

LNG & CNG Applications

SMS External Turret



Retrofit Solution for Mooring & Fluid Transfer

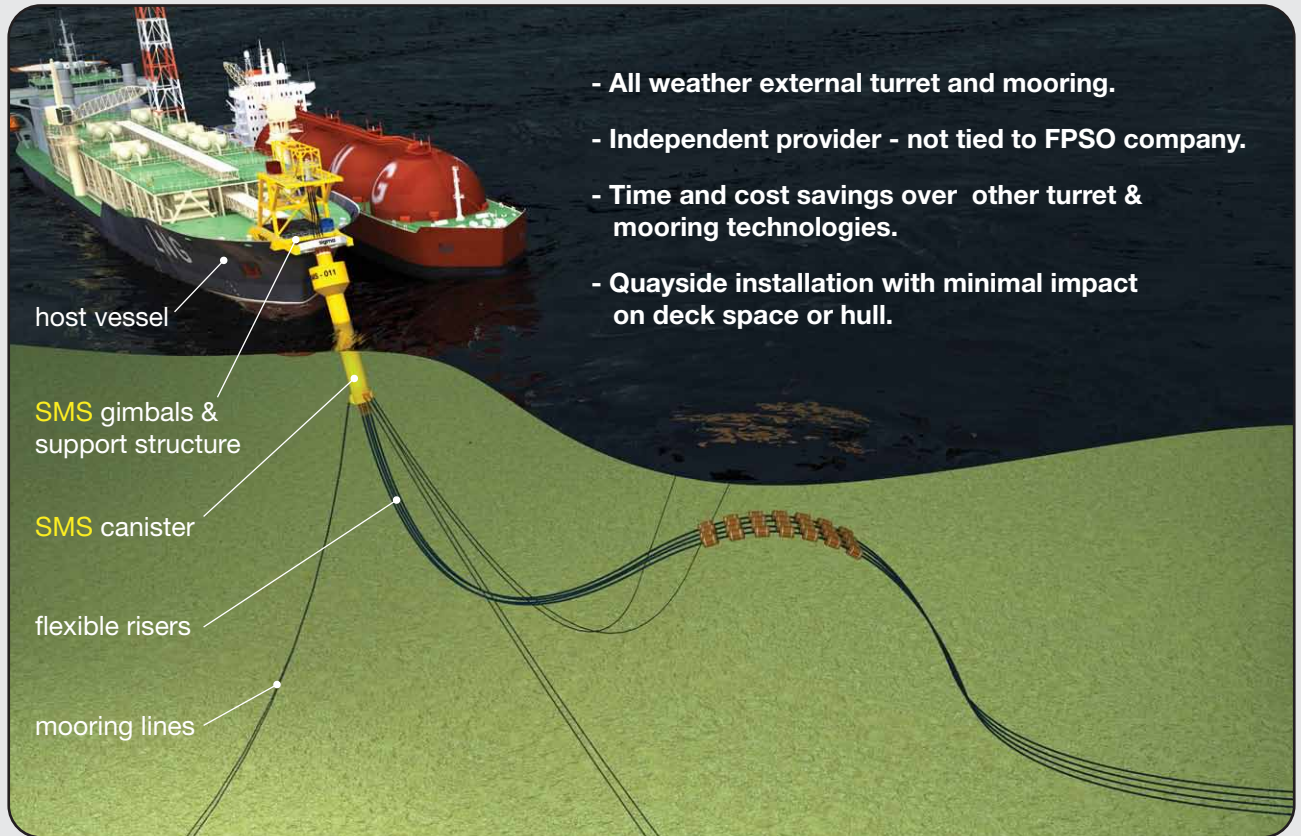
Our cost-effective External Turret is built from proven components and can be installed on FLNG, FSRU and CNG vessels without major hull modifications.

Discover more at www.sigmaoffshore.com

sigma[™]

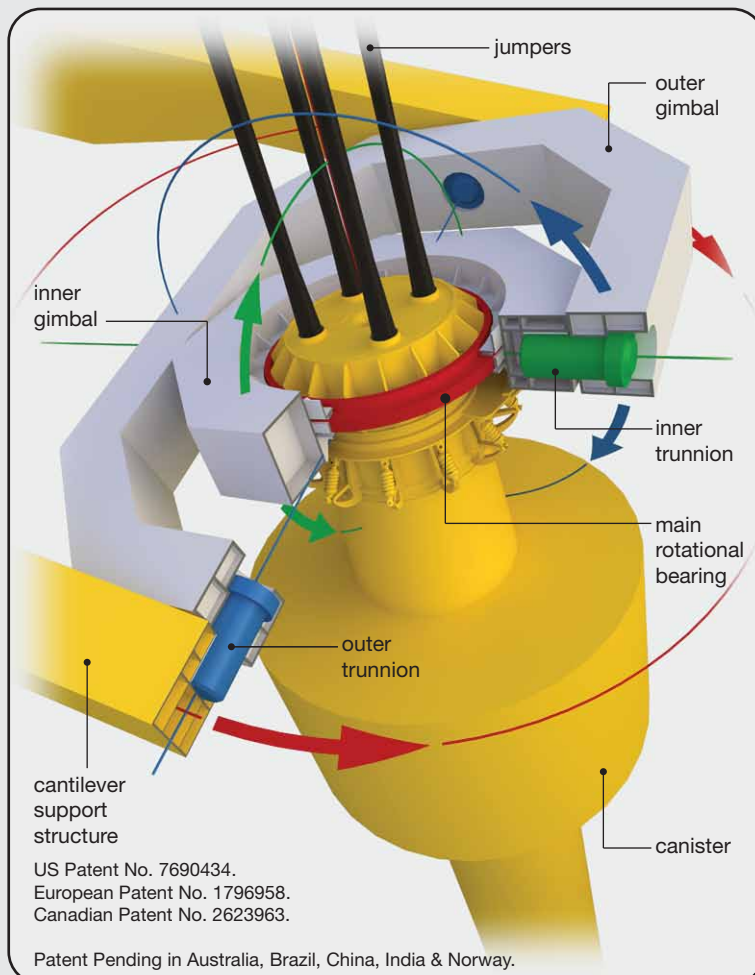
Independent providers of external turrets, moorings and engineering services

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


- All weather external turret and mooring.
- Independent provider - not tied to FPSO company.
- Time and cost savings over other turret & mooring technologies.
- Quayside installation with minimal impact on deck space or hull.

Patented Design >



Approved in principle by DNV following successful tank testing, our proprietary SMS is the product of 10 years continual development and offers clients a cost effective and flexible Mooring and Fluid Transfer Solution suitable for LNG or CNG FPSO's, FSRU's & similar applications. The tanker bow location of the SMS cantilever support structure and gimbal minimize deck space impact, avoid hull modifications, allow unlimited weathervaning of the vessel, reduce cost and modification to the ship's equipment and save time, thanks to a unique and patented design. Mooring components are below the canister eliminating splash zone corrosion.

-  outer trunnion allows vessel to pitch and surge; bending moments are minimized.
-  main rotational bearing allows vessel to rotate about canister enabling unlimited weathervaning.
-  inner trunnion allows vessel to roll; bending moments in structure and riser are minimized

FSRU and FRU applications >

A Sigma Smart Mooring System can provide the mooring and export system for a regasification unit at the destination. As with the FPSO SMS the system has unlimited weathervaning capability and the FSRU or FRU can remain on station in any weather condition. LNG carriers transfer their cargos to the permanently moored unit either side-by-side or stern-to-bow. Storage can either be integral (FSRU) or provided by a separate storage vessel moored alongside a regeneration facility (FRU). The resulting gas is exported by pipeline through one or more risers passing through the SMS. The canister can be detached from the FSRU / FRU if the latter is required to leave site, for example for maintenance or modification.



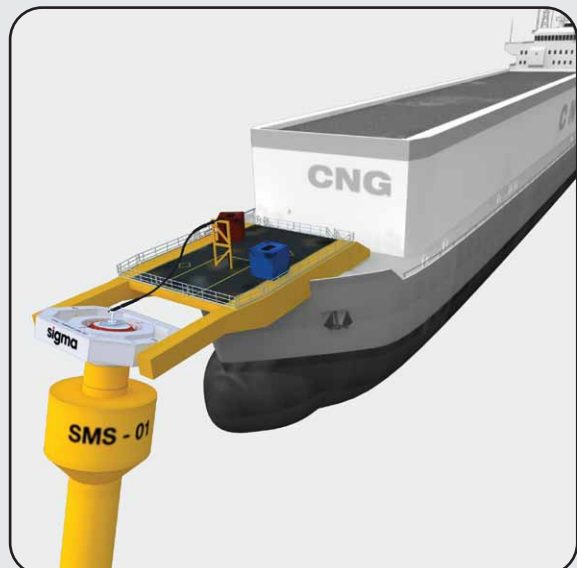
LNG and CNG FPSOs >

From the outset the Sigma Smart Mooring System has been designed for the various forms of FPSO. The SMS provides moorings and fluid flowpaths with an unlimited weathervaning capability and suitable for the FPSO remaining on station in all weathers. The export LNG or CNG carriers receive their cargos through tandem loading, either side-by-side or stern-to-bow. The SMS is designed to carry the combined mooring force of the FPSO and the carriers. The well production fluids and the well control umbilicals are carried through the SMS. Any associated oil can be exported through the SMS to a pipeline or transferred to a shuttle tanker. The canister can be detached from the FPSO if the latter is required to leave site.



LNG and CNG carriers >

A minimal version of the SMS can be used with a single riser to allow an LNG carrier with integral regasification or a CNG carrier to both moor and export gas through a pipeline at its destination; this can eliminate the need for significant shore infrastructure to be built.



Our SMS solution for your needs. Please contact us to discuss your requirements.

About us >

Sigma Offshore provide bespoke mooring and fluid transfer systems, including the Smart Mooring System, and also provide consultancy services in structural engineering, naval architecture and geotechnics.

Our roots go back to the mid 1990s and our mooring systems have been evolving since those days.

We have a special interest in devising economical solutions for FPSO/FSO Mooring and Fluid Transfer Systems and in providing solutions to problems posed in deepwater projects.

Our consultancy services are focused on marine structures, principally ships and FPSOs, but also includes renewable energy systems.

Sigma Offshore Limited is owned by :

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Sigma Offshore Ltd

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ISO 14001 : 2004	
OHSAS 18001 : 2007	
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