

Turret Mooring Systems



Turret Mooring Systems

Bluewater is an independent privately-owned EPCI contractor and operator with decades of experience in designing and delivering Turret Mooring Systems (TMS). We have an excellent project execution track record that ensures quality and delivery within schedule and budget.

These systems are used for mooring offshore production and storage units like FPSOs, FSOs, FSRUs and FLNGs.

The weathervaning of the vessel results in minimised vessel motions and minimised environmental loads. This maximizes production uptime and enables higher offloading availability.

Our TMS-systems range from lean systems for benign areas and shallow waterdepths to the most complex systems, in the harshest conditions in ultradeep waters.

They can support both simple and complex riser and umbilical systems (systems with more than 40 flexibles have been delivered), also for high pressure, high temperature, high voltage, and with sufficient space for pigging and injection facilities.

They also feature a Bluewater swivel system to enable the transfer of fluids, power and signals from the geostationary mooring line arrangement to the weathervaning vessel.

Bluewater provides tailor-made TMS solutions that are easy to integrate and install, while being credited for its robustness, minimal maintenance throughout its lifetime and inherently safe operation.

Internal Turrets

- Preferred solution in moderate and harsh conditions;
- Suitable for water depths up to very deep waters;
- Compact design with optimal structural integration into hull;
- Scalable based on field complexity and vessel size;
- ESDVs, manifold and swivels above deck, allowing easy and safe access with natural ventilation;
- Better weathervaning performance is achieved when turrets are positioned further forward in the vessel.

Disconnectable Internal Turrets

- Similar to internal turret, but with additional disconnect feature;
- Both for quick-disconnect, iceberg or harsh weather (hurricane) avoidance, or for planned disconnects (for yard upgrades);
- Quick and easy disconnect in any sea state or vessel draft;
- Allows pre-installation of mooring and risers before hook-up of the production unit, resulting in a de-risked project schedule, more flexible installation window and smaller installation vessels spread.

Very Large Internal Turrets

- Design for combination of large vessel, many risers, deep water, substantial manifolding, harshest weather conditions;
- Large area for production and testing manifolding with (inspection) pigging facilities, facilities for subsea control and downhole injection, ESPs, VSDs, equipment room(s);
- Swivel stack with multiple modules / flowpaths, also HP/HT, utility modules, (high) voltage and control swivels;
- Spare slots for future expansion of wells and field tie-ins.

External turrets

- Allow operation in shallow waters;
- Simple hull interfaces and integration;
- Quayside integration possible, no need for drydocking;
- Minimal impact on vessel and deck space; no impact on storage capacity;
- Excellent weathervaning capabilities.



An external outrigger configuration with disconnectable buoy is also available



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Bluewater Turret Benefits



Efficient Project Execution

- Full EPCI contractor, excellent project management to ensure quality, schedule and budget
- Open culture, flat organisation and short communication lines; around 200 engineers in one office location, easy to contact, always consulting with customers;
- Reliable and predictable, focussed on bespoke cost-effective project solutions for your field and location;
- As FPSO fleet owner and operator we understand our customers' need to operate to the highest HSEQ standards in the offshore industry;
- Our in-house developed FPSO 'safety case' DNA is an integral part of our project execution and our TMS design philosophy;
- Excellent track record in safety and reliability; with products that have stood the test of time in the most challenging and harshest offshore locations all over the world;
- Dedicated supply chain for equipment providers and fabrication yards based on decades of track record and long-term relationships.



Excellence in Technology

- In-house technology and engineering for all critical components;
- Designs suitable for all conditions worldwide;
- Compact slender turret design and robust dual bearing system with efficient load introduction into the hull, requiring minimal maintenance, resulting in lower weight and lower overall cost;
- Proprietary modular swivel design with in-house testing facilities;
- Experience with strict regulatory regimes and harsh environmental conditions;
- Condition-based maintenance of mooring, bearing, swivel or structural items is available;
- Monitoring with safe operation and maintenance in mind, using our operational experience.



Robust Mooring Systems

- Fully passive system, with unrestricted weathervaning capabilities;
- Full design optimization towards project-specific requirements, using field-proven materials (chain, steel wire rope and polyester);
- Both permanent or disconnectable systems can be provided, to suit field-specific and/or operational requirements;
- Proven mooring line connector design, if required with double-articulated arrangements and exchangeable during field life; retractable chain stoppers can be provided;
- Both catenary and semi-taut moorings are available;
- Various options for re-tensioning mooring lines can be provided if needed; in the turret, in the line or at the seabed;
- Underwater components maintenance-free.



Modular Swivel Stacks

- All process equipment is situated in naturally ventilated open areas to improve safety;
- Robust and proven designs for process, utilities and power/fibre-optic/control swivels;
- Project-specific arrangement based on standardized stackable and interchangeable swivel modules and passive (or active), double or triple sealing arrangements; option with spare seal containers;
- High voltage sliprings, for e.g. green power import;
- High pressure/high temperature process swivel modules;
- Swivels modules available for import/export of 'new fluids', e.g. NH₃, MeOH, compressed H₂, CO₂;
- HP utility swivel modules and multicore (fibre-optic) control sliprings.

Head Office:

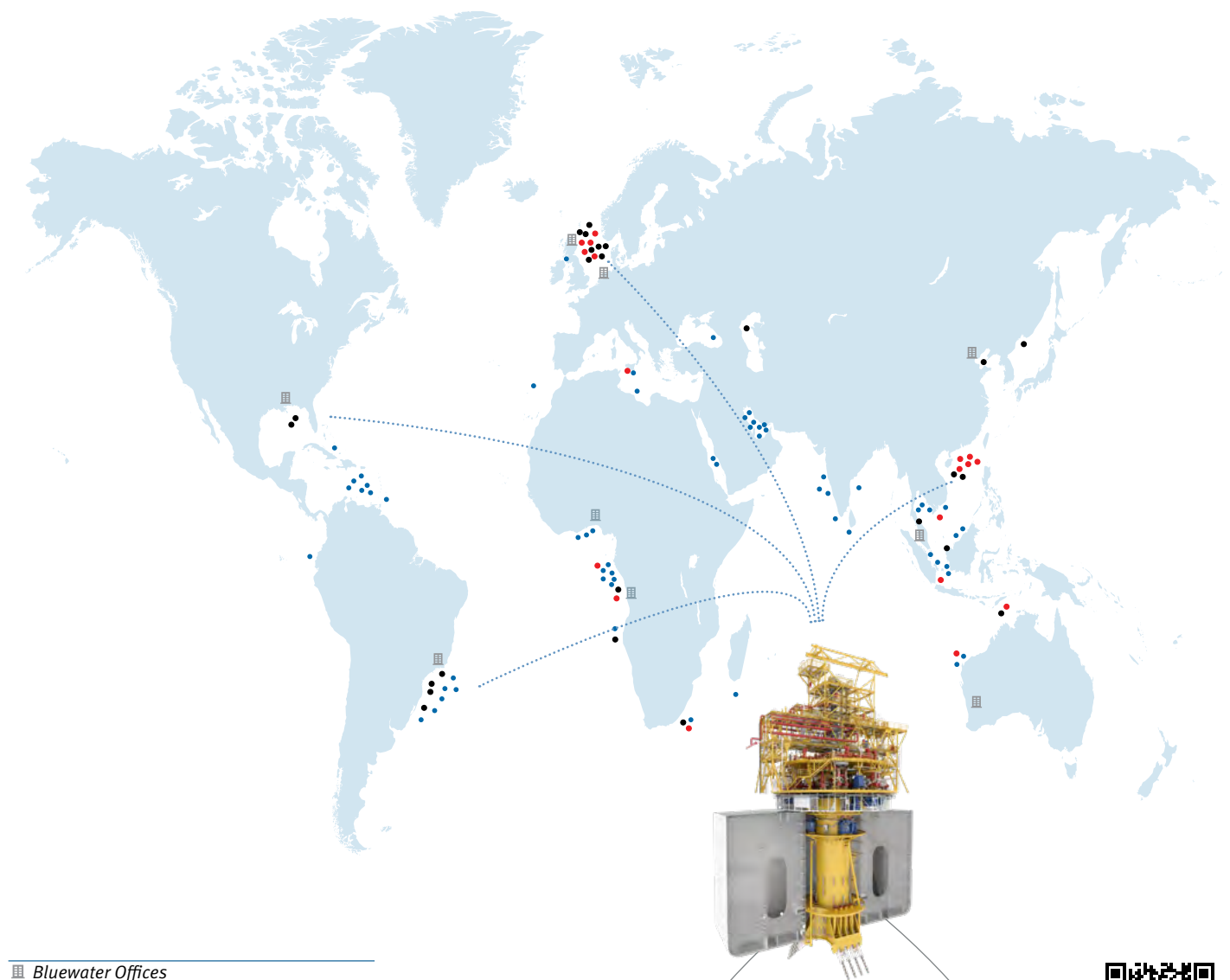
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Global Presence and Track Record



 Bluewater Offices

 FPSO & FSO Systems

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