

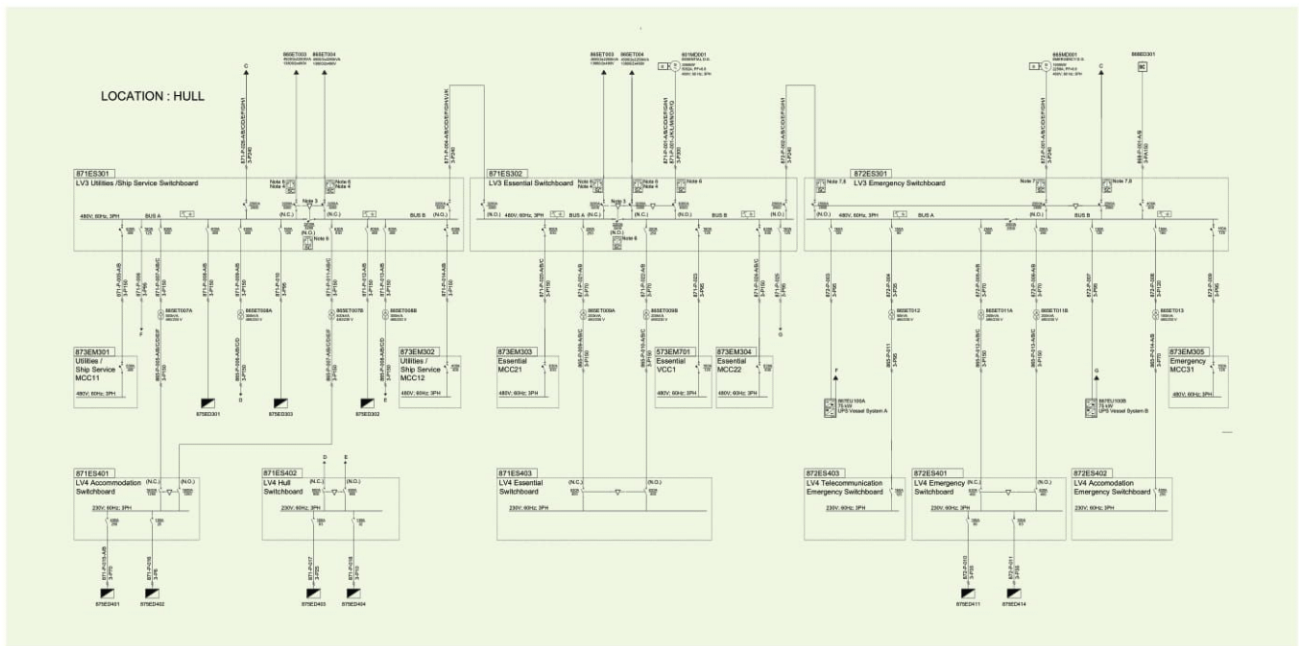
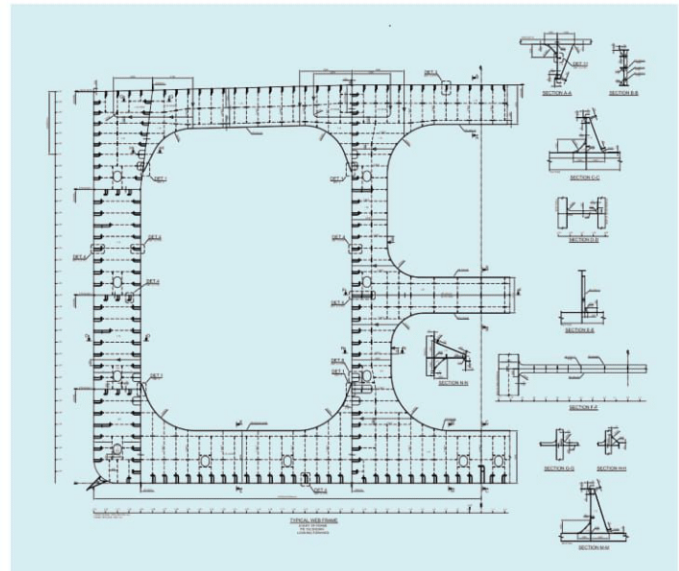
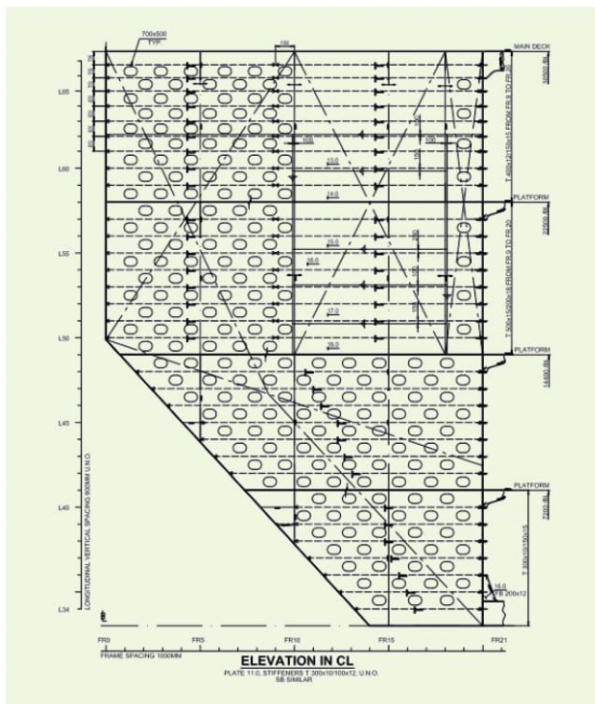
1.6 M Bbl Generic FPSO Hull (G-1600-SM/W)

Based on experience from more than 40 FSO / FPSO projects and design of other large vessels, ICE has developed a robust hull design that is:

- suitable as a platform for a wide range of floating production, storage and offloading (FPSO) facilities for offshore oil and gas,
- simple hull-shape, with double sides, single bottom and a rounded bow to minimize slamming. Favourable motion characteristics.
- economical to build using conventional shipyard technology, including to be assembled from joinable hull modules built in more than one yard,
- adaptable to topside configurations weighing up to 30,000 tons consisting of standard type modules and capable of up to 180,000 barrels of oil per day production rate,
- capable of storing 1.6 million barrels of oil available for offloading, with an offloading capacity of one million bopd,
- design extendable to accommodate topside configurations up to 40,000 tons and a storage capacity of 2.4 million barrels of oil,
- spread mooring system with risers on the side, also adaptable to a turret moored version,
- capable of a 30-year service life without dry-docking,
- providing accommodation for 200 persons.



Design developed from concept to detail engineering



Adaptability

Robust platform design adaptable to:

- Floating LNG / LPG arrangement;
- Floating Drilling Production Storage Offloading (FDPSTO) arrangement;
- Internal / External / Disconnectable turret arrangement;
- Various standardized (generic) and field specific topside module arrangements;
- Field / Client specific requirements.

Principal Dimensions

Length o.a	283.00 m
Length b.p	276.00 m
Breadth	59.40 m
Depth at side	30.00 m
Draught, summer (abt.)	22.00 m
Hull	Simplified barge-shaped, rounded bow, double sides, single bottom.

Capacities

Deadweight (design) abt.	264,639 t
Crude Oil Overall Offloading Capacity	1,600,000 bbl
Crude Oil Overall Storage Capacity	1,649,000 bbl
Slop tanks	2 x 4,168 cbm
Water ballast tanks	111,712 cbm
Diesel Oil	7,825 cbm
Fresh water	1,291 cbm

Mooring System

Type (base design)	Spread-moored
Water depth	max. 2,100 m
Number of mooring lines	24 (variable)
Turret mooring	optional

Accommodation & Safety

Accommodation and life saving appliances for 200 persons

Helideck

Sikorsky S-92, S-61N and Eurocopter EC-225

Cargo System

Processed oil flow rate	180,000 bopd
Cargo tank pumps submersible	15 x 1,200 cbm/h, 16 bar
Cargo tank pumps portable	2 x 1,200 cbm/h, 16 bar
Fiscal Metering skids	2 x 7,200 cbm/h
Offloading	Stern & Bow
Offloading rate	1,000,000 bopd
Slop tank pumps, hydraulic	2 x 800 cbm/h, 16 bar
Slop tank treatment unit	20 cbm/h

Power Generation

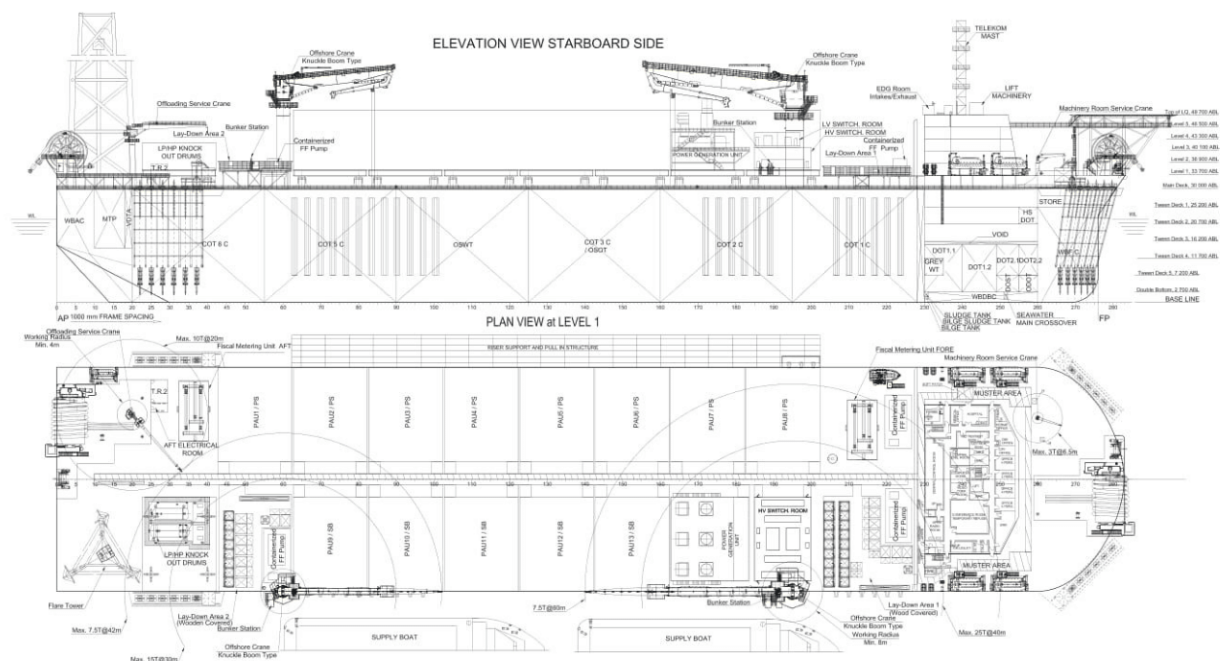
Main Power Generation	Turbine generators, 3 x 50% dual fuel 3 x 24,800 kW, 13,800 V, 60 Hz
Essential Power Generation (ESDG)	Diesel generator 1 x 3,360 kW, 480 V, 60 Hz
Emergency Power Generation (EDG)	Diesel Generator 1 x 1,500 kW, 480 V, 60 Hz

CLASS – ABS

✱ A1 Floating Production, Storage and Offloading (Ship-Type), ✱ AMS, ✱ AMCCU, HELIDK(SRF), CRC (OC - PL+), HL(30), EFP-A, UWILD

Other leading Class designations are optional. Earlier version was awarded Approval in Principle (AiP) by DNG-GL.

Operational life: 30 years without drydocking.



The specifications and data given in this leaflet are for guidance only and subject to applicable metocean data and change.

ICE GROUP CAPABILITIES AND RESOURCES

ICE is an independent full service marine design company with a substantial capacity, serving clients world-wide. Our experience includes 40+ FSO / FPSO projects (new construction, conversions and various studies), jack-up drilling platforms, drill ships, semi-submersible drilling rigs, self-elevating vessels for wind turbine installation, well intervention vessels, converter platforms, etc.. We are familiar with the rules of the major IACS Classification Societies and with Brazilian, UK and Norwegian (NORSOK and PSA) regulations. Most of our work is done for repeat clients.



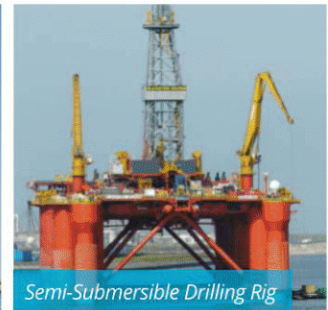
ICE Main Design Office



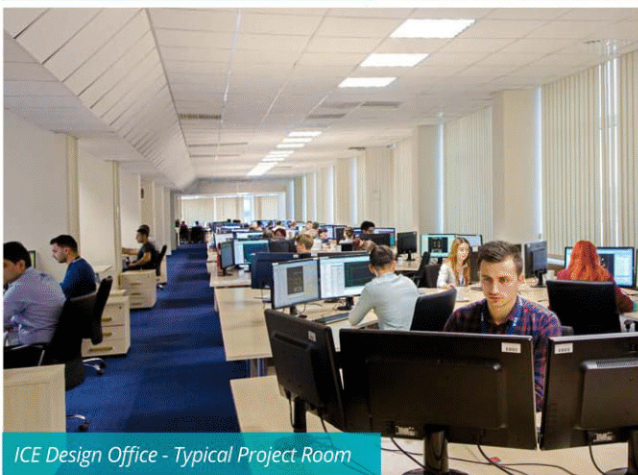
Drill Ship Design for Clients in the Netherlands, Brazil and Japan



Wind Turbine Installation Vessel



Semi-Submersible Drilling Rig



ICE Design Office - Typical Project Room



FPSO (Dubai)



FSO Conversion



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With a 50-year track record and an annual capacity of 700,000 professional engineering man-hours, the International Contract Engineering (ICE) Group is Europe's largest independent ship design consultancy. We provide high-calibre multi-discipline design services to yards and owners in the commercial shipping, defence and offshore energy industries, ranging from conceptual studies and Class drawings to detail design and production information. We cover a full range of naval architecture and marine engineering disciplines such as hydrodynamics, structural, mechanical, piping, electrical, instrumentation, outfit and HVAC. Our experience includes gas carriers, passenger vessels, navy and coast guard ships, chemical tankers, drill ships, FSO/FPSOs and a range of other vessels. We also have available proprietary designs that can be adapted to clients' requirements.

With our head office in the Isle of Man and our engineering facilities in Romania and Croatia, we provide high quality design and engineering at very competitive prices.