

Takoradi, Ghana

300 MW



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Combined Cycle For Volta River Authority - Ghana

First John Cockerill HRSG's installed on the African Continent

Project description

The Volta River Authority is the State-owned electric utility of Ghana. Its principal power plant is the Akosombo hydro station, which accounts for 1072 MW of a total installed capacity of 1402 MW. Hydro power supplies 95% of the electricity load, with the gold and aluminium industries as the main consumers. Rising power demand led to power shortages in dry years that were countered by initially buying power from Ivory Coast. In 1997 it was decided to install a 300 MW combined cycle station near Takoradi, the major port of Ghana. The plant is built in a 2-2-1 arrangement with the gas turbines running in simple cycle mode for about a year pending completion of the steam cycle. The plant is designed to burn light crude oil from offshore fields in the Gulf of Guinea

The Contract

In 1996 Volta River Authority ordered two MS9001E gas turbine from GE for the first phase of the plant. They in turn engaged architect engineers Stone and Webster (U.S.A.) who were responsible for the balance of plant including the two heat recovery boilers and who awarded a contract to John Cockerill in September 1997 for the boilers. All structures and pressure parts were fabricated in Europe and shipped to Ghana for erection under John Cockerill supervision.

Plant Operation

Base load and system reinforcement during times of low water level in Akosombo reservoir.

Gas Turbine

- GE Type MS9001E
- ISO rated 123.4 MW on gas
- Site rated at 103 MW on gas at 30°C
- Fuel: light crude oil

Heat Recovery Steam Generator

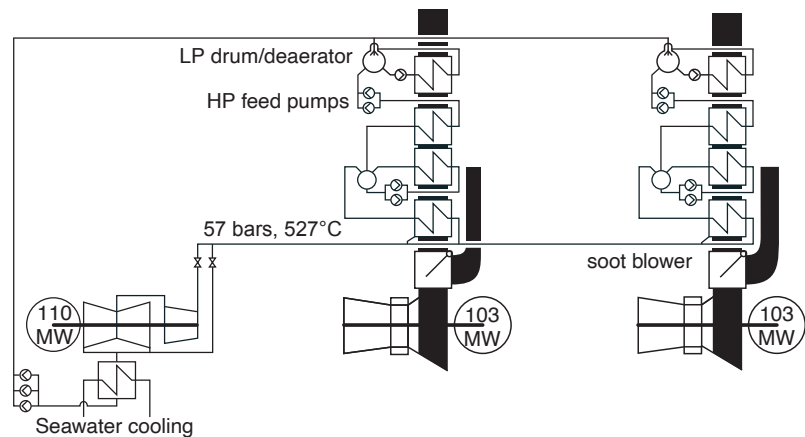
- John Cockerill Vertical, Natural-circulation design, unfired
- Single pressure output to steam turbine
- In each boiler, the LP evaporator is incorporated in a deaerator loop
- Sootblowers are installed on six levels and supplied from the HP steam header

Performances

GAS	°C		kg/s
Inlet	556		387
Outlet	167		387
STEAM	°C	barA	t/h
HP	527	57.6	187

Schedule

- Contract award for HRSGs September 1997
- Start up of gas turbine July 1997
- Start of boiler commissioning October 1998
- First steam to turbine November 1998
- Full combined cycle output December 1998



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