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PROJECT SUMMARY

DATE	August 1996	LOCATION	Abu Dhabi
SUBJECT	RETROFIT OF CONTROL SYSTEMS FOR ROLLS- ROYCE		

The Bab oilfield in Abu Dhabi is operated by ADNOC and is rich in natural gas. Its oil production capacity was developed in the 1970s to more than 75,000 b/d. It was closed down in 1986 and re-opened in 1989. Its sustainable capacity rose from 60,000 b/d in 1989/90 to 100,000 b/d in early 1990's. Current production is 300,000 b/d and further capacity increases are planned.

Overview

In 1992 NEI Control Systems, part of the Rolls-Royce group, was commissioned to upgrade the C & I equipment in the Bab field. The supply included the control equipment for 4 GEC EAS1 gas turbine generating sets, powered by Rolls Royce Avon gas generators. Turbine Controls Ltd was brought in by Rolls-Royce to provide a turnkey solution for the Avon gas turbine control system. Turbine Controls were selected due to their past experience and expertise relating to the Avon gas turbine control system.



The Problem

Reliable generation of electricity is key to the successful operations of the Bab oil field. The Avon Gas Turbines were installed in the 1970s and over time reliability issues have impacted on their availability. The control system was identified as being a major contributor to the reliability problems. The existing analogue electronic and relay based system was prone to frequent breakdown and the supply of spare parts was becoming problematic and expensive. Furthermore, the skills required to maintain and repair the hydro mechanical governing systems were becoming increasingly difficult to source.

TCL were commissioned to provide a control system that addressed these issues of reliability.

The Solution

Remove the unreliable elements of the gas turbine control system and replace them with modern state of the art equipment that will be supported well into the future.

The following equipment was removed:-

- Analogue electronic Governor
- Relay based Sequencer and trip system
- Relay based Avon Starter

The following equipment was installed:-

- TCL microprocessor based Governor
- PLC based Unit Sequencer
- Hard Wired Trip system
- Inverter based Avon Starter system
- Data acquisition and monitor for each gas turbine
- Overall plant Data acquisition and monitor

The equipment had to be compatible with retained equipment and adhere to the overall control system philosophy devised by Rolls-Royce and GEC.



Following successful installation and commissioning of the equipment the gas turbine start and operating reliability has significantly improved. The improved maintenance tools offered by the data acquisition systems have reduced maintenance costs whilst the commonality of equipment over the whole plant has reducing the spares holdings.