

Buoy Control and Automation Systems



Buoy Control Systems

Proserv has over 25 years' experience in supplying telemetry controls for buoy offloading systems globally, using our established, market leading technology.

Our expertise and experience has given us a portfolio of products such as subsea production control modules, WHCPs, HPUs, and telemetry control and monitoring systems for the oil and gas market. This allows us to offer fully integrated buoy control systems using various communication methods: fibre optics, radio, satellite and Wi-Fi.

Automation Systems

Proserv is an integrated service provider of complete automation systems for producing oil and gas fields and pipelines. Our solutions include remote terminal units (RTUs), programmable logic controllers (PLCs) and downhole gauges at the field site; radio, cellular, and satellite communication systems; SCADA, artificial lift analysis, operations management and well-file software.

A proven track record...

proserv



20,000

Production control systems
manufactured



200

Metering control systems
manufactured



6,000

Wellhead control systems
supplied



300

Subsea control
modules installed



40,000

Sampling cylinders
supplied



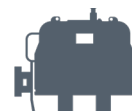
1,000

Production control systems
refurbishments



700

Monitoring, control
and retrieval projects



130

Subsea control
projects completed

Buoy Control and Automation Systems

Year	Client	Description	Location
2019	Tengizchevroil	10 PLC controlled single well control system - hydraulic control panel to operate the wellhead valves, Fibre Optic Ethernet switches, modems and patch panels; Hima SIL 3 certified ESD PLC, Allen Bradley Process PLC, interface to Honeywell DCS system, multi language HMI and associated mimic panel	Kazakhstan
2019	Tengizchevroil	2 PLC controlled single well control system - hydraulic control panel to operate the wellhead valves, Fibre Optic Ethernet switches, modems and patch panels; Hima SIL3 certified ESD PLC, Allen Bradley Process PLC, interface to Honeywell DCS system, multi language HMI and associated mimic panel	Kazakhstan
2019	Kuwait Oil Company / Bluewater Energy SVCS	Calm Buoy Control System - Buoy Control System, SIL3 H41/51q PLC systems; solar panels and batteries, separate system for navigation aids and instrument systems; Dual Redundant fibre optic link, 20 km; navigation aids, VHF ESD shutdown system, Hydraulic Power Unit with integral diesel engine, dual redundant zone 1 certified MMI, supply of all instrumentation and cables on the buoy, interface to existing DCS system on the shore	Kuwait
2018	Connected Energy / Jaguar Land Rover	Battery Storage Module - 2nd life EV batteries for short term energy storage, 20ft container fit out and integration, distribution module, PCM module	UK
2017	Chrysaor	MCS upgrade project - replacement PLC modules replacing obsolete GE CPU / Communication Modules, communication module allowing retention of existing GE IO system, engineering and installation services	UK North Sea

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2017	Shell	MCS upgrade project - replacement PLC modules replacing obsolete GE CPU / Communication Modules, communication module allowing retention of existing GE IO system, engineering and installation services	Tunisia
2016	Petrobras	HPU 2 x PLC Control System - Allen Bradley CompactLogix PLC and IO, Exd / Exe enclosures and certification, HART interface and integration, Motor Starters and controls, ethernet interface to the FPSO DCS	Brazil
2016 / 2017	BP	Buoy Control System - dual redundant radio link, low power PLC and HMI on buoy, integrated HPU for hydraulic control of PLEM valves, zone 2 certified, integral motor system, solar power system, interface with existing third party control system	Trinidad and Tobago
2016	Saipem / SOC	Buoy Control System - Standby Master Terminal Unit, fibre and dual radio communications to the buoy control systems, Hawser Life Prediction, dual redundant HMI computers, hardwire interface to third party ESD system, serial interface to third party ESD system	Iraq
2016	Saipem	Master Telemetry System - fibre and dual communications, Hawser Life prediction, HMI PCs, hardwire and serial interface to third party ESD systems	
2016	Petrobras	2 x PLC Control, Subsea - HMI screen for control and monitoring of subsea valves, Rockwell PLC, HART interface, distributed IO; zone 1 certified system, integral motor starters, interface with existing third party control system	Brazil

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Year	Client	Description	Location
2015	Tengizchevroil	12 PLC Controlled Single Well Control System - Hydraulic control panel to operate the wellhead valves, Fibre Optic Ethernet switches, modems and patch panels; Hima SIL3 certified ESD PLC, Allen Bradley Process PLC, interface to Honeywell DCS system, multi language HMI and associated mimic panel	Kazakhstan
2014	Phillips 66	Calm Buoy Control System - RTUs and interface to instrumentation, zone 1 certified batteries, HPU to control and monitor ESD pipeline valve, interface with existing third party control system	North Sea
2011 / 2013	Tengizchevroil	37 PLC Controlled Single Well Control System - Hydraulic control panel to operate the wellhead valves, Fibre Optic Ethernet switches, modems and patch panels; Hima SIL3 certified ESD PLC, Allen Bradley Process PLC, interface to Honeywell DCS system, multi language HMI and associated mimic panel	Kazakhstan
2010 / 2012	SBM / South Oil Company	Buoy Control Systems (4 buoys) - redundant RTUs, solar panels and batteries, radio links, navigation aids, load pins, MTU computer graphics, portable units, including interface to berthing aids	Iraq - Basra Terminal
2011	SBM	Calm Buoy Control System - redundant RTUs, solar panels and batteries, radio links, navigation aids, load pins, MTU computer graphics, portable units, including interface to berthing aids, wind speed/direction instruments and buoy pressure, temperature and surge tank level instruments	India, Mangalore
2010	NPCC / ADCO	Pig Launcher Control Panel - Hydraulic Control Panel to operate Pig Launcher System, GE Fanuc PAC8000 PLC system, panel mimic showing position and status of the valves, panel certified for location in zone 2 hazardous area	Offshore UAE

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Year	Client	Description	Location
2010	Aibel / BP ISG	21 PLC Controlled Single Well Control Systems - Hydraulic Control Panel to operate the wellhead valves and Hi-Lo pilot valves, solar panels and batteries, fibre optic modems and patch panels, Yokogawa PLC's, choke valve control modules, interface to existing Yokogawa DCS system	Algeria, Desert location
2009	SBM Atlantia	Calm Buoy Control System - redundant RTU's and interface to instrumentation, solar panels and batteries, radio link, UHF, 20km link; navigation aids, load pins, MTU computer graphic screens, Portable Unit, including Berthing Aids and DGPS; 50m antenna tower, wind speed / direction, wave height, tide speed and direction instruments; buoy instrumentation pressure, temperature and surge tank level instruments	India, Mundra
2009	SBM/Chevron	Buoy control systems (x2), redundant RTUs, solar panels and batteries, radio links 19km, navigation aids, load pins, MTU computer graphics (Wonderware), Hawser prediction software, portable units, offshore radio repeater units, buoys pressure, temperature and surge tank level instruments	Angola, Malongo Terminal
2009	Aibel / BP ISG	10 PLC Controlled Single Well Control Systems - Hydraulic Control Panel to operate the wellhead valves and Hi-Lo pilot valves, solar panels and batteries, fibre optic modems and patch panels, Yokogawa PLC's, choke valve control modules, interface to existing Yokogawa DCS system, integral downhole temperature and pressure transmitter interface (DHPT)	Algeria, Desert location

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Year	Client	Description	Location
2009	ADCO	15 PLC Controlled Single Well Control Systems - 15 units PLC based wellhead control panels and associated hydraulic units, SIL2 certified, Allen Bradley Control Logix PLC's, IS isolators, panel view MMI, interface to site RTU, segregated fire and gas IO, annunciator unit per panel (fire and gas)	UAE, Desert location
2008 / 2009	Aibel / BP ISG	5 PLC Controlled Single Well Control Systems - Hydraulic Control Panel to operate the wellhead valves and Hi-Lo pilot valves, solar panels and batteries, fibre optic panels and patch panels, Yokogawa PLC's, choke valve control modules, interface to existing Yokogawa DCS system, integral downhole temperature and pressure transmitter interface (DHPT)	Algeria, Desert location
2008	Maersk Oil Qatar / Bluewater Energy	Calm Buoy Control Systems (x3) - redundant RTUs, solar panels and batteries, radio links 2km, navigation aids, load pins, MTU computer graphics and data logging, portable units	Qatar
2008	Midia Marine Terminal / Bluewater Energy	Calm Buoy Control System - redundant RTUs, Hawser prediction software, solar panels and batteries, radio links 10km, navigation aids, slip ring, load pins, MTU cabinet, supply of instrumentation and cables on the buoy, interface existing DCS system on the shore	Romania, Black Sea
2008	BP ISG	5 PLC Controlled Single Well Control Systems - Hydraulic Control Panel to operate the wellhead valves and Hi-Lo pilot valves, solar panels and batteries, fibre optic panels and patch panels, Yokogawa PLC's, choke valve control modules, interface to existing Yokogawa DCS system, integral downhole temperature and pressure transmitter interface (DHPT)	Algeria, Desert location

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Year	Client	Description	Location
2007	Affren Energy / UWG	Platform Control Sytem, HPU and Navigation Aids - integrated Hydraulic Power Unit and RTU / Telemetry system, battery pack, solar panels, support structure for solar panels, UHF radio link, navigation aids, emergency lighting, FPSO control panel and DCS interface	Offshore Nigeria
2007	Petrobras / BM Imodco	Calm Buoy Control Systems (2 buoys)- Seimens S7-400 PLC's, battery packs, dual redundant fibre optic link 15km, navigation aids, interface to HIPPS and flowmeters, inclinometers on mooring chains, Hawser prediction software, MMI interface, interface to existing DCS system	Brazil
2006 / 2007	Kuwait Oil Company / FMC Sofec	Calm Buoy Control System (2 buoys) - SIL3 H41/51q PLC systems, solar panels and batteries, dual redundant fibre optic link 20km, navigation aids, VHF ESD shutdown system, HPU with diesel engine, zone 1 MMI, supply of all instrumentation on the buoy, interface to existing DSC system	Kuwait
2006	Kuwait Oil Company / Bluewater Energy	Calm Buoy Control System (2 buoys) - SIL3 H41/51q PLC systems, solar panels and batteries, dual redundant fibre optic link 20km, navigation aids, VHF ESD shutdown system, HPU with diesel engine, zone 1 MMI, supply of all instrumentation on the buoy, interface to existing DSC system	Kuwait
2006	ADCO / NPCC, OGD III project	PLC Controlled Single Well Control Systems - 100 units PLC based wellhead control panels and associated hydraulic units, SIL2 certified, Allen Bradley Control Logix PLC's, IS isolators, panel view MMI, interface to site RTU, segregated fire and gas IO	UAE, Desert location

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Year	Client	Description	Location
2005	BP / Sonatrach / Brown and Root Condor	5 PLC Controlled Single Well Control Systems - Hydraulic control panel to operate the wellhead valves and Hi-Lo pilot valves, solar panels and batteries, fibre optic panels and patch panels, Yokogawa PLC's, choke valve control modules, interface to existing Yokogawa DCS system	Algeria, Desert location
2005	ADNOC / Bluewater Energy	Calm Buoy Control System - RTU's and interface to instrumentation, solar panels and batteries, radio link 5km, navigation aids, slipring, load pins, portable unit, supply of all instrumentation and cables on the buoy, interface to existing DCS system	UAE, Mubarraz Terminal
2005	Shell / Bluewater Energy	Calm Buoy Control System - RTUs, solar panels and batteries, dual redundant fibre optic link 40km, navigation aids, portable units, supply of all instrumentation and cables on the buoy, interface to existing DCS system	West Africa, Nigeria Bonny Terminal
2004	Tullow Oil / SLP	Wellhead Platform Control System - dual redundant platform RTU's, zone 2 hazardous area packaged, dual redundant radio link, 1.4 Ghz, 22 km link, HPU and wellhead control panel controlled and monitored via the RTU system, SCADA system featuring Citect MMI, integrated fire and gas system, integrated ESD system, interface to existing DCS system on main platform	North Sea, Horne and Wren project
2004	ExxonMobil / SBM	Calm Buoy Control System - dual redundant buoy RTU's, hazardous area packaged, dual redundant MCS using GE Fanuc 90-30 PLC's, redundant radio modems and antennas, redundant radio frequencies, 5 km link, portable control units, dual function also provide repeater function, load pins and assemblies, navigation aids, zone 1 rated; solar power system, zone 1 rated	Nigeria, Erha project

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Year	Client	Description	Location
2004	SADRA / Bluewater Energy	PLEM Control and Instrumentation System, Calm Buoy - zone 1 certified RTU system, HPU and control panel for PLEM valves, radio link, over 7.5 km, shore based MMI, Citect SCADA, navigation aids, fog detector, strobe lamp, radar reflector, solar power system, load pin assembly, 250 tonnes; field cables and interconnections	South Pars, Iran
2004	ExxonMobil / SBM	Calm Buoy Control System - dual redundant buoy RTU's, hazardous area packaged; dual redundant MCS using GE Fanuc 90-30 PLC's, redundant radio modems and antennas, redundant radio frequencies, 2.5 km link, portable control units, dual function also provide repeater function, load pins and assemblies, navigation aids, zone 1 rated; solar power system, zone 1 rated	Angola, Kizomba B
2004	Shell / Bluewater Energy	PLEM Control and Instrumentation System for CALM Buoys - dual redundant, GE Fanuc 90-70 SIL2 (ESD valve control); HPU and control panel for PLEM valves, MMI, colour touchscreen, umbilical interface and SSTU, subsea instrumentation and jumper cables	Madera Marine Terminal
2003	Tengizchevroil / Parsons Fluor Daniel	Wellhead Control Panels - dual redundant design Hima TUV H51Q PLC's (ESD valve control and F+G); Simplex Allen Bradley Control Logix PLC (process control); MMI on each panel, colour panel view 1000 (English / Russian language); redundant fibre optic communications system interface to DCS; interface to Downhole Gauges; Integral Hydraulic Power Unit and Controls for injection wellhead valves	Kazakhstan / Tengiz SGI

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Year	Client	Description	Location
2003	ExxonMobil / SBM	Calm Buoy Control System - dual redundant buoy RTU's, hazardous area packaged; dual redundant MCS using GE Fanuc 90-30 PLC's; redundant radio modems and antennas, redundant radio frequencies; portable control units, dual function, also provide repeater function, lead pins and assemblies; navigation aids, zone 1 rated; solar power system, zone 1 rated	Angola, Kizomba A
2003	Saipem (Paris) / AGIP Nigeria	Subsea Control System - 2x Subsea Topside Hydraulic Power Unit, dual redundant valve control using GE Fanuc 90-30 PLC's; subsea umbilical termination units, TUTU, subsea jumpers	Offshore Nigeria, Okpoko project
2002 / 2003	ADMA OPCO / Brown and Root Aberdeen	CS7X RTU / Platform Wellhead Control Panel / HPU - CAC dual redundant CS7X RTU's, total of 300 I/O; zone 2 certified RTU system; zone 1 colour MMI with touchscreen; integrated / modular wellhead control panel / modular HPU; radio modems, antennas, communication network; interface to existing DCS system (GSI systems); local Abu Dhabi office support and maintenance	Offshore Gulf, ADMA Crestel GIP project
2002 / 2003	Shell	Rod Pump Controller Systems - 3x EP model 2000 RPC's c/w IS barrier for end instruments; control and monitoring of rod pumped wells; modem connection via cable to control room; interface to Shell software pack	Onshore Netherlands
2001 / 2002	Aquila Energy / Halliburton	Electric Dual Well Control Panels, Underground Gas Storage - fully all electric single well control panel; control and monitoring of electric tree actuators (MV); In and Out of sequence timing for the wellhead valves; open/close control for each valve with sequenced ESD pushbutton; electric fire fusible loop; flowline pilot signals integrated into the WCP; indication lamps for each valve; battery backup for the controller unit	Offshore Northern England

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Year	Client	Description	Location
2001	Texaco Kuwait / KOC / Imodco	Calm Buoy Control System - dual redundant EXS1000 RTU's, zone 1 hazardous area design; redundant UHF radio modems; control room based SCADA system, Windows 2000, Citect SCADA software; zone 1 certified navigation aids (foghorn and navigation aids); zone 1 solar power system	Offshore Kuwait
2001 / 2002	Shell Nigeria	EMTS and Telemetry Upgrade - temporary shelter, containerised, suitable for 6 person (beds, WC, utilities) A00 rating (safe area); battery room containerised A00 rating (safe area); equipment and control room A00 rating (safe area); auxiliary power units, 2 off, diesel powered generator sets, A00, containerised, 415V, 3 phase, AC; 75 kVA; process instrumentation upgrade, pressure transmitters, temperature transmitters, valve controllers; telecoms systems, point to point, 32 mbps, 2.5 GHz microwave backbone extension; RTU, SMAR foundation fieldbus system; solar power system, 120 solar panels, Shell Solar, 5 day autonomy; LV switchboard(s) and distribution; fire and gas detection and protection system, protection CO2 release equipment, generators and battery room; emergency and platform lighting; navigation aids; security and CCTV system, c/w microwave system interface, video monitors, cameras, remote control night visio capability; field cables, glands, cable tray, hardware and installation supervision; engineering and project management	Offshore Nigeria

Buoy Control and Automation Systems

Year	Client	Description	Location
2001	Occidental Petroleum	Platform Control System / Fire and Gas Extension Panels - choke valve and wellhead process control system; zone 1 safe area design (platform dependant); control PLC, GE Fanuc 90-30, I/O system Genius I/O; integral IS isolating barriers, interface to associated wellhead control panels	Offshore Qatar
2000 / 2001	Saudi Aramco	Siemens S5 PLC / RTU design, gas flow computation / choke valve control; dual redundant TUV certified safety shutdown PLC's, wellhead valves control; hardwire modem connection to Yokogawa SCADA system; remote control of CAC single well hydraulic control panel; front panel MMI / graphic scree / trending; dual powwe supply, battery backup system; SOE recording and monitoring / remote download of wellhead parameters	Khuff Gas Field, Onshore Saudi Arabia
2000	Dragon Oil	Wellhead Control Panel, PLC Platform Control System - all components zone 1; GE Fanuc 90-30 PLC; integrated fire and gas system; motor control centre, hazardous area MMI / graphic screens, dual language English / Russian, interface to Fluenta multiphase flowmeter; Integrated Hydraulic Power Unit / Wellhead Control System	Caspian Sea, LAM and Zhadanov field development
2000	Northland Energy Services	Underbalanced Drilling Package, Control System - all components zone 1 / intrinsically safe design; GE Fanuc 90-30 PLC with Genius interface / field control modules; communications to third party WITS, gas chromatograph and SCADA system; motor control centre, hazardous area MMI / graphic screens; modular electrical connection system / jumpers; Integrated Hydraulic Power Unit	Offshore North Sea

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Year	Client	Description	Location
1999	Oil & Natural Gas Commission (India)	SCADA System, Fire & Gas System, RTU System - VHF radio link between Master Control Station & remote platforms; 25m antenna mast & accessories; CAC 6500 RTU's & EXS1000 RTU's; dual redundant Wonderware Intouch SCADA system, fire & gas systems; Intergrated Wellhead Control Panels	Offshore India, GS-15 & GS-23 platform
1999	Fluor Arabia	Telemetry System - CAC 6532 RTU's, modem link over 8km twisted pair cable, Modbus Master / Slave Arrangement	Saudi Arabia
1999	Georgian Pipeline	Oil Loading Buoy Control System - UHF transceivers at the Buoy and MTU, Calibrated Load Pin and transmitter, buoy based RTU, CAC1200; hazardous area certified solar power system; navigation aids control system; portable control unit; wind speed, sea current and sea current direction monitoring; GE Fanuc Simplicity SCADA system at the shore terminal control room	Offshore Black Sea, SUPSA Loading Buoy
1999	Occidental Qatar	SCADA I/O Extension - hazardous area, zone 1 located; Exd I/O system incorporating GE Fanuc field control modules; isolating IS barriers; host PLC communication interface hardware and programming	Wellhead platform IS-R06
1998 / 1999	Shell Sri Lanka	Oil Loading Control System - power line communications system, no separate communications cables needed; CAC manufacture subsea control system electronics; Subsea Hydraulic Power Unit; subsea PLEM valve control system; 5.5km subsea umbilical cable; dual redundant GE Fanuc 90-30 PLC system topside; Wonderware Intouch SCADA system at the shore terminal control room	Offshore Colombo, Subsea System

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Year	Client	Description	Location
1998 / 1999	Zadco	Oil Loading Buoy Control System (x2) - dual redundant, hot changeover UHF transceivers at the Buoys and MTU, dual redundant buoy based RTU's, CAC1200; dual redundant voice communication system with path voting; 6 off Portable Control Units; fully redundant antennas for both the onshore and offshore repeaters; multiple node QNX based SCADA system at the Central Island control complex	Offshore Zirku Island
1990 / 1998	Bapetco	Single Well Control Panel, Integrated RTU and Telemetry System - EXS1000 RTU's, HPU, DCmotor powered, single well control panels; solar power systems; hazardous area certified IS barriers and termination equipment; panel operator interface units; mix of radio modem / dial-up modems communication; central SCADA host computer using Realfile	Onshore Egypt (desert), BED 2 and 3 projects
1998	Brown and Root / Amerada Hess	Structural Monitoring Package SCADA System - Wonderware Intouch SCADA system; GE Fanuc 90-30 PLC; wave height instrument; hazardous area, structural movement sensors	South Arne
1998	Mansel Offshore	Platform Control System / Fire and Gas System - dual redundant 90-30 PLC systems with Genius I/O; addressable fire loops and control unit with interface to the PLC system; touchscreen MMI based on the GE Simplicity SCADA package; multiple HC gas detectors; multiple H2S gas detectors; hazardous area certified PA system; PABX system, 112 extension lines with hazardous area telephones and accessories	Offshore Qatar - Rig Leen, Jack Up

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Year	Client	Description	Location
1998	Occidental Petroleum	Platform Control RTU Systems - multiple EXS1000 RTU's, hazardous area certified; hazardous area certified solar panels; hazardous area certified IS barriers and termination equipment; panel operator interface unit; 450 MHz radio modem and antenna; central base radio modem and antenna; interface to existing INFI 90 DCS system	Offshore Qatar
1998	Bechtel / Arabian Industrial Fibres - PTA & Aromatics Plant	RTU systems, SCADA system, Telecommunications System - hazardous area certifies 44 window annunciator panel; GE Fanuc PLC system; RS485 / fibre optic link to 2 remote PLC systems; telephone voice links via fibre optic cable; PABX / fibre optic interface units; Wonderware Intouch SCADA system, CAC manufacture 6532 RTU system	Saudi Arabia
1997 / 1998	Bechtel / Dabhol Power project	Oil Loading Buoy Control System - dual redundant, hot changeover UHF transceivers at the Buoy and MTU; buoy based RTU, EXS1000; hazardous area certified solar power system; navigation aids; portable control unit; redundant antennas; Hydraulic Power Unit	Offshore India
1997 / 1998	OGDC Pakistan	SCADA, RTU and Telecommunications System - dual redundant, hot changeover UHF transceivers; voice system including intrinsically safe handheld radios (UHF) and base station; multiplexer providing multiple data and voice circuits via the UHF link; UHF analog base station (connected to the remote MUX) polling 6 remote RTU sites; solar power for each RTU site; SCADA system and GE Fanuc PLC system at the central office site; CAC provided commissioning, installation assistance and start-up on site	Pakistan, Panjipur Gas Field

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Year	Client	Description	Location
1997	Saudi Aramco	Electric Single Well Control Panel - fully all electric single well control panel; control and monitoring of electric tree actuators (PWV, MV, SCSV, SWV); In and Out of sequence timing for the wellhead valves; Open / Close control for each valve with sequenced ESD pushbutton; electric fire fusible loop; flowline pilot signals integrated into the WCP; indication lamps for each valve and graphical operator interface unit; battery back-up with redundant chargers, for the controller unit	Onshore Saudi Arabia
1997	Apache Energy	Oil Loading Buoy Control System - dual redundant, hot changeover UHF transceivers at the Buoy and MTU; buoy based RTU, EXS1000; hazardous area certified solar power system; navigation aids; portable control unit; redundant antennas; SCADA system at the central offshore platform	Offshore Western Australia
1996 / 1997	Elf Qatar	Telecommunications System - space diversity, 1.5 GHz microwave link 43km; dual redundant, hot changeover microwave transceivers and antennas; dual redundant PLC link from onshore SCADA to offshore PLC system; voice system including intrinsically safe handheld radios (VHF) c/w telephone line interface (VHF); multiplexer providing multiple data and voice circuits via the microwave link; commissioning, installation assistance and start-up on site Halul Island and offshore	Offshore Gulf, Halul Island - DP1 platform
1996	Maersk Oil Qatar	Platform Control System - dual redundant GE Fanuc PLC ESD system; Simplex control PLC, GE Fanuc; field control I/O modules; PID loop control c/w multiple operator interface; AGA gas flow calculations using GE Fanuc system and supplied Orifice Plate system; Wonderware Intouch SCADA system, including SCADA Host plus operator workstation	Offshore Qatar

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Year	Client	Description	Location
1996	Maersk Oil Qatar	Platform Fire and Gas System - multiple H2S gas sensors and low power gas detector cards; multiple HC gas sensors and low power gas detector cards; fire loops safe and hazardous area - smoke detectors, heat detectors, call points; fire loop control cards; alarm sounders and lamps; control PLC, GE Fanuc, Wonderware Intouch SCADA system, dedicated to the F+G system	Offshore Qatar
1995 / 1996	Occidental Petroleum	Platform Control System / Fire and Gas System - multiple H2S gas sensors and low power gas detector cards; alarm sounders and lamps; control PLC, GE Fanuc; panel operator interface units, integral IS multiplexer system; interface to associated wellhead control panels; interface to fibre optic communications system	Offshore Qatar
1996	Petrobaltic	Platform Control System / Fire and Gas System - hazardous area zone 2 rated control room, c/w air conditioning; multiple H2S gas sensors and gas detector cards; alarm sounders and lamps; control PLC, GE Fanuc; panel operator interface units; dual redundant UHF radio link to remote wellhead platform; interface to associated wellhead control panel; Realplex 4 SCADA system	Offshore North Sea / Baltic
1995 / 1996	BP Columbia/ Bluewater Engineering	Calm Buoy Control System - dual redundant, hot changeover UHF transceivers at the Buoy and MTU; buoy based RTU acting as MASTER; portable control unit; redundant antennas; SCADA system and GE Fanuc PLC system at the central office site; hydraulic control panels for the PLEM valves; FAD detection interface (hose leak detection), commissioning, installation assistance and start-up onshore and offshore	Columbia

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Year	Client	Description	Location
1995	KOC/ Sofec	Calm Buoy Control System (x2) - Allen Bradley SLC series controller on each buoy; communications over an umbilical cable using modems; Wonderware Intouch SCADA system; hydraulic control panels for the PLEM valves; navigation aids and associated control system interface; solar power systems and backup diesel generator units on each buoy; commissioning, installation assistance and start-up onshore and offshore	Kuwait
1993 / 1994	Totalpetro (Total / Tatneft Joint Venture)	Mobile Cellulose Chemical Injection System - electrical generator trailer with RTU control system, provides power to all systems, 300kW; dosing pump trailer with RTU control system; mixing trailer c/w integral control room, SCADA MMI, Annunciator, PID loop controllers; 'Dosing Product' road tankers (3 off) c/w RTU control system; GOST certification for complete system; operating temperature range -40 to +40°C; all documentation and SCADA system provided in Russian language; installation and support services on site	Tatarstan (Russia CIS)
1994	Almetyevneft	Rod Pump Controller System - 6 wells automated CAC 8800 RPC's; hazardous area installation, IS barriers for end devices; radio communication network, UHF; hardwire modem connection to repeater and 2x RPC's; central computer monitoring and control system; installation and support services	Tatarstan (Russia CIS)