

Controls, Instruments, Electrical, Process & Valves Peninsular Offshore Systems provides We will engineer, design, calculate based upon a requested operation, and upon approval from our clients, we proceed to fabricate, test, install supply of process & safety control systems and valve automation. We and commission. specialize in valve automation, process We offer expertise in all pneumatic, hydraulic, electrical, relay based systems integration. logic and PLC systems.

ISO & Quality Management System Certified

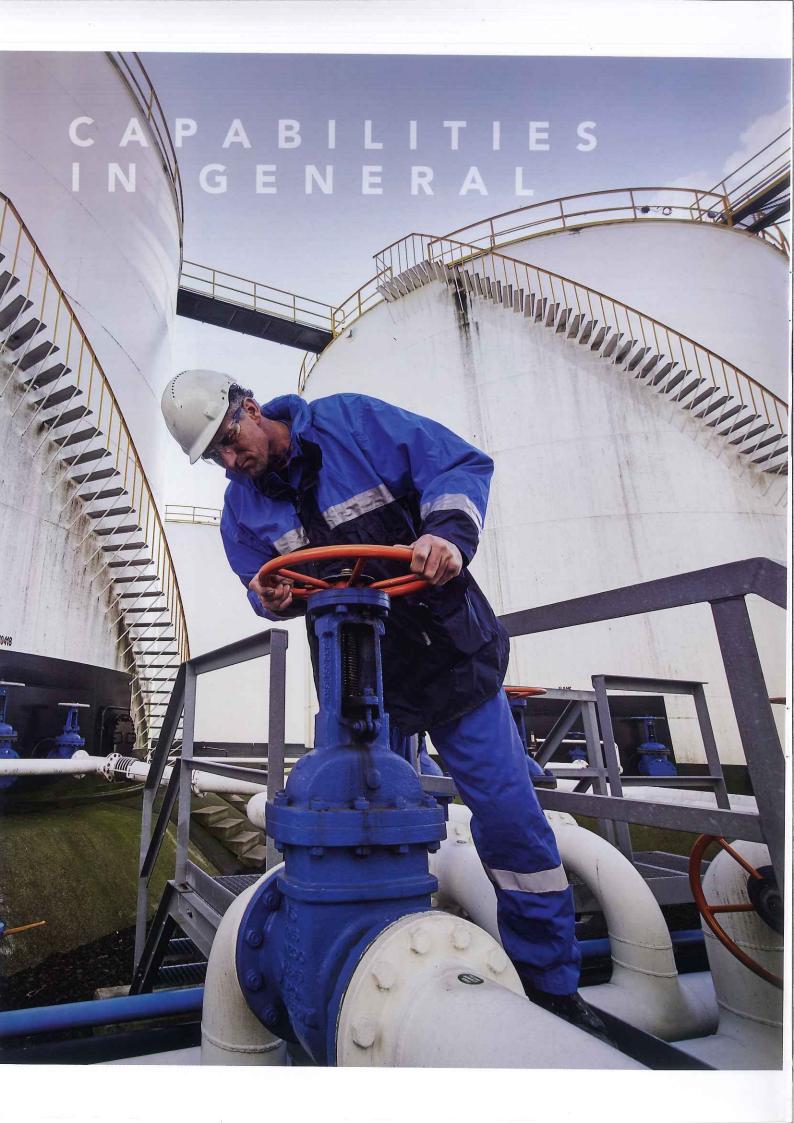
ISO 9001: 2008



BS OHSAS 18001: 2007







- Design, Fabrication and Commission of Pneumatic, Hydraulic and PLC Based Control System
 - Offshore Wellhead Control Systems for Operation of Safety Valves (SCSSV, SSV, MV) and Choke Valves

HIPPS Control Systems for High Integrity Pressure Protection

Instrument Control Systems (Pressure, Temperature, Level and Flow Control Panels)

Emergency Shutdown Systems for Fire Protection and Safety (Fusible Plug Panels & Deluge Valve Controls Panels

- Design, Supply and Commission of Electrical Distribution Systems including Design of Hazardous Area Enclosures and Components
- Process Skids including Pumping Systems, Pressure Vessels, Scrubbers and Strainers
- Injection and Dosing Systems including Chemical Injection Skids

■ Valve Automation

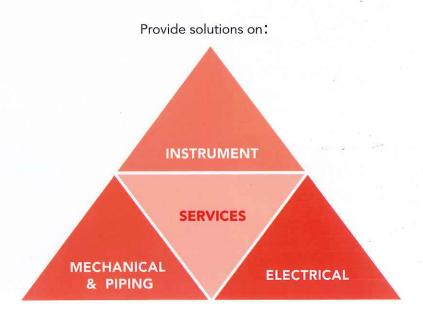
- Blow-down and Shutdown Valves

Positional Control Valves

Pneumatic , Hydraulic, Gas Over Oil and Electric Valve Controls

Pneumatic and Hydraulic Piston, Diaphragm, Electric Motor, Electro-Hydraulic and Rotary Vane Actuators

Choke and Control Valves Actuation



IN-HOUSE SKID FABRICATIONS

Peninsular Offshore Systems designs and builds skid mounted systems that specifically cater to provide the skid system you need. We have built chemical injection systems, pump skids, filter systems, compressor skids, high pressure chemical sampling systems and process modules.

We offer complete systems that ensure seamless integration with other components.











Our capabilities include:

- Interprets Customer Specification or Design Requirements.
- Design, Fabrication, and Assembly of Fluid Handling Systems starting from a conceptual study through finished drawings ready for fabrication. We will provide full electrical, instrumentation, programming and fabrication documentation.
- System and Component skid fabrication capabilities include: a welding shop, sheet metal fabrication shop, paint booths, sand blasting booths, control panel assembly and acomplete machine shop.
- System Design and Engineering including all necessary instrumentation, PLC programming or MMI software required to automate the skid.
- Welding of structural bases, skids and tanks per ANSI/AWS Structural Welding Codes.

- Pneumatic Testing of Pump and Piping Skids.
- Non-Destructive Testing of Fabrication Materials.
- Testing We fully test all skid systems at our facility to ensure proper operation in the field.
- Training We will train your maintenance staff on the operation and maintenance of the skid and it's subsystems.
- Hydro Testing of Pump and Piping Skids.
- Dye Penetrant Testing of Welded Tanks.
- X-Ray and Mag Particle Testing of Structural and Pipe.
- Start-up Our technicians assist you with the start-up in your facility until you are completely satisfied with the skid's operation.
- Quality Management through ISO 9001:2000 Procedures.

Valve Automation

MANUAL / ACTUATED BALL VALVES

ON-OFF APPLICATION (BDV, SDV, MOV – Standard or Compact design)

- Sizes from 2" and up to 48"
- Wide range of Materials available
- Trunnion mounted or Floating Ball

- Side entry or Top entry design
- Single or double acting actuator
- Pneumatic or hydraulic actuator



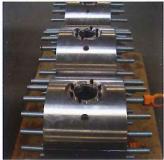














TWIN BALL DOUBLE BLOCK & BLEED VALVES













- Double Isolation Function
- Trunnion Mounted or Floating Ball Design
- Weight and Costs Saving

- Custom made to sizes customers require
- Onshore and Offshore applications

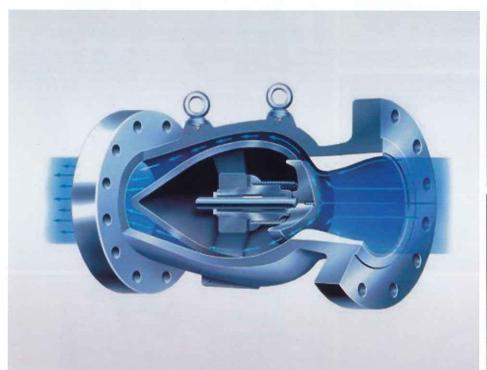
Engineered Valves

NOZZLE TYPE CHECK VALVES

High Performance and Non Slam Design

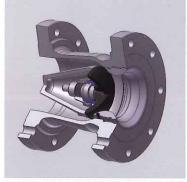
- Few moving parts
- Axial movement of disc
- Short stroke of spring-assisted disc

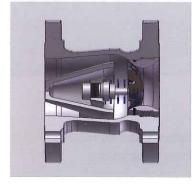
Unique Design Features result in Superior Performance, Fast Response and Lower Pressure Loss in piping systems

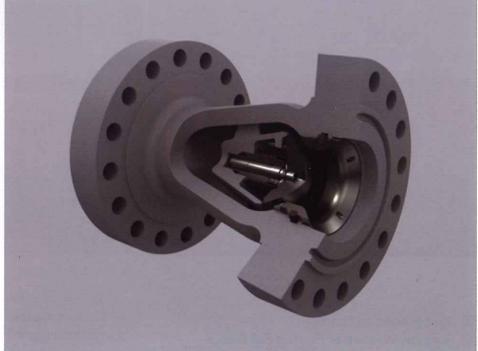












Valve Automation

MULTIPORT SELECTOR VALVES

The Compact Solution for Multiple Wells Test and Measurement







- Reduced installation cost
- Reduced operation cost
- Intelligent Actuator for selection of Test Well

Standard sizes :

2"x 4" (8 inlets of 2", test outlet of 2", group outlet 4")
3"x 6" (8 inlets of 3", test outlet of 3", group outlet 6")
4"x 8" (8 inlets of 4", test outlet of 4", group outlet 8")
8"x 16" (8 inlets of 8", test outlet of 8", group outlet 16")

MANUAL / ACTUATED CHOKE

- Adjustable & Positive Chokes for oil & gas production wells and water & gas injection wells.
- "Plug & Cage" Trim Design allows maximum flow capacity.
- "External Sleeve" Trim Design is suitable for high erosion service; Special trim design Multi-Stage Labyrinth Trims.
- Single or Double Acting, Stepper Actuator.
- Manufactured to perfection according to customers specifications and requirements.





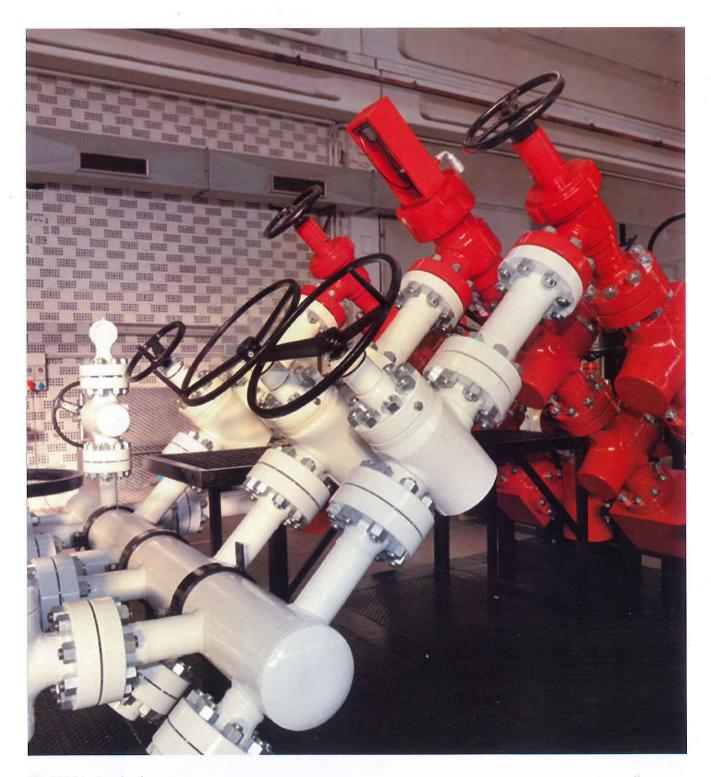




Valve Automation

PLATFORM WELLHEAD VALVES

Choke Manifolds



- API 6A standard.
- Formulated to provide for the availability of safe dimensionally and functionally interchangeable Wellhead & Christmas Tree Equipment.

PLATFORM WELLHEAD VALVES

Slab Gate, Double or Single Expanding Gate

- For Applications from 2000 psi 20,000 psi
- API 6A approved for severe service and to control the flow in wellheads and flow lines
- Sizes from 2" through 20"
- Manual & actuated with a wide range of actuators









Valves & Controls

ENGINEERED FOR SEVERE APPLICATIONS

Ball Valves, Gate Valves & Check Valves











- Subsea Ball Valves with Top Entry design for easy maintenance
- Through Conduit Gate Valve : Double Block and Bleed function for better sealing in presence of sand
- High Pressure High Temperature Application
- Manual Operation or by Remote Operated Vehicle (ROV)

PRESSURE, FLOW AND LEVEL INSTRUMENTS

Orifice Assemblies, Restriction Orifices, Venturi & Flow Nozzles, Pressure & Temperature Measurements, Pressure Sensors, Relays











PIPING SPECIALITIES

SP Items – Corrosion Coupons & Probes, Chemical Injection, Sampling Systems, Retrieval Tools, Rupture Discs, Breather Valves











MULTISTAGE RESTRICTION ORIFICE ASSEMBLY

Multi-Stage RO- Key Features & Benefits

Flow Measurement Excellence







Rototherm is widely recognised as a world leader in the design of restriction orifice assemblies and flow control systems with more than 40 years' experience.

Restriction orifice plates are widely used for managing pressure drops and to control flow rates. For high pressure and/or high noise applications, multi-stage restriction orifice assemblies are becoming increasingly common as a proven solution. Rototherm has built up significant experience and expertise within this area based on our design and application knowledge, uncompromising quality, proven project delivery, and industry leading machining and welding capability. Many of the world's leading users within oil & gas production, LNG production and mining, come to Rototherm to ensure the right solution is supplied first time.

APPLICATIONS



Gas Blowdown

Required typically to reduce pressure down to atmospheric. Increasingly common on offshore platforms where higher pressure drops and flow rates exist and control valves are expensive to install & maintain. For example, a multistage restriction orifice assembly is installed at the downstream of blow down When blowdown valves. valve opens to release the high pressure on its upstream, the RO at its downstream ensures that the flow is not excessive to overload the flare header. Usually the pressure drop in a blowdown circuit across an RO can be very high.

Gas Blow-By

Typical case is flow of hydrocarbon condensate from high pressure separator. Usually a level control valve controls the level of the high pressure separator. In case of valve failure, the valve needs to open fully to stop separator from overflowing. To stop the downstream systems from overloading due to gas flow, a multistage RO can be used for control. Similar application is seen in the heating medium flow in e.g. boiler, to mitigate effect of heating medium valve fail open position.

Cooling Water Recycling Lines

Common in mining and LNG producing plants, a multistage restriction orifice is a cost effective method for managing pressure within the water system. For example, a multistage restriction orifice assembly is used to manage a constant re-circulation flow. The recirculation ensures that cavitation and starvation cannot happen in the pump.

In these instances, users have two main choices:

- A control valve, which although has the flexibility of potentially varying flow conditions, is expensive to purchase and maintain due to various moving parts.
- 2. A multistage restriction orifice assembly which is cost effective and free from maintenance

Rototherm has become a world leader in the niche area of multistage restriction orifice assemblies, which requires great amount of technical understanding and experience within specific applications to ensure the "right" solution is designed and manufactured to meet the pressure drop requirements.

What is Cavitation?

Cavitation is an erosive condition which occurs when the internal pressure of the liquid passing through the orifice falls below its vapour pressure and vapour bubbles form. Further downstream from the orifice the pressure recovers sufficiently collapse the bubbles with extreme violence. Cavitation calculations are performed during the design stage of a **MSRO** to calculate cavitationfactors at each stage in the orifice assembly.

■ What is Flashing?

This is similar to cavitation except that the process pressure never recovers sufficiently to collapse the gas bubbles resulting in two phase flow – liquid and gas – downstream of the orifice. Erosion of the pipe work and valves and other instrumentation can occur due to the impact of liquid droplets arrived at high speed in the vapour flow.

■ What is Choked Flow?

Otherwise known as critical flow, this occurs when too large a pressure drop is attempted across a single orifice plate. When the downstream pressure is less than 53% of the upstream pressure, the flow through the orifice will become sonic, at which point no further increase in flow can be achieved by either increasing the upstream pressure or lowering the downstream pressure. A MSRO will enable staged reductions in pressure to choking prevent from occurring.



Design and Calculation

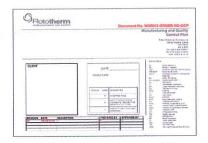
Each multistage restriction orifice assembly is a bespoke design. We work closely with process engineers to advise what limitations there are in the design of such equipment so that this can be considered as part of the overall system in the plant.



Manufacture & Assembly

Our in-house machinists and welders are trained to industry leading quality standards, and have experience across a vast array of exotic materials such as hastelloy, monel, duplex stainless steel, Inconel, and others. We are approved suppliers to all leading Oil& Gas producers, miners, and EPCs and our facilities and operators are regularlyaudited by such users. We are also an approved supplier to the Defence Industry.





Quality System, Inspection & Testing

ISO9001:2008 Approved 3rd party endorsed manufacturing and weld procedures. Stringent project quality plans. Experienced project engineers well versed in the high requirements

TAB HANDLED ORIFICE PLATE

General Description

Restriction orifice plates can be used as a simple pressure reducing device, or to limit the flow rate in a pipeline. They are designed to slip between pipe flanges. Versions to suit RTJ type flanges are available. The orifice plate is the most common differential pressure flow primary element. It is based on proven technology, has no moving parts and is suitable for high temperature and pressure applications. Orifice plates are recommended for clean liquids, gases and low velocity steam flows.

Dimensions

The outside diameter of the orifice plate is equal to the bolt circle diameter of the connecting flanges minus the diameter of the bolt. This ensures that the plate is centred accurately in the line. Plate thicknesses depend on line size and differential pressure, and should be sufficient to prevent the plate from bending under operating conditions.

Orifice Carrier Assemblies

Orifice plates can be supplied complete with one or two piece orifice carriers, or ANSI B16.36 orifice flanges.

Materials

Standard material grades include 316 Stainless Steel, 304 Stainless Steel, 310 Stainless Steel, Hastelloy® C276, Hastelloy® B3, Duplex Stainless Steel, Super Duplex Stainless Steel, Monel® 400, Carbon Steel, Titanium, Incoloy® 800, Incoloy® 825, Inconel® 600, Inconel® 625, Tantalum, PTFE and PVDF.

ORIFICE PLATE TYPES

Concentric Square Edge

For general applications in clean fluids - the most widely used design. Suitable for pipes up to 1000mm diameter.

Quarter Circle

Suitable for measurement of low Reynolds number flows in pipelines of diameter less than 750 mm.

Conical Entrance

Suitable for measurement of very low Reynolds number flows - easier to manufacture than quarter circle types.

Restriction

See Restriction Orifice Plate section.

Segmental

Suitable for measurement for measurement of dirty fluids and 2 phase flow - allows passage of extraneous matter. Suitable for pipes up to 350mm.

Eccentric

Suitable for measurement of dirty fluids and 2phase flow, preferred to segmental pipelines of diameters less than 350 mm.





EXXONMOBIL / SAPURAKENCANA

Project Name

: Tapis A and Tapis B

End User

: ExxonMobil

EPC

: SapuraKencana : Offshore Malaysia

Loacation Nominal Size

: 4"-8"

Flange Rating

: Up to 2500lb

Material

: 316SS

Number of Stages : 2 to 5

Application

: Gas blowdown/ flare

Year of Sale

: 2015





PETRONAS CARIGALI

Project Name

: PFLNG

End User

: Petronas

Nominal Size

: DN150 / 6 Inch

Flange Rating

: 900lb

Material

: 316 Stainless Steel

Number of Stages: 4

Number of Bores : 12 per stage

Application

: Flare, Pressure Drop

from 126 Brag to

atmosphere

Year of Sale

: 2015









SHELL / TECHNIP / MMHE

Project Name

: Gumusut Kakap

End User

: Shell

Medium

: Seawater

Nominal Size

: DN50 / 2 Inch

: Hastelloy C276

Flange Rating

: 150lb

Material Number of Stages: 3

Application

: Depressurize cooling

seawater from 11.6

brag to atm

Year of Sale

: 2015









SHELL / TECHNIP / MMHE

Project Name

: Gumusut Kakap

End User

: Shell

EPC

: Technip / MMHE

Medium

: Seawater

Material

Hastelloy C276

Number of Stages: 3

Number of Bores : 16 per stage

Application

: Depressurize cooling

seawater from 6

barg to 3 barg

: 2015

Year of Sale







EXXONMOBIL / SHAPADU

Project Name

: Tapis C

End User

: ExxonMobil

EPC

: Shapadu

Loacation

Nominal Size

: Offshore Malaysia : 4"-8"

Flange Rating

: Up to 2500lb

Material

: 316SS

Number of Stages: 4 Application

: Gas blowdown/ flare

Year of Sale

: 2014





SHELL

Project Name

: N/A

End User

: Shell

EPC

: N/A

Location

: Philippines

Nominal Size

: 6"

Rating

: Up to 900lb

Material

: 316SS

Number of Stages: 3

Application

: Gas Blow Down/flare

Year of Sale

: 2015









KONIAMBO NICKEL SAS / **HATCH**

Project Name

: N/A

End User

: Koniambo

EPC

: Hatch / Technip

Location

: Philippines

Nominal Size

: 16"

Rating

: Up to 150lb

Material Number of Stages: 3

: 316SS

Application

: Cooling Water Recycle

Year of Sale

: 2014





MODEC

Project Name

: N/A

Nominal Size

: DN50 / 2 Inch

Rating

: 2500lb

Material

: 316L Stainless Steel

Number of Stages: 4

Application

: Hydrocarbon Gas Blowdown Line

Onboard the StyBar row FPSO. Reducing

Pressure from 300 barg to Atmosphere

Year of Sale

: 2014

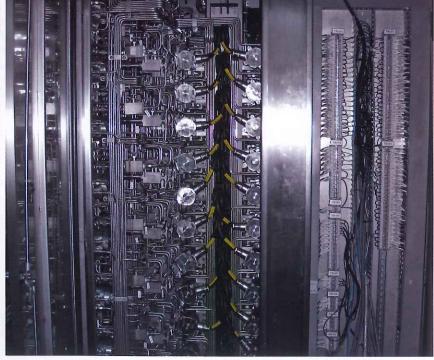


GUMUSUT KAKAP SEMI-SUBMERSIBLE FLOATING PRODUCTION SYSTEM (FPS) PROJECT











Supply of multi-packages with design, fabricate, test & delivery of:

■ HPU (Hydraulic Power Unit) & Riser Isolation Valves Control Panel - (Package 32)

To design, Fabrication, Coating Assembly, Testing and Delivery of Two (2) Hydraulic Power Units (HPU) and MISC Panels for HULL

HPU & Boarding Valves Control Panels (BVCP) - (Package 32A)

Design, Fabrication, Coating Assembly, Testing and Delivery of Two (2) Fully functional Hydraulic Power Units (HPU)and Five (5) Boarding Valve Control Panel (BCP)

■ HPU & Riser Isolation Valves (RIV) - (Package 32B)

Design, Fabrication, Coating Assembly, Testing and Delivery of Riser Isolation Valve (RIV) Hydraulic Power Units (HPU) and RIV Control Panel

Contractor : MMHE

End User : MISC Berhad











GUMUSUT KAKAP

SEMI-SUBMERSIBLE FLOATING PRODUCTION SYSTEM (FPS) PROJECT





Engineering, Fabrication, Testing and Delivery of Actuated Valve for Gumusut Kakap Topside

- Pneumatic Actuated Type, Motor Operated Type & Remote Operated Type with sizes from 1" to 24", ANSI 150-1500 rating. Total 160+nos (c/w PFP Firebox Riser Isolation Valves)
 - 84 Pcs Shutdown Valve (SDV)
 - 10 Pcs Blowdown Valve (BDV)
 - 02 Pcs Motor Operated Valve (MOV)
 - 11 Pcs Remote Operated Valve (ROV)

Production & Water-flood Boarding Valves (TCSG, 2 in 1 single body), sizes from 9" to 12", Class 2500 rating & API 5000, API 6A Design.











Contractor : MMHE End User : MISC Berhad











CENDOR

PHASE 2 DEVELOPMENT PROJECT, BLOCK PM 304

- Supply of design, fabricate & delivery of 86 Nos of Manual & Actuated Choke Valves in block PM 304 Cendor Phase 2 Project for :-CDW-A Wellhead Platform – 20 Pcs CDW-B Wellhead Platform – 38 Pcs CDW-C Wellhead Platform – 28 Pcs
- Size from 2" 6", Rating: 1500#
- Angle choke with piston linear actuator, external sleeve with tungsten carbide trims









Contractor: MMHE

End User : Petrofac Malaysia Limited



ELDFISK II, 2/75 JACKET UCS-UPENDING CONTROL SYSTEMS











- Design, Test, Supply and Commissioning of the Jacket Upending Control System (UCS) on the Eldfisk II 2/7S Jacket structure and the supply of 4 No. ROV operated flood valves for the Bridge Support Jacket structure.
- The Bridge Support Jacket is a 4-leg structure, which is designed to be lift installed. All jacket legs have single compartments and will be flooded during installation to assist on-bottom stability.

Contractor : **Dragados Offshore** End User : **ConocoPhillips** The 2/7S Jacket is an 8-leg structure with 2 No. Flotation Tanks. All jacket legs will be flooded during installation to achieve upending and obtain on-bottom stability. The 4 main legs will be subdivided into 3 compartments. The 4 internal legs will not be subdivided. Each of the Flotation Tanks will be subdivided into 15 compartments. The structure is designed to be barge launched.



KUMANG CLUSTER PROJECT



Supply and Delivery for 2 Unit of 28" Motor
 Operated Valve (MOV) for KUMANG CLUSTER
 Platform, Sarawak Operation

Operated by: Motor Operated Valve (MOV)

Size : 28", Rating 900#

Valve type : Ball Valve split Body side entry

End User: PCSB Sarawak Operation



BELUM

SATELLITE (BE-SA) TOPSIDE PROJECT



 Supply and Delivery of Corrosion Coupon, Corrosion Probe, Chemical Injection and Chemical Sampling for Belum Satellite (BE-SA) Topside

6 unit of 2" System Corrosion Coupon pipe size : 6" & Wall thickness: Sch. 160 6 Unit of 2" System Corrosion ER Probe pipe size : 6" & Wall thickness: Sch. 160 10 unit of 2" System Chemical Injection pipe size : 6" & Wall thickness: Sch. 80 10 unit of 2" System Sampling Connection pipe size : 6" & Wall thickness: Sch. 80

Contractor : Boustead Penang Shipyard End User : Murphy Sarawak Oil

E MÜRPHY

TAPIS B PLATFORM











Supply and Delivery of Restriction Orifice Plate/Orifice Plate Assembly / Multiport Restriction Orifice Plate for Tapis B Platform
 23 unit of Restriction Orifice Plate
 20 unit of Orifice Plate Assembly
 3 unit of Restriction Orifice Plate (Multiport)

End User: Kencana HL Sdn Bhd



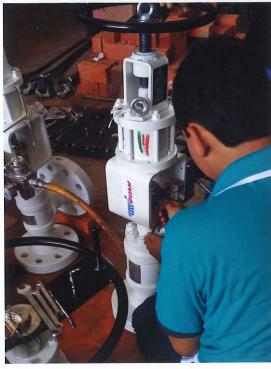
BOKOR

PHASE 3 INFILL WELLS PROJECT











 Supply and Delivery of Actuated and Manual Choke Valves for Bokor Phase 3 Infill Wells Project

Size: 3" and 3 1/8"

Rating: 1500# and API 5000#

15 unit Manual Choke Valves (Hand wheel) 4 unit Actuated Choke Valves (Pneumatic Piston)

Contractor : Petra Energy Sdn Bhd End User : PCSB Sarawak Operation





KINABALU

NON-ASSOCIATED GAS (NAG) PROJECT (KNPG-B)

- Malaysia's first High Pressure High Temperature (HPHT) well.
- Assist in developing the FEED and Detailed Engineering design for the HPHT Valves Package, which include but not limited to material selection, type & configuration, valve and actuator sizing, etc.

Successfully completed the Design, Fabricate, Test, Supply and Commission of HPHT Valves as per API 6A/ API 17D to 1034 bars pressure. Engineered to product specification level PSL 3 with HP gas test and performance requirement of PR2.

Fabricator:



Partner:



Consultant:





SBM ASENG FPSO PROJECT

Mooring - DBB Valves
 Topside - Manual Ball Valves
 Turret - Manual Ball Valves



THAI NIPPON STEEL CAKERAWALA & BULAN PROJECT

Successfully completed the Design, Fabricate, Test, Supply and Commission of HPHT Valves as per API 6A/ API 17D to 1034 bars pressure. Engineered to product specification level PSL 3 with HP gas test and performance requirement of PR2.



SIME DARBY BUNGA ORKID A CPP TOPSIDE

Actuated Ball Valves & MOV
 Manual Butterfly, Globe & Choke valves
 Actuated Butterfly Valves



PTSC BUNGA ORKID B, C & D

Wellhead Control Panel



PETRONAS CARIGALI SAMARANG, BOKOR, KUMANG CLUSTER, TEMANA, BARONIA, DULANG, RESAK, BARAM

MPA For Choke Valves

E‰onMobil

EXXONMOBIL TAPIS B, GUNTONG B, C & E,

Restriction Orifice, Orifice Assemblies,
 Multistage orifice

ExonMobil

EXXONMOBILGUNTONG A

Pressure Relief Valves



MLNG DUA DEBOTTLE NECKING PROJECT

Actuated Ball Valves



WOOD GROUP MUSTANG GUNTONG B, C

Corrosion Monitoring



MURPHY SOUTH ACIS (NAG)

Pneumatic Choke Valves

SERVICES

Engineering Assistant and On-Site Services

Engineering Services for Process & Safety Control Systems and Valve Automation as complete package.

Assist in system packages system design, e.g feasible study, system selection, valve engineering design, sizing, material selection and configuration.

On-Site Services:

- System Upgrade and Modification (Including On-Site Machining)
- Valve Repair Service and Valve Retrofitting
- Hydrostatic Testing
- Insulation & Wrapping
- Corrosion Monitoring Systems (including Hot Tapping)





ENGINEERING SERVICES – VALVE AUTOMATION & REPAIR SERVICES

Peninsular Offshore Systems Sdn Bhd offer valve actuation and automation services for all types/makes/model/sizes of actuators (pneumatic, electric, hydraulic units). Our service Include complete valve modification, actuator mounting for new and existing valves, actuator reconditioning, actuator set-up, calibration, stroking and hydraulic flushing services.

Our capabilities are to assemble and test valves from 1/4" up to 42" in diameter.



Client List



































































WHAT ISOUR STRATEGY?

Understand Objective

Client's requirement & Design Specification

Provide technical assistance with any questions regarding our products & how they apply to our client's applications

Promote Latest Technology which meets International Standard

Develop trust to always have your best interests in mind

Offer Top Quality Product with Cost Competitive Solution

Continuously upgrade our knowledge

Research & Development for Advance Technology

Training for Product Knowledge and Skillful Services

Know our products and always stand behind what we sell

Responsive After Sales
Services to Maintain
Long Term Success

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