

HHI is Global Leader in Offshore Oil and Gas Industry

Our Journey toward the Best Partner for the Offshore Energy Business

The Offshore & Energy Business Unit of HHI has a long history of supporting the offshore oil and gas industry by providing engineering, procurement, construction, offshore installation, and project management services. Starting as a fabricator of offshore structures, the Unit has continuously repositioned itself as an integrated solution provider for the oil and gas industry. HHI's commitment to innovation and its extensive experience have turned challenges into opportunities, allowing us to renew our goals and continually push the boundaries of offshore projects.

1976

Construction contract for OSTT from Saudi Arabia

1989

Delivered the world's biggest Jacket (40,000 tons) to Exxon

2002

Set a Guinness World Record for the on-ground assembly of a 12,112-ton 'super lift' for Na Kika FPSU

2004

Delivered the world's largest FPSO (Kizomba-A FPSO 343,000 DWT / ExxonMobil)

2011

Lifted the world's largest offshore platform (North Rankin B / 23,178 tons)

2015

Delivered the world's largest cylindrical FPSO (Goliat FPSO)

2021

Topside lifting and integration on the hull of 9,100 tons by HD-10000 Floating Crane (King's Quay FPS)

Past (1976 - 1990)

Since 1976, HHI's Offshore & Engineering Business Unit has been fabricating small-sized offshore fixed platforms and subsea pipe-laying projects, growing into a world-class fabricator equipped with advanced yard facilities, skilled labor, and efficient construction management systems. During these early years, the Unit laid the foundation for HHI to grow as an EPIC contractor by acquiring the core capabilities needed for executing offshore projects.

Present (1991 - 2021)

The Offshore & Energy Business Unit has evolved into an EPIC contractor, providing fully integrated engineering, procurement, construction, installation, and project management services. During this period, the Unit has dramatically expanded its range of services to include all kinds of offshore projects: FPSO, FPSU, semisubmersible, jack-up, TLP, and land-based process facilities. It has completed more than 170 projects, including 100 EPIC projects for the oil and gas industry.

Beyond

HHI's Offshore & Energy Business Unit pursues further growth as a reliable partner in the oil and gas industry, backed by extensive experience and technology accumulated through the successful execution of various EPIC projects. Our goal is to provide clients with a cost-effective total solution that meets their integrated field development plans.

HHI is now pioneering the Floating Offshore Wind Industry

Project Track Record

Gray Whale 3 FEED

- Client: BadaEnergy (TotalEnergies, Corio Generation, SK ecoplant)
- 500MW Wind Farm
- Wind Turbine: 15MW

Jeju Pilot

- Korean Government Funded Project
- Wind Turbine: 8MW

Haewoori 3 Pre-FEED

- Client: Haewoori Offshore Wind (CIP/COP Korea)
- 500MW Wind Farm
- Wind Turbine: 15MW

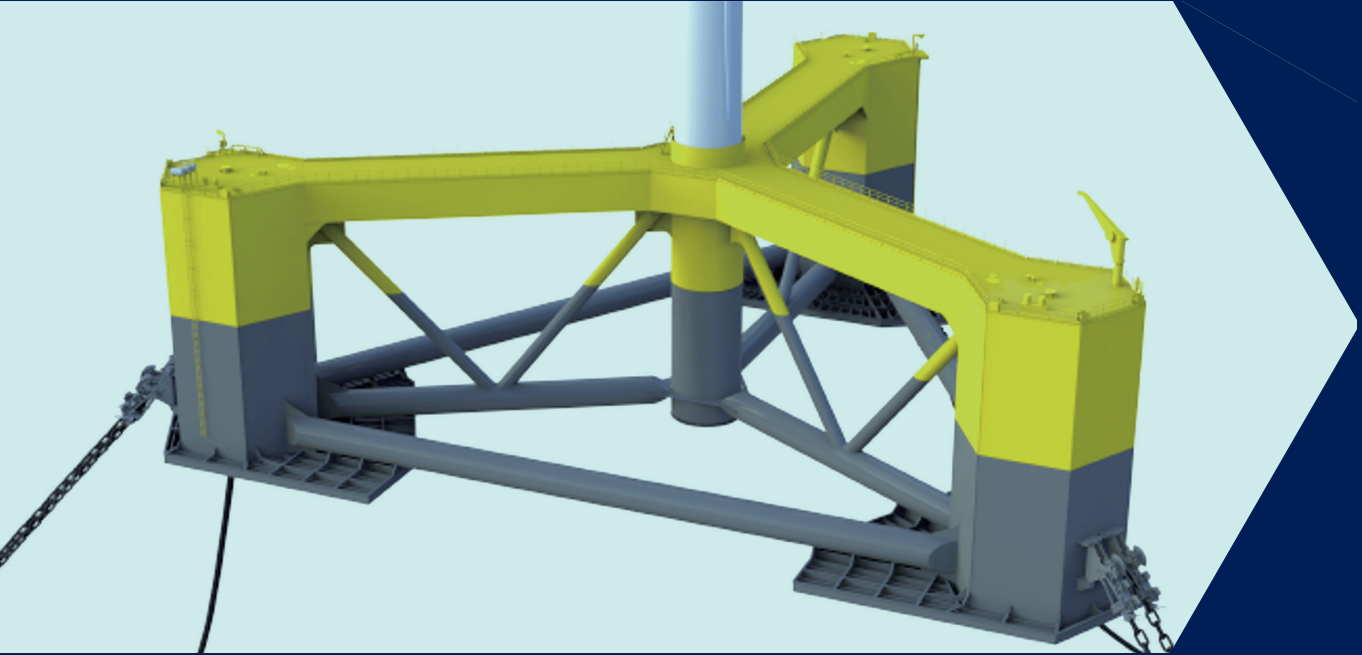
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Hi-FLOAT

HHI's Substructure for Floating Offshore Wind Turbine

Hi-FLOAT: HHI'S FOWT Substructure



Hi-FLOAT is HHI's patented floating substructure design that supports the floating offshore wind turbine.

The floater is composed of one cylindrical central column supporting the wind turbine and three hexagon-shaped outer columns.

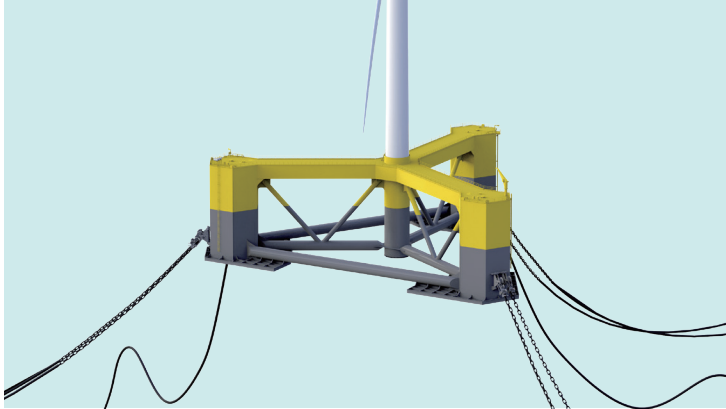
Hi-FLOAT has the following key success factors:

Reliability	Proven semi-submersible design from traditional oil and gas industry which minimizes project risks related to design, construction, wind turbine integration and offshore installation.
Global performance	Hi-FLOAT is suitable for commercial-sized large wind turbines, where yaw motion and mooring loads are minimized by locating the wind turbine at the center of substructure.
Customization	Substructure design can be optimized according to the requirements from the client, WTG OEM, and fabrication/integration yard to enhance wind turbine operation while minimizing project costs.

Approved Design

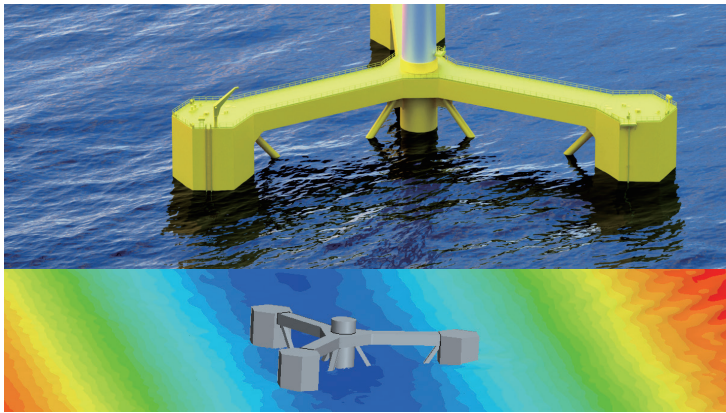
- 10MW Model AiP in 2021 from class societies (ABS, BV, KR, LR)
- 15MW / 18MW Model AiP in 2024 from ABS
- Patented in South Korea and other countries

Floating Substructure Design & Technology



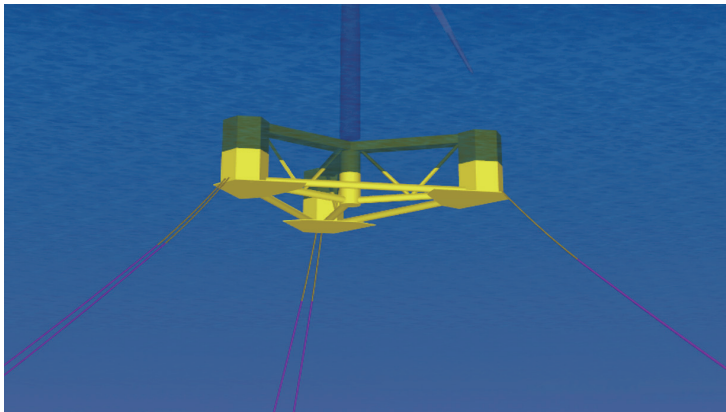
Reliable and robust semi-submersible substructure

- Proven floating substructure in the O&G Industry
- Implementation of HHI's offshore technology and project lesson learned



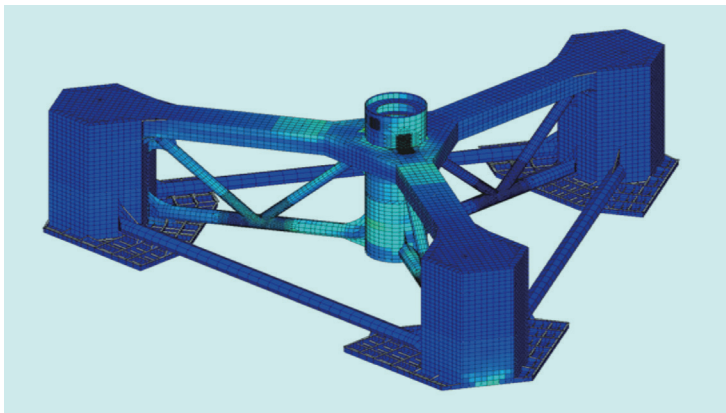
Global performance assessment

- Wave basin model test & CFD
- Integrated Load Analysis
 - : Substructure-wind turbine-mooring coupling
 - : Results validated with wind turbine supplier



Structural design and strength check

- Time Domain Structural Analysis
- Verified fabrication yard constructability
- Brace structure customization considering tower load and environmental loads

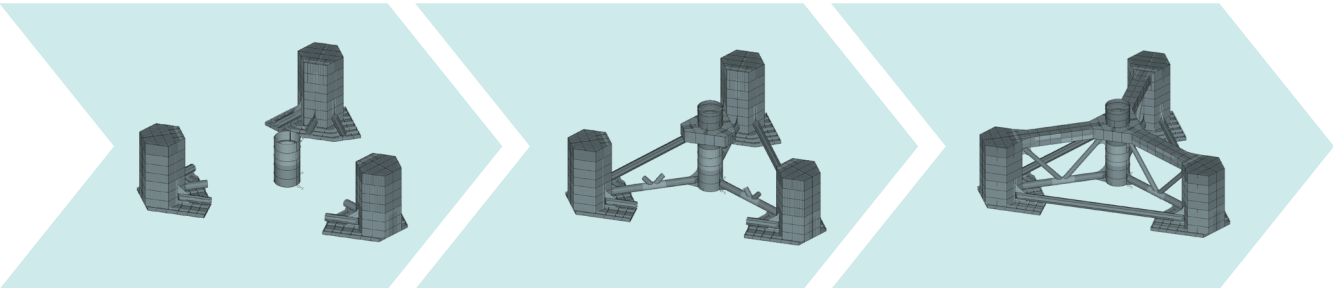


Design optimization

- Fit-for-purpose design customization
 - : Client requirement
 - : Wind turbine size and WTG OEM requirement
 - : Offshore environmental condition
 - : Fabrication and Integration yards condition
- O&M
 - : Passive ballast system for CAPEX/OPEX savings
 - : Wide flat deck space for material handling and passage way

Substructure Fabrication

Optimized fabrication plan



Maximization of assembly blocks size

Assembly completion in dry dock or on land

Load-out and quayside mooring management

Utilization of HD Hyundai Group's yards in South Korea and overseas



Wind Turbine integration

Safe and Stable tower and wind turbine integration at quayside

- Minimized substructure heel/trim control during lifting and integration, considering the centered location of the wind turbine within the substructure
- Optimized height of the transition piece to enhance tower flange bolting workability
- Satisfactory seabed-substructure bottom clearance

