

” We need both innovation and industrialization to continue the impressive cost reductions that we have seen over the last few years. If we succeed, offshore wind power will surely become the preferred source of electricity in the future ”

Innovation of tomorrow

Stiesdal Offshore Technologies A/S 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).

For further information, please visit



stiesdal.com

Stiesdal Offshore Technologies is a leading developer of innovative, industrialized offshore foundations, applying cost-effective technologies proven in modern wind turbine design.



welcon.dk

Welcon is the world's leading supplier of offshore wind turbine towers. Based on an up-to-date lean production setup, the company has delivered about half of all offshore wind towers in Europe.



bluepowerpartners.com

Blue Power Partners is a global consultancy and project development company with a dedicated focus on value chain optimization in the on- and offshore wind and solar industry.

Watch our Tetra concept video

stiesdal.com



Stiesdal
OFFSHORE TECHNOLOGIES

Nørrevoldgade 45 DK-5000 Odense C Denmark
stiesdal.com info@stiesdal.com

[Twitter](#) [LinkedIn](#)

**Industrialized
offshore foundations
for any water depth**



Stiesdal
OFFSHORE TECHNOLOGIES

Innovation and industrialization

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

Stiesdal Offshore Technologies has developed the innovative Tetra offshore foundation concept, which is optimally suited for industrialization. The concept can be implemented in a bottom-fixed variant and in a floating variant. Both variants can be deployed without the need for installation vessels.

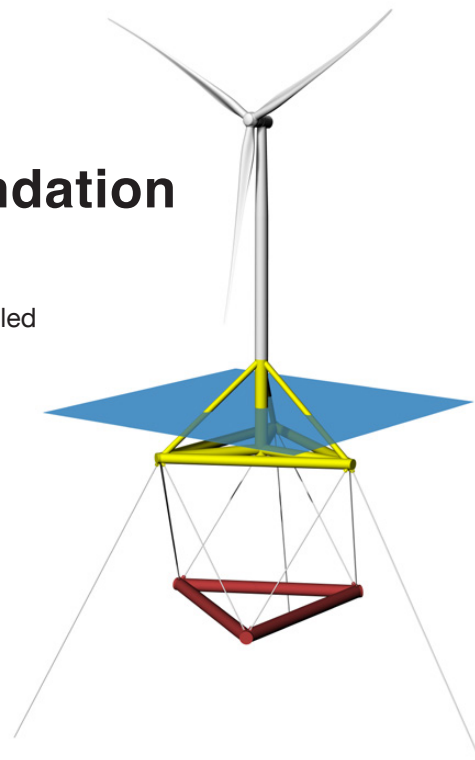
TetraBase[®] Fixed foundation

Fully industrialized bottom-fixed foundation with crane-free offshore installation, including harbor-installed wind turbine.



TetraSpar[®] Floating foundation

Fully industrialized floating foundation with harbor-installed wind turbine and attractive operational dynamics.



Key advantages of Tetra concept

- Can be adapted to any turbine size and any water depth
- Fully industrialized, utilizing existing supply chain
- All components are factory-made, no special processes (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

TetraBase[®] fixed foundation

- One-stop installation – foundation and turbine installed in one simple process
- No separate vessel mobilization for foundation installation and turbine installation, and no installation vessel required at any stage of process
- Seabed preparation limited to levelling of pad areas
- Gravity stabilized in most conditions – no piling required
- Piled or suction bucket variants can be applied where seabed conditions do not allow gravity foundations
- Where piling is required, piles will be limited to three micro-piles
- Easy decommissioning by reversal of installation process

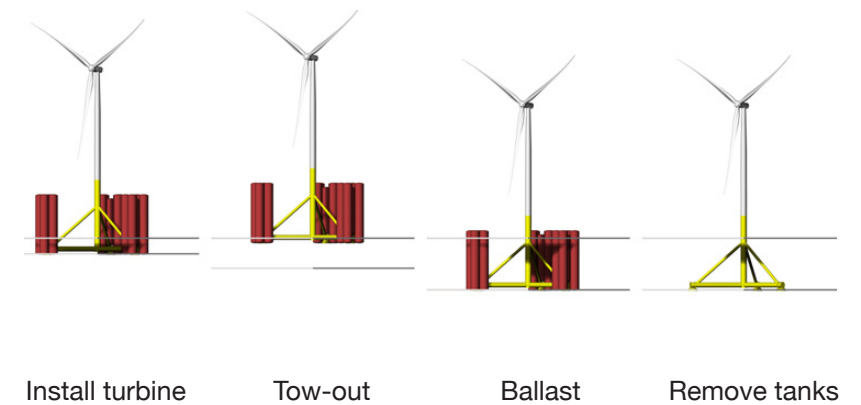
TetraSpar[®] floating foundation

- Easy towing to site using only tugs – no installation vessel required
- Very shallow draft in port and during towing
- Simple catenary mooring system
- Deployment of stabilizing keel after hook-up to mooring
- Ballasting of keel turns foundation into spar with very attractive dynamic properties
- Can also be implemented as semisub or as TLP at shallow water unsuitable for spar version
- Keel can be de-ballasted and elevated to sea level for periodic inspection
- Easy decommissioning by reversal of installation process

Port requirements and water depths

- Assembly requires flat, level 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 and in towing route 7 m
- TetraBase depth range 10-60+ m
- TetraSpar depth range 40-1000+ m

TetraBase[®] installation sequence



TetraSpar[®] installation sequence

