

# eXPert Ecosystem eXPert DMS

The Essentials for efficient Remote Control of Power Distribution Networks.



*eXPert DMS is SDI's solution for the remote control of electrical networks, designed to deliver essential functionalities through an intuitive and accessible interface. Thanks to its modular and scalable architecture, it flexibly adapts to the needs of utilities, supporting operational evolution, the addition of new features, and integration with external systems.*

## Features and Capabilities

### Real-Time Monitoring

eXPert DMS provides continuous and accurate visibility over the distribution network by collecting and updating field data in real time, enabling proactive and informed management.

With the introduction of the new HMIoE interface — winner of the **iF DESIGN AWARD 2021** for excellence in interaction design in industrial environments — monitoring becomes even more efficient and secure.

Accessible via web and mobile through an encrypted connection, the interface offers **user-profile-based access control**, ensuring secure and personalized access to operational functions.

The ability to manage **multiple synoptic diagrams** simultaneously on the same screen simplifies control over different network segments, enhancing overall supervision and reducing response times.

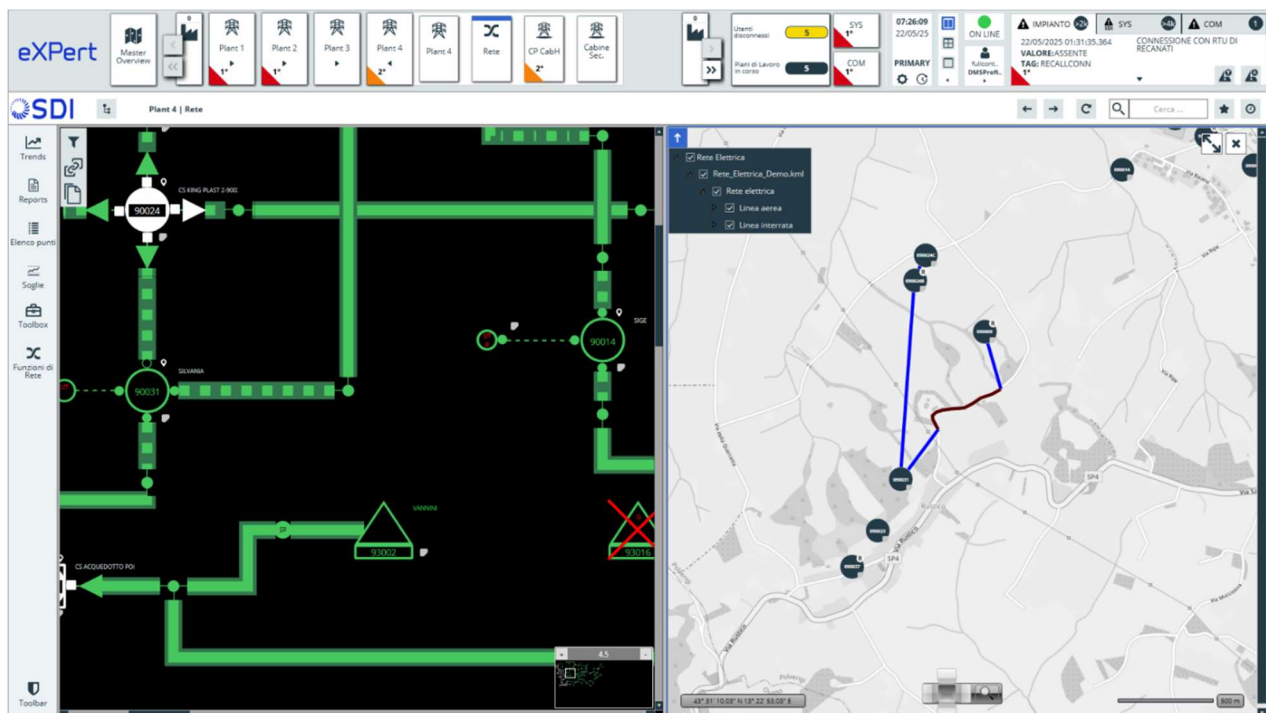
The design, attentive to **cognitive ergonomics**, lowers information overload, improves operational focus, and minimizes the risk of errors. The result is an interface designed to support **fast and well-informed decision-making**, while ensuring both operational efficiency and network security.

### Integrated Geographic View

The eXPert DMS platform natively integrates the **single-line topological representation** of the electrical network with its **geographic visualization**, thanks to interoperability with GIS systems.

Operators can analyze network status, act in real time, and plan operations with a clear, dynamic, and fully contextualized view. The switch between electrical model and geographic distribution is immediate and intuitive.

This dual perspective enhances **operational control**, shortens intervention times, and contributes to a more **efficient, informed, and secure supervision experience**.



### Advanced Alarm Management

The **alarm management system** of eXpert DMS, fully compliant with the **ISA-62682 standard**, is a key component for effective and secure alarm handling. This advanced and highly configurable functionality enables timely detection of any operational anomaly, triggering **customized notifications** that guide operators toward **rapid and targeted responses**. Thanks to the ability to **classify and prioritize alarms**, the system mitigates the risk of information overload, allowing users to focus on **critical events that require immediate attention**.

The implementation of the standard ensures that alarm management processes are **structured and consistent**, optimizing workflows and enhancing operational efficiency.

This approach not only improves operator responsiveness but also **significantly reduces network downtime**, contributing to greater **stability and reliability** of the electrical infrastructure. Moreover, the system provides **post-event analysis tools** to monitor alarm performance, identify root causes, and continuously optimize management processes, ensuring **proactive control** over network operations.

### Network Failure Search

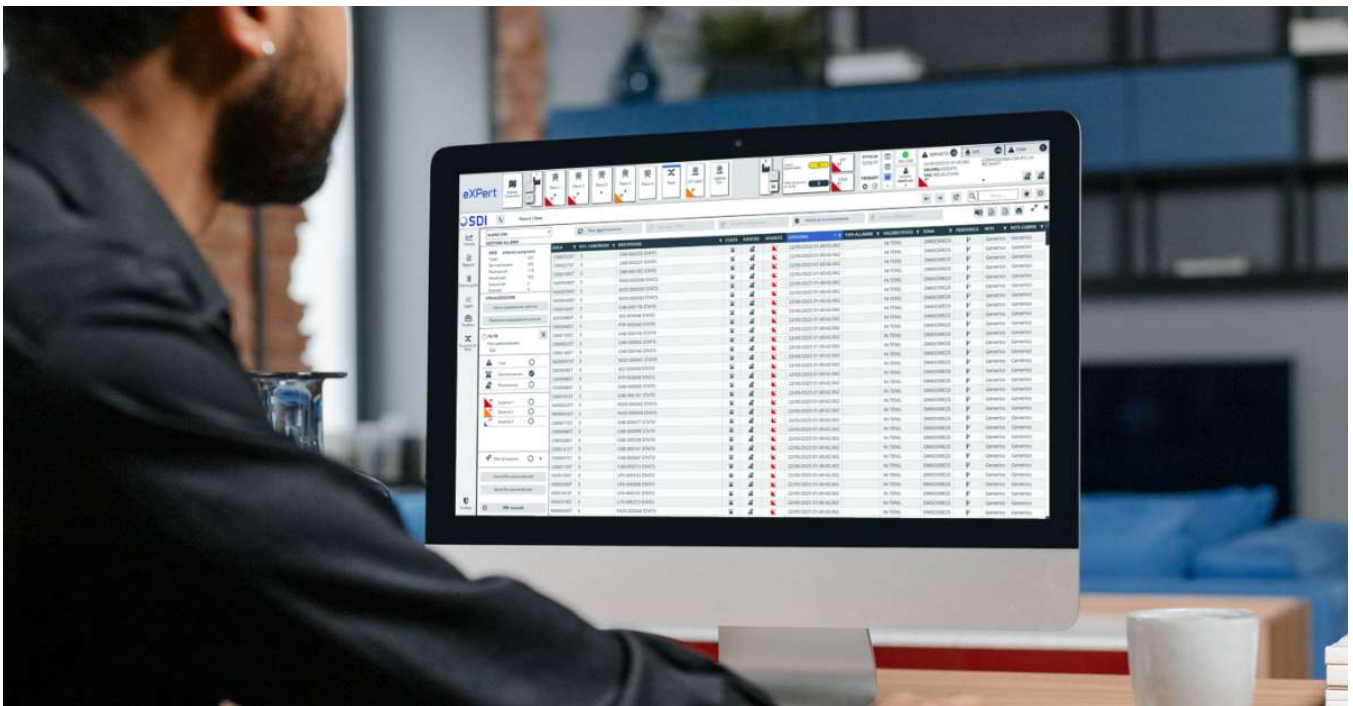
The **Network Failure Search** feature allows operators to quickly **identify the fault area** and guides both **intervention and root cause analysis** of the outage.

This process is supported by **RG fault detectors** installed in the network's peripheral equipment, which automatically report any anomalies.

When a service interruption occurs (e.g., due to the opening of a protection breaker in a primary substation), eXpert DMS dynamically animates the **network topology**, clearly highlighting the **de-energized elements**.

Through a **pop-up window** linked to the breaker, the operator can review details such as the **chronology of short circuit or ground fault events**, sorted by time, and initiate an **automatic search of the faulted section**.

This tool **significantly reduces intervention times**, improves the **overall reliability** of the network, and ensures **rapid service restoration** for end customers.



## Studio Station

The **Studio Station** of eXPert DMS is an advanced tool designed to simulate and analyze past network scenarios, offering a **dedicated testing environment** that does not interfere with the active remote-control system.

By using a **separate station** integrated with the production system, operators can **save network snapshots** and log state-change events, enabling the replication of specific configurations and the review of events in sequence.

These snapshots can be imported to simulate network evolution over time and to perform **manual edits**, which are essential for in-depth analysis and responses to critical events.

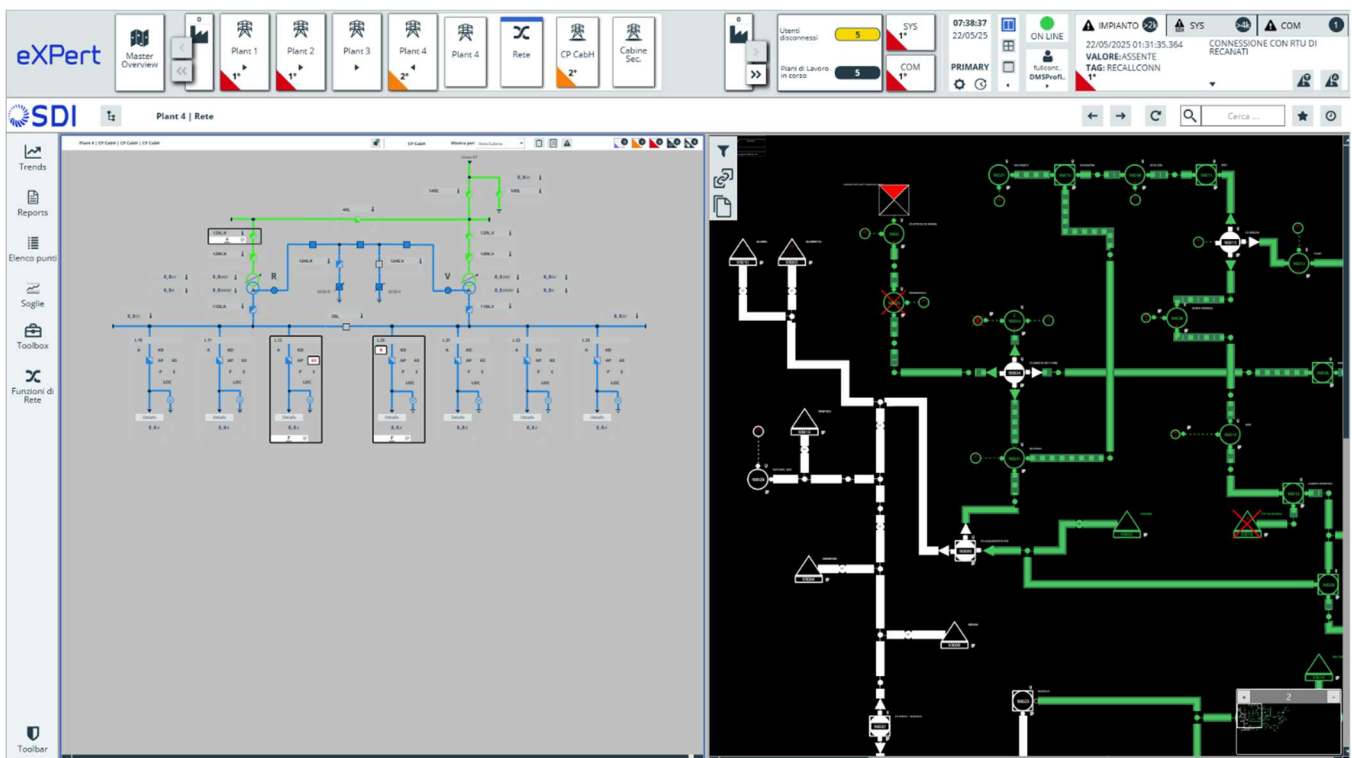
Synchronization with the active system allows the Studio Station to be **updated with the latest configuration**, supporting the creation of **accurate reports** in compliance with **ARERA regulations**. This tool is fundamental for ensuring **regulatory compliance** and **operational continuity**, improving service quality through **precise and reliable documentation**.

## Algorithm Ready

eXPert DMS is **designed for modular integration of advanced algorithms**, adapting seamlessly to evolving operational needs.

The **HMIOE interface** displays **real, estimated, fault-related, and forecasted data** in a clear and multi-layered format.

We actively collaborate in the **analysis of application requirements** and in the **integration of algorithms**, leveraging **academic-level expertise** to deliver high-performance, tailor-made solution



## Cyber Security and Data Protection



La **Security** is a **top priority** for eXPert DMS, which implements **advanced protocols** and complies with **international standards**, including **IEC 62351**, specifically designed to protect critical infrastructures from threats and unauthorized access.

With support for **IEC 60870-5-104** and **IEC 61850** protocols enhanced with the **IEC 62351 security profile**, eXPert DMS offers a **robust system for authentication and data encryption**, preventing intrusions and tampering.

This approach ensures the **confidentiality and integrity** of communications between devices and the control system, safeguarding sensitive data across the entire distribution network.

The integration of these protocols guarantees that **only authorized devices** can access network information, providing an effective defense against cyber threats and ensuring **safe and continuous operations**.



## Integration with External Systems

eXPert DMS is designed to natively interface with major external IT systems, ensuring interoperability, data consistency, and continuity in operational processes.

Integration with platforms such as IBM Maximo (for asset and maintenance management) and Terranova (for commercial and metering operations) allows for workflow automation, information synchronization, and a reduction in manual and redundant tasks.

Thanks to its support for open standards (REST APIs, SOAP, XML/CSV files) and the availability of dedicated connectors, the system also enables structured data import from **GIS systems**,

streamlining alignment between the electrical topological model and geographic representation. The modular integration approach allows progressive adaptation to the customer's digital maturity level, while ensuring traceability of interactions between application environments, in full compliance with data security and integrity policies.

## RIGEDI Procedure

eXPert DMS natively integrates the operational logic defined by the RIGEDI Procedure (Reduction of Distributed Generation during emergencies in the National Electrical System), enabling selective and automated management of power reduction for distributed generation plants connected to the network.

In situations of overgeneration or network congestion, the system can identify critical segments and execute generation curtailment according to predefined criteria, ensuring service continuity and system stability.

The operator interface allows real-time monitoring of reduction effects, visualization of active intervention profiles, and full traceability of actions taken — all in full compliance with ARERA and Terna regulations and security policies.

## PESSE Plan

Integration of the PESSE Plan (*Emergency Plan for the Security of the Electrical System*) is fully supported within eXPert DMS through native management of controlled load-shedding and a structured interface for executing the required operational measures.

The system allows for selective and traceable activation of temporary disconnections defined by the plan, in accordance with predefined priorities and exclusion rules for critical users.

This integration guarantees a high level of operational safety and business continuity, ensuring network responsiveness even in emergency scenarios and contributing to the protection of the electrical infrastructure as a national strategic asset.

## TSO Interfacing

The connection with the **TSO (Transmission System Operator)** is ensured by the **Server module** of the eXPert ecosystem, specifically designed to guarantee interoperability, reliability, and compliance with international standards.

In Italy, interfacing with **Terna** typically takes place through the **IEC 60870-5-104 protocol**. In other contexts, the system can be configured to operate with additional supported protocols such as **DNP3, OPC UA,** and other internationally adopted standards.

## Work Plan

The management of **Work Plans** is integrated into the **Portal Framework**, SDI's proprietary web-based business intelligence platform, designed to support structured, traceable, and secure operational planning.

Intervention scheduling generates Work Plans displayed directly on the network, via dedicated icons in the HMIoE interface, providing operators with a clear correlation between planned activities and affected assets.

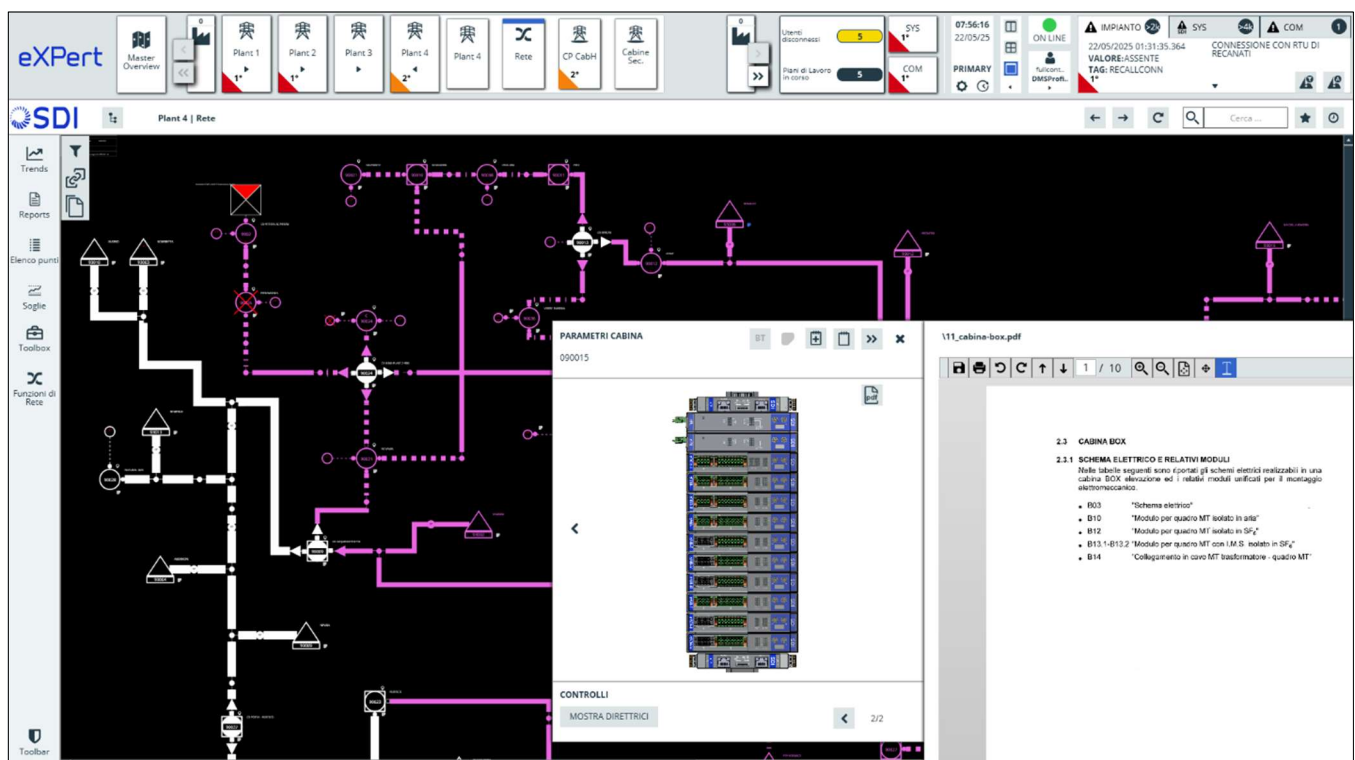
Work plans are accessed through an integrated PDF viewer, ensuring full synergy between supervision, maintenance, and operational safety, with immediate access to all technical and authorization documentation.

## Remote Alarming

The Remote Alarming function integrated in eXPert DMS ensures **continuous alarm management**, even in the absence of on-site personnel, by automatically forwarding alerts to on-call staff and enabling 24/7 operational coverage.

Thanks to zone-based configurations, intervention teams, and duty rosters, the system sends targeted notifications (**voice calls, SMS, or other channels**) based on the type and severity of the detected event. Each alert can be acknowledged directly by the on-call technician, avoiding unnecessary escalation and improving response times.

All activities are logged in a dedicated event register, ensuring full traceability of alerts and operator actions.



The screenshot displays the eXPert DMS interface. At the top, there is a navigation bar with icons for Master Overview, Plant 1, Plant 2, Plant 3, Plant 4, Rete, CP CabH, and Cabine Sic. The main area shows a network diagram with various components and connections. A window titled 'PARAMETRI CABINA' is open, displaying a table of parameters for a cabinet (ID: 090015). Another window titled '111\_cabina-box.pdf' is open, showing a PDF document with technical specifications for the cabinet. The interface includes a search bar and various control elements.

## Key Benefits

### Reliability

Thanks to its essential architecture, eXPert DMS ensures continuous and stable operation, minimizing unexpected behavior or errors linked to non-core functionalities.

The system is designed to support redundant architectures, ensuring business continuity even in the event of technical faults or outages.

This advanced configuration significantly reduces the risk of downtime, offering a highly reliable and secure system, adaptable to different deployment models and infrastructure types.

### Simplicity

eXPert DMS is built for ease of management and efficient maintenance, significantly reducing the operational burden on utilities.

Its modular structure and intuitive platform design simplify monitoring, configuration, and diagnostics, allowing operators to respond quickly and accurately, even in complex or geographically distributed networks.

With minimal need for corrective actions, high software reliability, and compatibility with both cloud and on-premise environments, eXPert DMS helps optimize internal resources and reduce long-term support and maintenance costs.



## Flexibility

eXPert DMS is built on a modular and scalable platform, allowing it to evolve in step with the needs of utilities.

Thanks to its expandable architecture, the system can easily integrate additional modules to support new functionalities, adapting to specific and evolving requirements.

This flexibility enables utilities to implement only the features they need at a given time, with the assurance of being able to enhance the system in the future—whether to handle increased loads, integrate new technologies, or meet updated regulatory requirements—without replacing existing infrastructure.

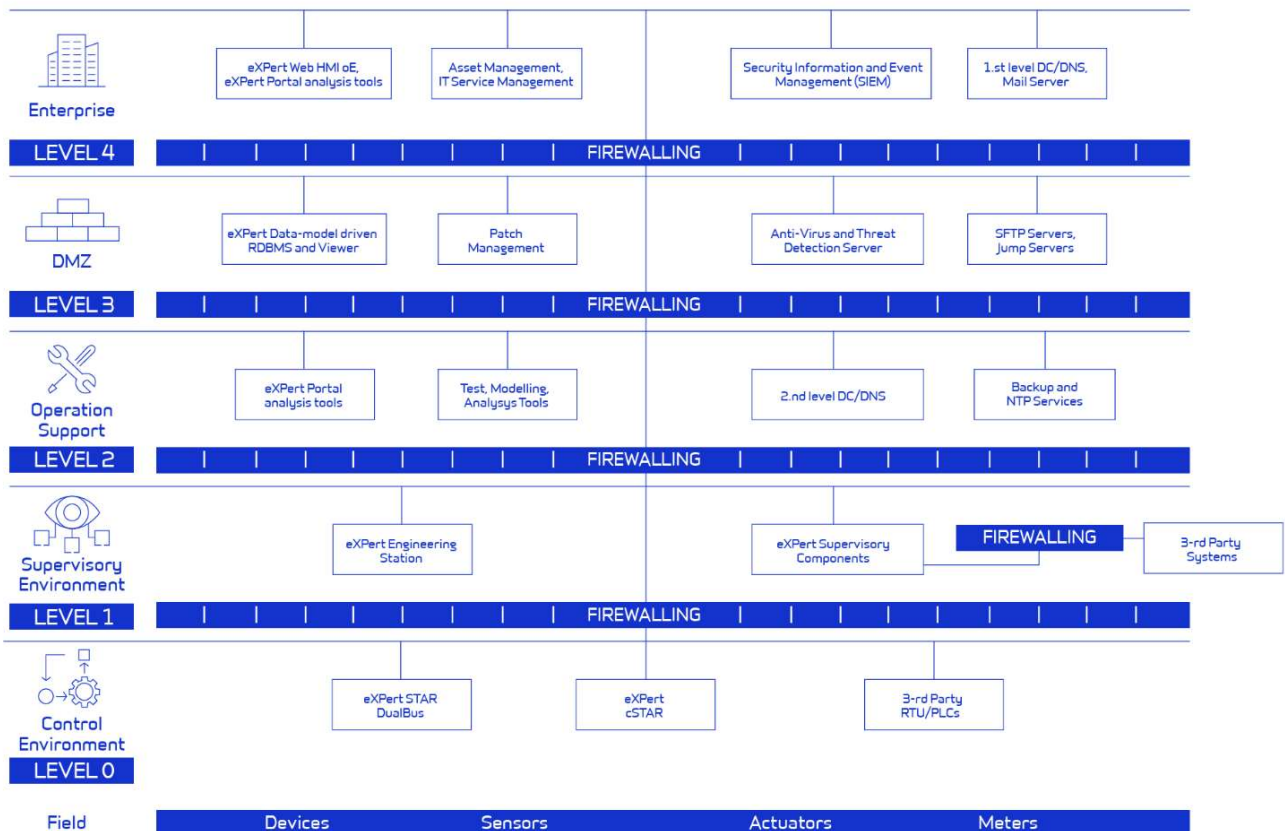
## Security

eXPert DMS offers advanced security to protect critical infrastructure against cyber threats and unauthorized access.

Through the implementation of IEC 62351 standards and support for the IEC 60870-5-104 protocol with authentication and encryption, the system ensures comprehensive protection for all network communications, preserving data confidentiality and integrity while preventing external tampering. Only authorized devices are allowed to interact with the system, reducing intrusion risks and securing sensitive information.

These advanced defenses allow for safe and continuous operation, minimizing service disruption risks.

By adhering to international standards, eXPert DMS also helps utilities maintain regulatory compliance, reinforcing the reliability and reputation of their infrastructure.

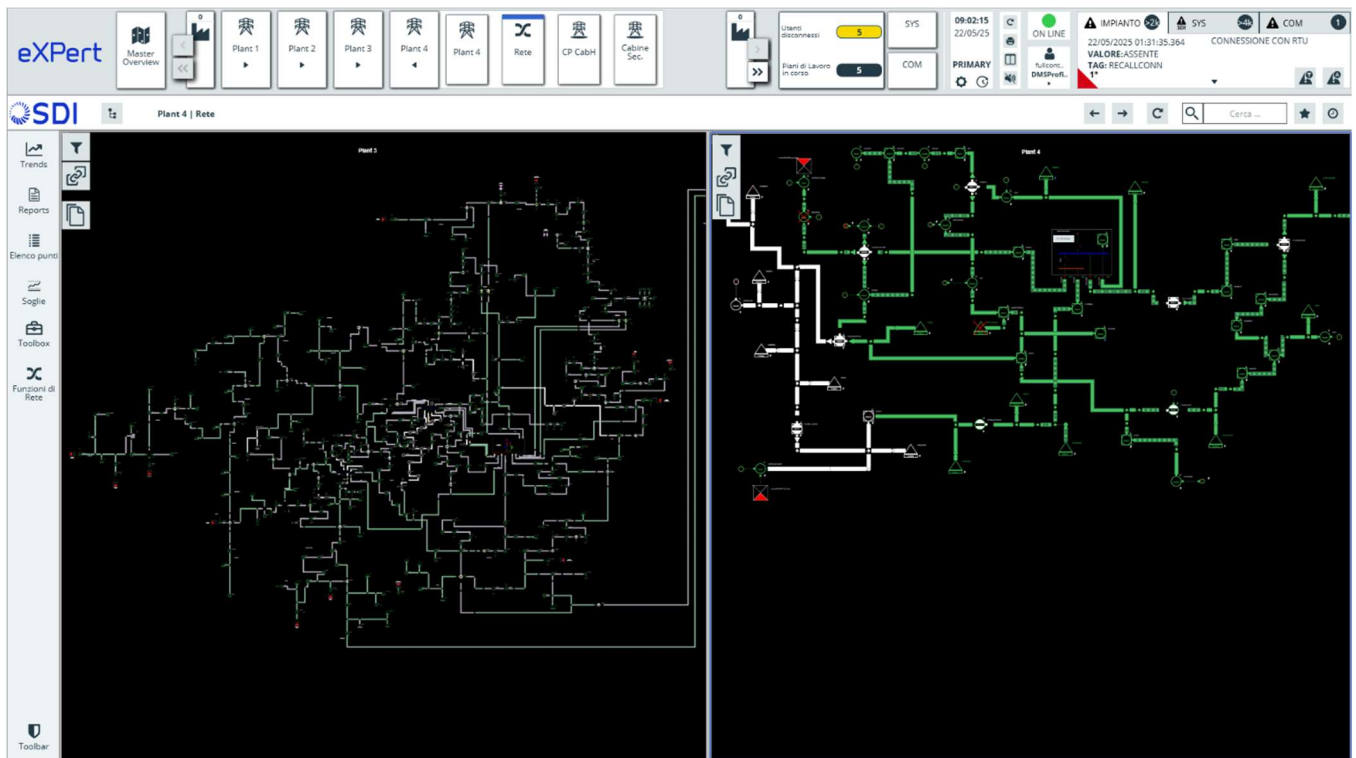


## Compatibility

Designed to seamlessly integrate with existing infrastructure, eXPert DMS supports major standard communication protocols and offers customization through the SDI proprietary platform.

This enables the addition of tailor-made functionalities based on the operational needs of each utility.

As a result, eXPert DMS is a flexible and adaptable solution, capable of optimizing workflows, improving operational continuity, and easily integrating even within complex networks.



## Complementary Services

### Turnkey Supply

SDI provides complete hardware delivery, including servers and peripheral devices, ensuring a locally configured system that gives utilities full control over data management and network security. SDI also guarantees comprehensive support, offering technical assistance and consulting services for system configuration and optimization, based on the specific requirements of each utility.

### Engineering and Configuration Services

SDI is fully equipped to provide end-to-end Engineering and Configuration services, thanks to its in-house team of highly skilled professionals and a network of specialized partners.

This structure allows SDI to manage every phase of system implementation and commissioning, ensuring optimal and customized configuration tailored to each client.

SDI's team handles all activities, from requirement analysis to system setup, software customization to hardware integration, and final commissioning. Each component is carefully configured and tested to ensure full functionality and alignment with customer expectations.

### RTU Devices

SDI offers a comprehensive range of hardware solutions for the remote control of primary and secondary substations, supporting utilities with high-quality, highly configurable devices.

Through its extensive experience and collaboration with a network of partners, SDI can provide RTUs (Remote Terminal Units) developed in-house or by selected partners, for the remote control of medium- and low-voltage substations (MV/LV).

### On-Site Installation

SDI delivers on-site installation services to ensure accurate and reliable deployment of the entire remote-control solution.

Leveraging a network of specialized partners, SDI installs RTUs for MV/LV substation control, ensuring each component is positioned and configured correctly to operate in harmony with the entire infrastructure.

This partner network includes qualified technicians with specific experience in substation automation, providing fast, secure, and high-quality service. This turnkey offering gives utilities peace of mind, ensuring professional installation that maximizes system performance and guarantees reliable and continuous network management.

### Maintenance and Support Services

With its extensive experience in the industry, SDI provides highly qualified maintenance and support services to ensure the continuous and reliable operation of remote-control systems.

SDI's structure is organized to provide technical assistance and 24/7 maintenance services, ensuring prompt and dedicated support, which is essential for critical utility operations.

The maintenance program includes both scheduled interventions and reactive support to rapidly resolve any issues, minimizing downtime and preserving operational continuity.

With specialized technicians and an efficient service request management system, SDI delivers tailored support to meet each client's needs, guaranteeing optimal performance and maximum infrastructure reliability.

## Related Products and Modules of the eXPert Ecosystem

### eXPert cSTAR

From field to control — Smart, secure, always operational

**eXPert cSTAR** is SDI's modular and rugged PLC/RTU, designed to connect field and supervisory levels even in the most critical environments. It supports both centralized and distributed control architectures, ensuring reliable operation through redundant bus and CPU with hot backup. With full protocol integration, real-time diagnostics, and robust cybersecurity measures, eXPert cSTAR guarantees **high availability** and **top performance** in the most demanding industrial contexts.



Find out more

### eXPert Alarm Inspector

Turn SCADA alarms into effective decisions

**eXPert Alarm Inspector** is SDI's web-based solution for advanced SCADA alarm management in industrial environments. Fully compliant with **IEC 62682**, it enhances alarm visibility, operator effectiveness, and overall system safety. By analyzing alarm data and providing tangible **operational KPIs**, Alarm Inspector helps reduce noise, pinpoint critical issues, and maintain full control—cycle after cycle.



Find out more

## About SDI

Since 1973, SDI has been Italy's leading company in automation, supervision, control, and remote control of highly critical industrial systems.

SDI designs, builds, and supplies complete DCS, SCADA systems and specialized equipment for major Italian players such as Eni, SNAM, and ENEL Green Power.

With over 50 years of experience, SDI offers the know-how required for the ongoing innovation and evolution of its solutions.

Flexibility and seamless integration: we deliver fully customized solutions that meet every need for control, monitoring, and remote supervision.

Proven reliability in the field: hundreds of applications in oil & gas, energy production and distribution, public utilities, water, renewables, and transport sectors.

Ongoing commitment to development: we invest daily to improve our solutions and build lasting customer relationships.

Valuable data anywhere: we deliver the right information, from any device, at any time.

For years, we have operated under a certified Management System in accordance with ISO 9001 (Quality), ISO 14001 (Environmental Management), ISO 45001 (Occupational Health and Safety), and ISO/IEC 27001 (Information Security), along with a 231 Organizational Model. The effectiveness of these systems is periodically verified by independent external bodies: DNV — one of the world's leading certification entities — for the Management System, and the Supervisory Body for compliance with the 231 Model.



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