SUCCESS STORY

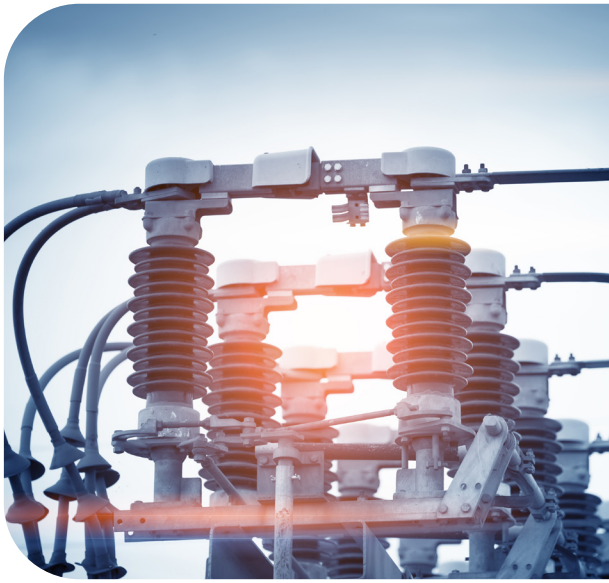
How PcVue and AMPER enabled secure dispatch communications for combined-cycle power plants supporting the energy transition

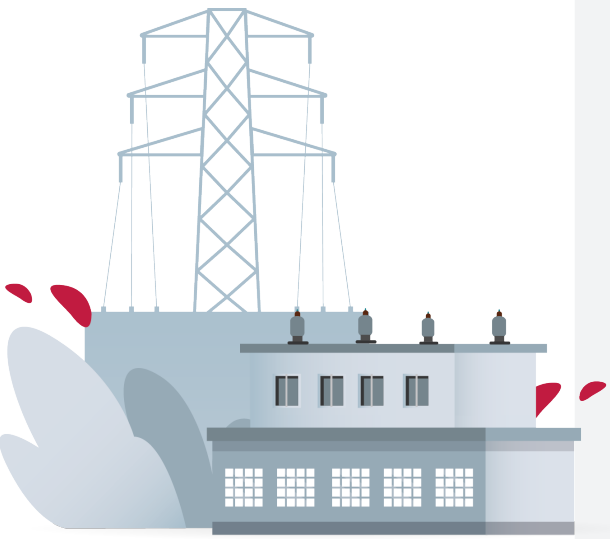
EXECUTIVE SUMMARY

As electrical grids become increasingly dependent on renewable energy sources, maintaining grid stability requires reliable and secure communication with dispatchable generation assets.

A leading combined-cycle power generation operator in Southern Europe needed to modernize its dispatch communication infrastructure to comply with new cybersecurity requirements while ensuring continuous, real-time communication with the national grid operator.

Together, AMPER Sistemas and PcVue delivered a secure and resilient communication platform that now enables reliable dispatch operations, advanced automatic generation control and continuous grid coordination.





PROJECT CONTEXT

Power generation assets play a fundamental role in maintaining grid stability by continuously exchanging operational data and responding to dispatch instructions from the national transmission system operator.

Combined-cycle gas power plants play a strategic role in today's energy mix by providing flexible generation capable of rapidly compensating for the intermittent nature of renewable energy sources such as wind and solar. Their ability to respond quickly to dispatch requests makes reliable and secure communication with the transmission system operator essential.

To continue operating under evolving cybersecurity and operational requirements, the customer needed a communication infrastructure capable of combining high availability, secure data exchange and deterministic real-time performance.

The objective was not simply to modernize communications, but to ensure secure and reliable dispatch communications for critical grid operations.

THE CHALLENGE

The existing dispatch communication infrastructure needed to evolve in order to support new operational and regulatory requirements without disrupting plant operations.

Key objectives included:

- Maintaining secure, real-time communication with the national grid operator
- Complying with updated cybersecurity requirements
- Ensuring continuous operation without a single point of failure
- Supporting secure bidirectional ICCP communications
- Preserving compatibility with existing plant control systems

WHY PcVue AND AMPER

To address these challenges, the customer selected a solution based on PcVue's secure communication capabilities and AMPER Sistemas' expertise in industrial automation and advanced control.

This combination enabled the delivery of a platform capable of meeting both cybersecurity constraints and real-time operational requirements.

The complementary expertise of PcVue and AMPER enabled the delivery of a platform that combines secure dispatch communications, advanced control capabilities and seamless integration with existing plant systems.

THE SOLUTION

PcVue was deployed as the secure communication gateway between the plant Distributed Control System (DCS) and the national grid operator, supporting the secure ICCP communication layer required by Red Eléctrica de España for dispatch communications.

The architecture provides:

- Modbus integration with plant control systems
- Native secure ICCP communication for dispatch operations
- Redundant Hot Standby architecture
- Continuous communication monitoring
- Secure bidirectional data exchange
- High availability for mission-critical operations

By consolidating these functions within a single platform, the solution simplifies system architecture while increasing operational resilience.

ADVANCED AUTOMATIC GENERATION CONTROL

A key differentiator of the project was the implementation of the Automatic Generation Control (AGC) application developed by AMPER Sistemas.

The AGC application automatically processes dispatch instructions received from the national grid operator and dynamically adjusts plant generation to match required production levels.

This enables:

- Faster response to grid demand
- Reliable dispatch compliance
- Optimized generation control
- Continuous operational stability

Rather than acting solely as a communication platform, the combined solution supports both secure data exchange and real-time operational control.

PROJECT INSIGHT

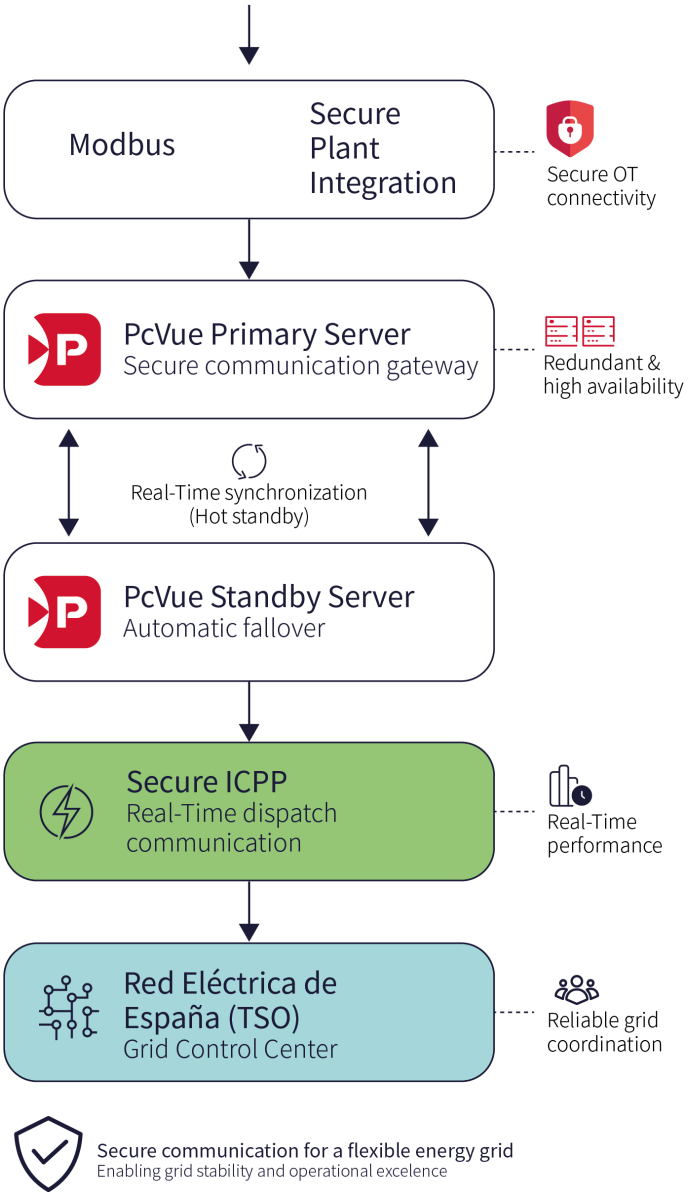
According to the project team, the deployed platform provides a secure and reliable dispatch communication infrastructure, enabling continuous compliance with grid operator requirements while simplifying long-term operations.

TECHNOLOGIES & CAPABILITIES

- Modbus
- ICCP
- Automatic Generation Control (AGC)
- Hot Standby Architecture
- Cybersecurity Compliance
- Real-Time Communication

KEY BENEFITS

- Reliable participation in national grid dispatch operations
- Full compliance with updated cybersecurity requirements
- Redundant architecture eliminating single points of failure
- Seamless integration with existing plant systems
- Deterministic automatic generation adjustment
- Increased operational resilience for critical energy infrastructure



RESULTS

> Following deployment, the customer now operates a communication platform designed to support critical dispatch operations with greater resilience and security.

STRATEGIC IMPACT

This project illustrates how modern SCADA platforms can evolve beyond traditional supervision to become secure communication hubs for critical energy infrastructure. Acting as a secure interoperability layer between plant systems and grid operators, PcVue enables reliable real-time coordination while supporting the operational requirements of modern energy networks.

By combining PcVue's communication platform with AMPER Sistemas' engineering expertise, the project delivers:

- Secure integration with national grid operations
- Advanced automatic generation control
- Infrastructure-level cybersecurity
- High operational availability
- Long-term support for energy transition objectives

ABOUT AMPER SISTEMAS

AMPER Sistemas is a technology and engineering company specializing in industrial automation, critical infrastructures and advanced control solutions.

Within this project, AMPER was responsible for system integration and the implementation of the Automatic Generation Control (AGC) application, enabling reliable real-time dispatch management.

LET'S TALK

Is your organization modernizing its dispatch communications or developing new critical energy infrastructure?

Talk to our experts to explore how PcVue and its partner ecosystem can help you design secure, real-time dispatch communication infrastructures for critical energy operations.

PcVue

ARC Informatique

arcnews@arcinfo.com
www.pcvue.com

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