



# Floating Storage and Regasification Units (FSRUs)

Floating Storage and Regasification Units (FSRUs) are multi-function vessels, which combine LNG storage and built-in regasification systems onboard a ship or barge

FSRUs can receive LNG directly from conventional and large LNG ships, storing it in insulated tanks – and can regasify, or convert the LNG back into natural gas when needed.

Land-based import and regasification terminals are, in most cases, good, long-term solutions to meet large base demands for energy.

An FSRU typically costs under US\$300 million to build and can offer a lower-cost, faster, more flexible option. They are capable of bringing the benefits of LNG and natural gas quickly to where they are needed most.

FSRUs can be moored quayside, near-shore or offshore, with single or multiple berth options, to maximize uptime (i.e. “availability”) and help minimize coastal impact.

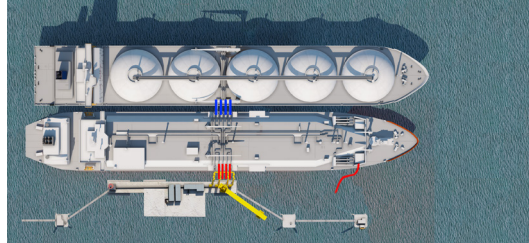
Regasified LNG from the FSRU can flow into the local grid or be transported by pipeline. The FSRU can also be used to create a regional LNG hub.

The FSRU receives LNG from long-haul LNG ships and then reloads LNG onto smaller LNG ships that can access tighter ports or locations that may be out of reach of the gas pipeline network. The FSRU can also replenish smaller bunkering vessels to fuel LNG-powered ships passing through the area.

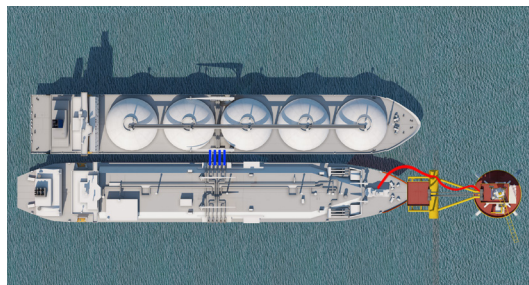
## Configurations

FSRUs are most typically self-propelled Moss-type, conventional, or large LNG ships which have been outfitted with regasification systems and auxiliary equipment. Some FSRUs are not self-propelled and have storage and regasification systems optimized for the customer's application. There are multiple FSRU configurations available depending on customer requirements, local market needs, available infrastructure, volumes required and financial priorities. Here are some of the available options.

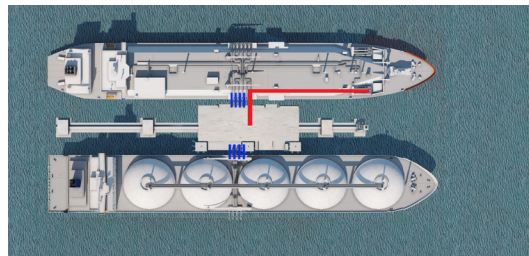
**Single berth FSRUs** - LNG ships can moor alongside the FSRU and offload LNG for regasification and then supply directly into a pipeline. This low-cost option works best in protected harbors or near-shore with water depths of 15-30m and mild weather conditions. *Examples: Nusantara Regas Satu, Salvador Brazil, Dubai*



**Single Point Mooring FSRUs** - weather-vaning solutions often allow the highest availability for offshore ship-to-ship transfer. There are numerous mooring options, depending on the site and conditions. Most have been tried and tested in the offshore oil industry. Some specific solutions include mooring towers, yokes, and turrets (internal or external to the FSRU). *Examples: Lampung, offshore Livorno Italy*



**Cross-dock FSRUs** - segregated berths for LNG ships and FSRUs provide flexibility and improved availability. Spacious 'sea island' concepts can be created to enable a flexible, offshore operation: this allows for adding more vaporizer capacity and further berths for a Floating Storage Unit (FSU) or another FSRU. *Examples: Guanabara Bay Brazil*



## Why ExxonMobil?

Our long-standing, global experience in every aspect of the world of LNG, means we can help our customers get maximum benefit from using LNG and natural gas.

Our agile approach helps us create progress quickly, with the flexibility to work on everything from small to large-scale projects.

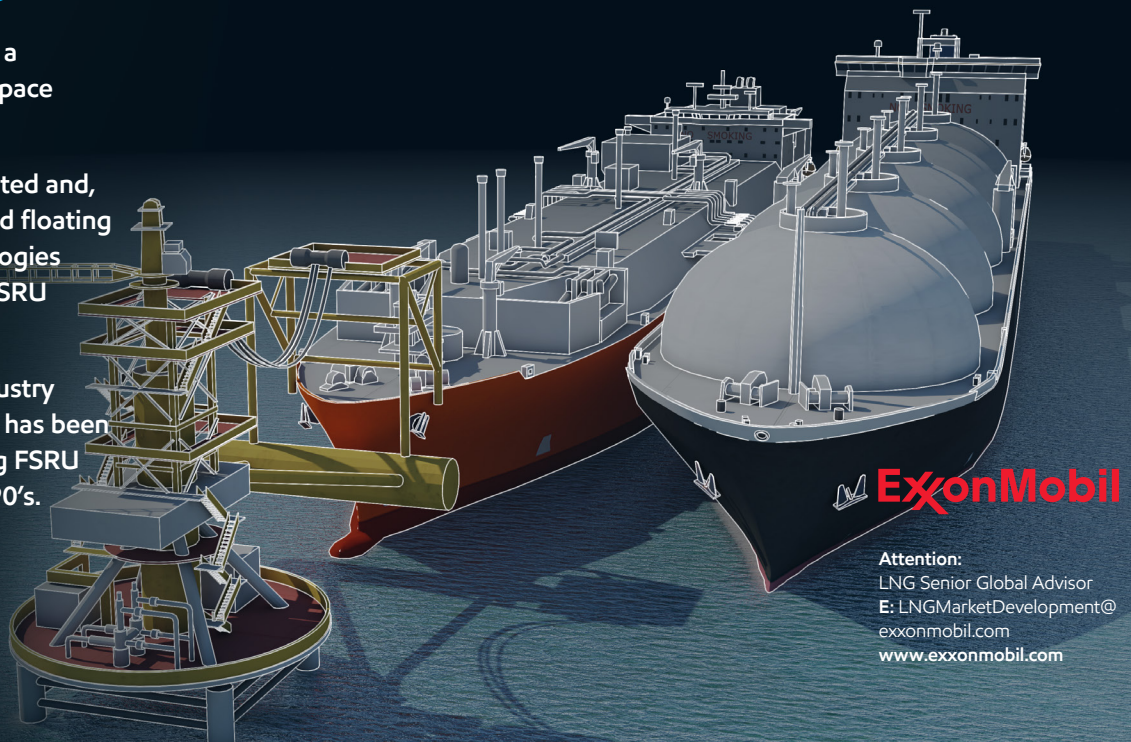
We use structured finance and commercial creativity to deliver successful solutions that work best for our customers.

We work with the world's best LNG technology and engineering providers to identify and help develop everything they need to get the most out of using LNG.

Building a long-term relationship with our customer helps us to understand your needs better, working with you to deliver a clean, reliable source of energy for communities, businesses, and industry.

## Our Experience

- ExxonMobil has been a pioneer in the FSRU space of the LNG industry.
- We researched, patented and, in some cases, licensed floating regasification technologies well before the first FSRU was ever built.
- Working with our industry partners, ExxonMobil has been involved in developing FSRU projects since the 1990's.



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