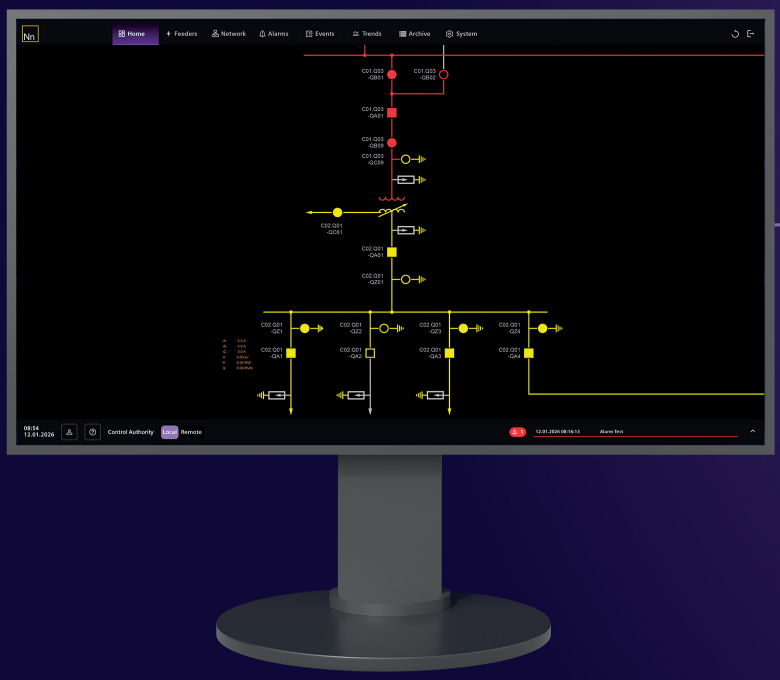
SIEMENS energy

Substation SCADA HMI

Noedra Node suite for substation digitalization

Listen to the grid's heartbeat.



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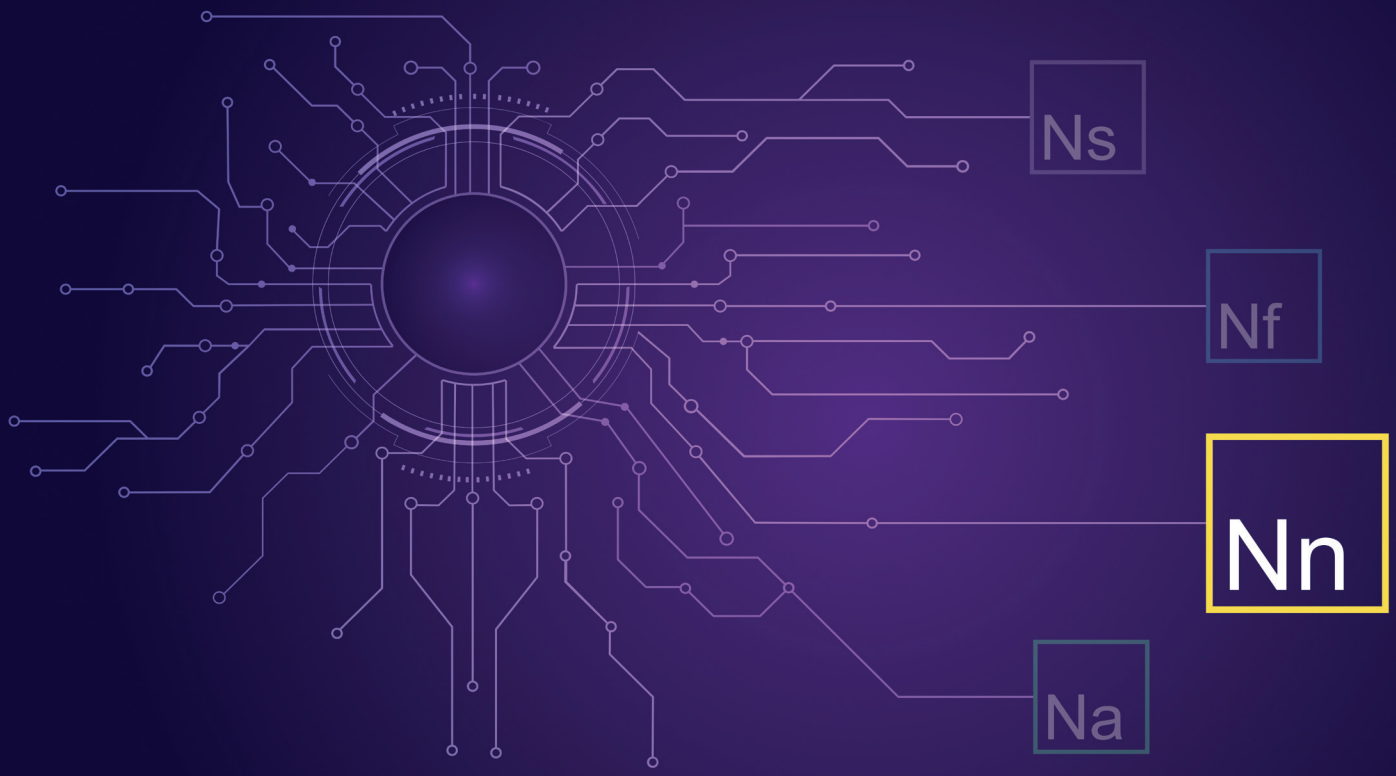
Noedra Node

Substation Digitalization



The Noedra framework

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

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

Each Noedra suite represents a specific way this intelligence acts across the grid.

Together, they protect, sense, structure, and guide energy systems toward a resilient future.

Node suite - Operational intelligence inside the substation

Within the Noedra ecosystem, Node delivers operational intelligence to the substation.

The Node suite focuses on substation digitalization, integrating sensing, analytics, protection, automation, and control into a coordinated digital layer.

Connected with the other Noedra suites, Node transforms fragmented substation environments into coherent, self-aware operational systems - enabling faster response, safer control, and confident decision-making in real time.

Simplifying control in an increasingly complex substation

Modern substations operate at the intersection of rising complexity and growing expectations.

Substation protection, automation, and control systems must manage:

- Diverse devices and protocols.
- Fragmented architecture and legacy equipment.
- Increasing cybersecurity and compliance requirements.
- The need for uninterrupted, reliable operations.

Traditional SCADA and HMI environments often add friction rather than clarity.

Overloaded alarm lists, unintuitive interfaces, and difficult integration between old and new systems can reduce situational awareness and delay response - increasing operational risk at critical moments.

As part of the Noedra Node suite, substation SCADA HMI addresses these challenges with a next-generation approach to control and monitoring - designed for usability, interoperability, and security by design.

Our offerings

Substation SCADA HMI

Siemens Energy's substation SCADA HMI delivers a comprehensive suite of features designed to advance substation automation:

- **Advanced visualization & analytics:** Real-time process visualization, alarm management, trending, analytics, and reporting, along with advanced libraries for specialized control and optimization.
- **Engineering tools:** Automation wizards, pre-configured templates, and intuitive tools simplify system configuration and commissioning.
- **Cybersecurity by design:** Incorporates robust security measures such as IEC 62443 and NERC CIP NIS2 compliance, encrypted communications, audit trails, and role-based access control.
- **Universal connectivity:** Supports over 300 protocol drivers (IEC 61850, IEC 104, DNP3, Modbus, OPC UA, and legacy protocols) enabling seamless integration with a wide range of field devices and systems.
- **Ecosystem integration:** Seamlessly connects with existing substation infrastructure, enabling a unified, future-ready digital ecosystem that supports interoperability.
- **Flexible, scalable architecture:** Accommodates deployments from small to large scale substation, with support for substation-grade, industrial, or commercial hardware. Offers deployment options for on-premises, virtualized, and cloud environments.

Benefits

With substation SCADA HMI, operators gain more than a control system - they gain clarity, confidence, and continuity.

Streamlined engineering tools and automation reduce project timelines, enabling faster system deployment and operational readiness.

High system availability (99.99% uptime) and zero data loss with seamless redundancy and automatic failover, deliver uninterrupted performance.

Universal protocol support and broad compatibility make it easy to connect new and legacy devices, unify operations, and support smooth transitions.

Built-in cybersecurity and compliance features minimize risk, safeguard critical assets, and help meet regulatory requirements.

Scalable architecture and flexible deployment options allow you to expand or adapt your system as your needs evolve, from small substations to enterprise-wide networks.

Regular updates, long-term support, and compatibility with evolving industry standards ensure your system remains up to date and valuable over time.

Scope of work

Our scope of work includes:

- **End-to-end system delivery:** Provision of the complete substation SCADA HMI platform, including all required hardware, software, and engineering services.
- **Custom engineering & configuration:** Signal mapping and seamless integration with protection relays, PLCs, meters, and legacy devices to fit your operational environment.
- **Commissioning & training:** On-site or remote commissioning support, detailed user documentation, and training sessions to ensure smooth adoption and confident operation.
- **Integration services:** Delivers expert support for integrating substation SCADA/HMI into diverse operational environments, enabling a unified, future-ready digital ecosystem for your organization.
- **Ongoing support & maintenance:** Continuous technical support, regular software updates, and lifecycle management to ensure long-term reliability and performance.

Technical details

Siemens Energy's Substation SCADA HMI is engineered to deliver robust, secure, and high-performance substation control and monitoring. Its architecture combines advanced software capabilities with industrial-grade hardware, ensuring reliability and adaptability for a wide range of deployment scenarios.

Cybersecurity & compliance

- IEC 62443 and NERC CIP NIS2 compliance
- TLS/SSL encrypted communications
- Audit trails, logging, patch management
- Multi-factor authentication, granular permissions

Platform foundation

- Powered by Zenon engine for stability and flexibility
- Linux and Windows OS with hardened security
- Modular design for customization and extension
- Advanced automation libraries

Architecture & scalability

- Layered, modular client-server architecture
- Small to large scale substation
- Redundant servers for high availability
- Load balancing for resource optimization
- Multi-project and distributed SCADA support

Deployment flexibility

- Substation-grade, industrial, COTS hardware compatibility
- On-premises, virtualized (VMware, Hyper-V), cloud deployments
- Engineering workstation and thin client support
- Tag-based and server/client licensing

Ecosystem integration

- Engineering tool integration
- Interfaces for asset management, MES/ERP, DCS, cloud
- REST API, OPC UA connectivity
- Engineering templates and libraries

Protocol & device support

- 300+ protocol drivers
- IEC 61850 (MMS, GOOSE), IEC 104, DNP3, Modbus (RTU/TCP), OPC UA
- Integration with relays, PLCs, meters, IEDs, RTUs
- Protocol conversion and gateway functions
- PRP/HSR network redundancy

Advanced functionalities

- Real-time process visualization, customizable HMI
- Alarm/event management with prioritization/ filtering
- Trending, analytics, performance dashboards
- Historian with SQL export
- Automated and scheduled reporting
- Automatic line coloring, topology checking, command sequencing
- Soft PLC/logic runtime, IEC 61131-3 support
- Role-based access control, user management

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.

Simplify control.

Strengthen confidence.

Bring operational clarity to substations with Noedra Node substation SCADA HMI.

Discover Siemens Energy’s next-generation control solutions.

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