

M A N O J M A T H E W

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TECHNICAL SUMMARY

- ✓ B.E. (Electrical & Electronics Engineering) with 13+ years of technical work with various makes of PLCs, Fire and Gas systems, RTUs, signal conditioners, communication protocols and instrumentation. Well oriented with programming of various makes of PLCs and SCADA systems.
- ✓ Working in all aspects of engineering for a Control Systems Integrator in Dubai since 1996.
- ✓ Hands-on work experience in design, assembly, testing, installation and commissioning of industrial control systems.
- ✓ Good computing skills and knowledge of networking, routing, operating systems and ethical hacking. Set up and administers my company's LAN and email/proxy servers. Owns and administers own internet domain for personal communications as well as hosting time-keeping database application.

NATIONALITY

Indian

DATE OF BIRTH

November 27, 1972

MARITAL STATUS

Married

LANGUAGES

English, Hindi and Malayalam.

INTERESTS

Reading, travel, driving, computers, music

EDUCATION

- ✓ B.E. Electrical and Electronics Engineering 1991 - 1995
Manipal Institute of Technology, Manipal 576119, India
Mangalore University
- ✓ Higher Secondary Education (Pre University) 1989 - 1991
Mar Thoma Residential School, Thiruvalla 689107, India
Council for Indian School Certificate Examinations, New Delhi
- ✓ School Education 1979 - 1989
Mar Thoma Residential School, Thiruvalla 689107, India
Council for Indian School Certificate Examinations, New Delhi

VOCATIONAL TRAINING /OTHER TRAINING

- Vocational Training Course for TV / VCR Technicians
Suneetron Agencies, Thiruvalla 689101, India
- Certificate Course in AutoCAD Rel.12
National Institute of Technology, Dubai
- Apprentice Electrical Engineer
F.A.C.T. (Fertilisers and Chemicals Travancore Limited)
Cochin Division, Ambalamedu, India
- Product training on Modicon 984 family of PLCs.
Modicon, Group Schneider, Jebel Ali Free Zone, Dubai.
- Certificate Course in Visual Basic 5.0

- GE Fanuc PLC & CIMPLICITY SCADA Training
GE Fanuc Automation, City Tower II, Dubai.
- ICND in Cisco Routers & Networking.
Synergy, Etisalat Academy, Dubai.
- ELOP II Engineer Training for HIMA range of PLCs
HIMA Main Office, Brühl, Germany.
- Product training on Kingfisher range of RTUs.
RTUNet Pty Australia.
- Certified Wonderware InTouch 9.0 System Developer
- Certified Wonderware Archestra Industrial Applications Server 2.1 Developer
- Product Training on TBox MS range of RTUs.
- Completed the Certification Examination for the TÜV Functional Safety Engineer in the field of Safety Instrumented Systems according to the TÜV Functional Safety Program. (Awaiting receipt of Certificate from TÜV Rheinland).

SKILLS / OTHERS

- ✓ Lead Project Engineer on automation jobs, company's point-of-contact to clients on project related activities, project documentation and correspondence.
- ✓ Proficient with large number of makes of PLCs:
 - Modicon range of PLCs
 - Telemecanique TSX Premium
 - Allen Bradley PLC5, SLC500, ControlLogix
 - GE Fanuc 90-70, 90-30, Versamax
 - ABB RTU211
 - ABB August Systems CS300 TMR PLC
 - HIMA 41q, 51q
 - Kingfisher RTU
 - Tbox RTU
 - Bristol Babcock
- ✓ Well-versed with development of projects with the following SCADA HMI packages
 - Rockwell RSView32
 - CIMPLICITY
 - Wonderware
 - GE Fanuc (Intellution) iFix
 - Citect (moderate exposure)
- ✓ Final Year project during Engineering graduate course was an 8085 microprocessor (μ p) based rig called 'Automatic Synchronisation of Alternator'. The aim of the project was to automatically start up an alternator using a dc motor, regulate running speed and exciter winding current to build up output voltage and frequency and synchronise it with an existing three phase domestic power supply and put it online.

A multi-layered PCB designed and assembled by us contained an onboard IC8255 programmable peripheral interface and an IC8253 programmable interval timer interfaced to an 8085 μ p kit through an 8-bit data bus and a shared 16-bit address bus. Numerous IC741 op-amps, IC555 timers, CD4046 phase locked loop, IC70xx TTL gates on the PCB were used to trigger two thyristors of a half-controlled full wave rectifier to drive the dc motor from an ac supply at a firing angle determined by the μ p to vary the motor speed and thereby the generator frequency, a variable duty cycle switched dc supply (chopped dc) using a MOSFET

transistor varied the exciter winding current to control the generated voltage, a frequency counter using RST5.5 and RST6.5 interrupt lines of the μ p isolated through an MCT6 dual opto-isolator, a phase locked loop to determine phase angle difference between the generated supply and domestic supply and a synchroscope circuit to determine the phase sequence.

- ✓ Electronic hobbyist with exposure to component level assembly and troubleshooting.
- ✓ Holder of Grade II Restricted Class Indian Amateur Radio Operator Certificate (Ham radio license).
- ✓ Participated and won various prizes in literary competitions in School. Member of the school football & kabaddi teams. House captain in school.

IT SKILLS

- JavaScript, VB Script, HTML4, C, Active Server Pages, Microsoft IIS 4, Visual Basic 6, FrontPage 2000, Flash, Adobe Photoshop, Microsoft Exchange Server 5.5, Microsoft Proxy Server 2.0
- Networking: TCP/IP, Good knowledge of networking and routing.
- Other packages: MSOffice Word, Excel, PowerPoint, Money, Schedule, AutoCAD Rel.14, PLC Programming packages, SCADA packages, BASIC, Fortran, Assembly Language, Visual Basic, Internet Applications, etc.

EXPERIENCE SUMMARY

Cimac F.Z.C.O
P. O. Box 61314
Dubai, U.A.E.

(formerly Cimac Automaton)

Superintendent Engineer - Control Systems
Control Systems Engineer

2002 - present
1996 - 2002

Job Responsibilities:

- ✓ Co-ordinated with clients for evaluation of requirements. Assisted the commercial executive / application engineer to recommend automation solutions & evaluate technical feasibility of solutions submitted to clients.
- ✓ Prepared Functional and Detailed Design Specifications, Bill of Materials, I/O Lists, etc.
- ✓ Designed Control Panel from Project Specifications and P&ID. Supervised preparation of engineering drawings. Followed-up drawings and documents through approval stages with the client.
- ✓ Developed logic diagrams and SCADA screen drafts as per project specifications and client requirements. Follow-up on approvals, after which developed the PLC and SCADA coding directly or through subordinate engineers.
- ✓ PLC & SCADA Programming.
- ✓ Hands-on experience in construction of PLC and relay Control Panels.
- ✓ Conducted Factory Acceptance Tests with the clients and/or representatives.
- ✓ Site Installation and Commissioning.
- ✓ After sales support - client personnel training, annual maintenance contracts, emergency call-outs.
- ✓ Assess and recommend training requirements, procure test equipment,

software and tools for in-house requirements. Assist site engineers for solutions in day-to-day work.

PROJECTS EXECUTED

1996

1. Process Control Modernisation Project, YANPET - Honeywell 1996/1997

Designed over 30 Modicon Quantum and 800-series PLC control panels from I/O list and BOQ for Process Control Modernisation Project, Saudi Yanbu Petrochemical Company Limited (YANPET), Yanbu, Saudi Arabia. The system had various combinations of 800-series and quantum I/O racks interfaced to Hot Standby Quantum processors in the same panels as well as remote locations connected through RIO coaxial and optic-fibre cables.

1997

1. Khatiyah North & South, KNS Project, QGPC - CCIC, 1997

Designed and assembled two Allen Bradley SLC500 based control panels and two relay-based ESD (emergency shutdown) panels for Khatiyah North & South Degassing Stations, Dukhan for Qatar General Petroleum Corporation (QGPC). Conducted full scale Factory Acceptance Test in our workshop with input/output simulator boards and SCADA system. Assisted on site for loop tests, commissioning and performance tests.

2. Powered Water Injection, PWI - Phase 5 Project, QGPC - CCIC, 1997

Designed and assembled two Allen Bradley SLC500 based control panels and two relay-based ESD (emergency shutdown) panels for Khatiyah north & South Degassing Stations, Dukhan for Qatar General Petroleum Corporation (QGPC). Conducted full scale Factory Acceptance Test in our workshop with input/output simulator boards and SCADA system. Assisted on site for loop tests, commissioning and performance tests.

3. Green & Baked Anode Conveyor System - Falcon Project 1997, Dubai Aluminium - Fredenhagen GmbH., 1997

Commissioning and software support services for the new Kiln3 Green & Baked Anode Conveyor System, DUBAL (Dubai Aluminium Company Limited), Jebel Ali, U.A.E. 24 Hour on-call service to attend to any problems in the conveyor systems in the Plant. Conducted training classes for the Operators and Maintenance personnel. Wrote the Operations and Maintenance Manual for the Anode Conveyors System.

1998

1. Early Production System, QGPC - Mid-East Constructors Ltd., 1997/1998

Designed an Allen Bradley SLC500 remote I/O rack control panel and relay ESD panel for the expansion project for Khatiyah North Degassing Station, Dukhan for Qatar General Petroleum Corporation (QGPC).

2. PTA & Aromatics Project, Ibn Rushd - CCIC / Technimont / ABB August. 1998

Commissioning services for the PTA Plant Emergency Shutdown System, Arabian Industrial Fibers Co. (Ibn Rushd), Yanbu, Saudi Arabia. Developed ESD logic based on new Cause & Effect document for the TMR (Triple Modular Redundant) ESD system based on ABB August.

3. Commissioned Modicon 584-series PLC test panel for Zakum Development Company (ZADCO) at Zirku Island, Abu Dhabi. 1998

4. Arak Petrochemicals - FIMCO, 1998

Designed and assembled a Siemens S5 PLC based control system with LED mimic panel for tank farm control. Installed and configured a Rochester annunciator panel for two-level alarming. Conducted Factory Acceptance Tests.

1999

1. Anode Conveyor System Kilns 3 & 4 - Condor Project, Dubai Aluminium - KEMPE

International, 1999

Programmed and commissioned the modified Anode Conveyor system for Kilns 3 & 4 for DUBAL. Interlocked the Allen Bradley PLC-5 with other existing PLCs - Storeroom Stacking Cranes, Furnace Tending Cranes, Anode Cleaning Stations, Motor Manager VME PLCs. Developed the new SCADA operator interface using RSView32.

2. Instrument Revamping Project, Abu Dhabi National Oil Company (ADNOC) - Cegelec, 1999

Modified and commissioned existing PLC program and new Utilities ESD PLC based on redundant Allen Bradley PLC-5 for Sea Water Pump / ESD for ADNOC Ruwais Refinery, Abu Dhabi. Configured modbus communication for new systems to the existing Foxboro DCS.

3. Compressed Air System Expansion, Gas Turbine Stations GT17 & GT18 - Condor Project 1999, Mott MacDonald - Dubai Aluminium, 1999/2000

Programmed and commissioned a new Allen Bradley SLC500 control and PanelView550 MMI (Man Machine Interface) unit for the new Compressed Air Supply Control Systems for DUBAL.

4. Compressed Air System Expansion, Gas Turbine Stations GT17 & GT18 - Condor Project 1999, GE Alstom, Mott MacDonald - DUBAL, 1999

Post-Commissioning Software modification services for two numbers of turbine-control GE- Fanuc PLCs for the new Compressed Air Supply Control Systems for DUBAL (Dubai Aluminium Company Limited)

5. Anode Conveyor System Kilns 1 & 2 - Condor Project 1999, DUBAL, K. Home - ALUTEC International, 1999/2000

Programmed and commissioned the revamped Anode Conveyor System for Kilns 1 & 2 for DUBAL, based on a control system consisting of 5 Allen Bradley PLC-5's interconnected on DH+ network. Modified the existing SCADA to include the new conveyor system. Added the new Kiln Messaging & Maintenance screens in the SCADA for Control room to Furnace Tending Crane Operator Messaging (a feature that was unsuccessfully tried by a European company in the earlier Falcon Project).

6. Modification and correction of alarm monitoring Telemecanique TSX Premium PLC and MaGelis display unit on board the tank-ship T.T. Sea-World. (Total Automation, Dubai, 1999)

7. Programmed and commissioned a retrofitted Diesel Firewater Engine for GASCO's NGL Extraction Plant in Buhasa using Modicon 800 series PLC and Telemecanique MaGelis display unit. (ITC - Gasco, 1999)

8. Modification of Allen Bradley PLC-5 logic to incorporate alumina-handling conveyors for two new Silos installed in Potlines 6A & 6B of DUBAL. (Potlines 5 & 6, Condor Project 1999, DUBAL - K. Home)

2000

1. Al Khaleej Sugars, Jebel Ali Free Zone, Dubai, 2000

Programmed and commissioned a process monitoring PLC System based on GE Fanuc Versamax for monitoring various parameters of two vacuum pan boilers for a sugar processing factory in the Jebel Ali Free Zone, Dubai. Developed a Cimplicity SCADA graphical user interface with a 30-day trending cycle to replace the mechanical chart recorders in the control-room.

2. Emirates Sky Cargo Terminal, Dubai Cargo Village. Dexion, Siemens - Emirates Airlines / DNATA, 2000

Programmed Siemens Simatic-S7 PLC for automatic sequence control of underground queuing conveyors in the new Emirates Cargo Terminal in Dubai Cargo Village, Dubai Airport

3. WED-71 Project, Shoheib Field, Al-Ain. Water & Electricity Department - Al Nasar Irrigation Company, 1999/2000

Designed, assembled, installed and commissioned one Modicon Quantum PLC and 35

Micro PLC systems for remote monitoring and control of 35 numbers of irrigation water wells from a main control room. The Control Room PLC is linked to 35 wells in the field through a RS485 network over a distance of 40 km. The remote data is displayed on two Intellution SCADA computers.

4. Fujairah Terminal Phase 2 Expansion Project. Van Ommerren ENOC Fujairah Ltd-Danway LLC, 2000

Programmed and commissioned Allen Bradley PLC-5 control system for a Tank Terminal in Fujairah for semi-automatic control of loading / unloading a product from ship, blending, re-circulation between storage tanks, implementation of operational interlocks through modbus ports to the MOV (motor operated valves), hot oil boiler, generator, Saab Radar Tank Gauging system and MCC (motor control centre) vendors' systems, as well as safety interlocks to control 26 storage tanks and jetty area loading arms. All processes are controlled and displayed on three RSView32 SCADA stations in the Control Room.

5. Programmed and commissioned the GE Fanuc PLC control system for automatic gate control of the tidal gate separating the Khalid Lagoon and Al Majaz Canal in Sharjah, U.A.E. (Tidal Gate Control. Al Nasr Engineering, Al Futtaim Tarmac - Ruler's Office, Sharjah)

2001

1. Al Jimmi District Cooling System Central Plant, Al-Ain - TABREED, Kattener / Shankland Cox / VOLTAS, 2001

Programmed a GE Fanuc 90-30 PLC and Cimplicity SCADA for automatic unmanned operation of 3 chillers, 6 VFD controlled distribution pumps and cooling towers, 6 booster pumps, motor operated valves and other equipment for the supply of chilled water for central district cooling system. The PLC calculates various billing parameters by obtaining energy supplied, electrical power consumed, water consumption, etc. directly from third party equipment via Modbus, DeviceNet and ASCII communication. The SCADA generates hourly and daily reports for the equipment runhours, power and water consumed, energy supplied, etc.

2. Al Jimmi District Cooling System, Energy Transfer Station - Jimmi Mall, Al-Ain - TABREED, Kattener / Shankland Cox / Nael Electromechanical, 2001

Programmed a GE Fanuc 90-30 PLC for automatic unmanned control and distribution of chilled water received at the energy Transfer Station from the Central Cooling Plant. The PLC controls 3 VFD controlled booster pumps and 3 motor operated valves to distribute chilled water within the Al Jimmi Mall.

2002

1. Al Towaisa District Cooling System Central Plant, Al Ain -TABREED, Kattener / Shankland Cox / ALGECO, 2002

Programmed a GE Fanuc 90-30 PLC and Cimplicity SCADA for automatic unmanned operation of 4 chillers, 6 VFD controlled distribution pumps and cooling towers, 8 booster pumps, motor operated valves and other equipment for the supply of chilled water for central cooling system. The PLC calculates various billing parameters by obtaining energy supplied, electrical power consumed, water consumption, etc. directly from third party equipment via Modbus communication. Programmed 5 GE Fanuc 90-30 PLCs for 5 Energy Transfer Stations located at customer premises. The ETS PLCs communicate with the main plant PLC over an RS485 modbus network for operations.

2. Doha & Rayyan Sewage Stations Upgrade Project, Doha - Ministry of Municipal Affairs & Agriculture, Qatar / Middle East Business Development Co. / Cimar, 2002

Installed modifications and commissioned 46 Modicon, GE Fanuc and Kingfisher PLCs for municipal sewage lifting pumping stations. Each station has one or two wells accumulating wastewater from the locality and upstream stations. When the levels exceed a high level set-point, one or two pumps pump the water to the downstream station till the level is lower than a low level set point. Fault or trip on duty pumps are annunciated and standby pumps assume duty. High high or low low well level

alarms are annunciated. Installed, configured and commissioned Cisco routers at 46 stations and municipality control room for remote access and supervisory control of the sewage pumps from the control room. All stations are viewed and supervised from three Wonderware SCADA stations installed by us in the control room.

3. Hotel Shangri-La (Dubai) District Cooling System, Energy Transfer Station - TABREED, Sensaire, 2002

Programmed a GE Fanuc 90-30 PLC for automatic unmanned control and distribution of chilled water received at the Energy Transfer Station from the Central Cooling Plant. The PLC controls 7 VFD controlled booster pumps and 5 motor operated valves to distribute chilled water within the multistory car park, basement and 27 floors of a multi-star hotel in Dubai. Programmed a GE Fanuc Versamax PLC for automatic unmanned control and distribution of chilled water

received at the 28th floor Energy Transfer Station from the Central Cooling Plant. The PLC controls 4 VFD controlled booster pumps and 2 motor operated valves to distribute chilled water within the 28th to 42nd floors of the hotel. Both PLC control systems communicate to each other and to the SCADA control system installed in the Cooling Plant Building (installed by our company in a different project) for monitoring and control

2003

1. Modification of HIMA 51q ESD PLC program for addition of new hazardous wastewater pumps for four crude oil gathering centres for Kuwait Oil Company (KOC) . Co-ordination with the Honeywell Plant DCS system for transfer of controls and status' for operator display and control. (GC-9, 10, 20, 22 : Addition of Hazardous Waste Water Pumps / ESD Modification. KOC/Mushrif. 2003)

2. Northern Oman Gas Project (Safah Central, Safah Satellite, Barakah, Far West, GOV Stations BVS-1, 2 & 5). Occidental Petroleum of Oman / Dodsall / Mott MacDonald. 2003, 2004

Programmed and commissioned Allen Bradley ControlLogix PLCs for four natural gas gathering stations and three gas operated valve stations. Our PLCs control the operation and display of gas compressors for natural gas extraction and forwarding from the outstations to the central plant for processing. The gas is processed to client specifications and then compressed to 1000+ PSI and delivered to the client through a pipeline extending more than 100 km. Three solar powered remote controlled gas operated valve stations located along the length of the pipeline transfer temperature and pressure data back to the main plant through a fibre optic link. The last valve station located at the delivery point also transfers gas analyser and volumetric data from the main plant to the client system for billing purposes. Our controller at the valve station also acquires flow metering data to be transferred back to the main plant for archival.

2004

1. Study of and programming of an ASCII to modbus protocol converter for translating Nexus fire panel status and alarms for display on plant Honeywell DCS. The protocol converter catches the ASCII broadcasts from the Main panel which includes status of all addressable detectors and manual fire call-points connected to various loops of 4 slave Nexus panels in the facility. This data is transferred to the modbus slave port of a Honeywell FSC (fail safe controller) and is displayed on the plant DCS. (Zakum Development Company (ZADCO)/Telectron. 2004)

2. Contract SE/11 - Ministry of Public Works, Kuwait / Burhan / Mushrif / Cimac. 2004

Designed, programmed and commissioned one control room, 14 irrigation reservoirs and 70 field control units (FCU) for supply of treated sewage water for roadside irrigation. Each (of the 70) FCU has a Kingfisher controller and control upto 16 RCV valves to supply water to irrigation sprinklers. They function as 16 on/off switches from an operating schedule entered by the operator at the control room. Analog signals monitor soil moisture so that irrigation is not carried out if the soil moisture is above a certain value, eg. during rains. Analog signals monitor the pressure of water for leakage monitoring algorithm at the reservoir PLC. A number of FCUs

communicate to their sub-master RTU at the reservoir through radio and fiber-optic media. The sub-master RTU, a redundant series II Kingfisher controller, also acquires signals from the reservoir itself and in turn communicates to the master RTU at the control room using data radio. Control panels in the reservoir stations control inlet valves to maintain set water level in the reservoir tanks. When pressure in the reservoir outlet pipes fall below a set value due to irrigation usage at FCUs, the process control panel (based on Allen Bradley SLC500) starts up and modulates the first VFD controlled irrigation pump to pressurise the outlet pipes. If at full speed, the water demand is more than that supplied by the first pump, successive pumps are started by the PLC to meet the demand. Conversely, the PLC switches off pumps when the demand drops off. The entire operation is monitored and controlled from redundant Wonderware SCADA stations in the control room. A feature highlight of this project was the absolute use of DNP3 protocol, resulting in least network traffic, quick response times and time-stamped event logging.

3. Contract SE/59 - Ministry of Public Works, Kuwait / Mushrif / Cimac. 2004

Designed, programmed and commissioned two control rooms and 15 roadside irrigation stations for the supply of treated sewage water from Kuwait city to Abdaly for irrigation of farms. Water received at DMC pumping station in Kuwait is pumped over a distance of 100+ km. to two large reservoirs at Abdaly (near Iraq) for irrigation of farms. Kingfisher Series II based redundant controllers at both locations communicate to each other using DNP3 protocol over radio modems through a Repeater station to operate 3 transfer pumps in DMC based on a number of safety interlocks. The two controllers also communicate with 15 RTUs installed in en-route distribution points. Wonderware SCADA stations at both DMC and Abdaly control rooms have complete & equal monitoring and control capability over the system. A feature highlight of this project was the use of DNP3 protocol and global variables to achieve equal SCADA operation from multiple points regardless of the point of connection of SCADA to the system.

2005

1. Sohar Instrumented Protection System - Pressure Reducing Terminal. Oman Gas Company (OGC) / Emerson Process Management / Parsons. 2005, 2006

Programmed, installed and commissioned an ESD system based on HIMA 51q for gas receiving and distribution terminal for OGC Oman at Sohar. Gas received at the terminal is sent through 9 pressure reducing trains and supplied to 9 customers in the Sohar port area. The control system includes complete dual redundant processors and I/O modules and line monitored I/O's for fault detection. All data is transferred via two redundant serial links to an Emerson Delta-V FCS system.

2. Ras Laffan to Mesaieed Sweet Gas Pipeline Project. Qatar Petroleum (QP) / Sicon Oil & Gas / CCIC. 2005

Programmed and commissioned redundant Modicon Quantum PLC systems at 8 locations for receipt of gas from two suppliers, regulate flow at individual manifolds, transportation to existing distribution station located about 120 km away through 4 operated remotely Section Block Valve stations. At Station-V and Station-S, modbus communication is implemented to Fire & Gas system, flow metering skid, instrument air, power monitoring and other utilities. In other 6 locations, modbus communication is implemented to the local fire & gas system as well as to the Station-S SCADA I/O servers on modbus through fiber-optic multiplexers.

3. Fast Field Development Project, Al Karkara, offshore Qatar. Qatar Petroleum Development Company (QPD)(Japan) / Gulf Piping Company / Emerson 2005

Programmed and commissioned two Hima 51q ESD and F&G systems for the main platforms and Kingfisher II RTUs at two remote platforms for FFD Project for Qatar Petroleum Development Company. The RTUs at each remote platform controls the operation of the sub-surface safety valve and the production wing valve on the well-head through an interlock with the main platform ESD system implemented on fiber-optic link. The RTUs also poll the ASU unit on modbus to acquire downhole pressure and temperatures, as well as monitor the air compressor and electric power distribution panels on the platform. All four systems are polled by an Emerson Delta-V DCS using modbus. In addition to the remote platform shutdown, the ESD system

also controls all systems on the main platform. The F&G system monitors a number of combustible & toxic gas detectors, flame detectors, manual callpoints, deluge and foam activate and inhibit stations. All alarms are displayed area-wise on the mimic panels in the control room & radio room on the platform. A Wizcon Sequence of Events logger records and prints all events and alarms with the timestamp of occurrence.

2006

1. Early Production Facility Phase 1. Nabrajah 2 & 5. Block 43 Yemen. DNO / Dome / Innovative Design 2006

Programmed and commissioned a redundant Allen Bradley ControlLogix with Flex I/Os and Wonderware SCADA system for the operation and ESD for an oil separator station in Yemen. Modbus master modules are installed in the Flex I/O rack to communicate to compressors, flowmeters and generator panels. The station receives crude oil from two wells and uses two stage separator to separate oil, water and gas. The gas is used for powering the compressors and flare pilot and rest is reinjected. Oil and produced water are pumped separately to the processing facility.

2. Ras Laffan to Mesaieed Ethane Transmission Pipeline Project. Qatar Petroleum (QP) / Tekfen 2006

Programmed redundant Modicon Quantum PLC systems at 9 locations for receipt of gas from two suppliers, regulate flow at individual manifolds, transportation to existing distribution station located about 120 km away through 4 operated remotely Section Block Valve stations. At Station-V and Station-S, modbus communication is implemented to Fire & Gas system, flow metering skid, instrument air, power monitoring and other utilities. In other 7 locations, modbus communication is implemented to the local fire & gas system as well as to the Station-S SCADA I/O servers on modbus through fiber-optic multiplexers through existing STM-1 link.