

A steel semi-submersible floating foundation design

Steel Floating Substructures – Sept. 18 - Edinburgh

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Three main foundation arche types.

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The Tri-Floater technology is making use of the combined experience of over 40 years experience in steel semi-submersibles for the oil & gas sector and 30 years of offshore wind industry.



Tri-Floater – Design history





Tri-Floater 3rd generation design

Braced flat plated design

Focus on minimizing weight

Focus on acceleration/inclination of turbine

Fatigue driven design

Scalable design for larger turbines

Fabrication of buoyancy modules



Suitable yards

Production capacity restrains

Qualified and sufficient labour

Design for manufacturing (industrialization) and low steel weight





Modular fabrication

Main buoyancy blocks all similar

Bracings at industry standard

Transition piece similar to current fixed wind solutions

Why not cylindrical/tubular design?

Large diameter pipe joints/nodes are labor and quality intensive welding process.



Foundation Assembly

Available locations close to project
Depth at quayside
Qualified and sufficient labour





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Not only looking at the steel foundation

Semi-submersible turbine installation

In port/harbor

With potential to be grounded to seabed





Semi-submersible foundation installation

Wet storage

Weather window for installation

Dynamic cable

O&M access

Looks and feel similar to fixed offshore wind



GustoMSC|NOV Tri-Floater

A three-bladed wind turbine is mounted on a yellow tri-floater substructure, which is a semi-submersible platform with three legs. The turbine is positioned in the center of the frame, set against a dark, stormy sky with heavy rain falling. The sea is turbulent, with white-capped waves crashing around the base of the substructure. The overall scene conveys a sense of resilience and advanced technology in a harsh marine environment.

Proven semi-submersible technology

Validated technology by scaled model tests

Low acceleration levels

Efficient manufacturing, installation and O&M

Potential for industrialization

Technology ready for full scale deployment

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Thank you!