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Prime Power

Case History

Otta, Ogun State, Nigeria

Where:

Tower Power Utility Ltd (TPUL)
of The Tower Group
Otta, Ogun State, Nigeria

What:

Five C1750 N5C Cummins Power
Generation natural gas generator sets
rated at 2,200 kVA (1.75 MW) generating
11,000 kVA (8.75 MW) of prime power

Purpose:

Design, install, manufacture, test, commission and provide technical support on a turnkey basis the first commercial Independent Power Provider station in Nigeria

Primary Choice Factors:

Years of experience, product, dependability, established relationship and proven performance

Cummins commissions first Independent Power Provider station in Nigeria

Nigeria is home of one of the largest rolled aluminum plants in West Africa. Aluminum Rolling Mills (ARM), owned by The Tower Group, is both an industry leader and household name, offering high-end quality aluminum products. The company converts basic raw material, aluminum ingots, into high quality coils and discs with an installed capacity of 12,000 tons per year. Final products include patterned and stucco coils, color coated coils, roofing sheets, cookware, extruded profiles and flexible packaging.

Manufacturing of aluminum products requires a dependable power source for continuous operation. Finding a source in Nigeria can be a problem. Despite being Africa's biggest oil and gas producer, Nigeria is plagued by constant power outages. Nigeria's power generation has at times plunged below 1,000 megawatts (MW), around a tenth of its basic needs.



Each generator set was equipped with a QSV91 Cummins engine and Powercommand® control.



Five C1750 N5C natural gas generator sets were installed to provide 11,000 kVA (8.5 MW) of power.

Providing a dependable power source

“Nigeria has a very unreliable and inefficient electricity supply which makes managing an industrial process very difficult,” according to Deepak Khilnani, chief executive officer, Gentec Energy PLC. Other unique challenges included a need for continuous 24x7 operations, the lack of interconnection to the grid and the need to operate in Island Mode.

To create a solution The Tower Group joined with Powergas International and established Tower Power Utility Ltd (TPUL). The new joint venture developed a plan to build the first commercial Independent Power Provider (IPP) station in Nigeria. “The purpose of the TPUL plant is to provide clean and reliable electric supply to a cluster of industries,” Khilnani said. The facility is a centralized power station providing an alternative to self-generation.

The partners recognized such a project would require outside expertise to complete the design, including all civil, electrical and mechanical engineering. They turned to Gentec Energy PLC to provide a solution. A 11,000 kVA (8.75 MW) prime power system was designed, manufactured, tested, installed and commissioned by Cummins Power Generation with five C1750 N5C natural gas generator sets rated at 2,200 kVA (1.75 MW). Each generator set was manufactured with a QSV91 Cummins engine and PowerCommand® control.

“We are very satisfied because not only have we found that the product meets and beats our expectations, we find the people at Cummins we deal with very responsive and supportive.” Deepak Khilnani, chief executive officer, Gentec Energy PLC.

Designing a system to meet customer needs

The system was designed by Cummins Power Generation and Gentec to meet specific customer requirements. Specifications included having an individual cell, customized forced ventilation system, and crane provision for ease and speed of maintenance. A mezzanine floor to house the exhaust silencers was also part of the design as well as radiator header tanks, coalescing gas filters and forced ventilation over the power cabling.

The system was also developed with a complete fire and gas detection safety system, including redundancy features to ensure the effectiveness of the safety and prevention measures. The design offers flexibility of either a complete gas supply shutdown into the station or a cell-by-cell shutdown of each individual generator set both fully automated for emergency action.

Cummins capabilities in providing a solution to meet specific customer requirements was one of many reasons why Cummins Power Generation was selected. Gentec Energy PLC also selected Cummins for their experience and reputation in providing dependable products. “We have had 19 months of continuous trouble free operation since commissioning – over 52,000 hours run at the power plant,” according to Khilnani. “We are very satisfied because not only have we found that the product meets and beats our expectations, we find the people at Cummins we deal with very responsive and supportive. A number of other projects are also under execution with Cummins natural gas products.”

For more information about prime power systems or other energy solutions, contact us at cumminspower.com or e-mail us at energysolutions@cummins.com.



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