

DIESEL POWER REHABILITATION



National Power Authority
Kingtom Power Station
Freetown, Sierra Leone



Kingtom Power Station Freetown, Sierra Leone

General Information

Owner: National Power Authority (NPA), Freetown, Sierra Leone

Site Conditions

Summer temperature: 30°C (86°F)
Winter temperature: 25°C (77°F)
Height above sea level: 0 m (0 feet)

Power Plant

Cooling water quality: Sea water/fresh water
Engines: Two Sulzer, 2-stroke, type 8 RNF 68
Nominal output: 9000 kW (12240 BHP)
Total site output: 18000 kW (24480 BHP)
Generator: BBC
RPM: 150

Financing

The European Investment Bank

Background

NPA was established in 1982 as a state-owned corporation charged with undertaking the production, transmission, distribution, and sale of electricity in the Republic of Sierra Leone. NPA's 1,500 strong workforce concentrates its efforts primarily in and around the capital city of Freetown.

At the end of the 1980s NPA's Kingtom Power Station was operating with more than 30 MW installed effect. However, by 1991 production, transmission, and distribution systems were so run down that any protracted use of the plant would probably have led to it becoming beyond repair. With this critical situation as its starting point, a major rehabilitation programme was initiated. The programme was to include the generation units, the transmission and distribution network, organisational measures, and the installation of new generation capacity at the Kingtom Power Station.

In the spring of 1994, Burmeister & Wain Scandinavian Contractor A/S (BWSC) was awarded a contract to rehabilitate a part of the existing generating equipment at the power station.

Rehabilitation

The rehabilitation work comprised:

1. The purchase and transportation to Freetown of the spare parts needed for the rehabilitation of the engines and of the mechanical and electrical auxiliary equipment.
2. A complete overhaul of the two Sulzer engines, including an overhaul of the scavenging air system and turbochargers, and replacement of major components and instrumentation.
3. A general overhaul and upgrading of the auxiliary equipment, including the fuel oil, lubricating oil, cooling water, compressed air and steam systems. Replacement of the following: diesel engine control panel, low voltage distribution panel, and alarm panel.
4. Test and commissioning of the new installations.

The work was carried out in cooperation with NPA electricians, mechanics and pipe fitters, who received on-the-job training during the course of the rehabilitation work.

Each unit required four months to be made operational, the first unit being handed over to NPA in February 1995 after successful performance trials. The second unit also passed its trials and was handed over in June 1995.

Conclusion

The two diesel engines are completely renovated. Adjusted and regulated, their output is now very similar to that obtained during delivery testing back in 1979 and 1980 as regards output, specific fuel consumption (heat rate), and consumption of lubricating oil. All the auxiliary equipment is similarly in place as an extra guarantee of reliable operation.

The plant is therefore ready to run optimally for as many as ten to fifteen years.

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