Automating Complex Cable Testing with the Vitrek V10X and 964i

Faster throughput, fewer errors, and complete traceability for every cable assembly tested.

Introduction

Cable assemblies are no longer simple pass/fail products. Modern harnesses may contain dozens—or hundreds—of conductors, shielding paths, insulation systems, and termination points. Testing them manually is slow, labor-intensive, and prone to inconsistency.

The combination of the Vitrek V10X Hipot Tester and Vitrek 964i High Voltage Switching System creates a modern automated platform for validating cable safety and integrity with higher speed and repeatability.

The Challenge

Manufacturers of advanced cable assemblies are under constant pressure to improve quality while keeping production moving. Many products now use large pin-count connectors and complex multi-conductor designs that require access to numerous test points during a single validation cycle. As assemblies become more sophisticated, testing each conductor manually becomes slower, more difficult, and more prone to mistakes.

At the same time, production environments are dealing with tight takt times, increasing documentation requirements, and frequent product changeovers.

Operator variability can also create inconsistencies between shifts or test stations. Traditional methods often rely on moving leads by hand, using dedicated fixtures for each product, and capturing results separately from the test process. This creates bottlenecks and limits scalability.

V10X Hipot Platform

The Vitrek V10X is designed to modernize electrical safety testing for today's manufacturing environments. It combines high-voltage capability with an intuitive interface and automation-ready features that help streamline operations. With outputs up to 30 kV AC, high leakage current resolution, touchscreen guided setup, barcode workflow support, built-in reporting, and automation interfaces, the platform delivers performance and usability.

The result is accurate dielectric withstand and insulation resistance testing with a system that is easier to configure, faster to operate, and better suited for connected production lines.

Typical Workflow

The process is designed for speed and repeatability. An operator scans the product barcode, which automatically loads the correct test program. The 964i then routes conductors in sequence while the V10X performs hipot and leakage tests according to the stored recipe. Results are logged automatically, and an instant pass/fail report is generated for traceability and production records.

Applications

EV Cable Assemblies — Electric vehicle systems rely on safe, reliable high-voltage connections across charging systems, battery packs, and power distribution networks. Cable assemblies must withstand high voltage, vibration, temperature cycling, and repeated use. The V10X + 964i helps manufacturers validate charging cables, battery interconnects, and HV harnesses with repeatable dielectric withstand and insulation testing. Automated switching improves throughput while maintaining traceability.

Aerospace Harnesses — Aircraft and defense platforms use complex wire harnesses with high pin counts and strict documentation requirements. Failures are unacceptable, and complete records are often required for compliance and customer acceptance. The V10X + 964i simplifies testing of complex aerospace assemblies through automated routing and programmable sequences. Automatic data capture supports quality records and standardized production workflows.

Medical Cables — Medical devices depend on specialized cables for monitoring, imaging, surgical tools, and therapy systems. These assemblies require high safety standards and consistent manufacturing processes. The V10X + 964i verifies patient-connected assemblies and device interconnects with precise high-voltage and insulation testing. Recipe-based workflows reduce variability and support regulated quality systems.

Industrial Equipment — Industrial systems use extensive wiring in motors, controls, robotics, conveyors, and automation equipment. High-volume production and multiple product variants demand fast, repeatable testing. The V10X + 964i automates routing and stores test programs for quick changeovers, reduced operator dependency, and immediate pass/fail reporting.

Renewable Energy & Power Systems — Solar inverters, battery storage systems, EV chargers, and power cabinets depend on reliable high-voltage wiring and insulation integrity. The platform supports production testing of cables and assemblies used in energy and power electronics applications, helping manufacturers scale output while maintaining quality.

Contract Manufacturing & High-Mix Production — Contract manufacturers often build many cable types for different customers, each with unique test requirements. Frequent changeovers can slow manual processes The V10X + 964i enables quick recipe recall through stored programs or barcode workflows, reducing setup time and supporting efficient high-mix production.

Conclusion

Together, the V10X and 964i help manufacturers move beyond slow, manual cable testing methods. The combined platform delivers scalable, automated validation that improves throughput, reduces errors, and supports the documentation demands of modern production environments.

For a free application review visit www.Vitrek.com.

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