



Overview

Country or Region: Indonesia

Industry: Power

Customer Profile

PLN (Perusahaan Listrik Negara) is an Indonesian Government-owned corporation operates in electricity generation, transmission and distribution in Indonesia. It is Indonesia's second-largest state company by assets with installation base of 48 GW, having plan to ramp up the the electrification of Indonesia from the current 67 percent to 100 percent in the next decade.

Power Generation Company adopts advanced controls from L&T-C&A for Critical DG-Set Operation



Need

The demand for electricity has been increasing in Indonesia due to flourishing economic and population growth. With this growth demand for electricity, putting a strain on existing supply and the production capacity of the power sector. On the other hand existing power production and distribution systems are conventional and demands modern technologies for efficient power generation and distribution system.

In Indonesia, power generations sectors is dominated by PLN which controls around 77% of power generating assets. It operates over 5000 power plants in Indonesia out of which over 4500 plants are diesel plants. To meet the country growing need of power PLN decided to setup a Heavy Fuel Oil based power plant with 120 MW capacity at Belawan, Indonesia on a IPP basis (Independend Power Producer). The objective of the project was to increase generating capacities in order to

- Improve the reliability of the supply

- Increase the number of electrified households
- Replace uneconomic captive power

Solution

Control & Automation Business Unit bagged an order from PT. Jasuma Austindo, an EPC company of Power Generation Projects (renewable and non-renewable) in Indonesia; to supply the Control systems to operate the 120 MW Heavy Fuel Oil based power generation Plant. The scope included design, engineering, supply of integrated Control system and Power system with a centralised SCADA system to control and monitor the 12 DG sets operation. The project goal was to have a common control system for main plant and auxiliary system while ensuring safe and efficient operation.

The plant comprised of 12 DG sets, out of which 8 sets were sourced from an existing plant in China and 4 sets were newly added along with their control systems. The existing 8 DG sets required new Engine control system along with Common control system for all 12 sets.

About Us

L&T Control & Automation (C&A) is a Strategic Business Unit of L&T Electrical & Automation. It is a part of Larsen & Toubro – the multi-billion India-based conglomerate. L&T's C&A business is market leader in delivering integrated electrical & automation solutions in India and overseas. With over three decades of experience in diverse industry segments, C&A delivers value through comprehensive solutions based on varied technology platforms and incorporates the benefits of its wide-ranging experience. L&T's state-of-the-art Electrical & Automation Campus at Navi Mumbai in India has the latest testing and manufacturing equipment. It incorporates a modular manufacturing unit, an application software laboratory and a fully networked office for engineering and project management.

LARSEN & TOUBRO
Control & Automation
Electrical & Automation Campus,
Shil Mahape Road, Navi Mumbai, India.
Tel : 91-22-67226300
E-Mail: CNA-marcomm@LnTEBG.com
Web Site: www.LnTEBG.com

Our Integrated Electrical & Automation Solutions:

Minerals & Metals

Cement, Mining, Ferrous & Non-Ferrous

- Cement Plant E&I
- Iron & Steel making E&I
- E&I for Bulk Material Handling
- E&I for Ports

Oil & Gas

Upstream, Midstream and Downstream

- Integrated Process Control
- Pipeline SCADA
- Emergency Shutdown and Fire & Gas
- Terminal Automation & Tank Farm

Power

Generation, Transmission and Distribution

- Integrated controls for Boilers and Turbines
- Station C&I
- E, C&I for CHP, AHP, WTP
- E&I for Solar Plants
- Smart Grid

Infrastructure

Highways, Ports and Metro Railways

- Highway Traffic Management
- Metro Rail BMS & AFC
- Airport Baggage Handling
- Power Management
- Smart City & ITS

Buildings

Hotels, Hospitals, Factories, Malls, Data Centres

- Substation
- MV / LV Power Distribution System
- ELV / CCTV / Fire Detection & Alarm Systems (FDAS) with suppression solution
- Access Control
- Lighting Control

The scope of supply included all the electrical and control equipments – from the electrical balance of plant to the substation. This involved detail layout engineering pertaining to electrical equipments, cable trays, lighting fixtures & earthing & lightning protection system based on the layout & the GA drawings of the various plant structures, i.e. Electrical control room, Engine hall, Tankfarm area, Pump House and Cooling Radiators.

L&T- C&A supplied Engine Control System comprises of set of four panels for each of the 8 DG sets.

The Engine Main Control system is designed to control and monitor engine related auxiliaries, MCC Panels and other critical equipments such as Automatic voltage Regulator and speed governor. Essential control panels such as GCP (Gen-set Control Panel), ECP (Engine Control Panel), EAP-I (Engine Auxiliary Panel-Interface) and ERP-I (Engine Radiator Panel-Interface) were integrated into main control system to achieve load management and synchronized operations.

The Common Control System supplied to control and supervise the plant related (not gen-set related) equipments and also to realize the protection and synchronization of the step-up transformers and the station transformers, the medium voltage bus couplers and the outgoing feeders. It comprises of 5 panels viz. CCP (Common Control Panel), CAPP-I (Common Auxiliary Pumphouse Panel-Interface), CAPP-E (Common Auxiliary Pumphouse Panel-Extension) CAP-I (Common Auxiliary Panel-Interface), CATP (Common Auxiliary Tankfarm Panel)

In addition, L&T-C&A also supplied a SCADA system to improve plant efficiency and reliability through the automation, integration and optimization of the entire plant. The system handles around 7000 I/Os i.e. some 700 I/Os for each unit and 1500 I/Os for the common control system, including remote I/Os for auxiliary and other plant components.

The solution seamlessly integrates all plant devices and systems, and enables the IPP

“ We appreciate L&T's support in consulting and engineering for Control System solution based on Siemens Platform. L&T engineers partnered with us to speed up this process with complete dedication and involvement. L&T's remarkable contribution instilled confidence in us to outsource design and engineering services. We recognize their contribution to our project success and look forward to strengthen our relationship with them further.”

***- David Kaesmacher
Specialist Control System,
Jasuma Austindo***

to operate the plant at maximum efficiency – and to reduce the plant's emissions. It also helps operators in taking faster and better decisions. It offers operational advantages by integrating automation functionalities like load balancing, load synchronization, automatic meter reading to facilitate effective plant management.

Conclusion:

The IPP team and the final customer PLN was impressed with L&T-C&A's engineered solution. The tight time schedule was met and the project was completed without any major challenges.

- Cost effective engineered solution minimises the investment
- Flexible control of plant systems helps in easy management and maintenance
- Easier management and maintenance of systems by plant engineers through standardized controls
- A scalable control solution for a rapidly growing business