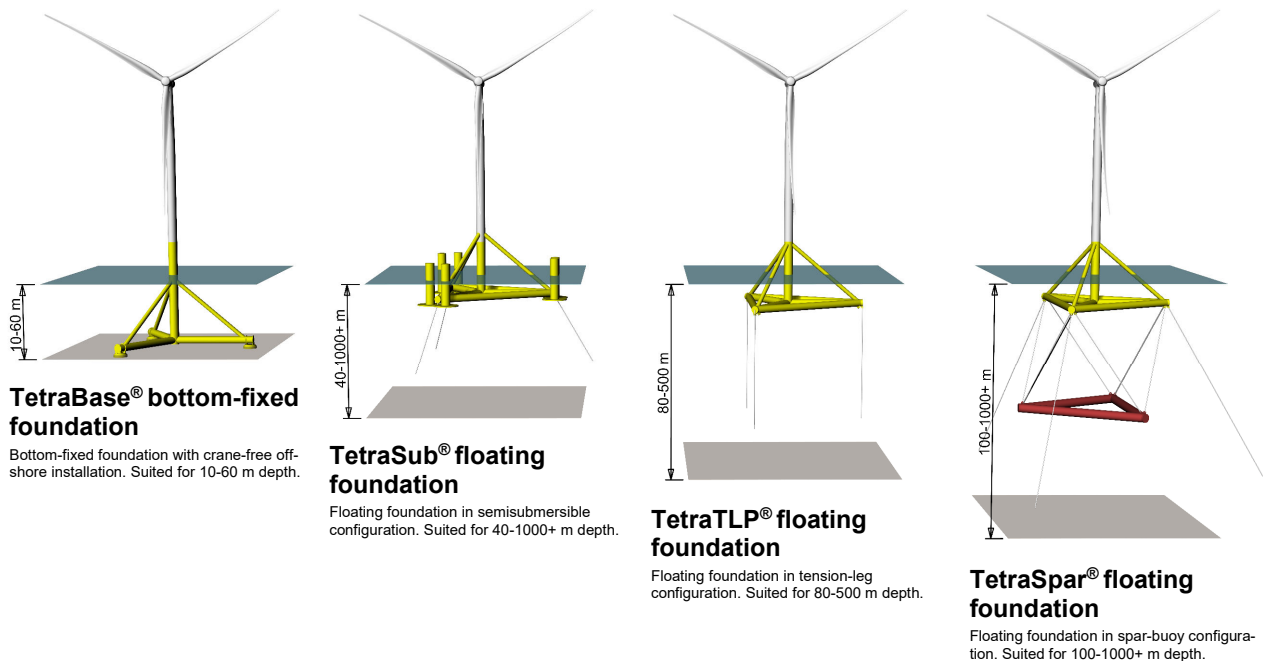


## Industrialized offshore foundations for any water depth

Introducing the modular, industrially manufactured Tetra foundation concept, Stiesdal is bringing offshore wind to the next level. The Tetra concept can be implemented in a bottom-fixed variant and in a range of floating variants. It offers competitive advantages over existing foundation concepts, with the potential for leaner manufacturing, assembly and installation processes and lower material costs.

The concept can be adapted to any turbine size and any water depth.



### Innovation and industrialization

Innovation and industrialization are the two main levers required to achieve continuous cost reduction in the rapidly developing offshore wind industry.

Stiesdal Offshore Technologies has developed the innovative Tetra offshore foundation concept with a focus on genuinely industrialized mass production.

implemented both in a bottom-fixed variant and in a range of floating variants. All variants can be adapted to any turbine size and any water depth.

Following quayside turbine installation and commissioning, all variants can be deployed without the need for installation vessels.

### Key features and advantages of Tetra concept

The Tetra concept has a range of key features and advantages that are instrumental for cost reduction:

- Fully industrialized, using existing supply chain
- All components are factory made, no special process (welding, painting, etc.) outside factory environment
- Fast and robust assembly in port of embarkation; no facilities needed other than a flat area at quayside
- Easy launch using slip or semisubmersible barge
- Turbine installation at quayside using land-based crane, pre-commissioning at quayside possible
- Easy towing to site using conventional vessels

### Port requirements and water depths

The Tetra concept can be deployed from any port of reasonable size having no airspace limitations. Port requirements include:

- Assembly area at quayside, preferred minimum dimensions 100 m x 100 m
- Soil capacity in assembly area sufficient to allow for movement of assembled foundation (typically in range 800-1200 t) on SPMTs.
- Soil capacity in turbine installation area sufficient to allow for use of suitable land-based crane
- Minimum water depth in port 5-7 m, depending on turbine size.
- Minimum water depth in towing route 8-10 m

Stiesdal Offshore Technologies specializes in technology development and innovation within the field of offshore wind power. Marketing, manufacturing and deployment of Stiesdal's offshore foundations are carried out in collaboration with Welcon A/S (manufacturing) and Blue Power Partners A/S (logistics, assembly and installation).

The first full-scale demonstrator of the Tetra concept will be deployed off the coast of Norway early 2020. The TetraSpar Demo project has been developed in collaboration with Shell and innogy. As technology partner, Siemens Gamesa Renewable Energy will provide the wind turbine and required services. The partners will be part of a project team that will gain detailed, practical insights into the construction, installation and operation of the TetraSpar concept as well as detailed performance data.

Stiesdal



BLUE  
POWER  
PARTNERS



SIEMENS Gamesa  
RENEWABLE ENERGY