

A full-page background image featuring a male worker in a blue jumpsuit, white hard hat, and safety glasses, leaning on a red metal railing on an offshore platform. The worker's name tag reads 'AUGUSTINE C' and his company patch reads 'STARKE MARINE'. In the background, the ocean stretches to the horizon under a cloudy sky, with another offshore structure visible in the distance. The image is framed by dark blue and light blue diagonal geometric shapes on the left and right sides.

STARKE
M A R I N E

**CORPORATE
PROFILE**

AGENDA

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Company Introduction

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Q&A



Starke Marine Sdn Bhd (SMSB) is a prominent leader in the global oil and gas sector, renowned for its commitment to innovation, sustainability, and reliability.

Established in 2014, our team brings a combined experience of over 100 years in the upstream oil and gas industry. SMSB offers an unmatched blend of technical expertise, operational efficiency, and business acumen, seamlessly integrated with industry-specific regulatory knowledge and risk management capabilities—making us a highly valuable partner to any venture.

We are dedicated to supporting hydrocarbon asset owners at every stage of development, from feasibility studies to engineering, project execution, operations, and decommissioning.



Photo from:
Transportation & Installation of PFLNG Satu Relocation Project, Year 2019.

CORPORATE OFFICE

Headquarter

Starke Marine Sdn Bhd

Level 1 to 3, Block H,
Plaza Kelana Jaya,
Jalan SS 7/13A,
47301 Petaling Jaya,
Selangor, Malaysia

Brunei Office

SMAP Enterprise

No. 15B SPG 637-84
Skim Tanah Kurnia Rakyat Jati Lambak, Kiri Berakas A,
Bandar Seri Begawan, Brunei

Borneo Office & Warehouse

SMAP Tech Sdn Bhd

Lot 1832, Jalan Desa Senadin,
Desa Senadin Industrial Estate,
98000 Miri, Sarawak, Malaysia

Factory Units

Starke Marine Sdn Bhd

Lot 56 & Lot 56,
Hamilton Industrial Park,
71800 Nilai, Negeri Sembilan,
Malaysia



LICENSES & CERTIFICATION



Companies Commission of Malaysia
Registration No: 1103645 W



Ministry of Finance (MOF), Malaysia
Certificate No: K10353124061850442



Royal Malaysian Customs Department
Registration No: 000358002688



Petronas License
License No: 1103645-W



OGSE Member
Malaysia Petroleum Resources
Corporation (MPRC)



Certified to ISO 9001:2015

Provision of Project Management for:

1. Offshore Transportation, Installation and Commissioning Services and
2. Marine and Engineering Consultancy Services Related to Transportation and Installation (T&I) for Oil & Gas Industry



Contractor Member of
International Marine Contractors Association
(IMCA)
Areas of Membership : Marine



MISC Berhad
Registration No: VRS-20180129-0001



Corporate Member for Malaysia
Oil & Gas Services Council



All Engineers are registered with
Board of Engineers, Malaysia
(BEM)



OUR SERVICES

OFFSHORE T&I AND DECOMMISSIONING SERVICES

Starke Marine provides a comprehensive, one-stop solution for managing complex offshore installations and decommissioning of oil and gas production facilities.

Our extensive network includes engineering firms, offshore contractors, vessel owners, equipment suppliers, fabrication yards, and marine specialists across the region. By leveraging expertise from various fields, we deliver integrated, cost-effective solutions tailored to meet our clients' specific needs.

With a proven track record, we successfully execute Engineering, Procurement, Construction, Installation, and Commissioning (EPCIC) projects on schedule, with zero Lost Time Incidents (LTI).

Photo from:
Provision of Transportation & Installation of PFLNG Satu Relocation Project - Year 2018/19.





PROJECT MANAGEMENT CONSULTANCY (PMC) & EXECUTION SERVICES

“ Our Project Management Team comprised of individuals with a diverse set of skills and expertise, able to ensure projects are delivered on time, within budget, and with the desired quality. Each personnel in our team, have a proven track records, serving major oil & gas brands across the globe.

We have the ability, expertise, resources and wealth of experience to provide a comprehensive project team or individual for the execution as the below position(s):

- + Project Managers
- + Offshore Construction Managers / Superintendent
- + Tow Masters
- + Project / Field Engineers
- + Diving Advisors
- + HSE Manager, Supervisor or Officer
- + Barge or Rigger Foreman
- + Construction crews (rigger, scaffolder, welder, fitter, etc.)
- + QAQC Engineers
- + NDT Inspectors
- + Offshore Medic

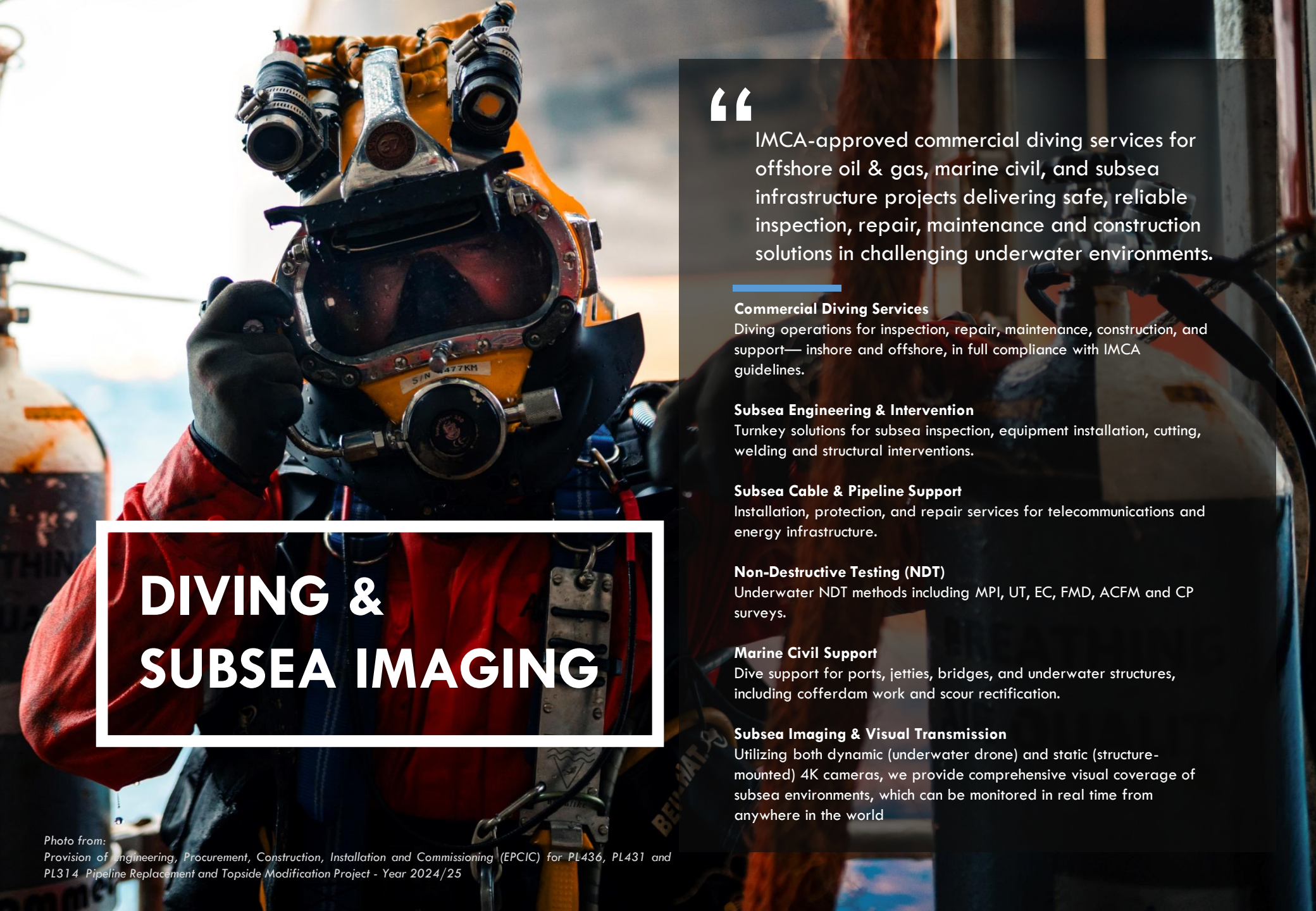
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Starke Marine able to provide deliverables related to offshore marine transportation and offshore installation engineering, from fixed platform, pipeline to floating production/storage unit.

We can provide advanced offshore engineering capabilities through our team of technical engineers providing a full spectrum of engineering such as :

- + Dynamic Lift Analysis
- + Motions, Mooring and Stability Analysis
- + Sea fastening, Grillage design & Transportation Study
- + Structural Integrity Assessment
- + Loadout Engineering, Ballasting and Towing Analysis
- + Offshore Pipeline Installation Analysis
- + Rigid/Flexible Pipeline Analysis
- + Quayside Strength, Fender Design Force and Impact Calculation
- + Subsea Foundation and On-bottom Stability Studies

**NAVAL, STRUCTURAL &
MSURF ENGINEERING
CONSULTANCY**



DIVING & SUBSEA IMAGING

“

IMCA-approved commercial diving services for offshore oil & gas, marine civil, and subsea infrastructure projects delivering safe, reliable inspection, repair, maintenance and construction solutions in challenging underwater environments.

Commercial Diving Services

Diving operations for inspection, repair, maintenance, construction, and support— inshore and offshore, in full compliance with IMCA guidelines.

Subsea Engineering & Intervention

Turnkey solutions for subsea inspection, equipment installation, cutting, welding and structural interventions.

Subsea Cable & Pipeline Support

Installation, protection, and repair services for telecommunications and energy infrastructure.

Non-Destructive Testing (NDT)

Underwater NDT methods including MPI, UT, EC, FMD, ACFM and CP surveys.

Marine Civil Support

Dive support for ports, jetties, bridges, and underwater structures, including cofferdam work and scour rectification.

Subsea Imaging & Visual Transmission

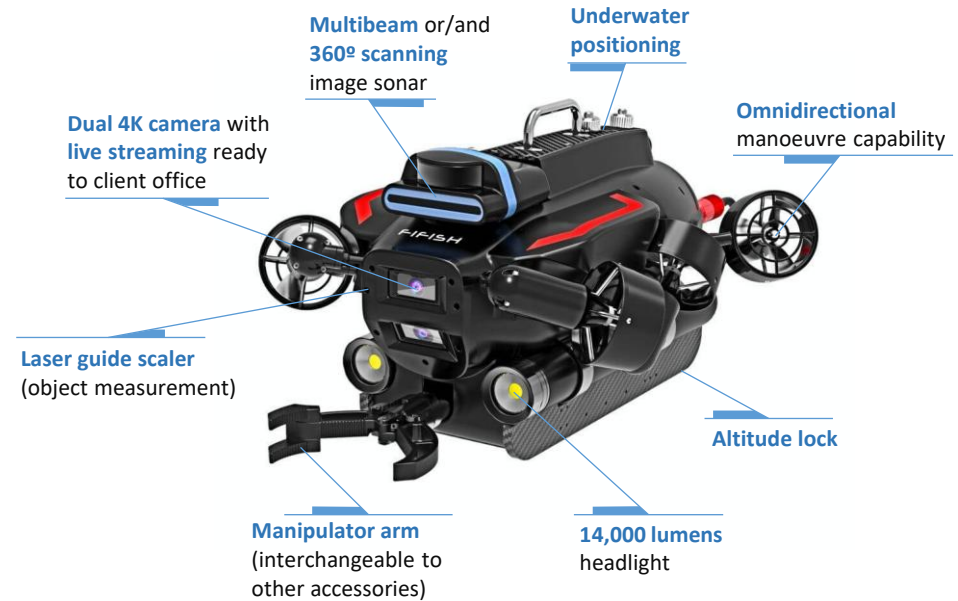
Utilizing both dynamic (underwater drone) and static (structure-mounted) 4K cameras, we provide comprehensive visual coverage of subsea environments, which can be monitored in real time from anywhere in the world

UNDERWATER DRONE SERVICES

Starke Marine underwater drone service is meant to fill in the void left by work class ROV - which are ease of deployment, working within tight space and cost effective.

This compact powerhouse combined with Starke Marine vast field experience, strong support from the principal and collaboration with universities guarantee a continuous support to our client.

Since its inauguration, we have completed numbers of survey and inspection at multiple offshore structures, flexible pipeline lay monitoring, FPSO turret visual check and assisting scientist with marine biology research.



CREATIVE CONTENT PRODUCTION

Our renowned creative department has been crafting compelling visual narratives for leading international brands since its inception. The synergy between our artists and engineers allows us to deliver the best of both worlds—creativity and technical precision.

Our creative team is comprised of highly experienced industry professionals who excel at understanding clients' needs and effectively communicating their message to target audiences.



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PRODUCT & TECHNOLOGY

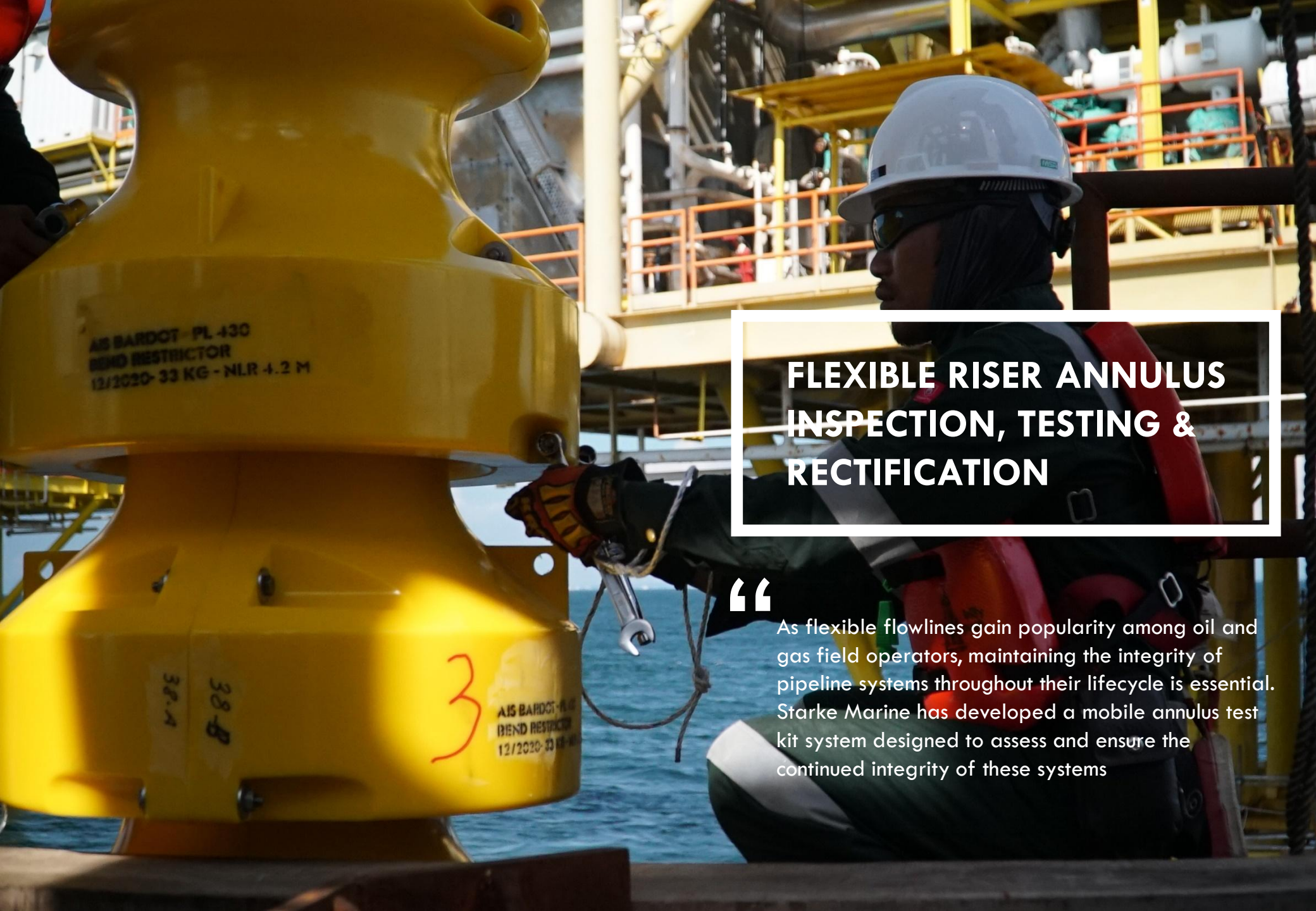


“

Engineered for subsea oil & gas from shallow to ultra-deepwater. High-strength, fatigue-resistant, and certified to API 17J for reliable offshore performance.

- + Shallow water smooth bore
- + Shallow water rough bore
- + Standard smooth bore
- + Standard rough bore
- + Deep water rough bore

**FLEXIBLE
PIPELINE**



FLEXIBLE RISER ANNULUS INSPECTION, TESTING & RECTIFICATION

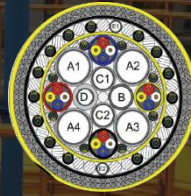
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As flexible flowlines gain popularity among oil and gas field operators, maintaining the integrity of pipeline systems throughout their lifecycle is essential. Starke Marine has developed a mobile annulus test kit system designed to assess and ensure the continued integrity of these systems

UMBILICAL CABLE SYSTEM

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Critical subsea lifelines for power, control, and chemical injection. Built for extreme depths and harsh environments with proven offshore durability.



Multi unit umbilical



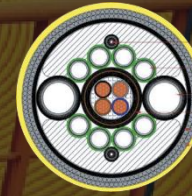
Dynamic umbilical



Integration of
umbilical and cable



Integrated high
electricity umbilical



Hose umbilical

NITROGEN GENERATOR UNIT

“

On-site, high-purity nitrogen for purging, testing, pigging, and tank blanketing. Inert, non-corrosive, and offshore-ready — all without cylinder logistics

Specifications

- Purity: 95%–99.5%
- Capacity: 300–2,000 Nm³/hr
- Pressure: Up to 350 bar
- Container Size: 20 ft ISO
- Applications: Purging, Testing, Pigging, Blanketing

Applications:

- Pipeline purging & inerting
- Pressure & leak testing
- Fire prevention in enclosed systems
- Pigging operations
- Tank blanketing



The background is a dark blue grid with a pattern of small dots. There are several diagonal lines and geometric shapes in shades of blue and white. A prominent white diagonal line runs from the top left towards the bottom right. Other shapes include a dark blue triangle in the top left, a light blue triangle in the bottom right, and a dark blue triangle in the bottom left. A light blue diagonal line runs from the top left towards the bottom right, parallel to the white line.

PROJECT HIGHLIGHTS

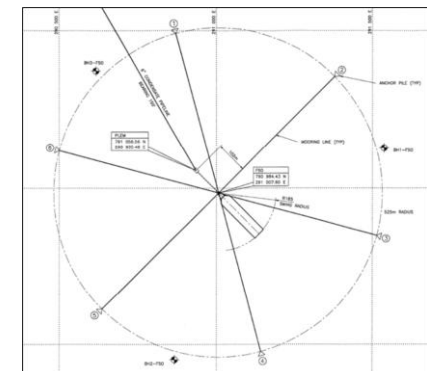
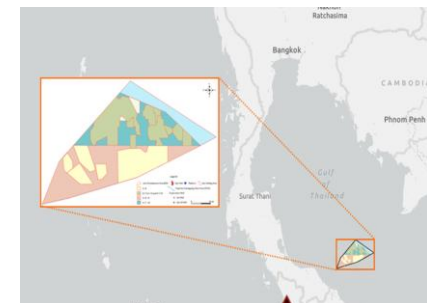
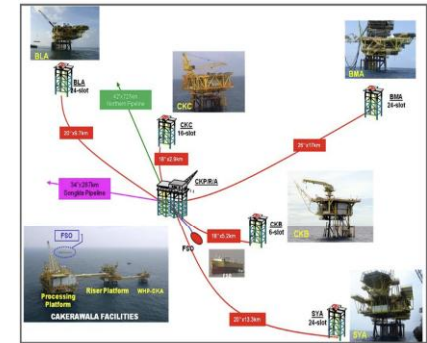
PROJECT HIGHLIGHT #1

Period: March 2026 – Sept 2026



STARKE
MARINE

PROJECT	PROVISION OF ENGINEERING, PROCUREMENT, CONSTRUCTION AND INSTALLATION (EPCI) OF FSO MOORING CHAIN REPLACEMENT PROJECT FOR FSO PUTERI CAKERAWALA
Client	PTTEP JDX & PC JDA JOINT OPERATIONS SDN BHD (formerly known as Carigali Hess Operating Company Sdn Bhd)
Location	Block A-18 in the Malaysia-Thai Joint Development Area (MTJDA)
Scope of Work	Executing the scope of works related to the transportation & installation for the replacement of FSO Puteri Cakerawala which including project management, engineering, procurement, manpower and not limited to the followings; - Project Management Team (PMT) to execute the works. - Prepare specific project management procedures - Detailed Engineering Design for the removal & replacement of 6 pcs of 95mm dia. x R4 chains. - Conduct site survey - Design and fabricate 6 nos of new chain stoppers and pull-in winch base frame. - Supply complete marine spread to support mooring replacement activities. - Supply complete supporting services (ROV, Survey & Pull-In Winch System) for execution of the works - Offshore site preparation works for installation of complete mooring chain pulling spread. - To replace all 6 chain stoppers. - To replace all 6 nos of 95mm dia R4 chains and conduct Turret Rotation Test. - Conduct As-Built survey.



Technical Services & Capabilities

PROJECT HIGHLIGHT #2

Period: December 2024 – February 2026

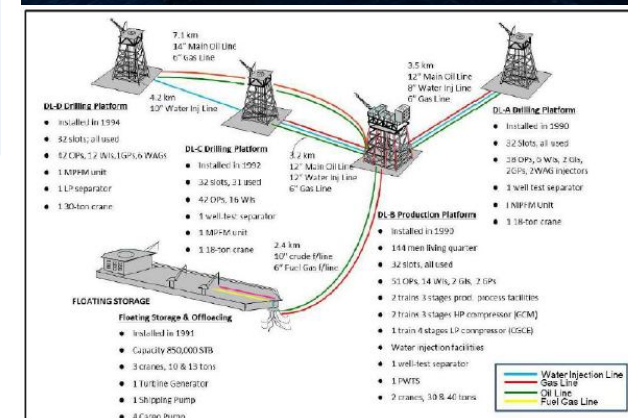
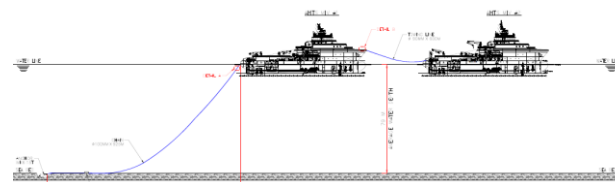
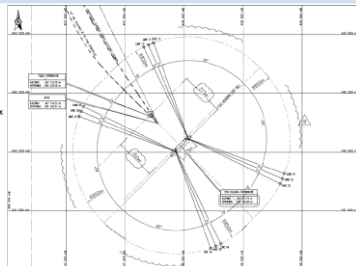
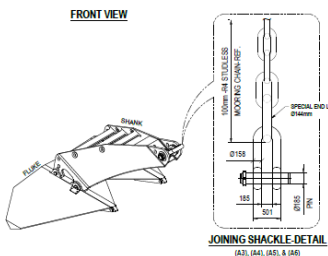


STARKE
MARINE

PROJECT	PROVISION OF OFFSHORE TRANSPORTATION AND INSTALLATION OF FLOATING STORAGE AND OFFLOADING (FSO) VESSEL 'PERMATA DULANG' FOR DULANG REPLACEMENT PROJECT – SCOPE 1 PROVISION OF MOORING DISCONNECTION FOR FLOATING STORAGE AND OFFLOADING (FSO) 'PUTERI DULANG' DEMOBILISATION – SCOPE 2
Client	PETRONAS CARIGALI SDN BHD / DUTA MARINE SDN BHD
Location	▪ Dulang Field, Offshore Terengganu ▪ Kuantan Port
Scope of Work	SCOPE 1: ▪ Collect, lift and transport the new mooring systems (12nos x 925m length x 100mm dia. R4 Studless mooring chains and 12nos x 15MT HHP anchors) from OWNER's appointed location to FIELD. ▪ Pre-laying and temporary abandonment, chain retrieval, pull-in and final tensioning of mooring system (4 Clusters x 3 mooring lines) to FSO Permata Dulang (FDLG) chains stoppers. ▪ Towing of FDLG from YARD to field. ▪ Modification of existing PLEM spool for riser connection. ▪ Transportation, installation, pre-commissioning, testing and preservation of new flexible riser & existing 10" x 2.55km pipeline from FDLG to CPP Dulang B ▪ Towing, hook-up and pre-commissioning of the new offloading hose. SCOPE 2: ▪ Disconnection and subsequent wet storage of the existing Mid Water Arch (MWA) at Field. ▪ Station-keeping and underwater disconnection of six (6) nos. x 108mm diameter mooring chains for FSO Puteri Dulang (FSOPD) ▪ Mooring chains and riser pigtails removal



FRONT VIEW

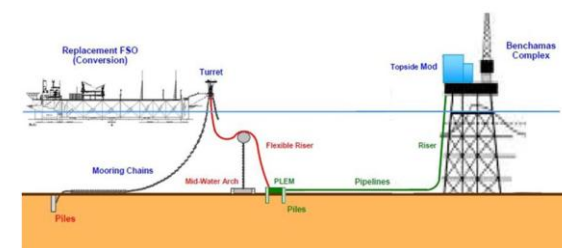


PROJECT HIGHLIGHT #3

Period: Sept 2024 – March 2025

STARKE
MARINE

Project	PROVISION OF FSO BENCHAMAS 2 (BFSO2) DEMOBILISATION FOR DRYDOCKING (SCOPE 1) & THE PROVISION OF FPSO BUNGA KERTAS MOBILISATION (SCOPE 2)
Client	Chevron Offshore (Thailand) Ltd. (COTL) / MISC Offshore Floating Terminals (L) Limited (MOFT)
Location	Block B8/32, Bechamas Field, Offshore Thailand
Scope of Work	SCOPE 1: - Project management, engineering, transportation and demobilization of BFSO2 from FIELD and deliver it to NOMINATED YARD. - Heading control and station keeping of BFSO2. - Removal of 15in circumference x 70m LG mooring hawser - Disconnection of one (1) line of offloading hose from BFSO2's export manifold and tow to shore for dismantling, clean and temporary storage - Disconnection of three (3) lines of flexible risers from BFSO2 and wet store at FIELD - Disconnection of nine (9) lines of mooring chains from BFSO2 chain stopper via gas cutting and wet store at FIELD. - Removal and temporary wet store of nine (9) lines of 100mm top chain x 110m LG at FIELD. - Towage of BFSO2 from FIELD to NOMINTAED YARD on manned tow SCOPE 2: - Provision of management, transportation and mobilization of FPSO BUK from NOMINATED YARD and deliver it to FIELD. - Transport, deliver and changeout of nine (9) lines of 95mm top chain x 110m LG from MMHE Yard to/at FIELD. - Towing of FPSO BUK from NOMINATED YARD to FIELD - Final tensioning, turret rotation test - Subsea retrieval of one (1) line of 8in produced water flexible riser and hook-up to FPSO BUK 8" produced water flexible riser, leak test and annulus test - Installation of 15in circumference x 70m LG mooring hawser
Challenges	- Hooking up of mooring chains from external cantilever turret to submerged turret - DMF requirements for vessels entering Thailand waters

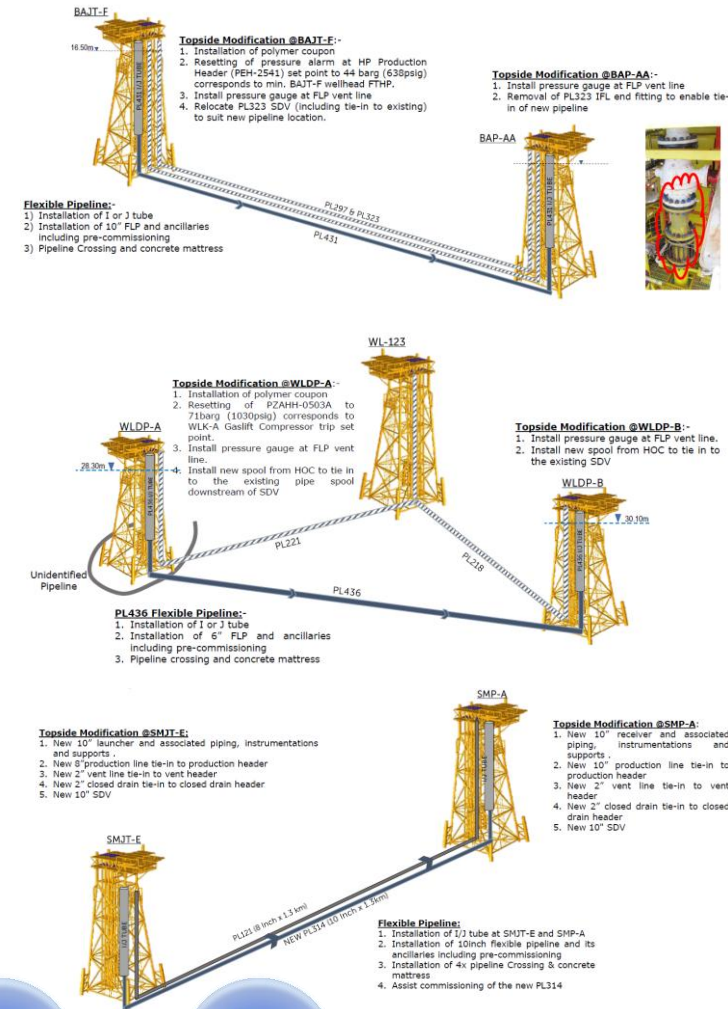


Technical Services & Capabilities

PROJECT HIGHLIGHT #4

Period: April 2023 – June 2025

Project	PROVISION OF ENGINEERING, PROCUREMENT, CONSTRUCTION, INSTALLATION & COMMISSIONING (EPCIC) FOR PL431, PL436 & PL314 PIPELINE REPLACEMENT & TOPSIDE MODIFICATION
Client	PETRONAS CARIGALI SDN BHD
Location	- Baram Field, Offshore Sarawak – PL431 - Semarang Field, Offshore Sabah – PL314 - West Lutong Field, Offshore Sarawak – PL436
Scope of Work	- Pipeline detailed engineering including I/Jtube and FLP ancillaries design (including installation engineering) and detailed engineering for topside modification work - Procurement (including inspection, logistic, delivery and expediting services) of all PL431, PL436 & PL314 items, both of permanent or temporary nature. - Provision of all things required in order to complete onshore fabrication. - Transportation and Installation of I/JTube, clamps, flexible pipeline and related ancillaries, concrete mattress, and pre-commissioning - Installation of Spool, SDV, topside piping, etc. - Assist commissioning of PL431, PL46 & PL314 system.
Challenges	- Offshore campaign for PL431 will be carried out during monsoon season. - Shallow water depth for PL314 - H2S Field for PL436 and PL314



PL314



PL431

Technical Services & Capabilities

PROJECT HIGHLIGHT #5

Period: May 2023 until Sept 2023

Project	PROVISION OF FPSO BUNGA KERTAS DEMOBILISATION PROJECT
Client	PETRONAS CARIGALI / MOFT
Location	▪ Penara-North Lukut Field, Offshore Terengganu
Scope of Work	Phase 1: ▪ Pre-survey prior FPSO Bunga Kertas decommissioning and as-left survey after complete demobilization ▪ FPSO Bunga Kertas decommissioning, tow out from WORKSITE to Kuantan Port ▪ Disconnection of four (4) sets of 180m length flexible risers (2 x 12" production risers and 2 x 6" gas lift risers) from FPSO Bunga Kertas and wet store at WORKSITE (including preservation, subsea or marker buoy installation). ▪ Disconnection of nine (9) lines of mooring chains (95mm dia x 350m length) from FPSO Bunga Kertas and wet store at WORKSITE (including subsea or marker buoy installation) Phase 2: ▪ FPSO alongside at Kuantan Port ▪ Removal of mooring chain & flexible riser pigtails from FPSO turret. ▪ Tow out FPSO from Kuantan Port and deliver to MMHE Yard.
Challenges	▪ Urgency of the project, prompt planning with careful evaluation to ensure delivery of the project safely within budget and a specific timeframe ▪ FPSO Bunga Kertas is an ageing FPSO (38 years) that has been operating at Field for 19 years (as of 2023)



PROJECT HIGHLIGHT #6

Period: August 2022 until December 2022

STARKE
MARINE

Project	PROVISION OF ENGINEERING, PROCUREMENT, CONSTRUCTION, INSTALLATION & COMMISSIONING (EPCIC) FOR FSO DUTA PACIFIC AT BANANG FIELD
Client	Petronas / Petra Energy/ Duta Marine Sdn Bhd
Location	Banang Field, Offshore Terengganu
Scope of Work	- Provision of Detachment of FSO Duta Pacific - Provision of Hooking Up FSO Duta Pacific & Mooring Analysis - Provision of Procurement of the Mooring Accessories and Pressure & Leak Test of Buoy - Provision of Mobilization and Demobilization of Suitable Vessel(s) - Provision of Positioning & Site Survey - Provision of Disconnection and Reinstatement of 6" Manuli Hose
Deliverables	Project Management, Procurement, Onshore/Offshore Construction Team and all related engineering deliverables
Challenges	- Urgency of the project, prompt planning with careful evaluation to ensure delivery of the project safely within budget and a specific timeframe - Offshore campaign for reinstatement was conducted during monsoon season.. Operating criteria have been developed which specify the length of the forecast period of stable weather prior to initiating the FSO mooring installation operation.



Technical Services & Capabilities

PROJECT HIGHLIGHT #7

Period: July 2023 – April 2025

SMAP TECH

Project	PROVISION OF CATHODIC PROTECTION INSPECTION, ANNULUS INSPECTION & TESTING FOR BSP
Client	BRUNEI SHELL PETROLEUM
Location	- AMRP-04 PRODUCTION PLATFORM - AMPA-12 PRODUCTION PLATFORM - AMPA-2 DRILLING PLATFORM - AMDP-02 DRILLING PLATFORM - AMGP-09 GAS PLATFORM - AMDP-20 DRILLING PLATFORM - AMPP-09 PRODUCTION PLATFORM
Scope of Work	- CP-ROV Inspection and Survey using FiGS by FORCE Technology 3D Mapping/Plot Post-processing and analysis report using SEACORR Software - Flexible Flowline Annulus Inspection (using Mobile Annulus Test Kit) - Checking the annulus venting system. - Evaluating the integrity of the riser outer sheath in the aerial section based on the vacuum test. - Estimating the free annulus volume of risers by nitrogen injection. - Visual inspection of risers and their accessories (when possible).
Challenges	- To setup working Platform to access vent port - Vent port has been plugged / not available to be tested

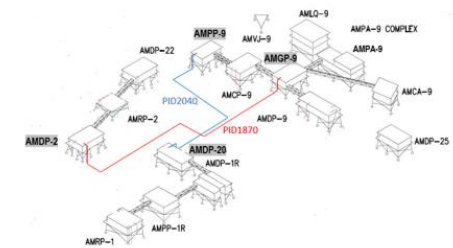
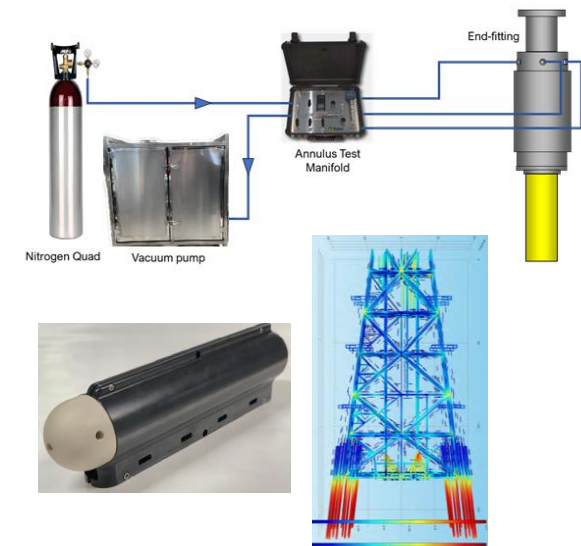
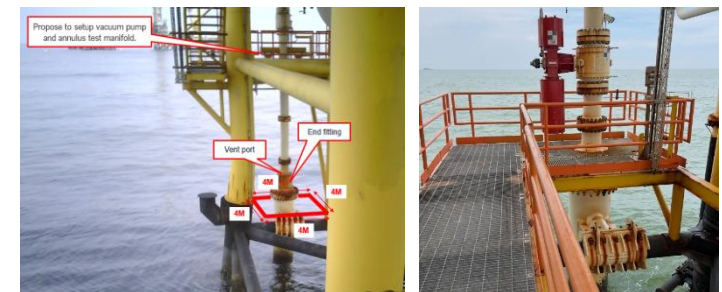


Figure 1: Field Schematic

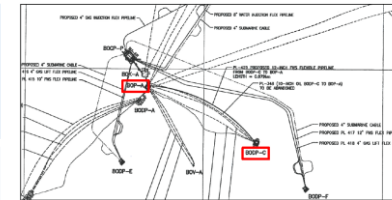


Technical Services & Capabilities

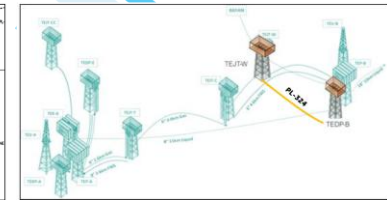
PROJECT HIGHLIGHT #8

Period: March 2020 until October 2021

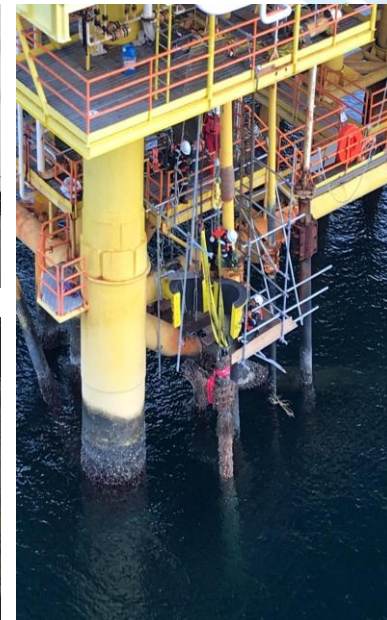
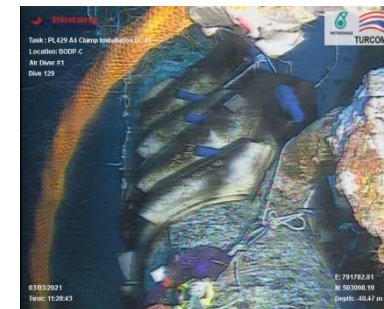
Project	PROVISION OF ENGINEERING, PROCUREMENT, CONSTRUCTION, INSTALLATION & COMMISSIONING (EPCIC) OF PL429 & PL430 PIPELINE REPLACEMENT PROJECT
Client	PETRONAS Carigali Sdn Bhd / Turcomp Engineering Services Sdn Bhd
Location	- Bokor Field, Offshore Sarawak - Temana Field, Offshore Sarawak
Scope of Work	- PCSB-SKO adopts to install a new flexible pipe, PL429 (12" dia. x 900m length) as a replacement to the existing PL348, and PL430 (10" dia. x 3410m) as a replacement to PL324 using alternative material options needs to be executed to safeguard the significant productions - The CONTRACTOR's scope of Works is the entire pipeline systems, and CONTRACTOR shall design, supply, procure, fabricate, construct, install and pre-commissioning the FLP system.
Deliverables	- Providing a dedicated and full-time Project Management Team (PMT) and all manpower required to complete the project - Detailed engineering design, procurement, manufacturing, fabrication, transportation, removal of an existing pipeline, installation and pre-commissioning for PL429 & P430 FLP system.
Challenges	- Installation works within the vicinity of existing platforms and subsea assets - Project is managed during the start of global pandemic (COVID-19)



Overall Bokor Field Layout



Overall Temana Field Layout

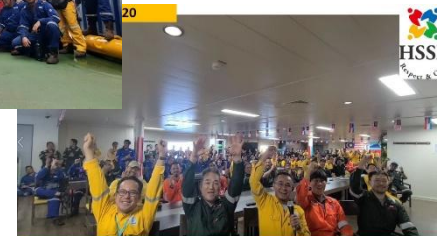
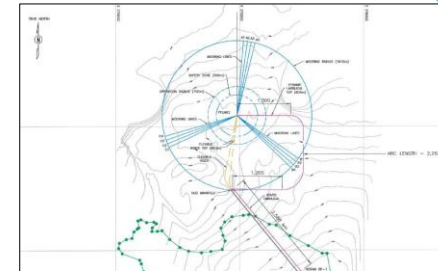


PROJECT HIGHLIGHT #9

Period: January 2020 until September 2020

STARKE
MARINE

Project	PROVISION OF SEAWATER INTAKE SYSTEM INSTALLATION, ESDV INSTALLATION & OFFSHORE MANPOWER SUPPORT SERVICES FOR EPCIC OF PFLNG DUA
Client	Japan Gas Corporation / PETRONAS Floating LNG 2 (L) Ltd.
Location	- Samsung Heavy Industries Co. Ltd (SHI) Shipyard, Geoje, South Korea - Rotan Gas Field, Block H, Offshore Sabah, Malaysia.
Scope of Work	- Installation of Sea Water Intake System (total 4 unit of Sea Water Intake Pump to be installed onboard PFLNG 2 and 4 strings of Seawater Intake Hose, which consists of 12 suction hoses per string.) - Re-Installation of Emergency Shutdown Valves (ESDV) at the Turret-side of PFLNG Dua - Supply of the indirect and direct manpower, including all necessary tools
Deliverables	- Established and managed a complete installation team for project execution. - Providing all technical deliverables required for the project (Job cards, work procedures, safety documents, etc.)
Challenges	- To manage and coordinate the project with multi-national organizations - Project to be completed within a short time frame - Project was managed during the start of global pandemic (COVID-19)



597th LTI Free Days
 Company: PETRONAS, JGC, SHI, PTTEP, STARKE MARINE
 Name: PFLNG DUA Family
 Commitment to LTI Free Day: Thank you for Selecting PFLNG DUA
 Respect & Care Video as Top5 from PETRONAS Group!

Technical Services & Capabilities

PROJECT HIGHLIGHT #10

Period: September 2018 until August 2019

STARKE
MARINE

Project	PROVISION OF TRANSPORTATION AND INSTALLATION (T&I) FOR PFLNG1 RELOCATION
Client	PETRONAS Floating LNG 1 (L) Ltd. / Kebabangan Petroleum Operating Company (KPOC) / DELSOL Offshore
Location	Kumang Cluster Fields, Sarawak and Kebabangan Cluster Fields, Sabah (KBB). KBB is located approximately 90 km North West of Kota Kinabalu (KK) with 142m water depth and about 450km from Kumang Cluster Field.
Scope of Work	Scope A: Flushing, Disconnection and Preservation at Kumang Field Scope B: Towing of PFLNG SATU Floater from Kumang to Kebabangan Field Scope C: Installation, Hook-up and Final Tensioning of Mooring System and PFLNG SATU at Kebabangan Field Scope D: Installation and Pre-comm. of Flexible Flowline at Kebabangan Field Scope E: PFLNG SATU Maintenance at Kebabangan Field (UWILD)
Deliverables	- Established and managed a complete T&I team for project execution. - Providing all technical deliverables required for the project (work procedures, safety documents, etc.) - Providing all engineering deliverables required (e.g. towing & station keeping studies, flexible flowline analyses, installation analyses, etc.) - De-commissioning works for 10" flexible flowline at KAKG-A and Pre-commissioning work of the new 10" Flexible Flowline at KBB.
Challenges	- World's first Floating LNG relocation project - Interfacing with two (2) major PSCs and OIC - Project to be completed within a short time frame - Handling a monstrous floater (the 2nd largest of its kind in the world), reflecting to a very high level of technical and specific installation requirements



WORLD'S FIRST FLNG RELOCATION

ENGINEERING, PROJECT MANAGEMENT & FIELD EXECUTION FOR
TRANSPORTATION & INSTALLATION OF PFLNG SATU RELOCATION PROJECT

STARKE
MARINE

Providing technical marine, engineering
consultancy and project execution services
for the offshore oil & gas industry.

PFLNG SATU

MOBILIZATION OF MOORING SYSTEM

- 8 nos x 18MT and 4 nos x 20MT Stevpris MK-6 drag anchors.
- 12 nos of 200m x 110mm diameter R35 studless chains (top chain).
- 24 nos of 150m x 165mm diameter R3 studless chains (excursion limiter chain).
- 12 nos of 235m x 104mm diameter R35 studless chains (ground chain).
- 2 x MIV and 2 x TV.



NEW FLEXIBLE FLOWLINE INSTALLATION

- Total length of 5.5km from KBB platform to PFLNG Satu.
- 10" diameter x 5.5km length.
- 21 nos of stabilization concrete mattress.
- 10 nos of protection concrete mattress.
- Flowline initiation by SMT DMA.
- 8 nos of bend restrictor.
- 13 nos buoyancy module.



MOORING SYSTEM DISCONNECTION AT KAKG-A

- 12 mooring lines x 465m length at 70m water depth disconnected using 4" Dyneema rope attached to 250MT SWL hydraulic winch.
- Mooring lines lowered down to seabed using 100T subsea crane from vessel.
- 1st 6 mooring lines disconnection assisted by 2 tugs = 200MT BHP.
- Remaining 6 mooring lines disconnection assisted by 4 tugs = 150 to 200MT BHP.



TOWING FROM KAKG-A

- 2 x 200 MT BP AHTS (main towing vessel).
- 1 x 200MT trailing tug and 1 x 130MT escort tug.
- Towing BP = 212 MT.
- Towing speed < 2 knots.
- Towing duration = 6 days.

PRE-LAY OF NEW MOORING SYSTEM AT KBB

- 12 mooring lines, 3 clusters at 120 deg spacing.
- Required proof load = Up to 468MT (at anchor).
- 3 segments of mooring chains per anchor leg.



STATION KEEPING AT KBB FIELD

- 4 tugs = 200MT BP.
- Station keeping tolerance = 30m radius from turret center.
- Turret offset = +/- 5m.
- 1 x 200MT BP heading control tug.



MOORING SYSTEM HOOKUP

- Mooring chain hook-up with zero (0) twist.
- Max pre-tension load of 110MT.
- Turret offset = 1.38m from target.



MOBILIZATION OF FLEXIBLE FLOWLINE

- 4 unit of 11.5m dia. reels x 10" flowline terminated at the end fitting with pulling heads on both ends.
- Reel #1=1212m length
- Reel #2=1305m length
- Reel #3=1240m length
- Reel #4=1275m length
- 1 unit of 11.5m dia. reel x 502m length x 10" dynamic riser terminated on the end fitting with Grayloc hub on PFLNG Satu's topside.



FLEXIBLE FLOWLINE FLUSHING & DECOMMISSIONING

- De-oiling / de-gassing from KAKG-A permanent launcher to PFLNG Satu receiver.
- Using 3 nos of medium density foam pig with 150LM separation.
- Propelled by treated seawater with total volume of 181m³.
- 3 in 1 chemical concentration is used = 350ppm.
- 3 water sampling taken during flushing and results are below 30ppm oil content = 26.87ppm, 20.74ppm and 9.72ppm.



FLEXIBLE FLOWLINE HOOKUP

- Flexible riser hookup to PFLNG Satu using 4" Dyneema rope attached to 250MT SWL hydraulic winch.
- Flexible riser connected to piping at PFLNG Satu by Grayloc clamp.



FLEXIBLE FLOWLINE PRE-COMMISSIONING

- Cleaning, Gauging and Flooding using 4 nos of Bi-Di PIG with 150LM separation propelled by 361m³ fresh water.
- Bulk Dewatering using 4 nos of Bi-Di PIG with 300LM separation propelled by compressed air.
- Final dewatering using 3 nos Bi-Di PIG and 1 no of medium density poly PIG with 300LM propelled by compressed dry air.
- Test pressure = 143bar.
- Dew-point = -20°C.
- Oxygen content = <2%.

- CLIENT: PETRONAS FLOATING LNG (L) Ltd.
- MAIN CONTRACTOR: DEL SOL OFFSHORE
- LOCATION: KAKG-A FIELD, OFFSHORE SARAWAK AND KBB FIELD, OFFSHORE SABAH, MALAYSIA

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The background is a dark blue field with a light blue grid of dots. Several diagonal lines in white and light blue cut across the grid. The text is centered in the middle of the image.

OUR VALUED CLIENTS





INDUSTRY ACKNOWLEDGEMENT

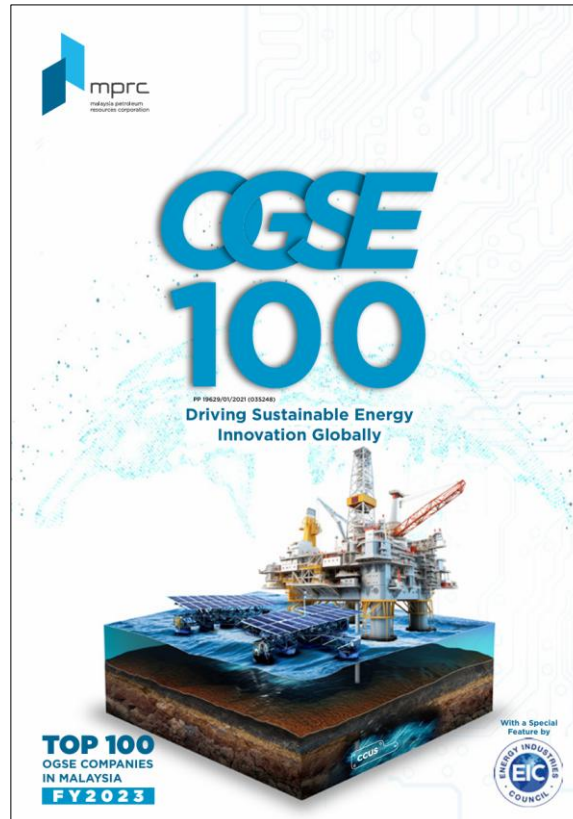
INDUSTRY ACKNOWLEDGEMENT



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OGSE100

The OGSE100 is MPRC's flagship report that provides a ranking of Malaysia's top 100 OGSE companies based on revenue. The report offers a snapshot of the size and health of the Oil & Gas Services and Equipment (OGSE) sector, by analysing consolidated industry performance in terms of revenue, profit before tax (PBT), PBT margin and total fixed assets for OGSE companies in Malaysia.



<https://mprc.gov.my/ogse/ogse-100/>

THANK YOU
TERIMA KASIH

多謝

감사합니다

Danke

ขอบคุณ

ありがとう