

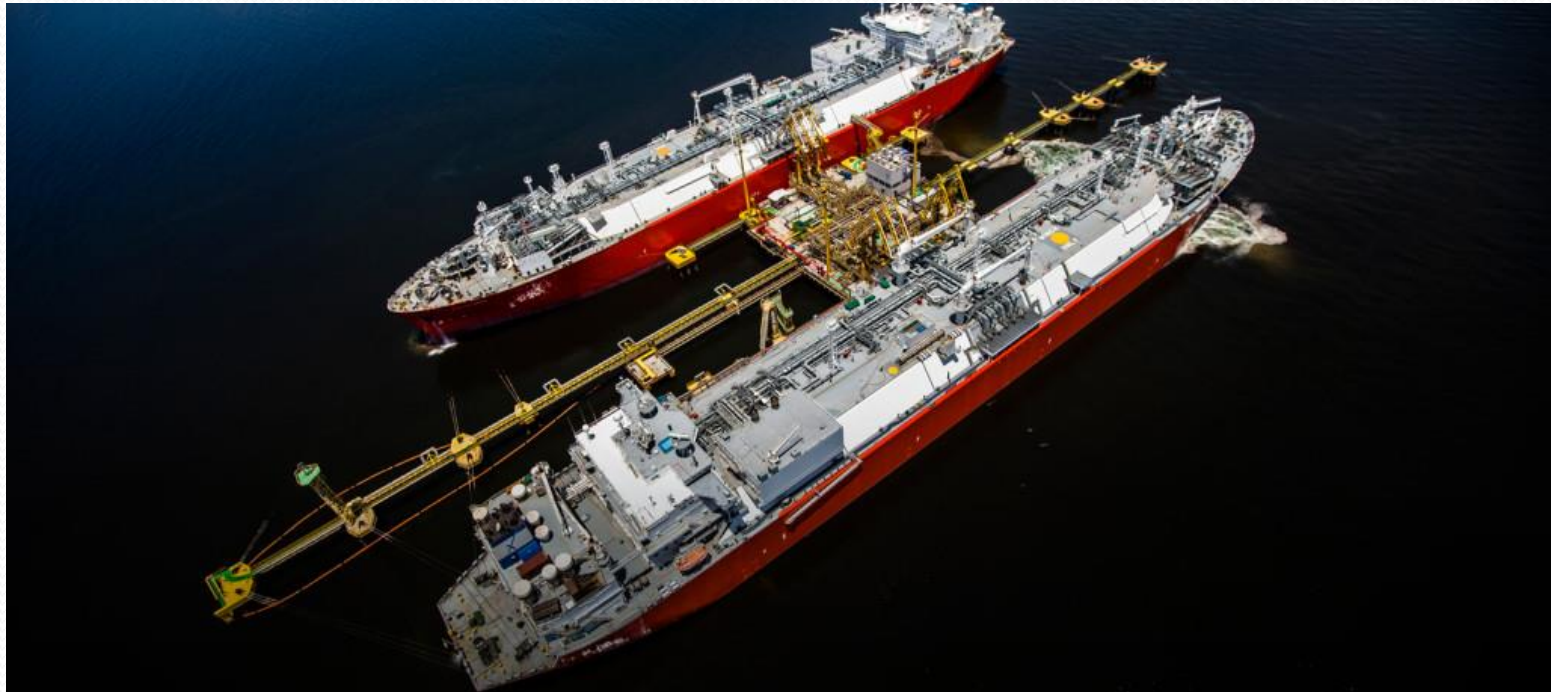
LNG FSRU Operations

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Floating Regas



- Floating regas units are based on the conversion of an existing LNG carrier into a floating terminal or newbuild that can be situated offshore or at a new or purpose-built jetty/pier.

Floating Regas



- The FSRU will receive liquefied natural gas (LNG) from offloading LNG carriers, and the onboard regasification system provides gas send-out through flexible risers and pipeline to shore.

Floating Regas

- Regas vessels are used primarily in stationary mode and may be moored dockside with natural gas discharged via a high pressure gas line (chicksan)



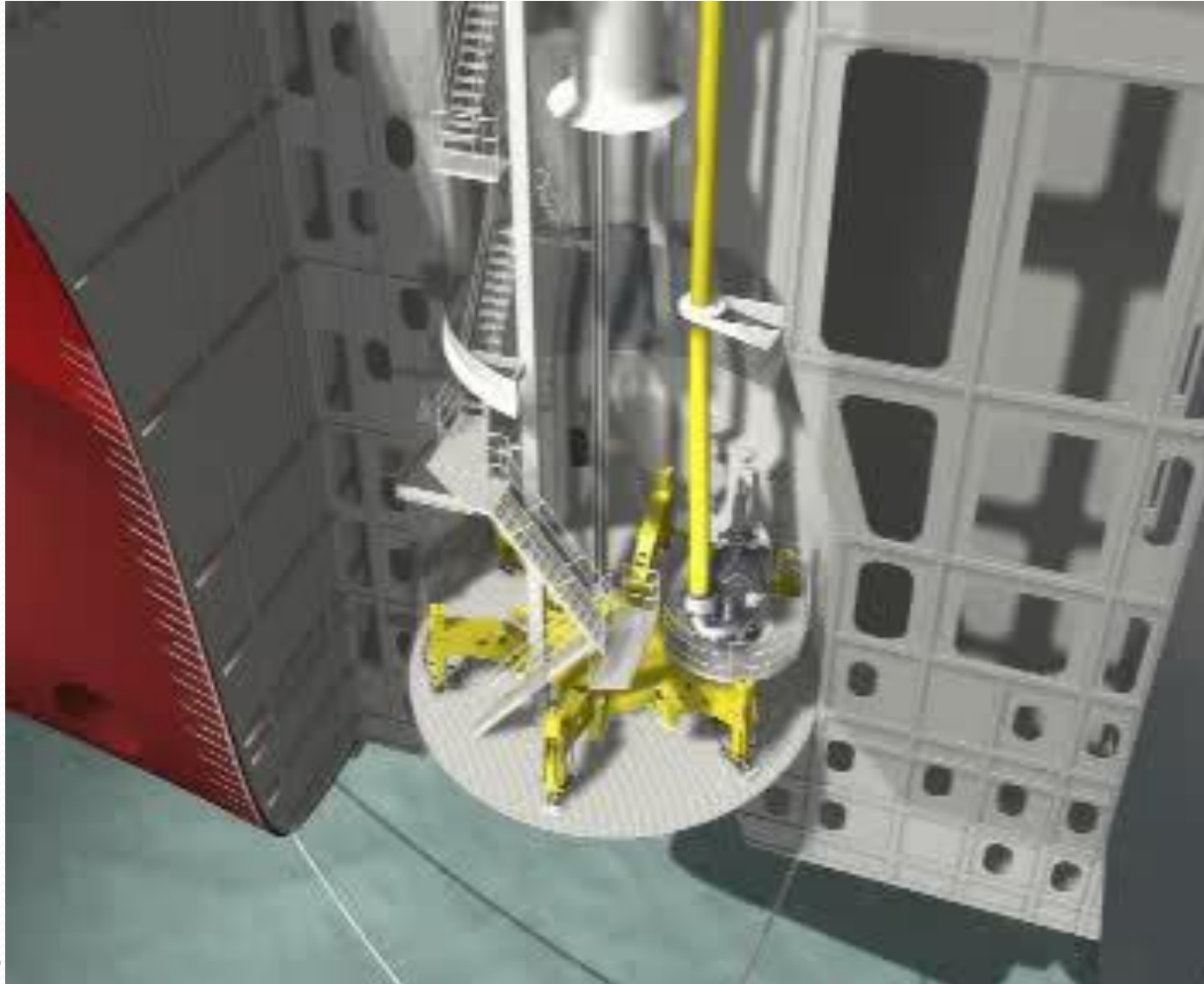
Floating Regas

- If moored offshore, the natural gas will be discharged from the FSRU through the mooring and unloading buoy with internal turret and swivel.



Floating Regas

Buoy Connection: How it works:



Floating Regas

Benefits-

- The vessel/floating facility can store, regas and conduct STS (ship to ship) loading operations in concert.
- As a result of this multi operational capability, FSRU vessels can provide continuous service, which in high demand locations support customer needs.

Drawbacks-

- Although the vessel is operating as a “fixed unit” i.e. either permanently moored to a berth or fixed to a buoy, all ship certificate requirements remain in effect and ships complement need to carry out these inspections, tests and reports in addition to regas/STS operations.

Ship-to-Ship Transfer of LNG

Courtesy Excelerate Energy

- Types of STS:
 - Open water
 - Jetty – Tandem, across dock, double banked or side-by-side
 - Sea Island – across dock, double banked or side-by-side.
 - Deep water port



Ship-to-Ship Transfer of LNG

Projected Time Line – Typical Open Water STS

Rigging Fenders	1 hour
Approach Maneuver	1 hour
Mooring	1 hour
Pre-Transfer Meeting / Gauging	1 hour
Connect Hoses	2 hours
Line Cool-down	1 ½ hours
ESD / ERC Tests	½ hour
Cargo Transfer (150,000 m ³ @ 5000 m ³ /hr)	30 hours
Hose Drain / Purge / Disconnect	4 hours
Unmooring / Vessel Separation	1 hour
Fender Recover	1 hour
Total Projected Time	44 hours

Thank You!



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