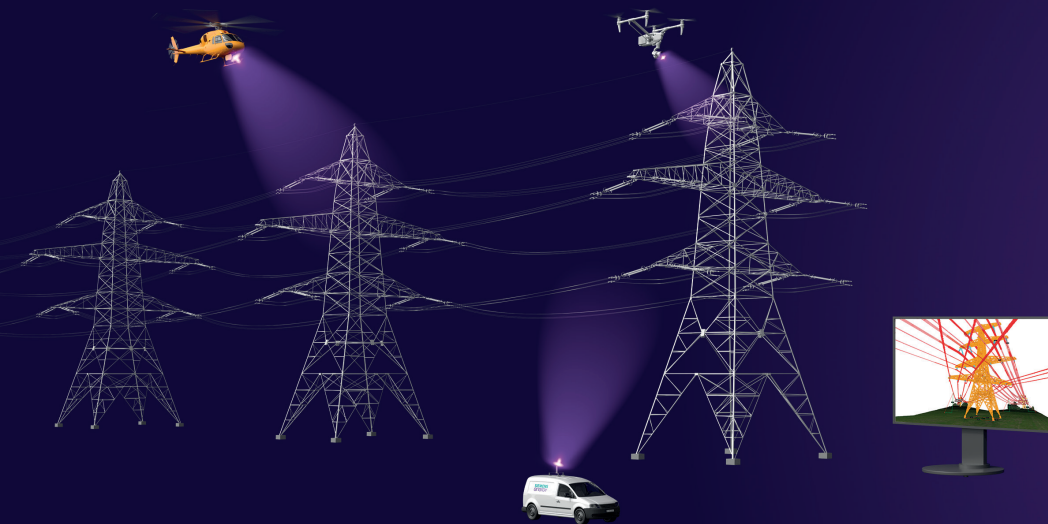




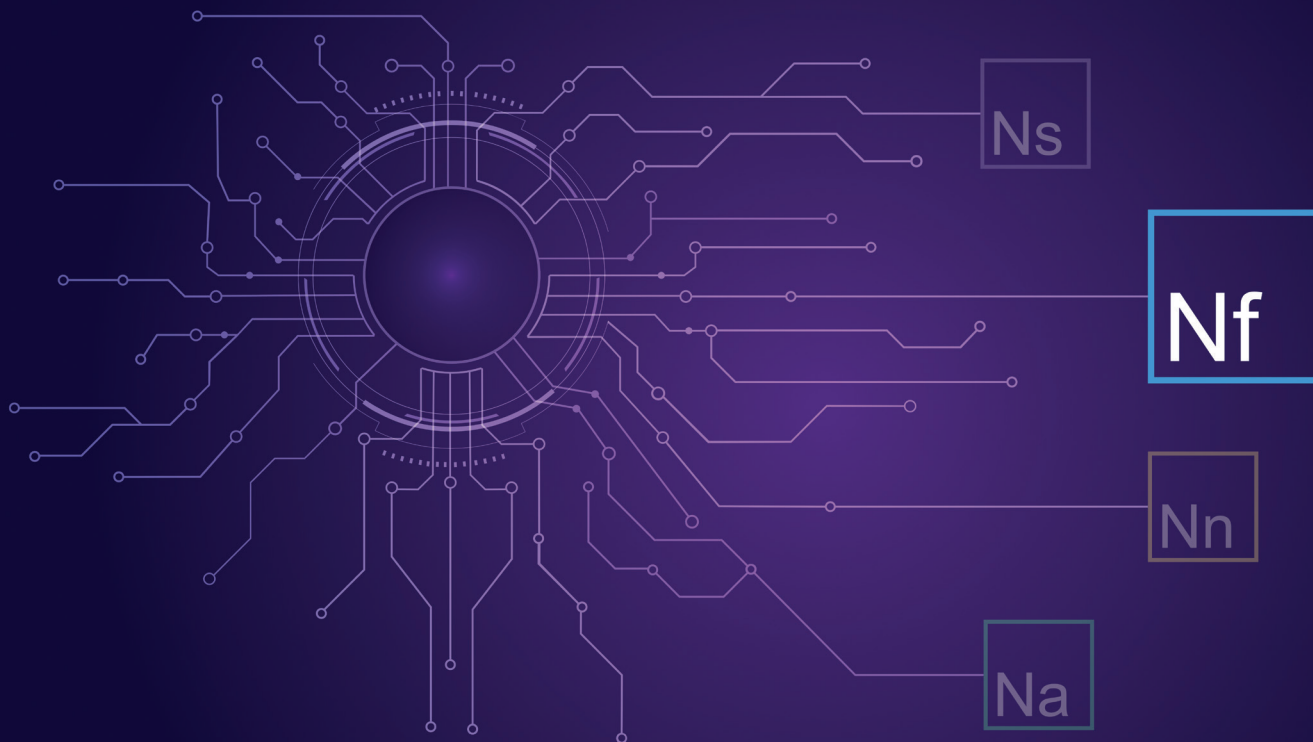
Advanced inspection

Noedra Flow suite for line digitalization

Bringing clarity, control, and confidence from above.



Noedra Flow
Line Digitalization



The Noedra framework

Noedra is Siemens Energy's digital framework - the Mind of the Grid - bringing together Grid Technologies' intelligent solutions, from sensors and control systems to software and advisory, into one connected ecosystem.

By transforming grid data into clarity, coordination, and confident action, Noedra enables operators to manage grid complexity with intelligence and control.

Each Noedra Suite expresses a specific way this intelligence acts across the grid. Together, they protect, sense, structure, and guide energy systems toward a resilient future.

Flow suite - Intelligence from above the grid

Within the Noedra ecosystem, Flow delivers intelligence from above.

The Flow suite focuses on line digitalization, enabling operators to continuously see, understand, and anticipate the condition of transmission assets – overhead and cable.

Advanced Inspection is a core capability of this intelligence - transforming traditional overhead line inspections into precise, data-driven, and predictive processes.



From visual inspection to digital asset intelligence

Transmission operators invest significant effort in identifying potential faults to ensure high reliability.

This traditionally involves regular visual inspections of overhead line components, vegetation management, and thermal hotspot detection - tasks often performed manually or via helicopter flights.

But even with high-definition cameras, results are often rough, incomplete, and difficult to compare over time, requiring extensive manual documentation.

As grids grow more complex, operators need more than periodic visual checks. They need **high-resolution data, consistent digital records, and analytics-driven insight** to identify risks early and prioritize interventions.

The Noedra Flow Suite - Advanced Inspection addresses this shift by combining aerial data acquisition, AI-based analytics, and digital modeling into a unified inspection intelligence layer.

Our solutions

Advanced inspection

Transform inspections from manual, time-consuming tasks into precise, intelligence-driven processes powered by AI.

Advanced Inspection leverages aerial and ground data, AI-based analytics, and digital modeling to deliver a comprehensive accurate, and continuously up to date view of the assets.

This unified digital inspection layer delivers actionable insights - helping operators detect risks early, prioritize maintenance, and strengthen grid reliability.



Key features

Vegetation management

Detect vegetation encroachment, simulate tree-fall scenarios, and identify obstacles within the right-of-way - such as buildings, machinery, and terrain features - enabling proactive maintenance and risk mitigation.

AI-based inventory

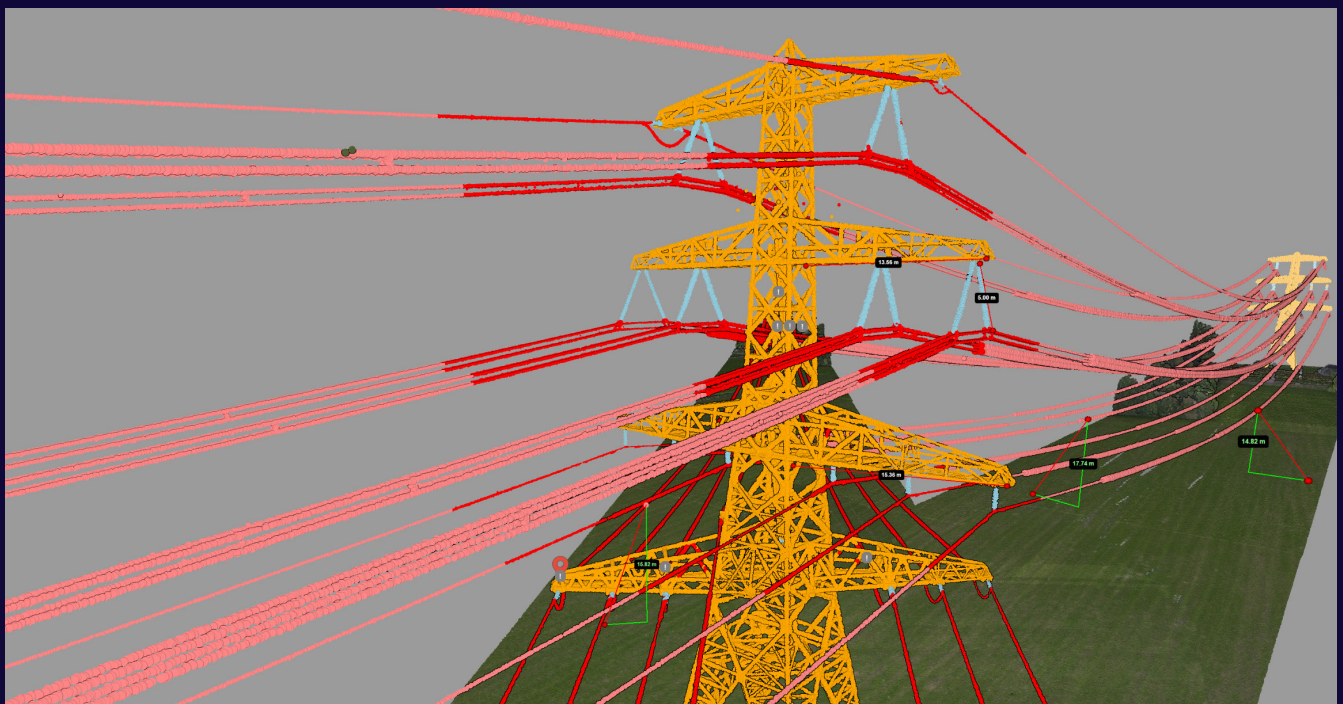
Automatic identification of overhead line components, including insulators, ID plates, joints, tension clamps, and marker balls - creating a consistent, up-to-date digital asset inventory

AI-based defect detection

Automated detection of defects affecting towers, foundations, conductors, structural elements and other critical components - supporting early intervention and improved infrastructure reliability

Surveying / right of way

Advanced GIS mapping with orthophotos (up to 4 cm GSD), digital terrain and surface models, and AI-powered LiDAR point cloud classification - delivering centimetric accuracy across X, Y, and Z coordinates.



Benefits



Comprehensive Insight

Complete, high-quality documentation of entire transmission lines and right-of-way areas enables operators to fully understand asset conditions.



Collaborative Workflows

Built-in tools let users edit, annotate, and plan maintenance activities directly within the platform.



Enhanced Safety

Reduced need for field exposure, walking in hazardous terrain, and frequent tower climbs significantly lowers EHS risks.



High-Definition Accuracy

Ultra-precise 3D localization and high-definition sensor data ensure reliable, consistent, and repeatable inspection results.



Trend Monitoring

Year-over-year comparison of subsequent flight missions supports condition trending and early identification of evolving issues.



Digitalized Access

Fast, user-friendly access to all inspection data through an interactive web interface or seamless integration into the customer's asset-management system.



Cost Efficiency

Optimized inspection workflows reduce operational costs - from data collection to reporting - while enabling broader digital use across assessment and asset-management processes.

Technical highlights

Data acquisition

High-fidelity helicopter, drone, and ground-based inspections using a multi-sensor system: Ultra-HD RGB cameras, 3D LiDAR scanner, and weather data; infrared (thermal) and UV/corona sensors. All sensors are co-mounted to ensure synchronized capture and accurate 3D localization.

Analytics

AI/deep learning models for automated inventory, visual defect detection, thermal hotspot and corona detection, vegetation clearance & tree fall simulation, and LiDAR point cloud classification -delivering centimetric GIS accuracy. Thresholds can be customised per customer.

Data processing

High definition, multi sensor data is aligned and processed in a smart analytics platform. Typical flights generate up to 100 GB per km (≈ 160 GB per mile), ensuring precise 3D localisation and consistent trending across missions.

Outputs & deliverables

An interactive web interface provides easy access to line documentation, defect findings, clearance maps, and survey products (orthophotos, digital terrain/surface models). Users can annotate findings, plan maintenance tasks, and integrate outputs into existing asset-management systems.

Reliability

Delivers comprehensive and precise inspections with consistent digital records for trend monitoring. Reduces EHS exposure by limiting climbing and helicopter hover operations, while offering cost efficient data access, reporting, and workflow integration.



Why Siemens Energy

Partnering with Siemens Energy means more than just choosing a technology provider. Our value goes far beyond technology - we bring vision, reliability, and partnership to every project.

Proven expertise:

Benefit from decades of experience in power systems and grid modernization, ensuring reliable and forward-thinking solutions.

Global reach:

Leverage our worldwide presence and deep industry knowledge to address local requirements while meeting global standards.

Tailored solution:

Our teams collaborate closely with customers to deliver solutions customized to your unique operational needs.

Trusted partnership:

Rely on Siemens Energy as your advisor, dedicated to building long-term relationships and supporting your journey toward a reliable, secure, and sustainable energy future.

Continuous innovation:

Experience ongoing support and innovation, ensuring your organization stays ahead in a rapidly evolving energy landscape.

Transform inspection into foresight.

Bring precision, intelligence, and confidence to line inspections with Noedra Flow - Advanced Inspection.

Discover Siemens Energy's digital inspection solutions for transmission lines.

Published by

Siemens Energy Global GmbH & Co. KG
Grid Technologies
Siemens Promenade 9
91058 Erlangen, Germany

For more information, please visit our website:
[siemens-energy.com](https://www.siemens-energy.com)
or contact us
E-Mail: support@siemens-energy.com
Phone: +49 911 6505 6505
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