

Gas Compressor Control

Project name: Gas compressor control – Petro China limited, Xinjiang, China.

Process: LPG compression and distribution over pipelines in China for domestic use.

System: Automation for two stage Gas compressor (2Nos.), which is driven by caterpillar engine. Allen Bradley PLC - CPU SLC 5/04, 96 local I/Os for each compressor. Operator Interface – Panel View 1000, Modbus module- MVI46 Modbus communication with Caterpillar engine electronic controller. Modbus communication with Emerson DCS to monitor all the parameters.

Scope: Application programming, trouble shooting, Commissioning PLC and operator interface, establishing communication between DCS and AB PLC.

LNG Terminal

Project name: SCADA system for Petronet LNG Terminal-Electrical system.

Process: Power distribution system.

System: The SCADA network included numerical relays, energy meters, communication network and SCADA/HMI system. ABB's MicroSCADA system communicated with the field devices over SPA and Modbus protocols.

Scope: Design, engineering, software development, FAT and commissioning.

Refinery

Networked SCADA systems for monitoring 6.6 kV power distribution system in refinery complex.

System components:

- Numerical protection Relays
- data acquisition units
- Load managers (Power Monitors)-Satec PM130E, L&T
- SPA protocol based FO communication network for 6.6kV switchgear, protection relays

- MODBUS RTU protocol based communication network for metering
- RP570 protocol based communication for RTU211
- MicroSCADA ver8.4.4 Base System with one Exceed client WS

Scope: Engineering, documentation, FAT, Site Acceptance Test and Commissioning

Electrical Load Management System

Process: Electrical Network with 12 bus bars and three 220kV receiving stations

System: SCADA system with distributed controllers. Make ABB

Software functions:

- Network Determination
- Fast Load Shedding
- Under-frequency Load shedding
- Manual Load shedding
- Load restoration
- Active Power control
- Reactive Power Control
- Synchronization
- Circuit Breaker Control
- Bay Control

Scope: Engineering, documentation, FAT, Site Acceptance Test and Commissioning

Substation SCADA for Middle-East Oil companies

Project name: SCADA systems for 11/3.3/.415 kV distribution stations in large petroleum refineries in ME.

System: Kalkitech developed SmartStation, a unique SCADA system for typical power distribution stations in oil and gas sector. The SCADA system provides the user with functionalities like substation monitoring, Motor/pump management, Feeder management, Power quality monitoring, Fault and disturbance analysis etc. A typical system comprises of numerical protection relays, bay controllers, energy meters, power quality analyzers and PLC all communicating to SmartStation SCADA system.

Scope: Supply of SCADA hardware, networks, and software, engineering, customizations, FAT and commissioning.

Instrument Air Supply System

Project name: Instrument and Service Air system (Air compressor and Dryer), Jebel Ali Power Plant, Dubai, UAE.

Process: Supplying compressed air for boiler and turbine control instruments. Air compressor (4 Nos.) and Dryer (2 Nos.) were the process equipments.

System: . Allen Bradley PLC – SLC5/04 with Redundancy, Remote I/Os – 80 for each dryer. Allen Bradley PLC – SLC5/04 with Redundancy, Remote I/Os – 88 and Panel View 1000 for each Compressor. Data highway communication between each compressor through DH+ network. Modbus communication between Toshiba DCS and All the PLCs. Ladder Logic programming software – RSLOGIX500. SCADA software – Panelbuilder32 .

Scope: Programming and Commissioning of PLC and Scada system. Establishing the Modbus communication between Toshiba DCS and AB PLC.

Well SCADA

Project name: Integration of Well SCADA with DCS for Qatar Petroleum.

Process: Gas Injection Wells spread over a large area were to be monitored at the control room of the production unit.

System: Invensys-Foxboro RTU at each Gas Injection Well acquired well data and transmitted to Wonderware SCADA/HMI at the control room over Radio links. ABB's Symphony Infi90 DCS communicated with Wonderware SCADA for acquiring the well data.

Scope: RTU-SCADA communication, SCADA configuration, DCS configuration, integrated communication tests.

FPSO and Well head Platform automation

Project name: Facility Control System (FCS) for FPSO and WHP.

Process: Production facilities comprising of Floating production Storage Offloading unit (FPSO) and a Wellhead Platform (WHP). The facilities are to be designed to accommodate and process production from several different oil reservoirs. WHP has 9 conductor slots (16 wells) and supported by the FPSO for the utilities system such as instrument air, wash water and power.

On the WHP, the production fluids from each wellhead are gathered in one production manifold and routed, to the oil stabilization system located on the FPSO. WHP consists of closed drain system, Open drain system and Chemical injection system.

The FPSO shall be designed with an oil stabilization system, gas lift compression system, produced water treatment, water injection system, fuel gas system and other utilities systems such as instrument air, HP flare, LP flare, Closed drains, Open drains, Wash water & fire water and deluge system among others.

System: FCS is built on Siemens PCS-Process Control System, SSDS-Safety Shut Down System and CCTV. A fully redundant communication network connects the various control units and operator screens together. No of nodes in the network are 15.

Scope:

- Design and development of control logic for PCS and SSDS on Siemens PCS S7.
- Configuration of Cause and effect matrix for Fire and gas system in Simatic safety matrix tool.
- Design and development of Operator displays.
- Communication configuration of the whole network and testing
- FAT and documentation