



System Description

Owner: ENEL Production

Plant Name: Pietrafitta Nuova

Product Type: DeltaV + Foundation Fieldbus technology

A/E Firm: ENELPOWER (EPC Contractor)

Unit No. 1 & 2

Unit size (MW): 360 MW : 1 SIEMENS Gas Turbine (260 MW) – 2 ANSALDO Steam turbine (70 MW each) – HRSG (ANSALDO)

Location: Pietrafitta, Umbria, Italy

Boiler/Plant Type: Combined Cycle

Application: HRSG and Balance of Plant (BOP), Siemens TelepermXP and ABB INFI interfaces + Remote control of 5 existing gas turbines.

Contract Initiation: September 01

Ship Date: March 02

Operational Date: October 02

Major System Components:

- 1 Redundant ETHERNET Network
- 15 Redundant Controllers
- 7 Operator/Historian Workstation
- 2 Application Workstation
- 1 Engineer/Professional Plus Workstation
- 14 Serial Interface links: RS232, Modbus and ETHERNET/OPC

Distributed Control System I/O Point Count:

- 4500 Total I/O points hardwired
- 1200 Datalinked points



ENEL Production

Pietrafitta Nuova Power Plant Located in Umbria, Italy

The Pietrafitta Nuova Power Plant is a critical win for Emerson Process Management Power & Water Solutions (Emerson). Located in central Italy in the province of Umbria, this new, 370-megawatt combined cycle plant marks a number of firsts. This project will be the first application of this new technology in a power plant of this size. It's also Emerson's first power project in Italy, as well as Emerson's first fieldbus-based installation in Europe.

Pietrafitta has been designed with an interesting combination of one gas turbine and two steam turbines. Using fieldbus technology, the configuration of the plant allows it to operate when one of the two steam turbines is not operating. Due to the many benefits that fieldbus technology provides, ENEL Production chose to apply this technology to all of its new combined cycle plants.

Since all of ENEL's new plants would use fieldbus, it made sense to update the Instrumentation & Control (I&C) of all their existing plants. ENEL employed Emerson Process Management to install a DeltaV control system. Along with Ovation® and WDPF®, DeltaV® is the third distributed control system sold within Emerson's Process Management family of companies. Using DeltaV allowed Emerson to provide ENELPOWER, the EPC contractor, a "turn-key" supply consisting in:

- DCS
- ESD system (interfaced via OPC)
- Site activities (supervision to installation, commissioning, and start up)
- Control room

- Foundation Fieldbus field instruments (170 Pressure transmitters and 40 DVC controllers)

ENEL opted to develop new serial connections wherever possible using serial interface links. Ethernet/OPC links were used with the following hardware:

- Gas turbine with TelepermXP protocol
- Steam turbine (EHC)
- TV Electrical Protection
- TG Electrical Protection
- ESD system
- Gas station

Along with Ethernet/OPC, Emerson used MODBUS and RS 232 technology. The project also had a requirement for the use of a WEB Server for interface to all the DeltaV graphics.

Project Implementation

One of the reasons ENEL chose Emerson was our detailed, specific project implementation plan. With every installation, a Project Manager oversees the entire project, while Project Leader coordinates the entire process, keeping lines of communication open between Emerson and Pietrafitta. Pietrafitta also liked the fact that Emerson uses local subcontractors as much as possible with every project. Throughout the Pietrafitta project, all the engineering will be performed in Italy using local engineers.

While this is the first time Emerson and ENEL have worked together on a project in Italy, it wasn't ENEL's first experience using DeltaV technology. Fisher-Rosemount, a sister company within Emerson Process Management, used Emerson's Fieldbus technology to automate the Fusina Power Plant, located in Italy. The DeltaV system at Fusina used Foundation Fieldbus instruments and AMS software for control of the demineralization plant.

Due to the unique benefits of Fieldbus technology, ENEL expects to reduce installation and commissioning costs with improved benefits in the Plant Management and Maintenance activities.