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OFIL SYSTEMS

NEWSLETTER

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Powering a Cleaner Future: OFIL Solutions for **Renewable Energy Systems**

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Advancing **Multi-Sensor Inspection Intelligence** for Power Grid Reliability

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At the INMR World Congress in Panama, OFIL Systems took the stage with a session on “AI Diagnostic Solution & Integration to UV Technology.” Amit Ashkenazi showcased how combining UV inspection with AI-based diagnostic platforms elevates event detection and risk evaluation, empowering utilities to strengthen asset performance and grid resilience.



with Marvin Zimmerman, Publisher & Editor of INMR



Powering a Cleaner Future: OFIL Solutions for Renewable Energy Systems

A New Era of Energy

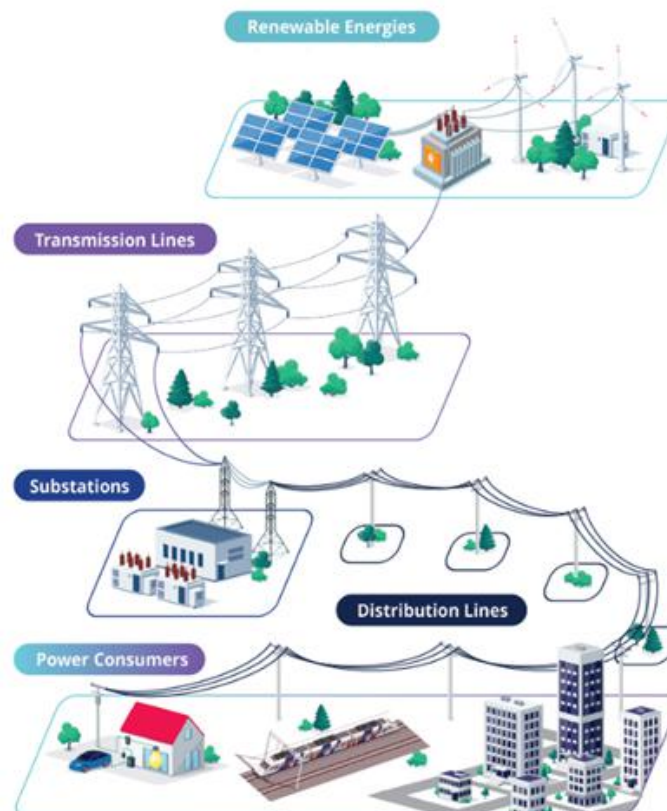
Renewable energy is reshaping the global power landscape. From solar and wind to hydro and geothermal, clean energy sources are driving the transition toward sustainability. They reduce greenhouse gas emissions, enhance energy independence, and create a resilient, decentralized power grid.

Challenges of Renewable Energy Integration

Despite the clear benefits, renewable power introduces new challenges for utilities and operators. Variable generation, remote site locations, and the need for reliable grid integration make maintenance and monitoring critical. Substations, transformers, switchgear, and powerlines connecting renewable plants to the grid must operate flawlessly to ensure stability and safety.

Connecting Renewables to the Grid

Renewable energy plants interface with the grid through step-up transformers, substations, and powerlines. Each component, whether part of a solar farm, wind park, or hydroelectric station, plays a vital role in voltage conversion, power flow control, and grid reliability. Continuous monitoring and inspection of these assets are essential to prevent failures and ensure efficient operation.



Types of Renewable Energy

- **Solar Power:** Converts sunlight into electricity using photovoltaic panels or solar thermal systems.
- **Wind Energy:** Harnesses kinetic energy from the wind through turbines connected to generators.
- **Hydroelectric Power:** Generates electricity from moving water through turbines, typically at dams.
- **Geothermal Energy:** Draws heat from beneath the Earth's surface to produce steam and drive turbines.
- **Biomass Energy:** Uses organic material to create biofuels or generate electricity through combustion.

OFIL's Inspection Solutions for Renewables

OFIL's UV imaging technology is helping renewable operators maintain safety, reliability, and performance across their assets:

- **Substations and Transformers:** Detect corona partial discharge activity in step-up transformers, switchgear, reactors and other key components in renewable substations that handle high voltages and variable loads.
- **Transmission and Distribution Lines:** Inspect long-distance powerlines connecting remote renewable sites to the grid, identifying faults that could lead to outages or safety risks.
- **Generators in Wind, Hydro, and Geothermal Plants:** Detect insulation degradation, arcing, and corona discharges in generator stators, especially critical during commissioning and maintenance.



Supporting the Entire Asset Lifecycle

OFIL's UV cameras are essential throughout the asset lifecycle -from commissioning and routine maintenance to predictive maintenance. By identifying discharge activity before it escalates into failure, utilities and renewable energy providers can reduce downtime, optimize maintenance schedules, and extend equipment life.

With Gridnostic, OFIL's advanced inspection data management and analysis platform, inspection results are securely stored, visualized, and interpreted. It provides users with actionable insights, trend analysis, and severity assessments - transforming inspection data into decision-ready information that supports proactive asset management.

Conclusion

As the world accelerates its renewable energy transition, ensuring the reliability of generation and transmission assets has never been more important. OFIL's inspection solutions empower renewable operators to safeguard their equipment, prevent failures, and maintain a stable, sustainable grid for generations to come.

New in Gridnostic: Advanced Thermal Analysis Tools

We're excited to introduce a powerful new thermal analysis feature in Gridnostic, designed to streamline infrared inspections and give utilities deeper, more reliable insight into asset condition.

Key Capabilities

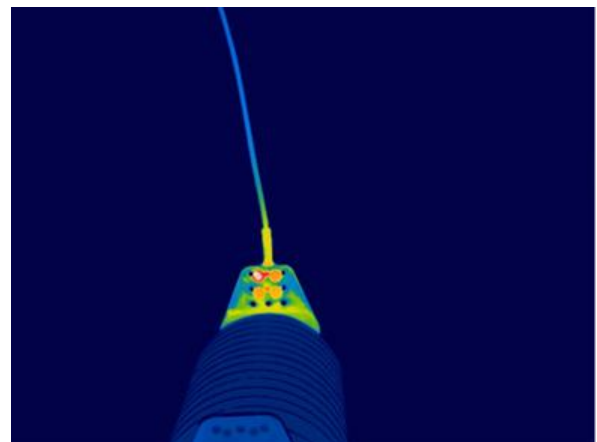
- **Radiometric Thermal File Support:** Work directly with radiometric IR files for precise temperature interpretation.
- **Adjustable Analysis Parameters:** Fine-tune color palettes, emissivity values, temperature ranges, and more - tailored to each inspection's needs.
- **Built-In Measurement Tools:** Measure temperatures across points, lines, and area boxes to identify critical hotspots quickly and consistently.
- **FLIR & DJI SDK Integration:** Seamless compatibility with leading IR technologies ensures smooth workflows across field inspections and post-processing.



- **Batch Processing for Large Inspections:** Apply uniform settings — color palette, emissivity, temperature rules — across an entire inspection or a selected inspection area for consistent reporting.



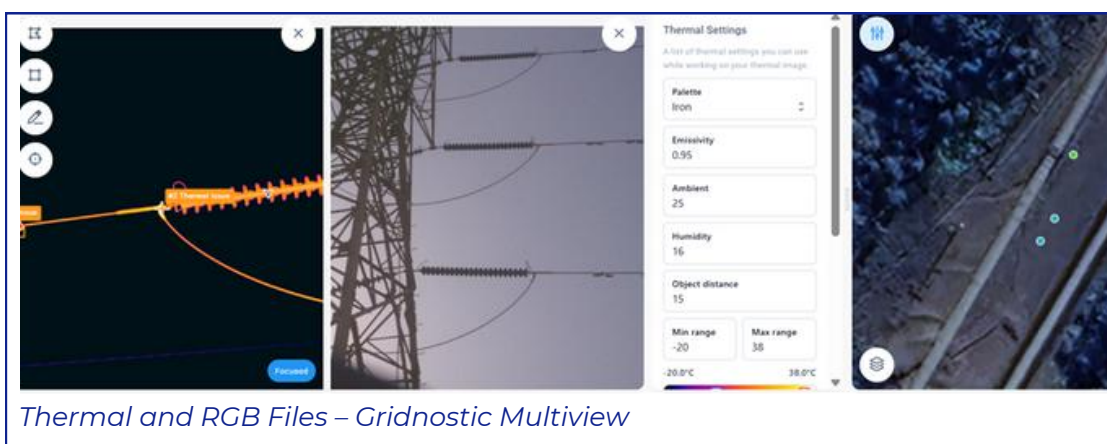
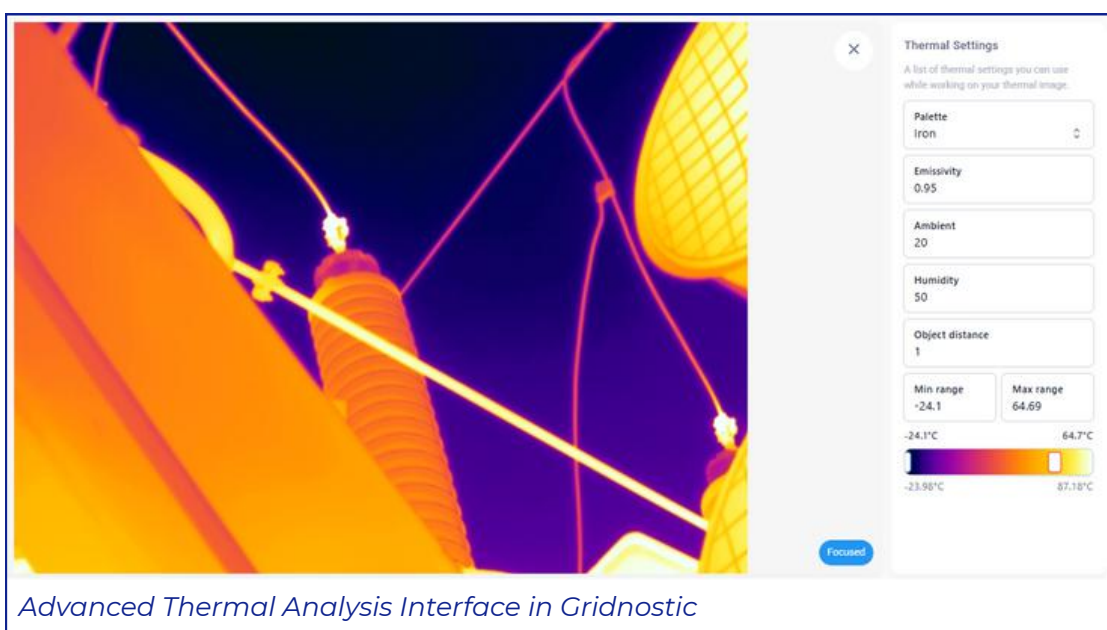
Radiometric IR Thermal Data



*Radiometric IR Thermal Data
Hotspot detected on bolt*

Why It Matters

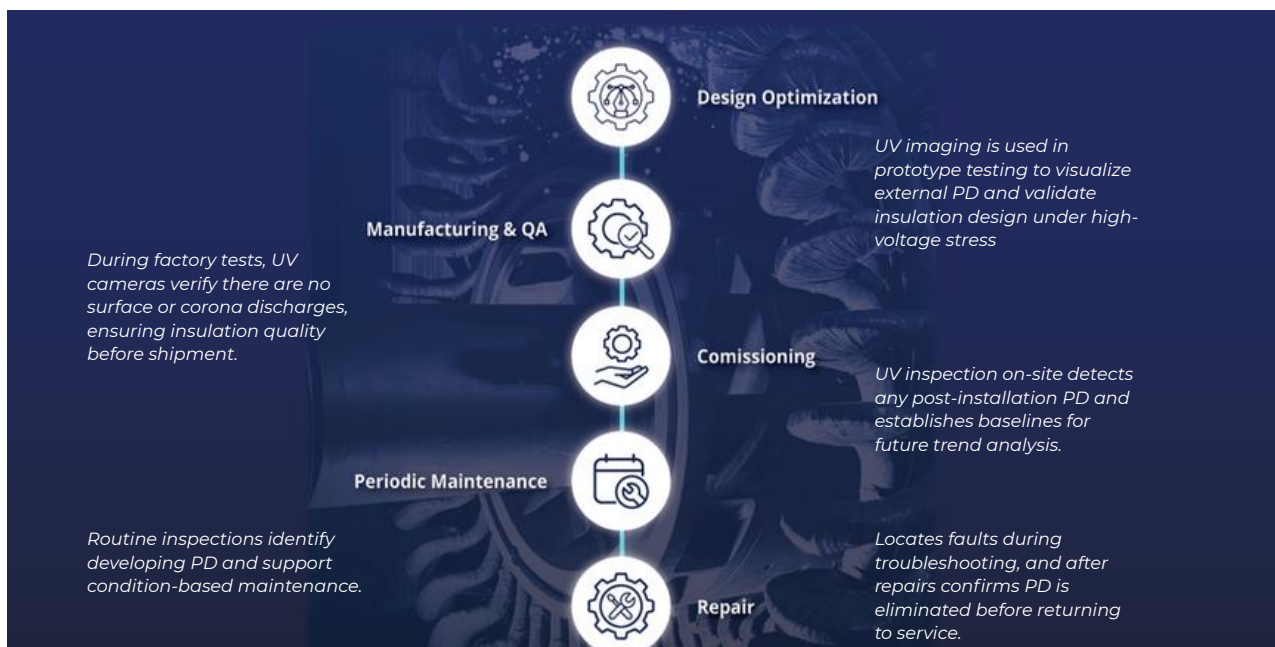
- **A SINGLE platform for ALL imaging types:** Review thermal, UV, and visual data in one environment without switching tools.
- **Higher diagnostic confidence:** Accurate temperature measurements and consistent parameter control help identify issues earlier and more reliably.
- **Faster analysis with less manual work:** Batch processing and built-in measurement tools reduce repetitive tasks and speed up reporting.
- **Consistent results across teams:** Unified settings ensure everyone works with the same parameters, improving clarity and alignment during inspections.
- **Better understanding of asset condition:** Radiometric thermal data provides insight into overheating, load imbalance, contact resistance, and other early-stage faults.



Pinpoint Partial Discharge Throughout Your Machine's Life Cycle

From the first prototype to decades of service, partial discharge (PD) can silently threaten the health of any rotating machine whether it's a low-voltage 200V EV motor, a medium-voltage 6.6 kV industrial drive, or a high-voltage 13.8 kV generator. Detecting and locating PD early is key to ensuring reliability, safety, and performance.

Solar-blind UV imaging provides an unparalleled view into this hidden world, making the invisible visible at every stage of your machine's life cycle.



1. Design Optimization: Build Reliability from the Start

During prototype and design validation, UV cameras visualize external partial discharges under high-voltage stress.

By capturing real-time corona activity and insulation weak spots, engineers can:

- Validate insulation design and material selection.
- Detect localized stress points before costly tooling or certification.
- Optimize the geometry and layout of windings, terminals, and clearances.

This early-stage visibility allows manufacturers to perfect insulation systems before the product reaches production — preventing future breakdowns.

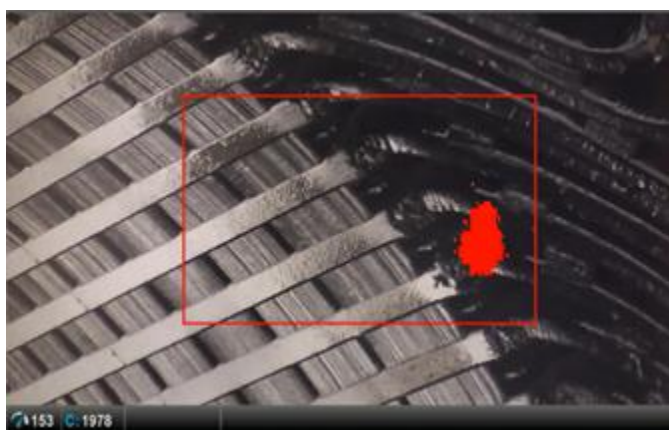
2. Manufacturing & Quality Assurance: Ship with Confidence

In manufacturing, UV imaging is often incorporated as a fast, non-contact verification step alongside standard insulation quality tests such as hipot, surge tests, Partial Discharge Inception Voltage (PDIV), Repetitive Partial Discharge Inception Voltage (RPDIV), and AC withstand testing. This additional visual layer helps confirm that no surface or corona discharges are present on completed assemblies, providing a more complete assessment of insulation integrity. By combining UV inspection with electrical tests, manufacturers can identify early-stage insulation stress or discharge activity that might not appear through other measurements.

This additional visual layer:

- Confirms insulation integrity before shipment.
- Catches issues often missed by conventional electrical tests.
- Enhances quality assurance and customer confidence.

Every PD-free machine that leaves the production line is a step toward long-term reliability and reduced warranty claims — fully aligned with best practices and standards such as **IEEE 1799 & IEEE 1434** for Partial Discharge Testing in Rotating Machines.



Example of PD detection on a stator using UV camera

3. Commissioning: Establish a Healthy Baseline

Once the machine is installed, UV inspection validates its condition during energization. Installation errors, transport damage, or contamination can all introduce weak points that lead to early PD.

Performing UV inspection during commissioning:

- Detects discharge sources before the asset enters service.
- Ensure proper installation and cleanliness.
- Establishes a baseline for future comparison and trending.

This baseline becomes an invaluable reference for maintenance teams over the life of the equipment.

4. Periodic Maintenance: Stay Ahead of Failure

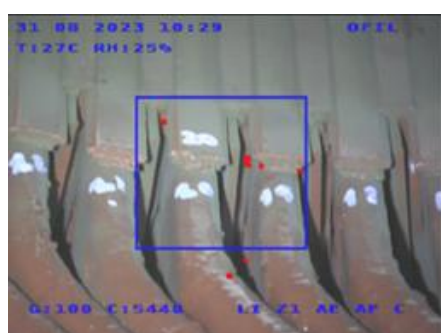
Condition-based maintenance programs rely on consistent, comparable data.

Routine UV inspections during scheduled outages help identify developing PD activity long before it becomes critical.

With periodic monitoring, operators can:

- Track PD progression and trend severity.
- Plan repairs proactively, avoiding unplanned shutdowns.
- Optimize maintenance schedules based on asset condition.

This approach is particularly beneficial in high-value assets such as industrial drives, power-plant generators where downtime carries a heavy price.



Example of PD detection on a stator during periodic maintenance

5. Repair & Refurbishment: Verify Restoration Quality

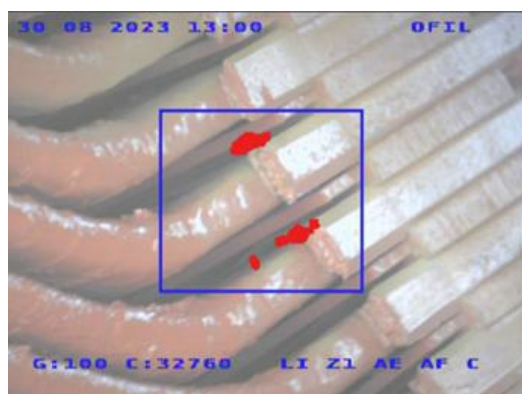
When a failure occurs, UV imaging is a powerful troubleshooting tool.

It precisely locates discharge sites, such as deteriorated end windings, defects in insulation, or contamination.

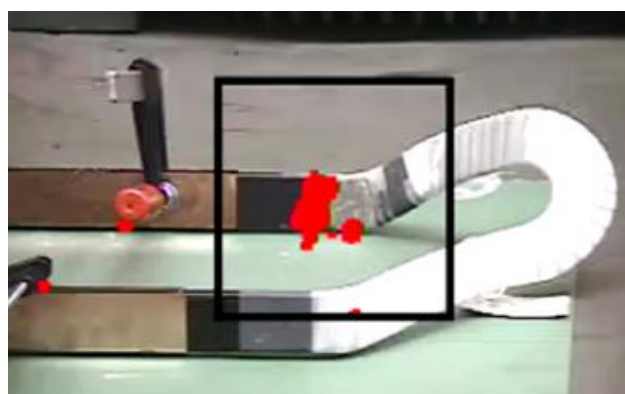
After repairs are complete, the same camera confirms that the discharge has been eliminated:

- Verifies repair effectiveness.
- Ensures PD-free operation before return to service.
- Reduces the risk of repeat failures.

The result: a validated, reliable restoration backed by visible proof.



Example of PD activity in the end winding



Example of PD activity on a single coil

A Clear View of Reliability

Whether you design, build, operate, or repair rotating machines, integrating UV inspection across the asset life cycle ensures continuous reliability.

From prototype validation to in-service maintenance, UV imaging provides the clearest path to PD-free performance - empowering your team to see what others can't and act before failures occur.

Learn how ENGIE Laborelec Using a UV camera as a tool to help assess the condition of high voltage motors and power generators



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Ofil's UV camera is a very effective way to help identify defects in a wide range of industrial situations

– Sam Piot

Expert Technician, Electrical Machines at ENGIE Laborelec

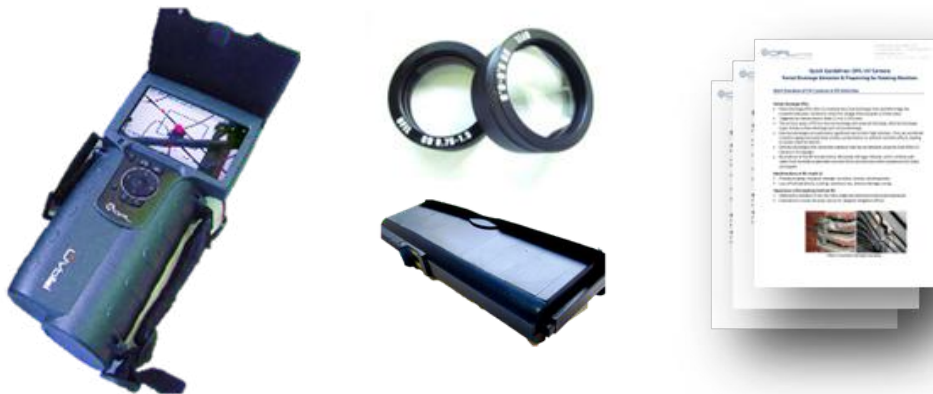
Rotating Machines PD Inspection Bundle

Unlock unmatched visibility into partial discharge activity across motors, generators, and other rotating equipment.

This all-in-one professional kit combines the DayCor® UV camera with an additional lens optimized for close-up inspections, a spare battery to ensure extended usage, and a guide filled with valuable instructions and tips for effective use.

The packages include:

- UVollé VX or UVollé SX
- 0.75m-1.5m or 0.5m-0.8m Close-up lens
- Spare battery
- Quick Guidelines: Partial Discharge Detection & Pinpointing for Rotating Machines



OFIL Systems' Quick Guidelines: OFIL UV Camera Partial Discharge Detection & Pinpointing on Rotating Machines

- Based on the IEEE1799-2022 Standard and OFIL's extensive experience with customers in the rotating machines market, we have developed a Quick Guidelines: OFIL UV Camera Partial Discharge Detection & Pinpointing on Rotating Machines document to guide the camera operators.
- The Quick Guidelines is delivered along with each camera and is a part of the onboarding process.
- **The Quick Guidelines includes:**
 - Brief Overview of UV Cameras in PD Detection
 - UV Camera Use Guidelines for Partial Discharge Inspection and Pinpointing.
 - Test Procedures According to IEEE1799:2022 Standard Recommendations.



For more information please contact: solution@ofilsystems.com

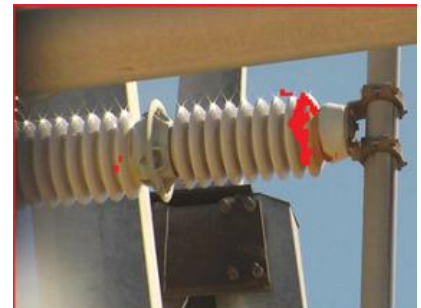
Advancing Multi-Sensor Inspection Intelligence for Power Grid Reliability

NETA: Winter 2025 Magazine

Learn how utilities can transform inspection data into a strategic asset that enhances grid reliability

In the latest NETA World Magazine, OFIL Systems examines how utilities can transform inspection data into a strategic asset for enhancing grid reliability. Written by Sheyna Reizes, Vice President of Product at OFIL, “**Advancing Multi-Sensor Inspection Intelligence for Power Grid Reliability**” highlights the industry’s shift toward standardized, multi-sensor inspection workflows and emphasizes the growing importance of IEEE-aligned data structures, cross-sensor integration, and AI-driven diagnostics.

As utilities contend with aging infrastructure, increased demand, and heightened regulatory expectations, the article provides a clear roadmap for converting UV, IR, and RGB imagery into consistent, traceable, and risk-informed insights that strengthen asset management and enable predictive maintenance.



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