Climate change and extreme weather cycles have begun to take a toll on energy and utility assets, such as high-voltage transmission lines — occasionally with catastrophic results, such as some of the most destructive wildfires in U.S. history. Asset managers in the energy and utility industry bear the responsibility for keeping thousands of miles of these transmission lines, along with other equipment, such as insulators and dampers, safe and operational.

Conventional inspection methods involve risk to technicians, such as the perils of hanging from helicopters or climbing tall towers. Although some companies are using drones to collect digital images to ease the burden, the manual processing of applying data analytics to detect defective equipment takes too long. It creates inefficiencies in time-sensitive processes, leaving utilities vulnerable.

Hitachi Image-Based Inspections replace these dangerous, expensive, and time-consuming approaches by combining the industry’s most sophisticated artificial intelligence (AI) and machine learning (ML) capabilities in one fully automated and integrated platform. With Image-Based Inspections, you can analyze defects fast, more accurately, and from a safe location, as well as allocate resources effectively and respond quickly at scale.
**Manual Asset Inspections Are Risky and Expensive — and Ineffective.**

If you’re still leaning on time-consuming manual processes to inspect and analyze your energy assets for defects, you’re exposing yourself to unnecessary risk and missing out on the transformative potential of a digital-first approach. The right tools will help you evolve past manual processes, better allocate resources to reduce cost, minimize risks and eliminate subjectivity in your strategic decisions.

**Image-Based Inspections Automate Defect Processing, Maximize Human Expertise and Generate Insights**

Hitachi Image-Based Inspections provide scalable image inferencing and processing to help asset managers classify assets, detect defects and categorize defect severity. The solution’s highly optimized human-in-the-loop capabilities enable continuous retraining of the model-based subject matter expert (SME) input for a wide range of asset classes and image quality.

Image-Based Inspections provide real-time indication of moderate and severe problems, allowing asset managers to implement a priority-based maintenance strategy to improve reliability. This approach makes planned repairs easier across the entire process, providing inherent operations and maintenance savings (proactive maintenance versus reactive maintenance).

The Image-Based inspections leverage AI to automate defect assessment, instantly preprocessing and analyzing thousands of images. Intuitive workflows give your subject matter experts a holistic view of existing and potential defects.
Streamlined Data Intake and Automated Preprocessing
Hitachi Vantara’s industry-best ML and AI capabilities help Hitachi Image-Based Inspections automate the processing of tens of thousands of digital images over thousands of line-miles — giving you instantaneous access to critical insights and actionable data in minimal time.

Detect asset defects quickly and without expensive, potentially unsafe manual processes; avoid costly downtime; and prioritize the right maintenance strategy.

Human-in-the-Loop Process
The solution’s intuitive workflow leverages human expertise by bringing SMEs into the analysis loop where they are most useful. This strategic intervention continuously retrains the solution’s world-class algorithms, making them even more effective decision-making tools.

Seamlessly tap into your institutional knowledge base to strengthen algorithms, leading to greater efficiencies, increased cost savings and richer insights.

High-Quality, Immediately Usable Images
Images captured by helicopter, ground-based and pole-based photography are limited to just a few angles and frames. Image-based inspection supports the collection of images from above, level with, and below towers, poles, crossarms, equipment and conductors from any angle.

Gain 360-degree visibility into the condition of every asset and tap AI to automate defect assessment, instantly preprocessing and analyzing thousands of images.

Unique Inferencing Environment
The inferencing environment pairs a comprehensive view of asset defects with human-in-the-loop expertise to mitigate subjectivity, provide quality-assurance safeguards, generate confidence scores for flagged defects and retrain assessment models in a self-improving system.

Increase the accuracy of defect data to triage high-priority maintenance, better allocate scarce resources and generate more confident insights.

Fully Integrated, Scalable Solution
The solution works with your existing performance management platforms to create dashboards that generate asset risk scores, predict asset failure, suggest mitigating action, and create proactive maintenance plans at reduced risk and cost.

Amplify the business value of existing technology investments, increase scale, and make a broader spectrum of system data actionable at speed.

Cloud-Agnostic Architecture
The image-based inspection solution is designed for any cloud or on-premises architecture and any provider. It’s built on Hitachi’s Lumada software-as-a-service (SaaS) foundation, allowing for better reporting, customized to your environment — all backed by Hitachi expertise.

Simple implementation catered to your environment eliminates expensive startup costs and puts actionable insights at your fingertips faster.
Hitachi Leverages a Century of Experience Supporting Energy and Utilities

For more than 110 years, Hitachi has built machinery and technology for the energy sector. We’ve engineered everything from wind and hydroelectric turbines to nuclear power plants, along with the infrastructure and software to support them. Our AI is built upon a foundation of domain expertise that no other organization can match.

Key Data Points

- Pioneering AI automates defect identification and processing, reducing asset-management and maintenance time from months to seconds.
- ML allows for smarter algorithms, increasing accuracy of assessing defects while lowering costs and risks.
- Integration with existing performance management systems and cloud-agnostic implementation fuels transformation without additional startup expense.
- Instantaneous access to insight-rich data supports better decision-making and more efficient resource allocation.

Hitachi’s experience fast-tracks your maintenance and data-management strategies to save you time and money, help protect your assets and increase safety across your utility organization.
Next Steps

Enabling efficiencies, harnessing data and maintaining an extensive asset ecosystem require a partner like Hitachi to support your organization with an integrated, automated solution that can scale as your needs change.

Learn about video intelligence solutions through Lumada Video Insights.

Explore new ways to streamline operations with workflow personnel management through Lumada Field Service Management.

Read about the disruptions affecting your industry and how Hitachi's Energy and Utilities experts can help.

Reach out today to schedule a demo with our team of experts and find out how Hitachi Image-Based Inspections can transform your asset management.

We Are Hitachi Vantara

Hitachi Vantara solves digital challenges by guiding you from what's now to what's next. Our unmatched industrial and digital capabilities benefit both business and society.