

# Specifications

## The FPSO main features

The Floating Production Storage and Offloading unit (FPSO) was built as a Multi-purpose offshore unit. The hull design, including fatigue life and longitudinal strength, is suitable for operation in harsh environment areas like the North Sea. The disconnectable Turret Mooring System is suitable for operation in areas with hurricanes/typhoons.

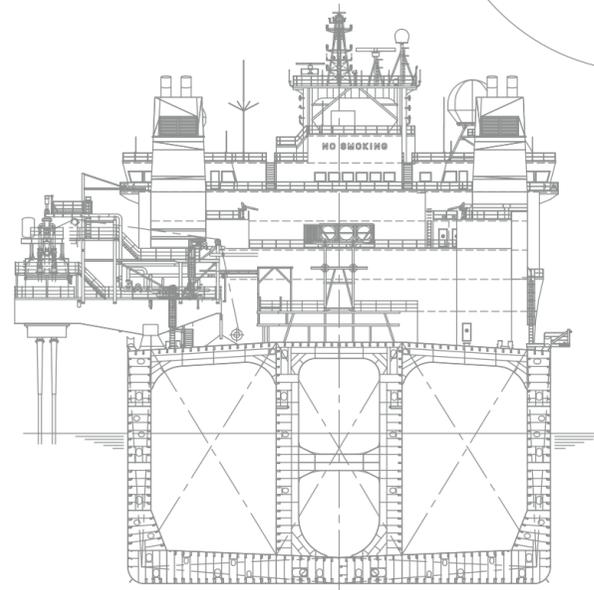
The unit is also provided with Dynamic Positioning (DP2), and a quick disconnectable external turret, allowing operation without installation of a mooring system. Crude Separation Plant suitable for production of waxy crude at high temperature. There is ample deck space available for additional modules and large power generation capacity for tie-in of additional consumers.

## General

<b>Port of Registry</b>	Curaçao, Willemstad
<b>Flag state</b>	Netherlands Antilles
<b>Converted to FPSO</b>	Samsung Heavy Industries Co. Ltd, Korea 1997
<b>Classification society</b>	DNV-GL
<b>Class Notation</b>	+1A1 Ship-shaped Oil Production and Storage Unit), BOW LOADING (as applicable for stern loading), HELDK(SH), CRANE, OPP-F, EPR, EO, F-AMC, ICS, DYNPOS AUTR, PROD

## Principal dimensions

<b>Deadweight [Tonnes]</b>	101,107
<b>Hull type</b>	Double hull Aframax size suitable for North Sea
<b>Dynamic Positioning</b>	DP2
<b>Storage capacity excl slops</b>	595,950 bbls (94,757 m <sup>3</sup> ) in 18 Cargo oil Tanks (98%)
<b>Offloading</b>	Tandem offloading
<b>Accommodation</b>	55 persons (normal operating)
<b>Helicopter deck</b>	EH101 max 14290 kg D value 22.8 m



## Topsides data

<b>Total fluids capacity</b>	125,000 bpd
<b>Crude production</b>	60,000 bpd
<b>Produced water</b>	120,000 bpd
<b>Water injection</b>	N/A
<b>Seawater treatment</b>	N/A
<b>Gas compression</b>	N/A
<b>Gas treatment</b>	N/A
<b>Material selection</b>	NACE MR 01-75
<b>Power generation</b>	4 x 5.2 MW Diesel Generator
<b>Topsides motor drives</b>	Electric

## Turret mooring data

<b>Turret type</b>	<ul style="list-style-type: none"> <li>• Disconnectable internal turret</li> <li>• 6x1 Mooring system</li> <li>• Outrigger for DP FPSO operation</li> </ul>
<b>Number of riser slots including umbilicals</b>	<ul style="list-style-type: none"> <li>• 4 for internal turret</li> <li>• 2 for outrigger</li> </ul>

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# FPSO Munin

## References



■	Bluewater offices
●	FPSO/FSO
●	Turret Mooring Systems
○	CALM Buoy Systems
●	Multi Buoy Systems
●	Tower Loading / Mooring Systems

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# Munin

The FPSO Munin is a unique FPSO, equipped with DP2 (Fully Redundant Dynamically Positioning) system and external turret to hold a quick disconnectable buoy system for supporting the oil/gas risers. The FPSO is also equipped with a Disconnectable Turret Mooring System to allow conventional mooring. The FPSO has operated successfully in the Lufeng

field, Xijiang field and Huizhou field, all located in the South China Sea. The high flexibility of the FPSO is proven at the Xijiang and Huizhou projects, where the FPSO operated for more than 3 years on full Dynamic Positioning with oil production rates exceeding 90,000 bbl/d. Presently, the FPSO is at anchorage near Labuan, Malaysia, directly available for redeployment.

## 4 diesel engines

The FPSO is equipped with 4 diesel engines with 20 MW power generation, to provide power for diesel-electric propulsion and to provide power for topsides equipment.

## Outrigger

The FPSO Munin has an external outrigger construction with quick-disconnectable buoy, which allows the FPSO to hook-up, independently, in harsh weather conditions (e.g. winter) and disconnect within 1 minute in case a heavy storm or hurricane is approaching. The buoy and its SURF (subsea umbilicals, risers, flowlines) configuration can be pre-installed without the FPSO present.

## Topsides equipment

The FPSO topsides equipment arrangement shows efficient space utilization and open space allows for additional production equipment to increase the oil/gas production capacity.

## Dynamic positioning system

The FPSO is equipped with a DP (dynamic positioning) system. It is self-propelled and suitable to execute an autonomous hook-up to the disconnectable buoy.

