Success Story

Reliable Data Acquisition with FA-M3V Ensures Safe and Steady Operations at Geothermal Power Plant

YOKOGAWA
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Aboitiz Power Corporation

Location: Makban Geothermal Facility, Laguna, Philippines
Order date: October 2012
Completion: April 2013
Industry: Renewable Energy

AboitizPower
A Better Future

Executive Summary

Aboitiz Power Corporation is a holding company that was set up by the Aboitiz Group to oversee its investments in power generation, distribution, retail, and services. The company owns and operates several hydroelectric and geothermal power plants as well as a number of non-renewable power facilities throughout the Philippines. It also owns distribution utilities that are centered in high-growth areas in Luzon, Visayas, and Mindanao.

Aboitiz Power envisions the harnessing of an array of renewable energy sources that have a lighter impact on the environment, and has established Cleanergy as the brand for its consumer power business. To carry out that vision, the company aims to leverage its expertise in fields such as hydroelectric, geothermal, wind and solar power.

Aboitiz Power Renewables Inc., a subsidiary of Aboitiz Power has two operating fields. The geothermal power generating complex in Makban has four 63 MW units at plants A and B, two 57 MW units at plant C, and four 20 MW units at plants D and E.

As the data acquisition systems (DAS) in units 7 and 8 at plant D were approaching their end of life and spare parts were increasingly expensive/difficult to procure, Aboitiz Power decided to replace its legacy PLCs with Yokogawa FA-M3V controllers.

Steam turbine

The Challenges and the Solutions

1. Safe and steady operation

With the legacy single loop/panel controllers for each of the steam turbine and generator sets at plant D, operators needed to monitor nearly 400 I/O points including the turbine inlet steam pressure, turbine oil tank level, lube oil temperature, vibration, rotor position, differential expansion, eccentricity, turbine speed, voltage, current, power, frequency and so on.

The replacement of these controllers with the FA-M3V has made it possible for operators to receive both analog and contact signals for the entire range of I/O at this plant. Operators can clearly see how the steam turbines are working 24/7 and have all the information needed to take prompt action whenever intervention is required.

2. Easy engineering and installation

Many different types of input signals can be monitored with the FA-M3V DAS. The FA-M3V configuration tool can run on a standard PC, allowing maintenance engineers to easily configure all inputs and adjust set points and parameters wherever and whenever – even during factory acceptance testing (FAT). This reduces the total engineering time and improves work efficiency.

As the FA-M3V I/O modules and CPU unit are very compact, the existing cabinet could be reused, without modification. Input/output signal cables are much easier to connect and are all neatly arranged inside the cabinet, making the system much easier to maintain.

Legacy system

Replacement: Yokogawa's FA-M3V

Customer Satisfaction

Januario Maralit, the Facility Manager at the Makban complex, said, “We are very much satisfied with Yokogawa’s FA-M3V system. Its high reliability ensures safe and steady operation. All process data for the steam turbines are clearly visualized for optimum operation, allowing us to generate reliably and efficiently for the national grid. This also enables us to plan better for our performance based maintenance requirements. We have future plans to continue the replacement of our legacy systems with the highly reliable FA-M3V system.”

System Delivered

Number of I/O	364
Network Infrastructure	Ethernet TCP/IP
Field Equipment	Existing sensors/transmitters/switches for pressure. Level, temperature(TC/RTD), vibration, position, expansion, eccentricity, speed, voltage, current, power and frequency
Hardware Supply	Base module: 1x F3BU13-N, 1x F3BU16-ON Power supply: 2x F3PU35-OS Sequence CPU with Network: 2x F3SP71-4S Contact input module: 4x F3XD64-3F/K2, 1x F3XD32 Analog input module: 9x F3AD08-4V Temp. monitoring module: 6x F3CX04-ON FA-BUS2 module: 2x F3LR02-ON Programming tool cable: 1x KM13-15 Blank module: 6x F3BL00-ON Connector: 9x TA50-ON, 9x KM55-010 Fiber optic cable for FABus: 1x KM60-001 1xPC
Software Supply	1x Widefield 3, SF630-MCW 1x Toolbox, SF661-MCW
SCADA/HMI	EQVue HMI/SCADA package, module HMI-1000-CPT
New Job/Replacement	Replacement of Shimadzu PLC

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