

Khartoum North Power Station Automation Project, Sudan Extending Life Span of an Old Power Plant

THE CHALLENGE

Despite Limited Reliability and Efficiency

The instrumentation and control system of the power plant in Khartoum was obsolete and out of order. The plant was facing the risk of major damage to turbines and boilers due to the poor control system.



INSTRUMENTATION AND CONTROL SYSTEM AT THE PLANT



KHARTOUM NORTH POWER STATION PROJECT

- **Improving reliability and efficiency of upgraded power plants cannot be achieved as envisaged unless all integrated components of the project are implemented.**

In this project, only the automation and control system was implemented, which extended service life of the power plant. However, other components such as installation of firefighting system and desulphurisation units were not implemented as envisaged due to non-availability of government counterpart funds.

As a result, it is uncertain that the project's objectives of increasing reliability and efficiency have been achieved as planned. Frequent shutdowns are still occurring at the plant and the fuel consumption records do not show any significant decrease.

THE LESSONS

THE PROPOSED SOLUTION

- Increase the reliability and efficiency of the Khartoum North Power Station and extend its lifecycle through;
- (i) Installation of a new instrumentation and control system,
 - (ii) Upgrading the plant's firefighting system, and
 - (iii) Installation of a desulphurization unit to minimize the negative environmental effect of the power plant, and to decrease its sulphur emissions.
- The upgrading is estimated to cost €30.5 million, of which €18 million will be financed by IDB.

THE FINDINGS

- The project has secured the continued functioning of two 60 MWh generators by installing a modern instrumentation and control system, hence extending the service life of the plant.
- There is no sulphur emission monitoring system in place and installation of a de-sulphurisation unit for the power station did not take place due to unavailability of the government counterpart funding.
- Fire-related hazards to the plant were only partially mitigated. The rehabilitation of the firefighting detection and protection systems were reduced to rehabilitating the firefighting pump.
- The power plant is still facing frequent unplanned shutdowns in power generation.
- The project actual cost was € 22.3 million compared to €30.5 million planned at appraisal, IDB contribution remaining unchanged. The project suffered a 25-month delay due to sanctions on Sudan, changes in project scope, lengthy bidding process and the lack of government counterpart funding.