

Deep Water Oil&Gas Development Solution

Deep Water Jacket



Deepwater Oil&Gas Development Solutions

Starting in Bohai Bay, COOEC has planned, designed, constructed and installed hundreds of jacket platforms around Chinese inner sea, Southeast Asia and Middle East. From 2019 to 2024, COOEC successfully performed three EPCI projects for deep water jacket with water depth more than 240m. Haiji-2 jacket is the deepest water jacket in Asia and the seventh in the world.

Jacket	Water Depth
Haiji-2	324m
Haiji-1	286m
LF12-3 DPP	240m
LW3-1 CEP	190m
Zawtika 1B WP4/5/6/7	150m

※Perfect※

Design System



Haiji-2
Deepest Jacket in Asia

※RICH※

Design Experience



Haiji-1
Second Jacket in Asia

※Mature※

Design Techniques



LF12-3 DPP
Third Jacket in Asia

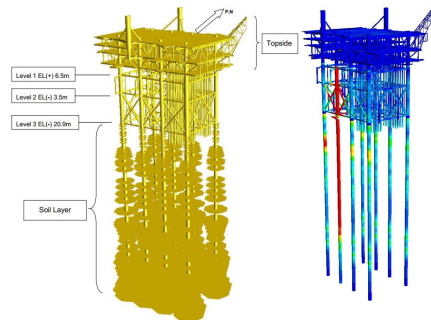
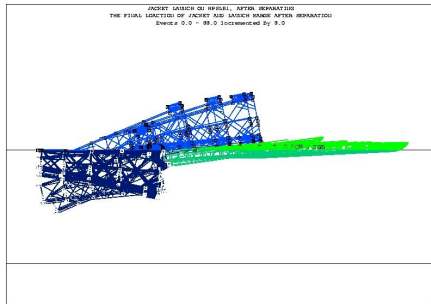
※Stable※

Design Team



Liwan3-1
Biggest float-over
topside in Asia

COOEC has a professional and stable design team with omni-directional, multi-level and wide-field, and also has a complete set of offshore engineering software, which are international industry sounded and also includes advanced in-house software.



Software	Usage
SACS	Static & Dynamic Analysis, Fatigue Analysis, Seismic & Collapse Analysis, Ship collision Analysis, Loadout Analysis etc.
MOSES	Towing Motion Analysis, Launching Analysis, Floating State Analysis, Uppending Analysis
GRLWEAP	Pile Driving Analysis, Pile Fatigue Analysis
ANSYS	FE Analysis on Pile Sleeves, Padeye etc.
USFOS	Seismic Analysis, Collapse Analysis, Time History Analysis
SESAM	Offshore Calculation
E3D, BOCAD, XSTEEL	3D Design
In-house Spreadsheet	VIV, Slamming, Hydrostatic Ring Design, Stiffener Ring Design.
Others	AutoCAD / Naviswork etc.

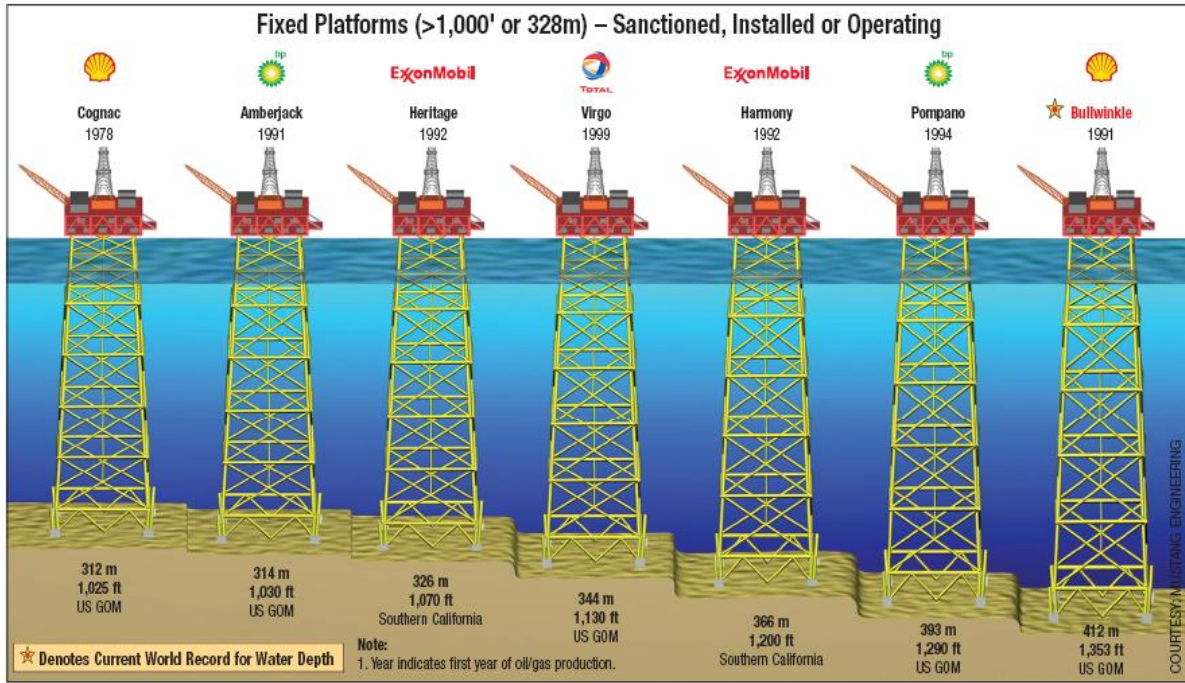


- **Domestic standards:** GB, Q/HS, SYT, CCS, etc.
- **International standards:** ISO, API, ASME/ANSI, AWS, IEC, ASTM, SOLAS, etc.
- **Enterprise standards:** Shell DEP Standard, Russian Gost Standard, QatarEnergy Enterprise Standard , Canadian CSA standards, Nexen Enterprise Standards, etc.
- **Third party authority certifications:** DNV, ABS, BV.

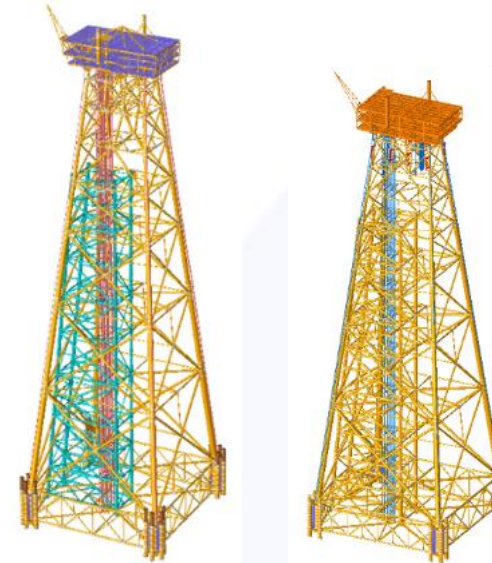


Deepwater Oil&Gas Development Solutions

➤ COOEC has developed multiple technologies for Engineering, Construction and Installation and also made breakthroughs in the special technologies.

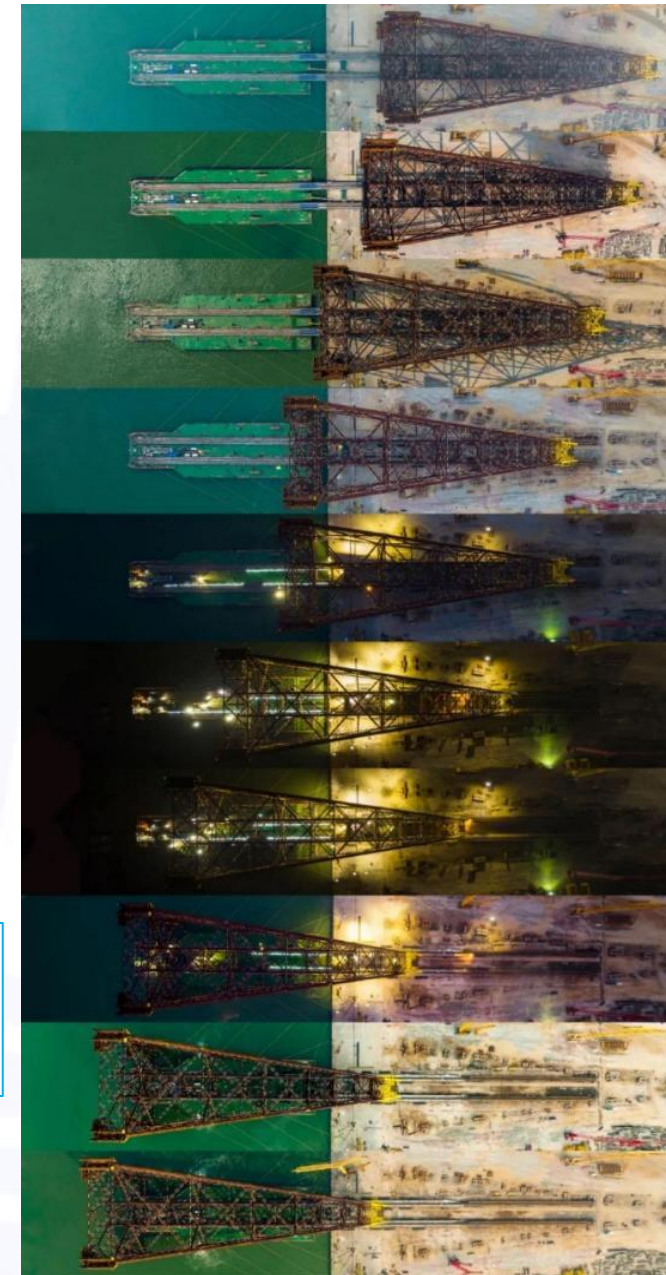


Cognac 1978 312m	Amberjack 1991 314m	Heritage 1992 326m	Virgo 1999 344m	Harmony 1992 366m	Pompano 1994 393m	Bullwinkle 1991 412m
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Haiji-2
WD: 324.3m
1st in Asia
7th in the world

Haiji-1
WD: 286m



EPCI of Large Jackets at the Water Depth of 300M



Detail Design Technology System

- ✓ Dimensional Optimization of 300m Deepwater Flexible Jacket
- ✓ Dynamic Analysis
- ✓ Fatigue Analysis
- ✓ Node Reinforcement and Hydrostatic Collapse Resistance Design

Fabrication Technology System

- ✓ Welding of High-strength Steels
- ✓ Evaluation of Weld Defects
- ✓ Dimensional Control and Precision Control
- ✓ Control of Jateral Cracks
- ✓ Fit-up and Construction
- ✓ Multi-machine Collaborative Lifting
- ✓ Weight Control During Fabrication

Installation Technology System

- ✓ Real-time Internal Wave Monitoring
- ✓ Treatment of Sand Waves & Sand Ridges
- ✓ Evaluation & Upgrading of Vessels' Ultimate Capacities

Breakthrough

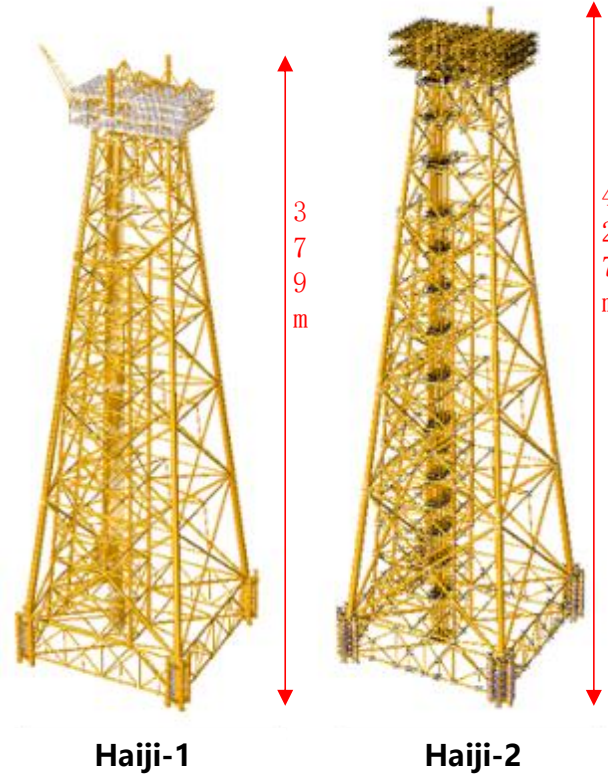
- ✓ Testing of Underwater Grouting and Injection Systems
- ✓ Reduction of Wind/Vortex-induced Vibrations

“Haiji-1” VS “ Haiji-2” Deep Water Jacket

Haiji-2 Deepwater Jacket

Construction Height: 122m
Lifting Upright Height: 338m
Jacket Water Depth: 324m
Platform Overall Height: 427m

S420 steel is used more than 20,000tons(63%)
New Structural Form



Haiji-1 VS Haiji-2		
	Haiji-1	Haiji-2
Weight	30,090tons	37,000tons
Height	300m	338.5m
Wate Depth	284m	324m
Levels	13	14
Max Pipe ND	4,000mm	4,200mm
Primary WT	24,170	29,957
Skidshoe WT	660	645
Anode WT	1,694	2131
Skirt Piles	3*4=12	4*4=16
Center Truss Length	232m	262m
Center Truss WT	8,900	9,700
Fatigue Node	17	40+
Lifting No.	144	180

Construction	ALL TKY Node Pre-heated	Primary Structural Post Weld Hydrogen Elimination	Scaffold Modeling
	Deep Water Jacket ICCP	120m Height Lifting	Adjustable Support

Lufeng 15-1 EPCI Project (Haiji-1)

2st deep water jacket in Asia



CLIENT	CNOOC
WEIGHT	Jacket: 30,090 tons Topside: 10,700 tons
LOCATION	South China Sea
JACKET HEIGHT	300m
DEPTH	284m
SOW	<ul style="list-style-type: none">• Jacket + Topside• 88km 12"/18" subsea pipelines• 26km subsea cables• 19km umbilicals

Lufeng 12-3 EPCI Project

3rd deep water jacket in Asia



CLIENT CNOOC +SK

WEIGHT Jacket: 24,000 tons
Topside: 7,370 tons

LOCATION South China Sea

JACKET HEIGHT 265m

DEPTH 240m

SOW

- Jacket + Topside
- 3km Subsea Cables
- 10" 2.9km Flexible Pipeline

Liuhua11-1 EPCI Project (Haiji-2)

The deepest Jacket in Asia (WD 324m)

- ✓ Height of Jacket is 338.5m; Weight 37,000 tons
- ✓ Break many Asia records in water depth,height and weight



338.5m

CLIENT	CNOOC
WEIGHT	Jacket: 37,000 tons Topside: 10,200 tons
LOCATION	South China Sea
DEPTH	324m
SOW	<ul style="list-style-type: none">• Jacket + Topside• 16km umbilical• 15" 3.5km flexible pipeline• 3 x 1.1km subsea cable

卓越工程 赋能未来

Empower the Future with Excellent Engineering

THANKS

谢谢

