

Design & Engineering

Services to Offshore Industry



About Us

Cybermarine is an ISO certified leading Offshore Design & Engineering Enterprise with global operations. Cybermarine is headquartered in Singapore and delivers projects worldwide through offices at Houston, Mumbai and Kolkata.

Cybermarine as a company built from scratch, has developed innovative technology and processes over the years and is in a position to deliver wide ranging design and engineering solutions to the upstream oil & gas industry. Cybermarine, by utilizing its proficiency in engineering & extensive design experience has successfully delivered a range of design and engineering solutions on Jack-up Rigs, Semi-submersibles and FPSOs

Design & Engineering projects are executed using innovative and well-developed technology, which include Work Break-Down, Design-Spirals and 3D Space Arrangements/Models. The execution is augmented by well laid-down processes consisting of work specification spreadsheets and process checklists.



Our technical teams are organized as project teams and operations' teams.

Project teams comprise of project managers and project engineers responsible for project management and client interaction. Project teams are stationed in all our offices in various geographical locations.

Operations' teams comprising of Naval Architects/Engineers/Designers are responsible for project Deliveries and class approvals. They are stationed in Mumbai, India and Singapore.

We also have a Marine Division catering to the Design and Engineering of Multi-purpose support vessels, Cargo Vessels and other special vessels used in dredging and marine construction.

Service Segments

Our services extend to the entire range of Floating assets used in the Offshore Industry and covers following types of vessels:

New Designs

- Offshore Support Vessels
- DSV
- MPV
- Accommodation Barges
- Well Stimulation Vessels

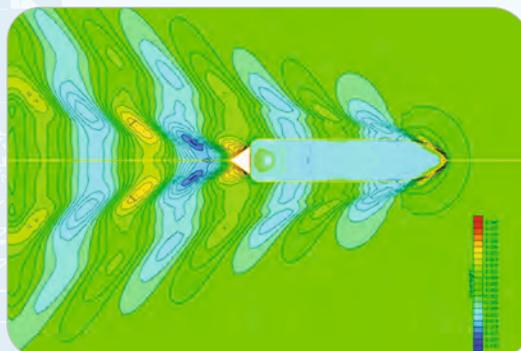


Conversions

- Simple Vessels to high end complex Offshore Vessels
- Type Conversions, i.e. Tanker to Bulk Carrier, Ro Ro Vessel to Offshore MPV
- Alterations to change main dimensions
- Modification concerning life extension, facility upgrade, hydrodynamic behaviour etc.

Our Design Services include development of concepts and solutions consisting of floaters to address precise offshore operational requirements. We take such projects to completion with our experienced Detail Engineering team. Our handling of Conversion projects covers right from generation of concept design to complete detailed engineering, our project gallery shows projects involving conversion of simple floaters into those capable of carrying out complex offshore operations. These include MPV, DSV, Well Stimulation Vessels and other offshore vessels.

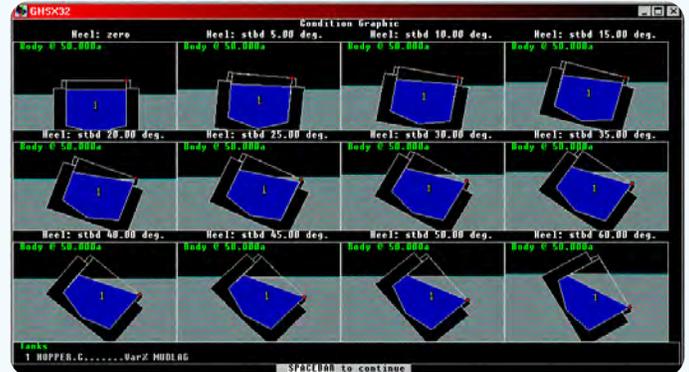
Once concept is accepted by the client and frozen, hull form is optimized and refined using advanced CFD tools, and further model testing is carried out often to confirm expected performance and power requirements. Similarly DP performance and safekeeping performance is assessed through advanced techniques.



Domain Knowledge

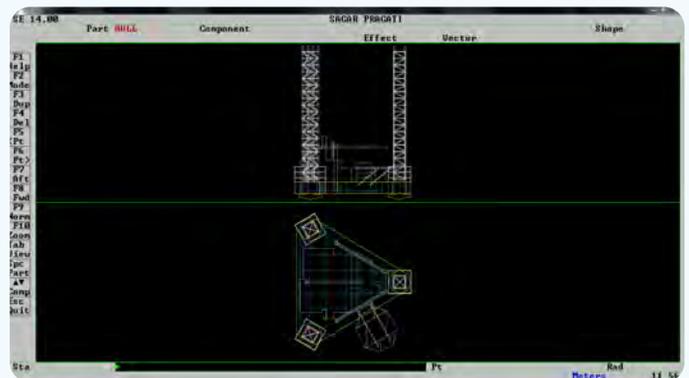
We have strong teams in several disciplines as follows:

- Naval Architecture
- Marine Technology
- Structural Engineering
- Marine/Process Engineering
- Electrical & Instrumentation
- System Integration
- Interface Engineering
- Regulatory Compliance



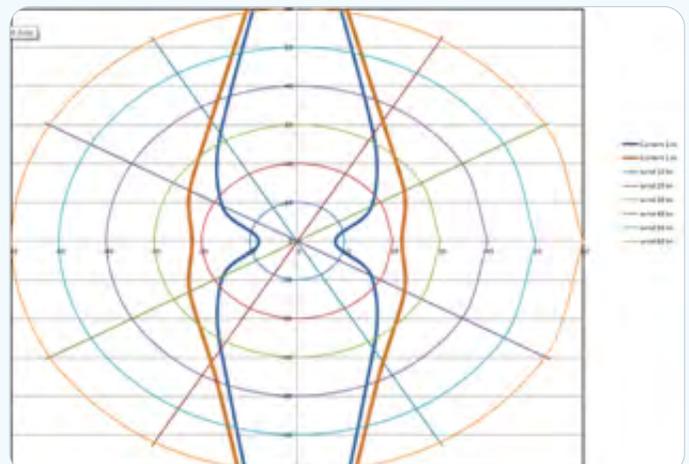
Naval Architecture

- Hull Form, with CFD study and Hullform Optimisation
- Motion Analysis Seakeeping and Maneuverability
- Space arrangements
- Design for Loadline compliance (Freeboard/Bow Height)
- Design for watertight integrity & subdivision
- Intact & Damage Stability compliance
- Weight & COG determination/Monitoring



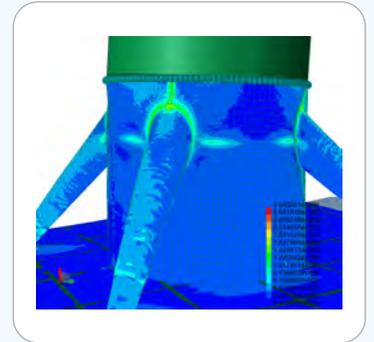
Marine Hydrodynamics

- Hydrodynamics and Motion Analysis
- Mooring Analysis
- DP Studies
- CFD analysis of Hull Form



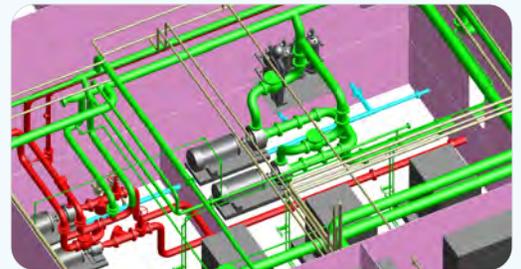
Structural Engineering

- Structural Design & Arrangements
- Finite Element Analysis
- Fatigue Analysis
- Dynamic Analysis
- Buckling and Ultimate Strength Analysis of Panels and Shells
- Joint Strength Analysis of Tubular connections
- VIV screening
- Hydrostatic and Soil Collapse Analysis



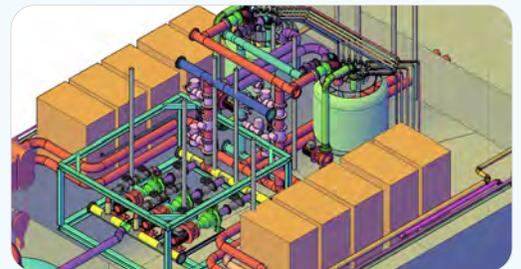
Marine/Process Engineering

- Pipe Flow & Piping System Design
- Pump Sizing
- Procurement Engineering
- Safety Engineering
- Layout Engineering in 2-D & 3-D



Electrical & Instrumentation

- Load Lists & Power Balance
- Cable Tray Routing
- Cable Schedules
- Developing Control Philosophy
- Control Room Design



System Integration/Interface Engineering

- Developing Interface registers
- Interface resolution

Regulatory Compliances

The design process ensures that while meeting the client requirement, we keep constant check on the regulatory/statutory requirement to avoid design alteration at advanced stages. Other than the requirements of Class, SOLAS, local administration, the special requirements like UKOOA, OSV requirements, CAP compliance are taken care of at the very early phase of the design as a practice.

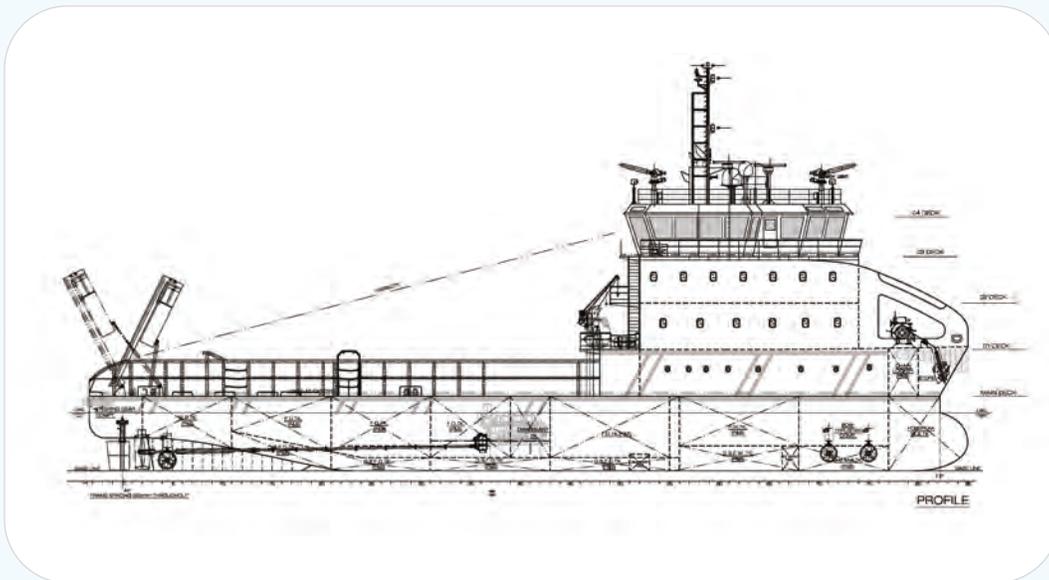


Major Design Projects – Offshore

● Offshore Support Vessels & Multipurpose Vessels

A range of OSV /MPV vessels designed to serve and provide general operational support to the Rigs & Platforms in the offshore field. Multiple Variants developed are:

Variant 1: Offshore MPV with GT more than 500



Length Overall	50.00m	Complement	50 persons
Breadth(Mld)	13.00m	Deck Strength	5.00T/m ²
Depth (Mld)	5.00m	Deck Area	260 m ²
Draft(Loaded)	3.50m		

Key features

Accommodation for 50 persons with SPS Code,

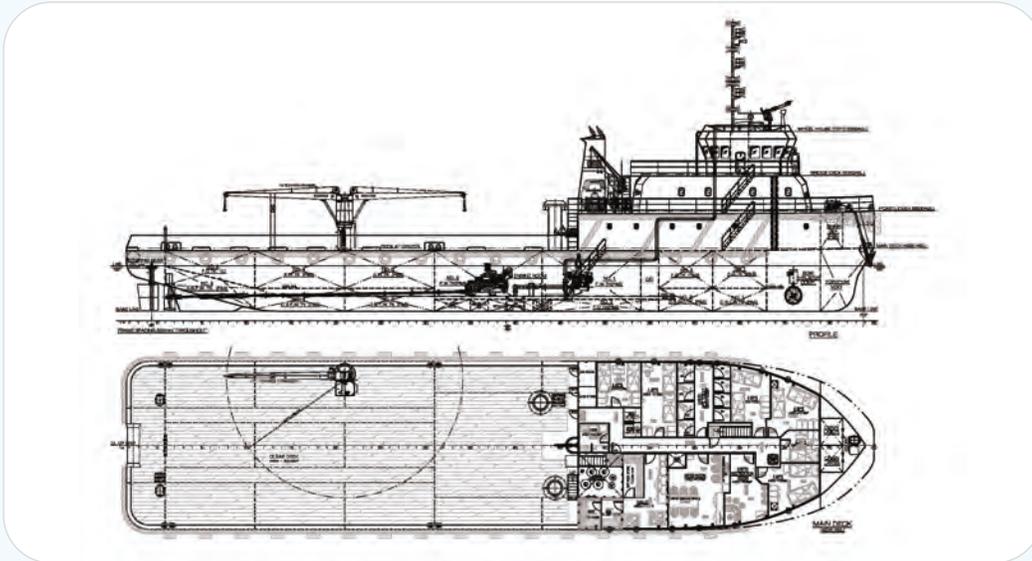
Propulsion and Thrusters:

- 2 CPP Propellers powered by 2 x 1040 KW Engines
- 1 Stern Thruster 400 KW
- 2 Bow thrusters 400 KW

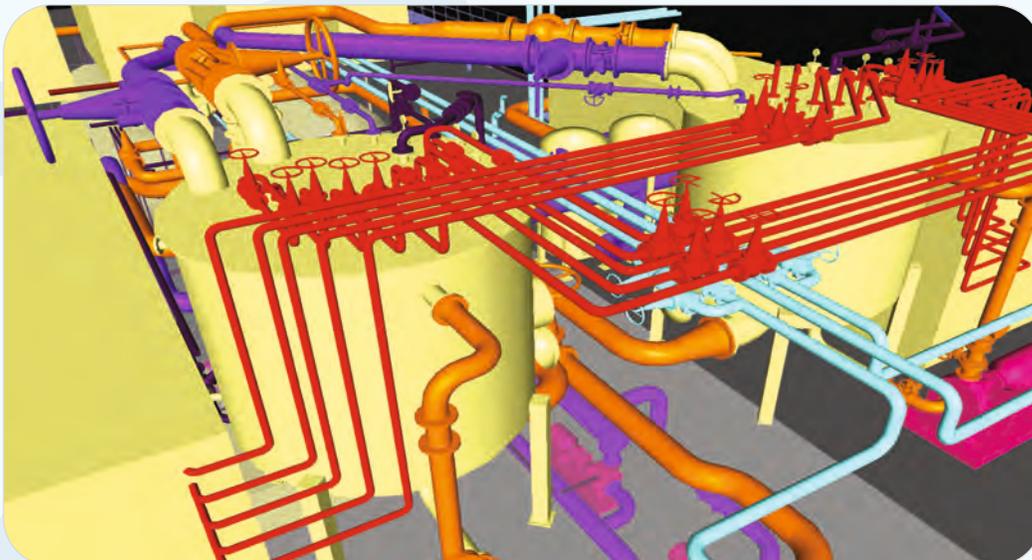
Additional Capabilities : DP2, FI FI-1

Major Design Projects – Offshore

Variant 2: Offshore MPV with GT MORE than 500



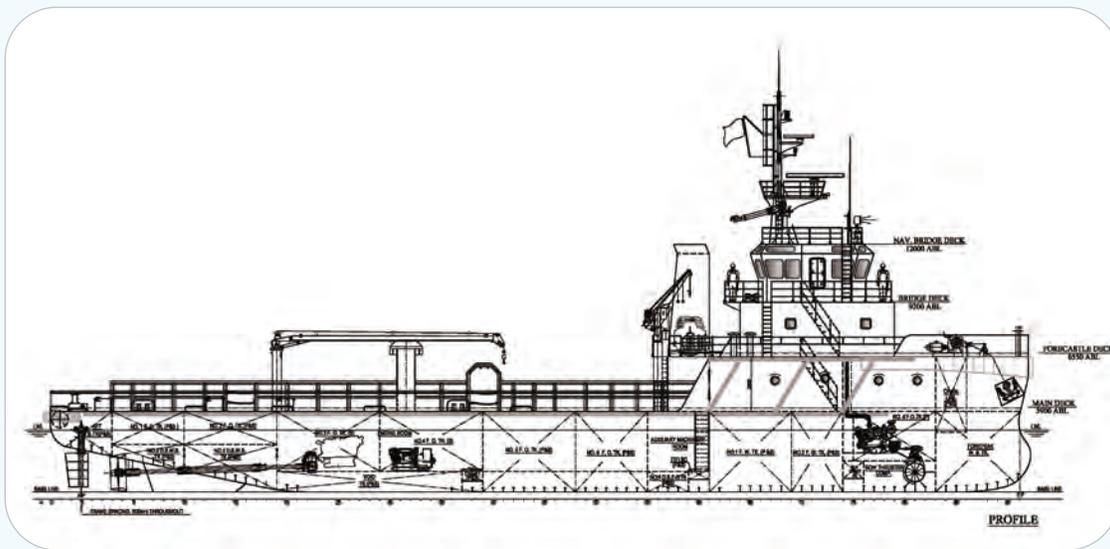
Length Overall	50.00m	Draft(Loaded)	3.00m
Breadth (Mld)	11.25m	Complement	36 persons SPS Compliant
Depth (Mld)	4.00m	Deck Area	300m ²



Major Design Projects – Offshore

● Offshore MPV with GT less than 500

Variant 1:



Length Overall	47.50m	Complement	22 persons
Breadth(Mld)	10.00m	Deck Strength	5.00T/m ²
Depth (Mld)	3.90m	Deck Area	225m ²
Draft(Loaded)	3.00m		

- Accommodation for 22 personnel (Crew + Supernumeraries)
- Deck area of 200-300 sq m with deck strength of 5T/sq m
- Liquid Cargo carriage capacity of 500-600m³ (FO+FW)
- Speed above 12 Knots
- Main Engine 1050 KW x 2
- Additional Notation FIFI 1

Major Design Projects – Offshore

Variant 2:



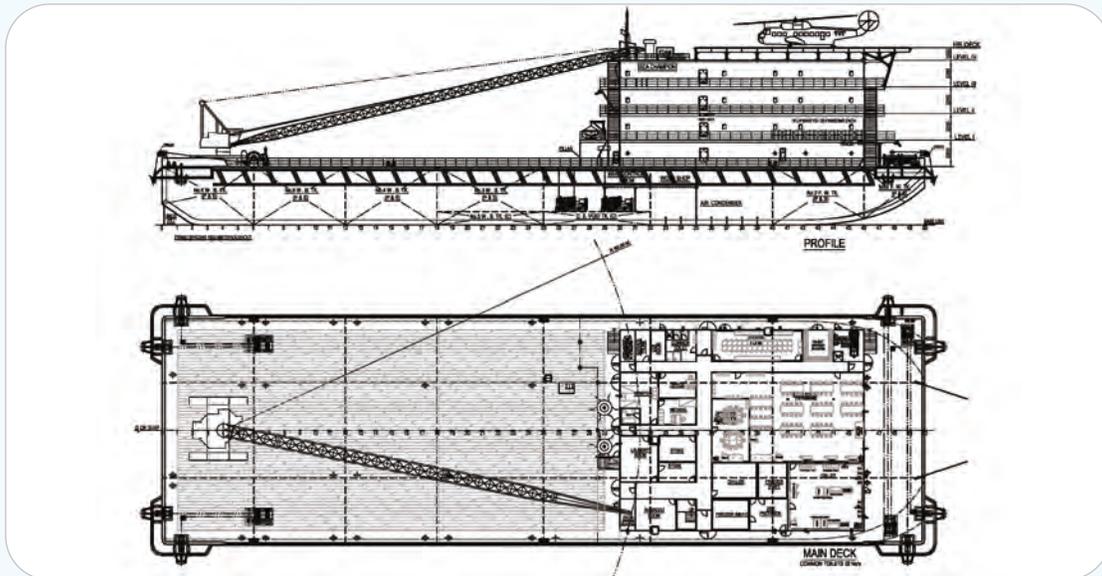
Length Overall	43.00m	Draft(Loaded)	3.00m
Breadth(Mld)	10.00m	Complement	22 persons
Depth (Mld)	4.00m	Deck Area	165m ²

Major Design Projects – Offshore

● Accommodation Barge

An Accommodation Barge designed to operate in offshore field, with the following capabilities:

- Classed with ABS
- Design of Helideck to meet CAP 437 requirements (specific)
- 8 Point Mooring System Arrangement
- Deck area 1500 sq m and strength 15 t/sq m
- 3 x 1000 kva gensets + 300 kva emergency power
- FW generation, FO transfer pumps, FW transfer pumps etc



Length Overall	91.44m	Complement	250 persons
Breadth(Mld)	27.43m	Deck Area	1500 m ²
Depth (Mld)	7.00m		

Key features

- Compliance with SPS Code and MODU Code and ABS Rules for Accommodation Barges and Hotel Barges 1989
- 250 person accommodation with recreational / Physical fitness / hospital facilities
- Installation of 350 ton crane

Major Design Projects – Offshore

● Well Stimulation Barge

A 60m barge has been designed to serve the purpose of a well stimulation barge in shallow waters.

Key features

- The vessel has spuds capable of position keeping To serve the well stimulation operations
- Designed to comply the hazardous zone requirements of ABS
- Space arrangements made to accommodate well stimulation equipment and the required fluids like brine etc.



Length Overall	60.96m	Draft	2.50m
Breadth(Mld)	18.29m	Complement	49 persons
Depth (Mld)	4.00m		

Conversion Projects

Ro-Ro Vessel to Diving Support Vessel

A RO-RO vessel operating in sheltered vessel was converted into a DP-3 compliant MSV. The vessel was upgraded from a sheltered service vessel to an ocean going – unrestricted service vessel requiring considerable augmentation of midship section modulus.

The vessel was also jumboized to increase the deadweight and also to cater to the increased lightship weight



Key features

- An aesthetic superstructure able to accommodate 250 persons
- Helideck complying CAP437
- DP 3 capabilities, with Damage stability compliance and Fire protection compliance
- SOLAS compliance
- SPS compliance
- Fi-Fi 1 & 2 Capability
- Addition of retractable bow/stern thrusters
- Addition of two 100 T cranes

Further an accommodation gangway was added to work with a FPSO. The vessel was technically reviewed and found satisfactory by Exxon-mobil for operation in their West African field.

Conversion Projects

Cable Laying Vessel to Diving Support Vessel

A 120 M Cable Laying vessel converted to a sophisticated Diving Support Vessel with DP-2 capabilities. The vessel after undergoing modifications has been successfully operating in various parts of the globe for oil majors.

- Novel Design adopted with diving equipment mounted at a lower deck and upper deck completely available for working
- Upper deck redesigned to enhance the deck strength from 1.0 t/m² to 10.0 t/m² only by addition of Longitudinal girders
- A double walled and aerated moon pool for SAT diving designed
- Helideck Installation & support structure designed and also to comply CAP437
- SAT diving system layout developed
- FI-FI 2 system designed
- Redesign carried out to the stringent requirements of DNV, Oslo
- All SOLAS, requirements complied
- SPS compliance achieved
- Increase in accommodation from 65 to 130
- 100 T Crane pedestal added

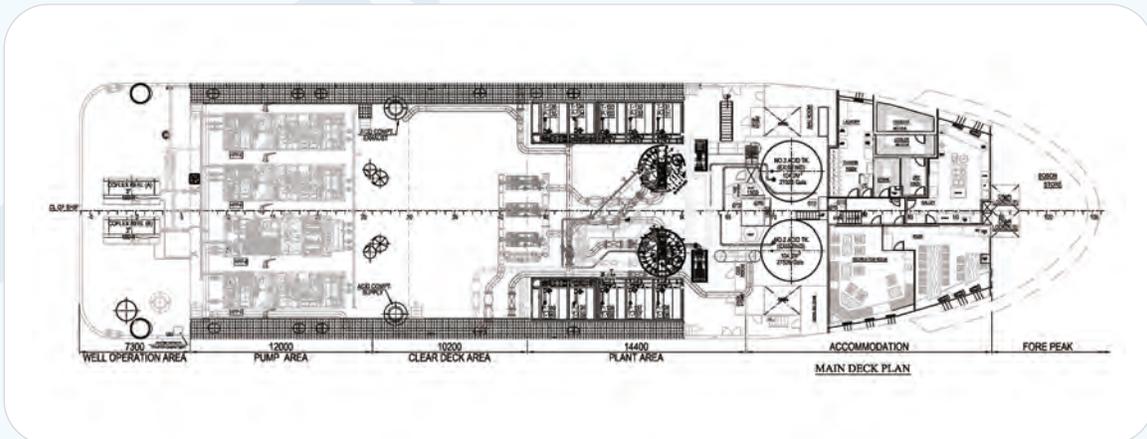


Conversion Projects

Supply Vessel To Well Stimulation Vessel

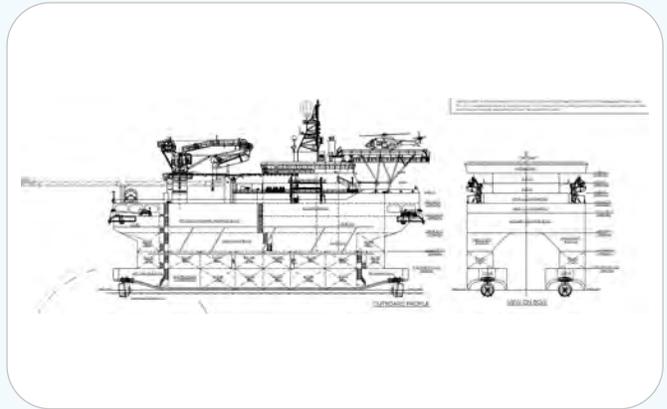
This project involved the conversion of an offshore support vessel to a well stimulation vessel under DNV certification for stimulation plant and hull modifications. The purpose of utilizing WSV is to improve production of offshore hydrocarbon wells by removing well bore scales and reducing the formation damages. This will be achieved by acid, water and chemicals mixture injection and pumping to wells. Cybermarine was responsible for the Stimulation plant design, Design of automation and control systems and generation of all P & IDs apart from the engineering required for integrating all the equipments to the hull.

Vendor identification and project management support was key to the overall execution of the project, given the fact that this type of vessel is not a standard design. Conversion involved key equipments and their ergonomic layout to maximize deck space, achieving acceptable vessel trim and efficient pipe routing.



Major Design Projects – Offshore (New Design Products)

● Swath Ship Offshore Utility Floater - Multi - Cat

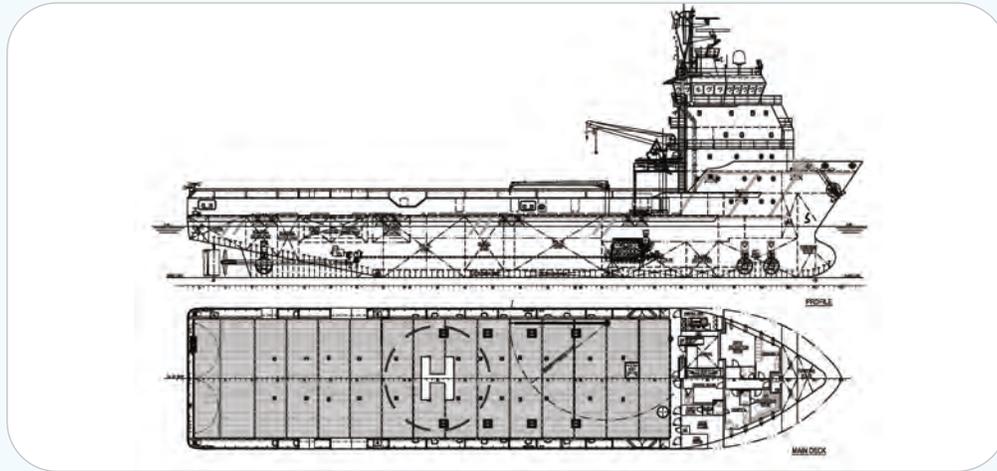


It offers following advantages:

- Enables operators to have a larger weather window for operations much beyond conventional ship-shape
- Being thruster assisted, she is easily maneuverable, and gives considerable advantage against Jack up and Centenary Moored vessels
- 3 Hull Motions like Heave and Roll are significantly more softer than sheep shaped hull thereby giving a advantage during operations
- 4 At a deeper draft can be used for heavy lifts up to 100 Tonnes

Major Design Projects – Offshore (New Design Products)

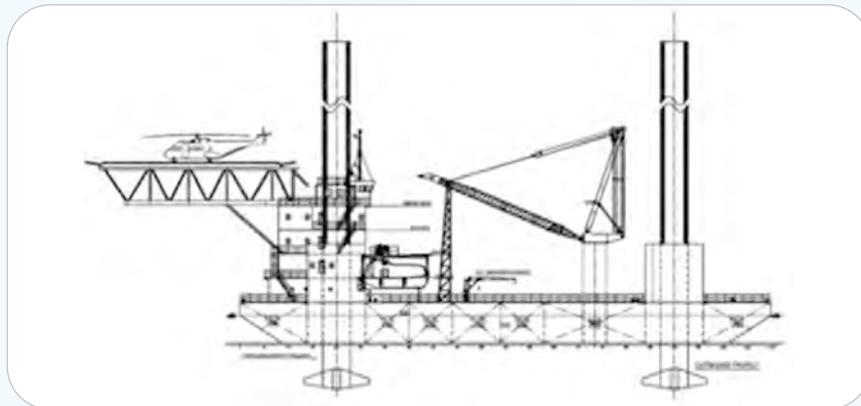
● Platform Support Vessel



Length Overall	76.61m	Draft(Loaded)	5.80m
Breadth(Mld)	16.00m	Complement	32 persons
Depth (Mld)	7.00m	Deck Area	725m ²

● Offshore Multi Utility Jack up -CMJ 40AP

This is a Jack up unit that caters to multiple support requirements of an offshore installation such as Accommodation, Water Injection, provide Work deck space and facilities amongst a few. It is mobile, can be towed to any location and then can jack itself up quickly and position itself.



Length of Hull	61.80m	Design Draft	3.40m
Breadth of Hull	40.00m	Complement	100 persons
Depth of Hull	5.00m	Water Depth	65.00m
		Free Deck Area	1200m ²



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