Substation Automation System (SAS)

An end-to-end solution for protection, control, monitoring & telecommunication of modern digital substations

PROTASIS® SAS is a reliable, interoperable substation automation solution engineered in accordance with IEC 61850 and international standards

PROTASIS
engineering & consulting
with power, we perform

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CHALLENGES & MARKET NEEDS

Substations are becoming digital, multi-vendor and communication-driven

Modern substations must integrate multi-vendor devices such as protection relays, meters, PLCs, RTUs, and SCADA systems into a unified, reliable, and cybersecure data network. Operators also face growing demands for interoperability, real-time monitoring, and remote control capabilities.

Key challenges:

- Integration of multi-vendor protection relays and Intelligent Electronic Devices (IEDs)
- Managing the complexity of IEC 61850 engineering and system integration
- Ensuring reliable real-time communication between bay and station level
- Secure and seamless connectivity with SCADA, EMS, DMS and Remote Control Centers (RCC)
- Accurate sequence-of-events (SOE) recording and disturbance analysis
- Supporting future substation expansion without extensive system redesign
- Implementing robust cybersecurity measures for critical grid infrastructure
- Modernizing and retrofitting conventional substations into digital substations

THE SOLUTION

PROTASIS® SAS
Unified automation solution for digital substations

PROTASIS® SAS enhances the reliability and efficiency of power transmission and distribution through real-time monitoring and control of substation equipment. It enables fast fault detection and isolation, reducing outage duration and equipment damage.

The system is delivered fully assembled and configured to allow control & protection of all substation components.

01 | **Core Functionalities:**

- Bay Control Units for equipment status monitoring, power measurements, signals acquisition, interlocking & control procedures
- Specialized protection relays based on the specific application requirements
- Integration of all IEDs & PLCs into a unified & robust data network via IEC 61850 (GOOSE / MMS) protocol
- PLC-based general signal acquisition for MV switchgear & auxiliaries
- Station SCADA & HMI
- Remote Control Center telecommunication via IEC- 60870-5-101/104
- Time synchronization (NTP / PTP / IRIG-B) of all IEDs & PLCs for accurate sequence of events recording and post-event analysis
- Redundant communication network topologies ensuring high availability and robustness (PRP / HSR – IEC 62439)

02 | **Engineering & Standards Compliance:**

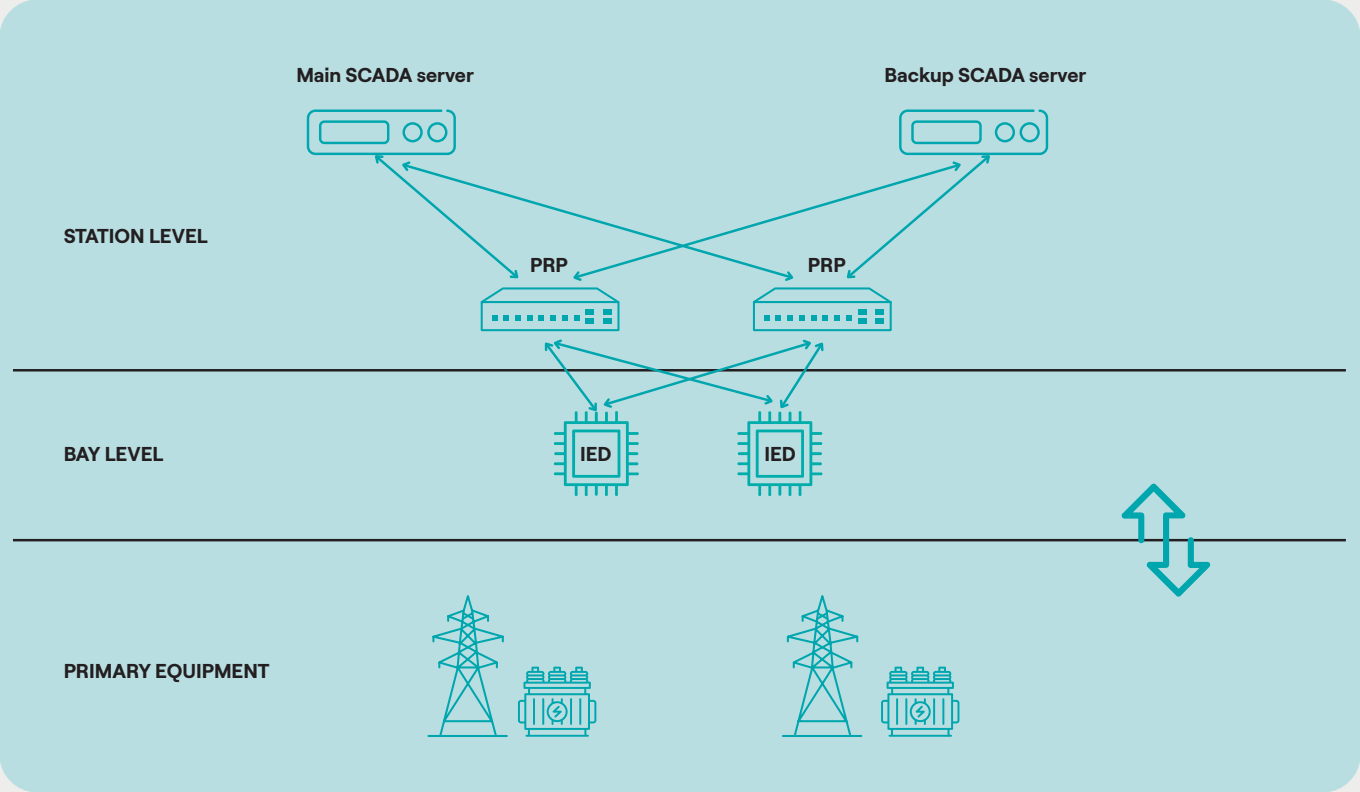
- Designed according to IEC 61850 standard
- SCL-based engineering (SSD, SCD, CID files)
- Interoperability with major relay manufacturers
- Cybersecure network architecture for substations

03 | **Partners:**

Preferred Hardware Partner

Exclusive Software Partner

PROTASIS is a gold partner of COPA-DATA



04 | **Technical Highlights:**

- Hardwired & process bus options
- Redundant servers and communication networks
- Multi-protocol support: IEC 61850, DNP3, IEC-60870-5-101/104, Modbus, OPC
- Integrated HMI with real-time visualization
- Event logs, alarms, trends, reports
- HTML5 Web Clients, remote access & notifications
- Scalable from MV to HV/EHV substations

05 | **Applications:**

- EHV / HV / MV substations
- Renewable energy substations
- Industrial substations
- Transmission & Distribution networks
- Retrofit of conventional substations to digital IEC 61850 architecture

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PRODUCT FUNCTIONALITIES & BENEFITS

Advanced control and protection intelligence for secure and high performance substations

Why choose PROTASIS® SAS?

Interoperability & Compliance
- Ensure seamless interoperability across multi-vendor substation environments
- Simplify future upgrades and extensions through an SCL-based engineering approach
- Strengthen the cybersecurity posture of critical substation infrastructure

Reliability & Availability
- Minimize downtime through fully redundant system architectures
- Maintain uninterrupted operation with high-availability SCADA platforms
- Improve fault analysis and operational awareness with precise SOE recording

Flexibility & Scalability
- Reduce engineering effort through reusable Smart Objects
- Support both new projects and modernization of existing installations
- Enable seamless integration with diverse communication protocols and systems

Advanced Monitoring & Control
- Improve operational efficiency through centralized monitoring and control
- Enable secure remote access for operators and maintenance personnel
- Support faster decision-making with real-time alarms, trends and reporting

PROTASIS, and its operations, are certified according to the latest applicable international standards, regarding the respective Management Systems

ISO 9001 : 2015 | ISO 14001 : 2015 | ISO 37001 : 2017 | ISO 45001 : 2018 | ISO 27001 : 2022

SUCCESS STORY

PROTASIS® SAS – 400 kV / 150 kV Substation for the Independent Power Transmission Operator (IPTO)

Among more than 100 successfully delivered projects, this flagship implementation features a complete Substation Automation System for a 400/150 kV air-insulated substation in the Greek transmission network, comprising 36 bays across 400 kV, 150 kV and 30 kV voltage levels.

01 | **Project Scope:**

- Multi-vendor integration of protection relays and IEDs
- Dual RTU architecture for seamless Remote Control Center connectivity
- Hot-standby SCADA servers ensuring zero data loss and high availability
- Advanced HMI system for real-time monitoring and full network visibility
- Smart Objects engineering approach enabling fast deployment and future expansion
- Full integration with transmission operational requirements and RCC protocols

02 | **Engineering Challenges:**

The system was designed to meet strict requirements for:

- High redundancy and fault tolerance
- Precise event and disturbance recording across all voltage levels
- Secure and reliable communication with control centers
- Ergonomic operator interface for real-time decision making
- Future-proof architecture for expansion and retrofit projects

"Due to the seamless redundancy of the system, IPTO's operators feel confident that they are working on a system that will not fail at critical moments. The ergonomic visualization provides all required information accurately and in an easily readable form."

Athanasios Georgopoulos,
Director of the New Transmission Projects, IPTO S.A.

03 | **Impact & Benefits:**

- Exceptional system reliability through redundant architecture and PRP-ready design
- Intuitive operator environment with advanced visualization tools
- Accelerated engineering and commissioning through reusable Smart Objects
- Scalable architecture supporting future network expansion
- Proven interoperability with transmission-level infrastructure

Take full control of your substation infrastructure with PROTASIS® SAS, delivering interoperability, reliability and intelligent automation for the digital grid era

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