:** Enables test to be paused after a failure and re-engaged after debugging, eliminating the need to repeat already verified test sequence and save overall test times.

**Measure & Energize:** Measurement & energization is available from all available test points reducing overall test times.

**Mass-Hi-Pot:** Provides complete test coverage in a fraction of the time required by conventional linear test methods.

**Activation & Energization:** Enables test sequence to energize relays to validate functions and verify safety features.

**SuperTrace:** Nets for complete colour-coded connectivity map.

**Scan Testing:** Enables all test points to be scanned every 10  $\mu$ s for discontinuity testing. Ideal for environment, stress, vibration and thermal cycle testing.

### TEST APPLICATIONS

- Cables & Harnesses
- Bulk Wire
- Component
- Panels & Chassis
- Backplanes
- Dynamic Resistance & Rotating Assemblies
- Transient Voltage Suppression
- Lightning Strike Protection
- Environmental Stress Testing

### KEY FEATURES & FUNCTIONS

- Modular & Configurable
- Unlimited Test Point Expansion Capability
- Multilingual Easy to Use Operator Interface
- Optional Wireless HMI Tablet
- Intelligent Diagnostic Tools
- TCP/IP Controls

## CASE STUDY

## NEXEYA APPLIES OWN AVIATION TEST PLATFORM TO THE RAIL MARKET



For over 15 years, Nexeya has conducted testing of aircraft backplanes and power distribution cabinets using an innovative methodology that is embedded into several offerings. Military and commercial aircraft are complex and require extensive safety and performance verification and validation, both during the production process and at set maintenance intervals. An aviation OEM approached Nexeya with a challenge: 8 hours of setup time was required to run a 15-minute test. **Nexeya delivered a test system which reduced the setup time by 55%.**

Since that initial development, Nexeya continues to refine the methodology and reduced the time from the original 8 hours to less than 10 minutes.

- INCREASED TEST COVERAGE AND TEST RELIABILITY
- REDUCED TESTING COSTS
- INCREASED MANPOWER UTILIZATION
- PAYBACK OF 14 MONTHS

Nexeya witnessed a rail application where the Rolling Stock OEM was experiencing similar challenges to our aviation partner: a large number of test points accompanied with long setup times and a high probability of troubleshooting and retests due to the number of test points and complexity of the test configuration.

In addition, operators found test setup cumbersome and stressful due to the large number of test cables, cable routing and cable weights. With some modification to our aviation test solution, Nexeya developed a similar offering for our rail partner. Today, they enjoy a much shorter setup time which benefits economically but, more importantly, provides a much safer environment for operators.

Nexeya's ability to take our experiences from one industry and apply the benefits to other markets is one of our key value propositions.

## TESTIMONIAL FROM BOMBARDIER TRANSPORT

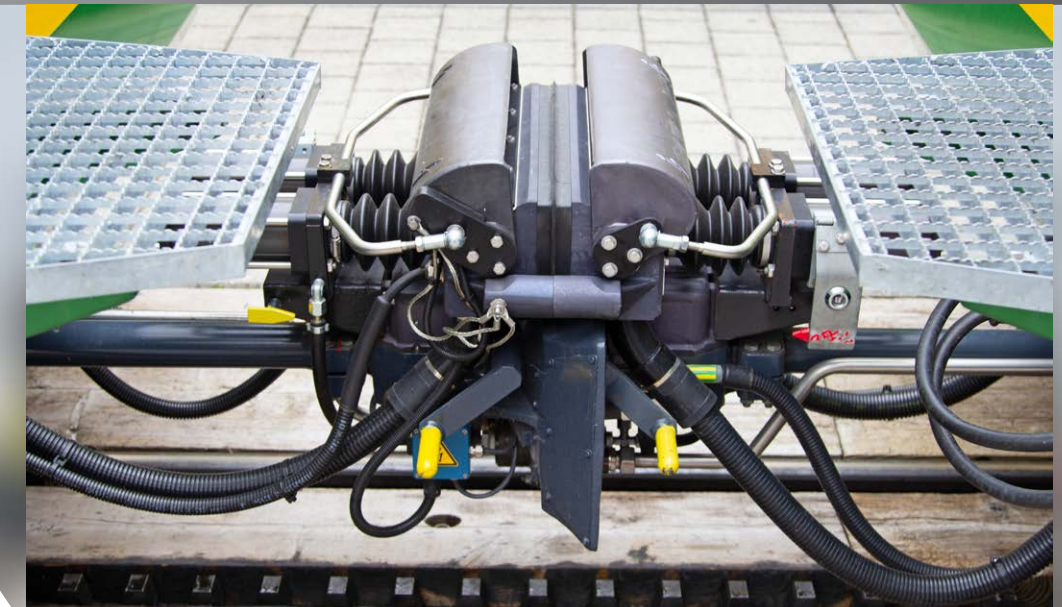


“Nexeya Canada Inc. has provided quality wire test systems to Bombardier Transportation Americas for over 20 years, and in that time, their products and solutions have proven to

be exceptionally reliable, robust, and cost effective. In compliment of their great products, Nexeya Canada Inc. has provided outstanding service and customer support.

Overall, Nexeya Canada Inc. has had a close, and mutually beneficial, relationship with Bombardier that is expected to continue well into the future. ”

## TESTIMONIAL FROM MARTA - METROPOLITAN ATLANTA RAPID TRANSIT AUTHORITY



“With the challenge of establishing a test area dedicated to our Electric Couplers, we did not want to use the current methodologies, we approached Nexeya for a novel solution. Nexeya presented a solution based on their proven

EZX-1510 product line. The team was incredibly easy to work with, assisting us with the system selection and modification. All adapter requirements were based on a standard offering which provided custom configurations at low prices.

We are very impressed with the speed and ease of use of the equipment, worked wonderfully out of the box. ”

*Electrical Engineering  
Marta - Metropolitan Atlanta  
Rapid Transit Authority*

## CASE STUDY

**BULK WIRE ANALYZERS**

### HIGH VOLTAGE POWER CABLES FOR RAIL APPLICATIONS

The world continues to grow more and more with respect to connectivity. As human to human digital interactions, human to machine interfaces and machine to machine data transfers multiply at exponential rates so do the requirements for reliable connectivity.

Belden (Cable & Wire) is a leader in this market and with the advances in technologies and development of more and more restrictive specifications they required a new test solution. A solution that would verify and validate their products as well as support their manufacturing processes; Nexeya delivered.

The new test requirement presented many challenges including; the safe and cost effective switching of larger voltages (greater than 5000VDC) and the high power requirements (to energize high capacitive loads (x gage, x feet)) was a critical requirement of the test system.

Nexeya delivered a safe and efficient system by integrating current commercial (Nexeya) products with several custom design (by Nexeya) components that resulted in a complete turnkey system fully supported by Nexeya's engineers and technical support network. The right mix of off-the-shelf and customized components ensured a reliable, serviceable, cost effective solution.



Bulk Wire Analyzers use a proprietary high voltage switching architecture to evaluate and test reels of bundled twisted-pair cable up to 30,000 feet in length for conductor resistance, insulation resistance, conductor to conductor dielectric strength up to 10 kVDC and core to sheath dielectric strength up to 15 kVDC. AC High Voltage testing is available (as a standard offering) up to 6000VAC for 30,000 foot cables.

#### KEY FEATURES INCLUDE:

- Mass HiPot Algorithm
- High Voltage Discharge
- Customized fan-out fixtures
- Tare & Temperature Compensation
- EPO and Safety Interlocks
- Easy to use menu driven software



## TRANSORB CASE STUDY

**LIGHTNING & SURGE PROTECTION**

On average, railways are  
**hit by lightning,  
200 times per year**

### IDEAL FOR MANUFACTURING & MAINTENANCE OPERATIONS

#### THE CHALLENGE

With the growing number of micro-processor based products and systems deployed on rail cars and by railways, the impact of lightning strikes and power surges is ever-increasing.

While infrastructure suppliers deploy surge arrestors and grounding blocks electrical equipment suppliers protect railway systems by deploying Transient Voltage Suppressors (TVS) devices in the design of their products. These devices, built into onboard electronics, protect the equipment from surges and reduce, or in some cases, eliminate the impact of the voltage strike.

#### THE NEXEYA SOLUTION

Nexeya starts with a standard MPT Tester, integrates several COTS (commercial off the shelf) instruments, selected from industry leading manufacturers and based on the clients specific needs, and develops a customer specific test program that links all the sub-assemblies together to work in unison.

The Nexeya solutions allows product OEMs and operators, the ability to verify and validate the products they delivery and aircraft they fly will be protected from the impact of a lightning strike and power surges.

Today, Transorb Model MPTs have been delivered around the globe, including; Canada, the United States, Mexico, Europe and India.



#### Many complications can arise from railway lightning strikes, including:

- Safety risks to personnel
- Damage to critical equipment
- Data Corruption
- Operational Software



# LIFE CYCLE MANAGEMENT



## THE CHALLENGE

With the constant addition of new technologies, features and functions today's railcars are becoming more and more complex. Many of these complexities are in the electronics resulting in kilometres of wiring, cables and harnesses, hundreds of bends and thousands of connections.

Nexeya offers a variety of test, validation and verification solutions when cables and harnesses are being manufactured and installed. But, what happens when an aircraft completed is, when all is 'buttoned up', panels in place, seats adjusted? What happens when you have a fault and the cable or harness or connector is hidden behind a structure, in a conduit, running through a bulkhead?

How can you effectively and efficiently test installed systems?

How can you make the repair without removing everything installed in front of the electrical system?

Nexeya came up with a solution.

## THE NEXEYA SOLUTION

In 2016 Nexeya introduced their latest electrical wiring interconnect system test tool: WIDD (Wiring Intermittent Defect Detection). The WIDD is ideal for identifying electrical faults and pinpointing their location, enabling technicians to make repairs in a timely manner without having to dismantle and replace more access panels than necessary.

In addition to finding permanent and intermittent faults, the WIDD solution enables operators to collect the data required for life cycle material management of their assets electrical systems.

By characterizing the electrical system at set intervals\*, operators can utilize analytics to determine how an electrical system is aging and thus the optimal time to initiate repairs.

The WIDD product is extremely effective in both shortening the repair cycle of electrical faults in aircraft and enabling life cycle material management.

In utilizing the WIDD to characterize the electrical signature of a railcar's cables and harnesses troubleshooting, at both set maintenance cycles and unexpected events are greatly reduced. With the simple comparison of baseline signatures to the current profile, a technician can pinpoint a fault in a matter of minutes.

Nexeya's WIDD brings a new dimension to a rail systems Life Cycle Material Management Program.

\*The cycle matches predefined maintenance cycles.

## Why select Nexeya and WIDD?

### PERMANENT AND INTERMITTENT FAULTS

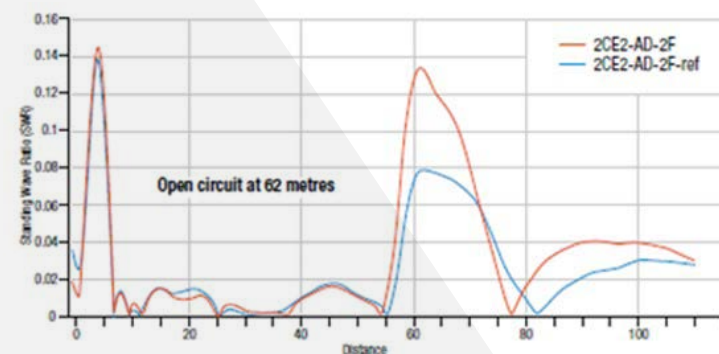
Permanent or intermittent fault occurrences can take place anywhere in the electrical system. These issues can take a considerable amount of time to locate and repair. In addition, in many cases intermittent electrical faults, which occur in transit, can be nearly impossible to replicate after the fact, resulting in countless hours of trial and error. Nexeya's WIDD Life Cycle Management program addresses this issue.

### ONGOING MAINTENANCE AND REPAIRS

Transportation assets are constantly undergoing some type of preventive maintenance as part of the checks and balances that keep the equipment and its passengers safe during normal operations.

In executing these operations there can be considerable 're & re' that takes place; the removal and replacement of 'other' assemblies that need to be removed and replaced to execute the service cycle.

These operations can induce an error or fault if everything is not returned back to its original configuration. An advantage of the WIDD product is that an operator can characterize an area of the electrical system before any maintenance is undertaken. They can perform the maintenance and then take a second characterization. Any change in those two 'takes' and the system will identify where a potential error or fault has been introduced.



### THE WIDD IS AN ALL-IN-ONE TOOL THAT OFFERS THE ABILITY TO:

- Detect and locate an electrical fault
- Reduce or eliminate the introduction of future electrical faults during normal maintenance operations
- Capacity to chart the life cycle of the electrical system over time to ensure optimal life cycle asset management

The WIDD solution is capable of checking 62 channels sequentially, which enables incredibly fast fault analysis (2 msec. for a 1024 points harness of 100 meters). This empowers maintenance personnel to go directly to the problem (defect

located to +/- 50 cm), reducing the time and expertise needed to troubleshoot and pinpoint a defect such as:

- Short circuit
- Open circuit
- Bonding
- Grounding
- Intermittent

The WIDD solution is ideal for any electrical application including; satellites, aircraft, trains, naval vessels, ground vehicles; anything with an electrical interconnect wiring system where faults have to be discovered and repaired in record time to keep vehicles in service satisfying customers and generating revenue.





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