



Protecting Data Center Operations: Why Electronic Leak Detection (ELD) Is the Gold Standard for Roof Integrity

When downtime can cost nearly **\$10,000 per minute**, even the smallest leak matters. Data centers are built for continuity. Every system, from power to cooling to the roof, must perform flawlessly. Yet roof leaks remain one of the most common and costly threats to uptime. Choosing the right inspection method isn't just a maintenance decision, it's a business continuity strategy.

The Hidden Risk Above Your Servers

Modern data centers house millions of dollars in critical IT infrastructure. Even a pinhole breach in the roof membrane can introduce moisture that travels unseen through insulation or seams. By the time it's visible, it may have already damaged electrical systems or forced unplanned shutdowns.

According to the Ponemon Institute's Cost of Data Center Outages study (commissioned by Vertiv), the average downtime cost was **\$8,851 per minute**. More recent Uptime Institute data shows that many facilities now exceed **\$100,000 per incident**, underscoring how high the stakes remain. (Sources: Vertiv 2016 Report, Uptime Institute 2023 Outage Analysis)

Prevention Pays

A single proactive ELD test can identify hidden vulnerabilities early, saving thousands in emergency repairs and protecting critical IT assets.

Traditional inspection tools like Infrared (IR) or Electronic Impedance testing can miss early warning signs—especially in complex, multi-layer roof systems typical of data centers.

- IR Testing measures temperature differences but struggles to “see” through dense or reflective roof assemblies.

- Impedance Testing measures electrical conductivity but is easily distorted by substrate composition, surface moisture, or environmental conditions.

Both methods often identify moisture presence rather than the actual breach point, leaving room for error and costly re-inspection.

Why Data Centers Are Turning to ELD

Electronic Leak Detection (ELD) delivers a step-change improvement in precision. Instead of inferring leaks from temperature or conductivity shifts, ELD uses low-voltage electrical pulses across the membrane surface to pinpoint exact breach locations—no guesswork, no false positives.

How It Works

Every ELD system works on a simple concept:

- **Water conducts electricity**, while intact waterproofing membranes do not.
- When a conductive substrate (like concrete, metal, or conductive mesh) sits below the membrane, a **potential difference (voltage)** is applied between the top testing electrode and the substrate below.



Downtime Is Expensive

The average data center outage costs **\$8,851 per minute** – and some exceed **\$100k per incident**. Precision leak detection helps you present those losses before they start.

If there's a **breach or puncture** in the membrane, current passes through that point and is detected by the ELD equipment.

Because it directly measures continuity breaches, ELD detects leaks through multiple roof layers, around penetrations, and beneath equipment supports—even on live data centers where accessibility is limited.

Proven Advantages of ELD for Mission-Critical Facilities

ELD offers clear advantages over Infrared and Impedance testing methods:

Performance Factor	Electronic Leak Detection (ELD)	Electronic Impedance	Infrared (IR)
Precision	✓ Pinpoints the exact breach location	✗ Prone to false readings	✗ May miss leaks under reflective or multi-layer surfaces
Depth of Detection	✓ Detects through full roof assembly	✗ Surface-level only	✗ Limited penetration
Versatility	✓ Works around equipment, parapets, and complex geometry	✗ Hindered by obstacles	✗ Line-of-sight required
Speed of Insight	✓ Immediate results, minimal prep	✗ Slower, requires controlled moisture	✗ Weather and time dependent
Lifecycle Value	✓ Prevents damage, extends roof life	✗ May require re-testing	✗ Missed leaks cause costly repairs

Routine ELD Testing = Long-Term ROI

Regularly scheduled ELD inspections give operators visibility into roof performance over time. By identifying small breaches early, you prevent damage to sensitive electrical and HVAC systems—and dramatically reduce the likelihood of downtime.

Every minute of downtime costs money. Early detection through ELD keeps those minutes—and dollars—from ever being lost.

From Preventive to Predictive Protection

As part of a proactive maintenance plan, ELD enables facilities teams to shift from reactive repairs to predictive prevention. Leak data can be mapped, tracked, and trended across inspection cycles—creating a digital 'health record' for each facility.

- Identify weak points before they fail
- Verify repairs after every storm or construction project
- Validate warranty claims with documented proof

The result is a measurable reduction in both operational risk and total cost of ownership.

Why Partner with Honza Group

Honza Group specializes in advanced Electronic Leak Detection for complex commercial environments, including data centers, manufacturing, and government facilities. Our specialists combine decades of field experience with proprietary testing methods that deliver unmatched accuracy—even in active facilities with sensitive electronics.

We understand that roof integrity equals data integrity. That's why every inspection is designed to protect uptime, reduce liability, and extend asset life.

Schedule an ELD Assessment Today

See how a preventive roof “check-up” can protect your data center investment.

- ✓ Early-stage leak detection
- ✓ Comprehensive roof health report
- ✓ Recommendations for preventive maintenance

Request an ELD Assessment at honzagroupinc.com/contact or email info@honzagroupinc.com for more information.