Wison FPSO

Making Low Carbon Production Possible

Dec 2025

Wison overview

Mission and Vision

Mission

Enabling a greener future

Vision

The global solution provider for clean energies

International Team

Innovative and Environment-friendly EPCIC Solutions Delivered by an International Management & Execution Team

More than **2500** employees

From **22** countries

Over **1100** in-house engineers

Integrated EPCIC+O&M Solutions

E	P	C	I	C	O&M
Engineering	Procurement	Construction	Installation	Commissioning	Operation Maintenance

Wison Product Portfolio

A trusted partner with track record delivering flagship projects

- **Tango FLNG**
  - Delivered fully commissioned at the quayside - World's first LNG production (0.5 mtpa) from an FLNG unit (Dec 2016)
- **Exmar FSRU**
  - World's first new-build FSRU barge; delivered Dec 2017 with 600 MMscfd regas capacity and LNG storage of 25,000 m^3
- **Zhejiang Petrochemical's ECF**
  - The largest single ethylene modular production unit in the world of 200,000 tons/year
- **ENI Congo FLNG (ongoing)**
  - EPCIC for a new build 2.4 Mtpa FLNG unit, offshore Congo
- **Onshore Modular Liquefaction Plant (ongoing)**
  - EPC for 4 x 1.2 Mtpa modular LNG trains (confidential client)
- **Genting FLNG (ongoing)**
  - EPCIC for a new build 1.2 Mtpa FLNG unit
- **Sakarya Phase 3 FPU (ongoing)**
  - EPCIC for a new build 800 MMSCFD Gas FPU

WISON TECHNICAL STANDARD (Design Philosophies)

A200 System Description

P002 Process System Design [NS]

P200 Topsides Isolation Philosophy

P201 Equipment Sparing Philosophy

P202 Topsides Drains System Philosophy

P203 Topsides Emergency Shutdown and Blowdown Philosophy

M001 Materials Selection [NS]

M004 Piping and Equipment Insulation [NS]

M200 Materials Selection and Corrosion Protection Philosophy

M501 Surface Preparation and Protective Coating [NS]

R001 Mechanical Equipment [NS]

E001 Electrical Systems [NS]

I001 Field Instrumentation [NS]

I200 Overall Instrument Philosophy

I207 Instrument Control & Safeguarding Philosophy

I208 Cyber Security Philosophy

I209 Alarm Management Philosophy

I210 ICSS

I211 Fire & Gas Detection Philosophy

I212 Operator Training Simulator Guidelines

L002 Piping System Layout, Design, and Structural Analysis [NS]

L201 Manual Valves Selection Philosophy

L202 Mechanical Handling Philosophy

L203 General Requirements for Piping Stress Analysis [NS]

L204 FLNG Layout Philosophy

L207 Topsides Piping Details Standard

C200 Living Quarters Area

S200 Major Accident Hazards Management Plan

S201 Cryogenic Spills Protection Philosophy

S202 Ignition Source Control Philosophy

S203 Active Fire Protection Philosophy

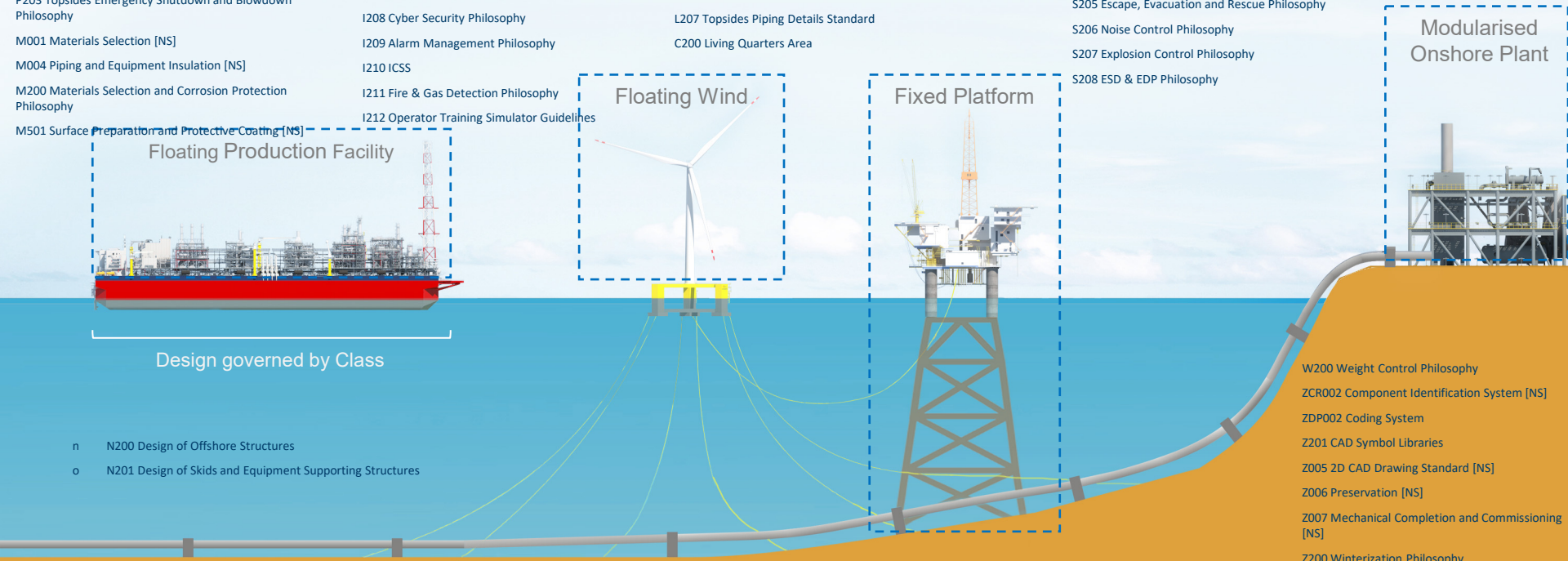
S204 Passive Fire Protection Philosophy

S205 Escape, Evacuation and Rescue Philosophy

S206 Noise Control Philosophy

S207 Explosion Control Philosophy

S208 ESD & EDP Philosophy



n N200 Design of Offshore Structures

o N201 Design of Skids and Equipment Supporting Structures

W200 Weight Control Philosophy

ZCR002 Component Identification System [NS]

ZDP002 Coding System

Z201 CAD Symbol Libraries

Z005 2D CAD Drawing Standard [NS]

Z006 Preservation [NS]

Z007 Mechanical Completion and Commissioning [NS]

Z200 Winterization Philosophy

Z202 GHG Management Plan

[NS] Norsok Based

Application Domain

Two Fabrication Yards with Excellent Geographical Locations

Distance

Shanghai – Nantong	140 km
Shanghai – Qidong	98 km

*Qidong shipyard will be completed and put into operation in Q4 2025

Nantong
Small/medium-size floating facilities fabrication yard

Hull erection capability	200,000 tons
Area occupied	800,000 m^2
CS pipe	456,500 Din
SS pipe	331,200 Din
Min. WD at quay side	12 m
Drydock	370 m (L) x 68 m (W) x 12 m (D) 2000T Gantry Crane, 1 set 440T Gantry Crane, 2 sets

Qidong
Large-size floating facilities and modules fabrication and integration yard

Peak throughput	**250,000 tpa**
Area occupied	1,200,000 m^2
CS pipe	1,500,000 Din
SS pipe	1,000,000 Din
Min. WD at quay side	11.5 m
Quay side length	1370 m
Drydock	500 m (L) x 90 m (W) 2000T Gantry Crane, 1 set 300T Gantry Crane, 2 sets

Wison Low-Emission Solutions

R&D Direction for FPSO Product Development

Standardization

- Layout Standardization
- Process Standardization
- Tool Standardization

Decarbonization

- Reduce Emission
- Replacing Power Gen source
- Carbon Capture

FPSO Product

Serialization

- Medium sized FPSO (90000BOPD)
- Large sized FPSO (250000BOPD)
- Medium–large sized FPSO (150000BOPD)

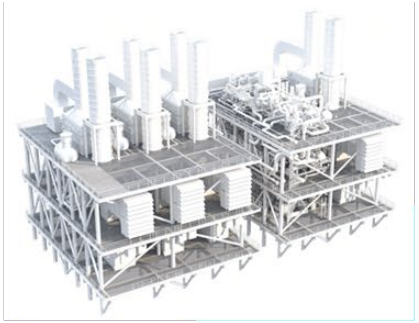
Smart

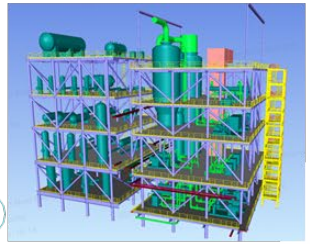
- Digital Twin
- Smart Operation
- Smart Training

Wison's Low Emission FPSO

RD180 Low Emission FPSO main specifications	
Oil production (BOPD)	90,000
Gas processing (MMSCFD)	160
Produced water treatment (BWPD)	100,000
Gas lift (MMSCFD)	20
Gas Export (MMSCFD)	124
Water Injection (BWPD)	160,000
Storage (Barrel)	1,400,000

FPSO products Low Emission solutions





Energy Efficiency

Low Emission

Combined Cycle

Submerged Turbine Generator

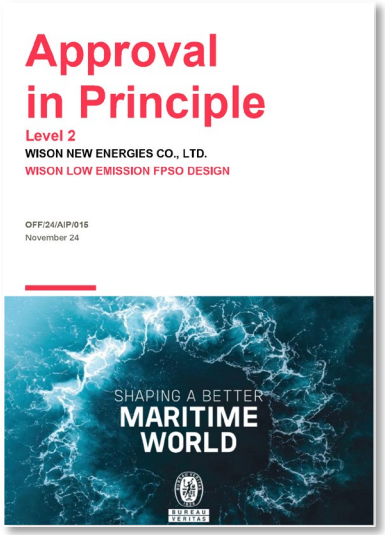
Carbon Capture

Closed Flare

All Electrical Solution

Wison Low Carbon FPSO project results

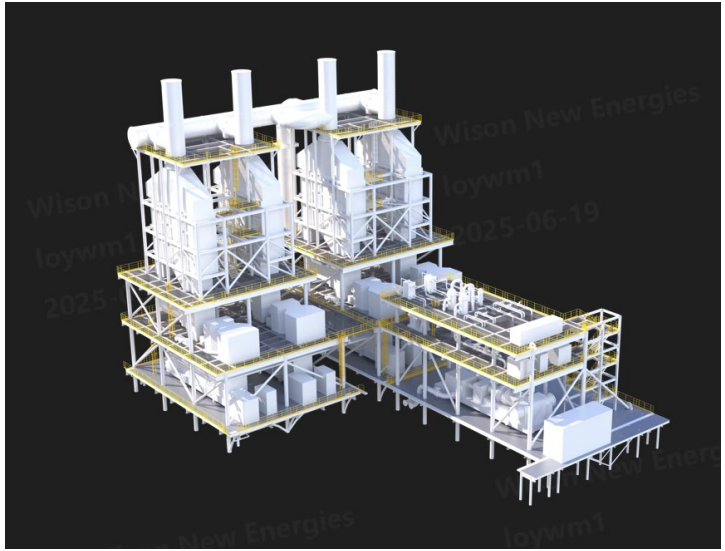
- **Project Background:**
  - In line with the company's vision and based on WISON's standardized FPSO product technology, we have embarked on the research and development of low-emission FPSO technology. By leveraging technological innovation to grasp market trends, we demonstrate our commitment to low-carbon and environmental protection in the FPSO market.
- **Comprehensive Carbon Reduction Plan:**
  - Combined Cycle Gas Turbine (CCGT) + Carbon Capture, Utilization, and Storage (CCUS) + CO2 reinjection, with each CCUS route capable of reducing carbon emissions by 80,000 tons per year.
- **Project Approval:**
  - The project has received the Approval in Principle (AIP) from Bureau Veritas (BV).



FPSO R&D – Combined Cycle Gas Turbine Module

- **Functional description:**

Based on the total power of 83.27MW and the total heat of 31.95MW under the design conditions, the CCGT combined cycle carbon reduction technology is used, and 4 LM2500 Base gas turbine generators (21MW@32℃) and 1 steam turbine generator (23MW) are configured to meet the total power demand. At the same time, the total heat demand is met through preheating by the waste heat recovery unit (WHRU) on the gas turbine exhaust pipe and secondary heating by the heat medium heater after the steam turbine system. The core of the CCGT combined cycle technology is to recover the heat in the gas, which is used to generate steam for power generation and for heating the heat medium, maximizing the use of fuel, and the thermal efficiency of the entire system can reach about 64%. The system's overall thermal efficiency is about 64%, a substantial increase of roughly 33% compared to the 48% efficiency of open-cycle cogeneration systems.

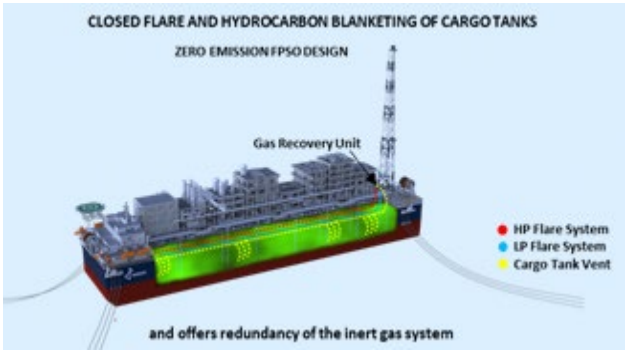


Wison Low Carbon FPSO project results

Wison Low Carbon FPSO project results

- **Closed Flare System:**

The gas pipeline at the top of the flare separator tank normally leads to the VRU unit to recover the normal discharged flare gas. When the pressure at the top of the separator tank rises to the pressure setting value, the valve on the pipeline leading to the VRU will be closed, and the quick-opening valve leading to the flare system will be opened. At the same time, the quick-opening valve is set with a bursting disc bypass to prevent the valve from being unable to open normally in an unexpected situation. Therefore, all exhaust gases will be recovered, so that under stable operation, so no need to discharge to the flare or atmosphere.

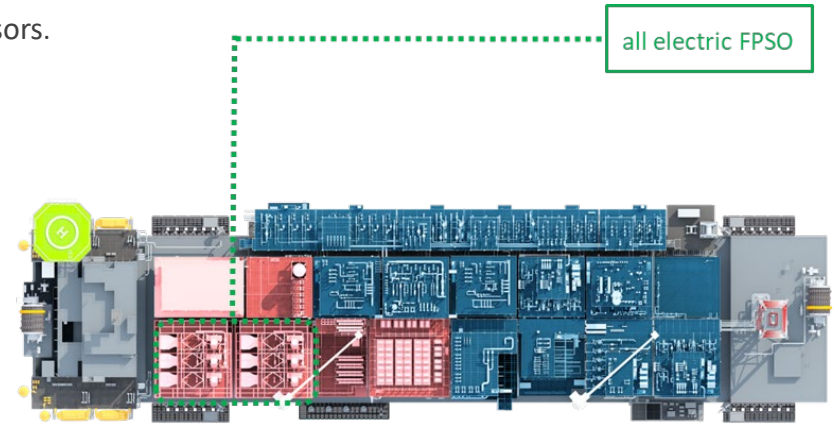


Wison Low Carbon FPSO project results

- **Power system design of all-electric FPSO:**

To reduce greenhouse gas emissions, the platform will be fully electrified in the future. All compressors will be powered by electricity .The platform's main generator will power all the platform's load-bearing compressors.

Description	Power	Work Condition
HP Gas Compressor	19843kW	3x50%
MP Gas Compressor	1451kW	2x100%
LP Gas Compressor	809kW	2x100%
Total Power Demand	83053kW	4X33% GTG + 1X100% STG



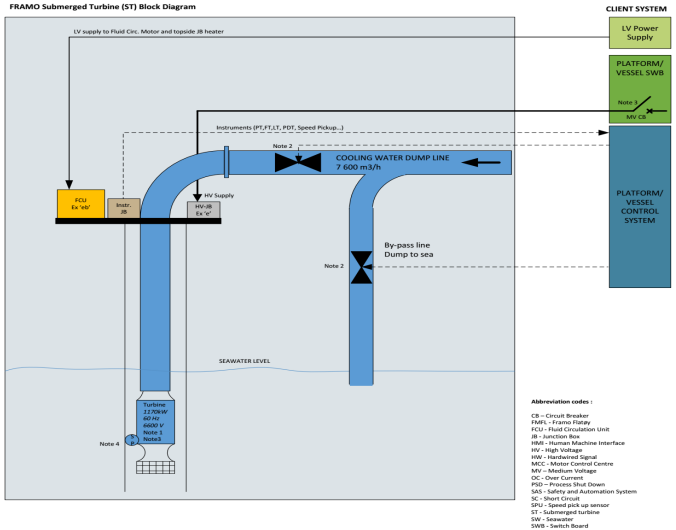
Wison Low Carbon FPSO project results

- **Design of submerged turbine generator system:**

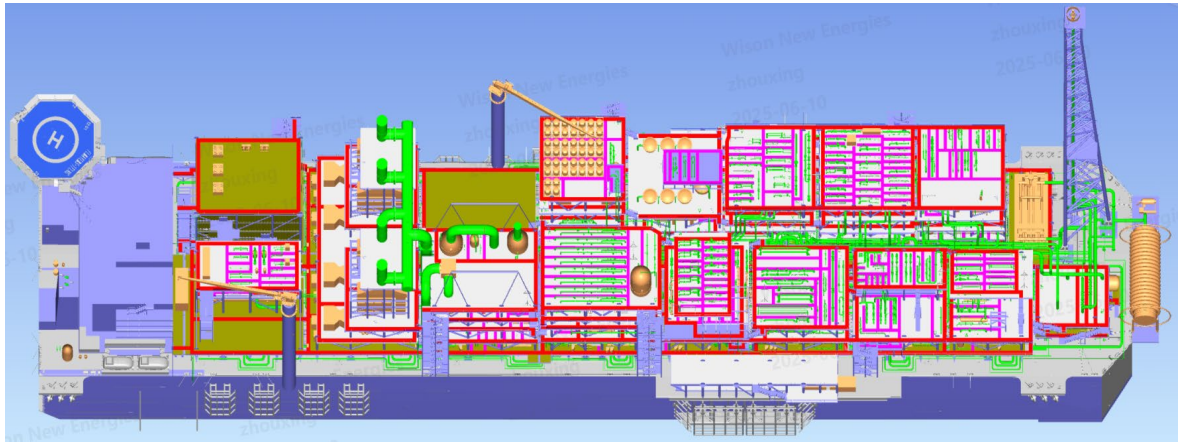
Submersible turbine generators use the pressure and flow of sea cooling water to drive the impeller to rotate to generate electricity and input it into the platform's power grid. The capacity of the main generator can be appropriately reduced, thereby reducing costs and carbon emissions.

Data Description

Generator Available Output: 1071kW
Cost per kWh at sea: 0.15 EUR/kWh
Annual Cost Saving： 1,266,671 EUR/Year



R&D Achievement for Low Emission FPSO



30% 3D Modeling completed

设计文件目录
Master Document Register

序号 S/N	通讯通道号	来源	设计阶段 Phase	区域 Area	专业 DIS	文件类型 DOC. TYPE	图号 Doc&DWG.No.	文件名称 Document & Drawing Title	WISON Numbering AAAA	XBBB	CCC	DDD
		M	R&D Project		TS PRO		RD180-1400-PRO--	DRAINAGE PHILOSOPHY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	HOT/COLD INSULATION AND WINTERIZATION PHILOSOPHY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	INTEGRATED EMERGENCY SHUTDOWN PHILOSOPHY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	RELIEF AND BLOWDOWN PHILOSOPHY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	PROCESS DESIGN CRITERIA	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	ISOLATION PHILOSOPHY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	START UP & OPERATIONS PHILOSOPHY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	BLOCK FLOW DIAGRAM - PROCESS UNIT	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	BLOCK FLOW DIAGRAM - UTILITY UNIT	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	P&ID'S PREPARATION PROCEDURE	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	FLUID LIST	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	FLARE LOAD SUMMARY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	EQUIPMENT SUMMARY	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	PROCESS SIMULATION REPORT	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	FLARE & BLOWDOWN REPORT	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	PROCESS DESCRIPTION	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	UTILITIES & PROCESS EFFLUENT SUMMARY	RD180	1400	PRO	
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		M	R&D Project		TS PRO		RD180-1400-PRO--	PROCESS PERFORMANCE GUARANTEES	RD180	1400	PRO	
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		M	R&D Project		TS PRO		RD180-1400-PRO--	HEAT & MATERIAL BALANCES	RD180	1400	PRO	
		M	R&D Project		TS PRO		RD180-1400-PRO--	PROCESS DUTY SPECIFICATION FOR PACKAGES (INLCUDING CHEMICAL DOSING PACKAGES)	RD180	1400	PRO	

MDR- Prepared and Completed
362 document

Wison and SUPCON Sign Strategic Partnership to Advance Intelligent FLNG and Low-Carbon FPSO Solutions

Wison New Energies and SUPCON jointly recognize AI as a critical enabler for achieving intelligent, unmanned (or minimally manned), and highly efficient low-carbon operations in FLNG and FPSO facilities. The two parties will establish a joint technical team to share resources and data, tackling the challenges of applying industrial AI in harsh and complex offshore environments. The goal is to co-develop core solutions with proprietary intellectual property.

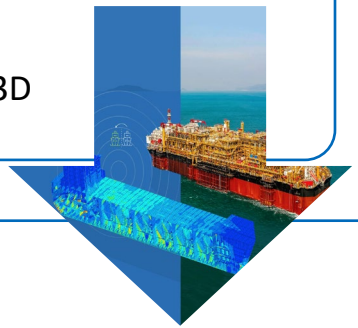
Wison and BV Officially Signed Smart FPSO Joint Development Program

Wison New Energies and Bureau Veritas will jointly promote the research and development of **advanced Smart FPSO systems** around core functions such as **data infrastructure, intelligent machine learning, and intelligent hull structure monitoring**, taking artificial intelligence as the core driving force to accelerate the green and intelligent transformation of marine engineering equipment.

FPSO Smart R&D Plan

2026 Smart Plan

- Smart Operation: Achieve advanced process control (APC) for low-pressure (LP) and high-pressure (HP) compressors.
- Digital Twin: Implement three-dimensional visualization for the F484 TOPSIDE.
- Smart Training: Complete the F484 Operator Training Simulator (OTS) and integrate 3D visualization models to achieve training for operating personnel.



Medium to Long-term Smart Plan

- Smart Monitoring and Predictive Maintenance.
- Explore the establishment of a SMART FPSO AI digital infrastructure
- Robotic Inspection and Smart Security Systems.
- Utilize AI technology to achieve autonomous supervision and optimization to enhance the economic performance of SMART FPSO.

FEED Track Records

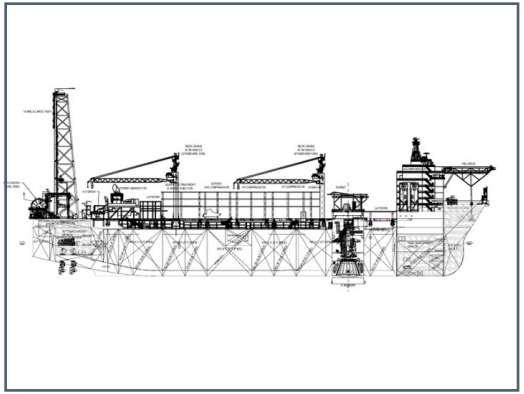
FEED Track Records

West Africa FPSO FEED Project

- Spread Mooring
- Water Depth:800~1200m
- 690 deliverables
- 120,000 man hours
- EPCIC

Sakarya Phase 3 - Gas FPU FEED Project

- Spread Mooring
- Water Depth:2200m
- 386 deliverables
- 4.5 months fast track FEED
- EPCIC



North Sea FPSO FEED Project

- Internal Turret Mooring
- Water Depth: 1100m
- Harsh Metocean Conditions
- 830 deliverables
- 7 months FEED
- EPCC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