



## ENEL/ENDESA, ELECTRICAL UTILITY, SPAIN

### THE CLIENT

The Enel Group (including Endesa organizations across Europe and Latin America) is made up of nearly 70,000 people from around the world whose work is based on core values of Responsibility, Innovation, Trust and Proactivity. ENEL's portfolio of power stations is highly diversified, including hydroelectric, wind, geothermal, solar, thermoelectric, nuclear and other renewable sources of power. Almost half of the energy generated by Enel is produced with zero carbon dioxide emissions, making the group one of the leading producers of clean energy.

Enel Spain required an advanced telecontrol system based on open standards to deliver a reliable communications platform that would provide connectivity for Distribution Automation across some very challenging territories both geographically and from a human perspective.

### SITUATION

Due to the variety of regulatory environments Enel operates in, the successful solution needed to operate within existing 12.5 khz frequency allocations in the VHF and UHF bands, depending on the country of use.

Due to the legacy of the deployed Distribution Automation solutions across the various Enel Distribution companies, multiple Data standards including IEC101, 103 and DNP3 were required along with open standards based, over-the-air communications. The solution also needed to be scalable from 1 or 2 sites to over 150 sites due to the varying demands of Distribution companies within the group.

The solution required efficient bandwidth management by optimizing available spectrum, maximum resilience and security assurance through authentication, encryption and message integrity controls. The SCADA systems required support for IEC-101 and IEC-104, protocols to Remote Terminal Units supporting serial RS-232 and Ethernet.



SPAIN

LOCATION



ELECTRICAL  
UTILITY

EXPERTISE

### SOLUTION OVERVIEW

- ▶ Tait DMR Tier 3 trunked network
- ▶ Tait GridLink
- ▶ Tait AES256 encryption
- ▶ Tait EnableMonitor
- ▶ Tait EnableFleet
- ▶ Future voice services (DMR / PTToc)



## RESPONSE

Tait proposed DMR Tier 3, a market-leading, open standards based 12.5kHz communications solution, which can operate in a wide range of globally applicable VHF and UHF frequencies.

For SCADA telemetry, Tait proposed its centralized GridLink SCADA gateway interfacing to SCADA master systems to provide translation and management for DNP3 and IEC protocols for transmission over DMR. The endpoints proposed were Tait TD9300 GridLink terminals providing DNP3 and IEC protocols over serial and Ethernet/IP to Remote Terminal Units.

The Tait solution enabled a single form factor and uniform management interfaces across the Distribution companies within the Enel Group, whilst accommodating legacy frequencies and Distribution systems.

## OUTCOMES

After a robust and extensive evaluation, Enel enabled their Distribution Companies in Spain Peru, Colombia, Brazil and Chile to take advantage of Tait GridLink. Deployment throughout the Enel Group has been ongoing since 2014. At the time of writing, over 10,000 GridLink terminals have been deployed supported by 300 radio sites in five countries, with an additional 5,000 GridLink terminals to be ordered.

With the implementation of the Tait DMR3 SCADA GridLink solution ENEL has achieved their targeted goal for improved grid reliability and resilience to over 99% and has improved the service quality to their customers whilst reducing operational costs through better visibility of and remote access to endpoints.

Expansion of their current data services is in progress and continues over the next two years with thousands of additional GridLink devices to be added.

The DMR tier 3 network enables the addition of voice services at marginal cost. This is planned for next year, and will further enhance the productivity and safety of field personnel, especially lone workers.

## BUSINESS BENEFITS

- ▶ Easily scalable and expandable DMR tier 3 open standard ETSI trunked network
- ▶ Maximum security utilizing AES 256 encryption with OTAP and network monitoring tools
- ▶ Remote management of the GridLink terminals.
- ▶ Extensive system monitoring tool for managing system load and traffic parameters
- ▶ Transparent support of SCADA communications standards: DNP3 over TCP/IP and serial, IEC60870-5-101 and 104
- ▶ Expansion to voice services over the DMR Tier 3 system
- ▶ Tait Support Services providing remote analysis, diagnostics and remediation services
- ▶ Improved grid reliability
- ▶ Faster response times
- ▶ Greater service uptime
- ▶ Improved customer satisfaction
- ▶ Coordination in storm situations