



**Keppel**

**Gas Technology  
Development**

# Investor Presentation

September 2016

# Keppel Corporation

Meeting the needs of sustainable urbanisation

## Offshore & Marine



- Offshore rig design, construction, repair and upgrading
- Ship conversion and repair
- Specialised shipbuilding

- LNG Solutions

## Property



- Property development

## Infrastructure



- Energy & related infrastructure
- Logistics & data centres

## Investments



- Asset management
- Property & infrastructure trusts
- Private funds
- Investments

# Keppel Offshore & Marine

World leader in designing and constructing offshore rigs, ship conversions and repairs, and specialised shipbuilding.

## Offshore



Leading designer, builder and repairer of high-performance mobile offshore drilling rigs.

## Ship Repair & Conversion



Trusted industry name for repair, conversion and upgrade for a diverse range of ships

## Specialised Shipbuilding



Designer and builder of a wide spectrum of highly specialised ships for global customers

## Technology



Design and engineer market-relevant and commercially viable solutions for all frontiers

# Keppel Yards Globally

- Harnessing the synergy of 20 yards worldwide keeps us *Near Market, Near Customer.*



# Keppel LNG Solutions

**Keppel**

## Gas Technology Development

**Keppel Shipyard**

Ship Repair & Conversion



- LNG Carriers
- FSRU
- FLNG
- FSU
- Engine Conversions

**Keppel Singmarine**

Newbuilding



- Small scale solutions
- Power Barge
- LNG Fuelled Tugs

# Keppel in the LNG Value Chain

Keppel has a suite of innovative solutions across the whole LNG value chain

## Upstream



## Midstream



## Downstream



Gas to  
LNG

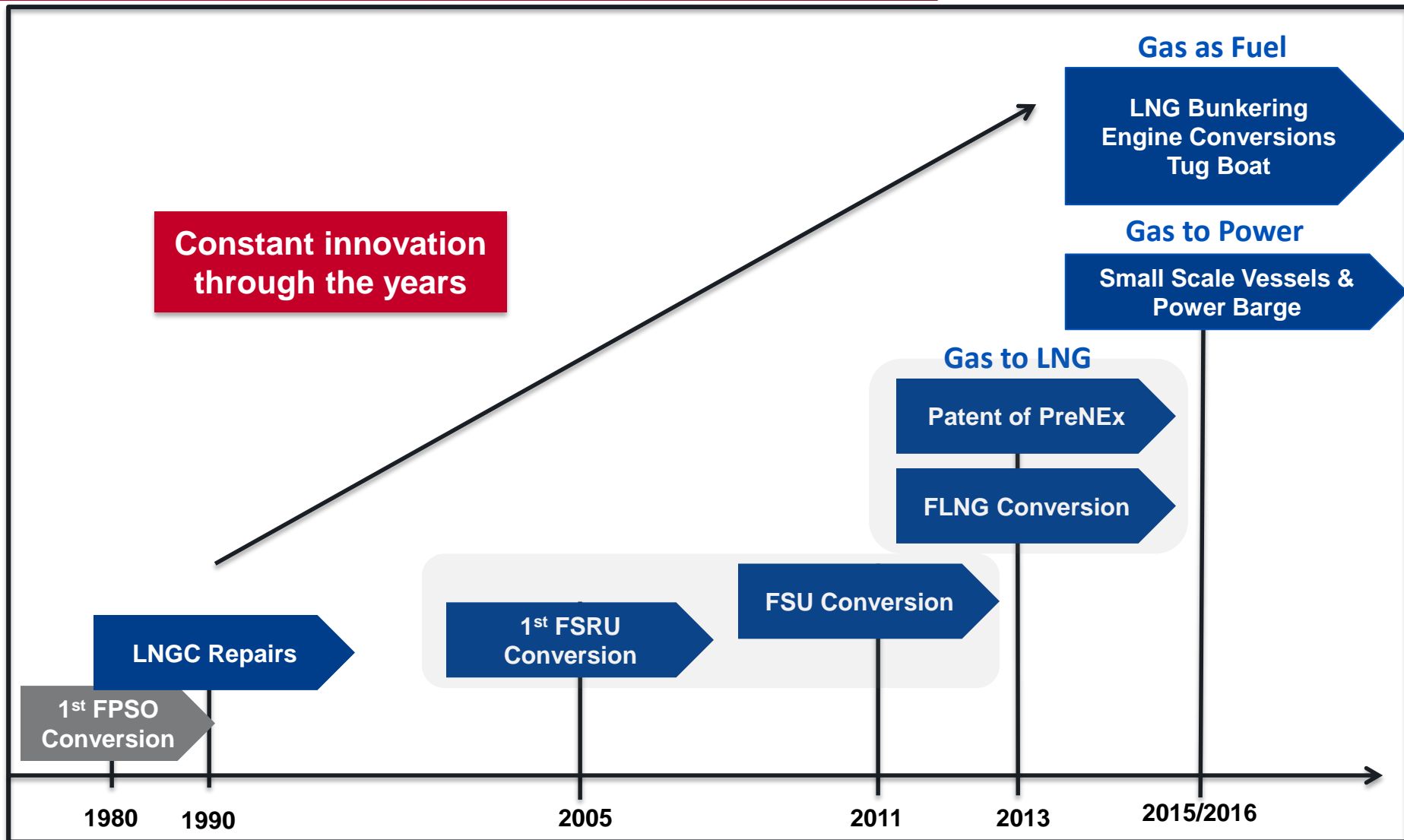
LNG to  
Users

LNG to  
Gas

Gas to  
Power

Gas as  
Fuel

# Keppel's LNG Portfolio Development

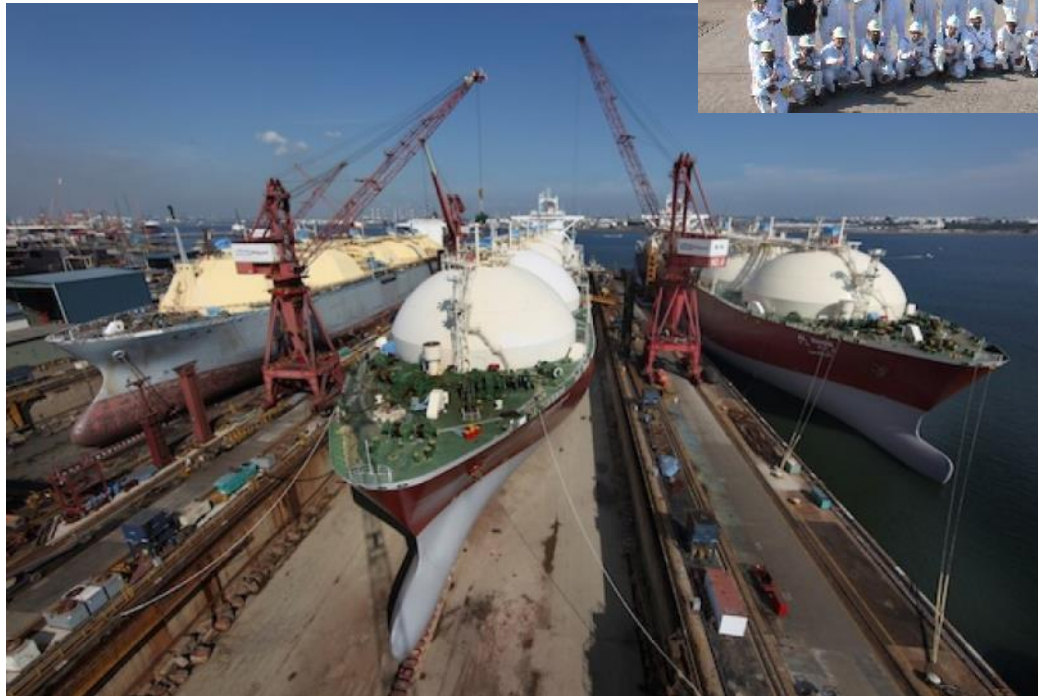


# LNGC Repairs

- First LNGC repair in 1990
- Docked 199 LNGC's for Repairs and Class



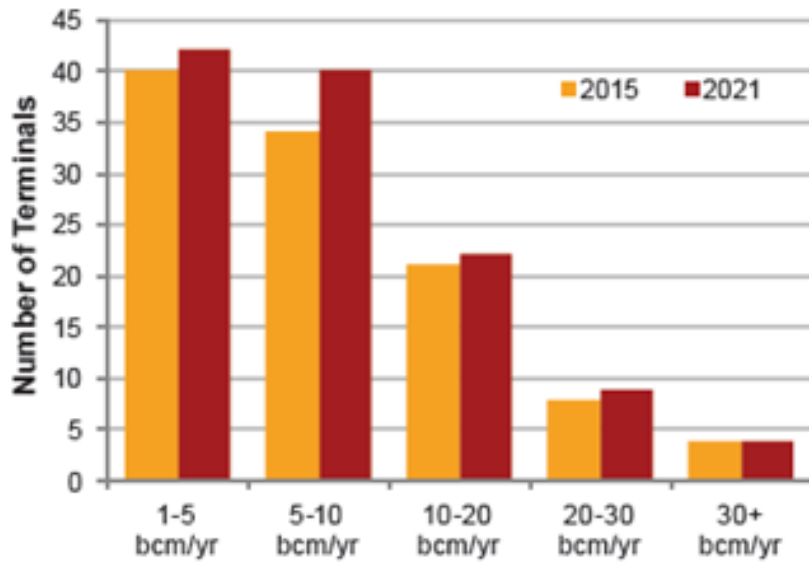
N-KOM Shipyard (Qatar)



- Established in 2007
- JV between Qatar Gas Transport Company (Nakilat), and Keppel
- Performed 112 LNGC repairs as of June 2015

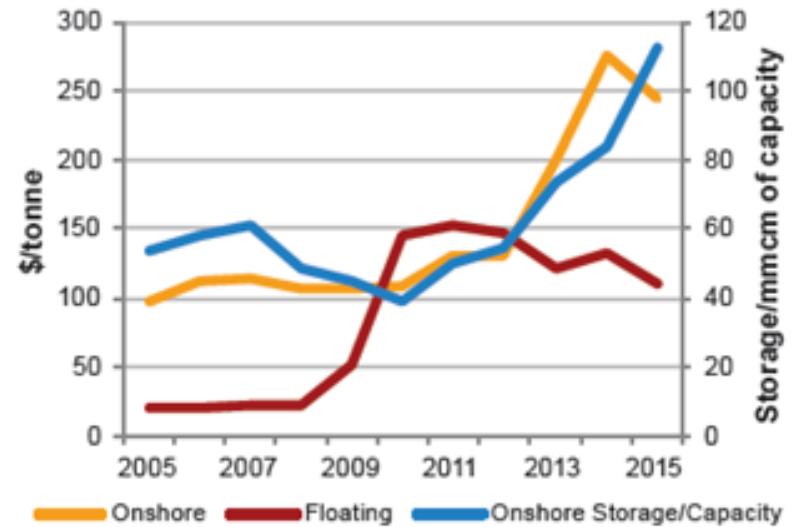


# High Demand for FSRU



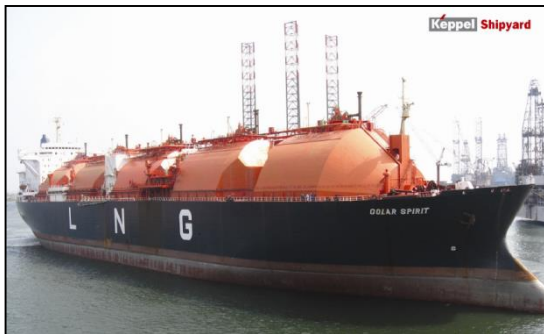
Sources: IHS, Company Announcements

Annual gas send-out capacity of increases until 2021



\*Indicates the size of onshore storage relative to onshore terminal capacity.  
Sources: IHS, Company Announcements

Regasification costs by FSRU remains low in 2015



FSRU Golar Spirit



FSRU Golar Winter

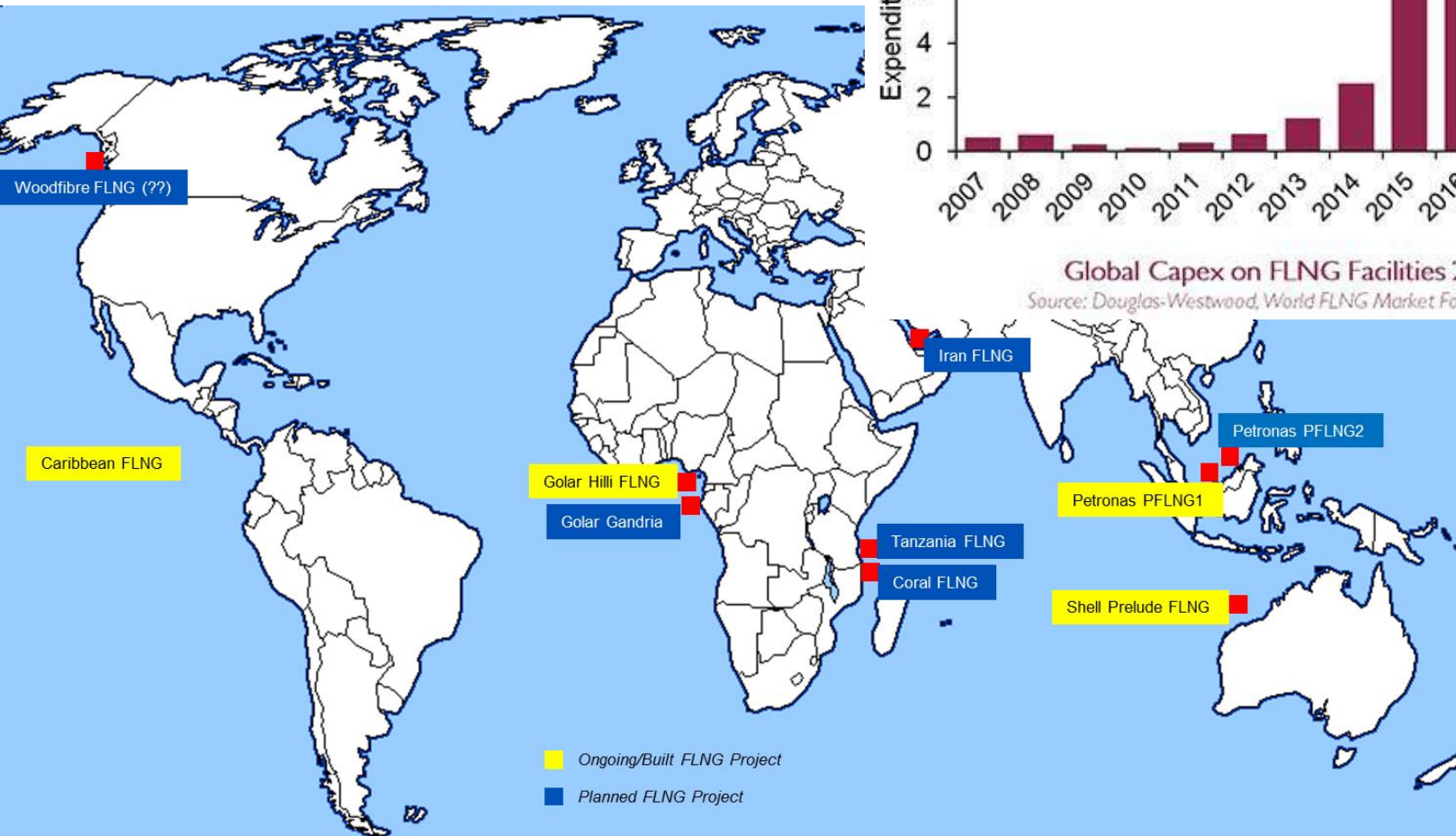
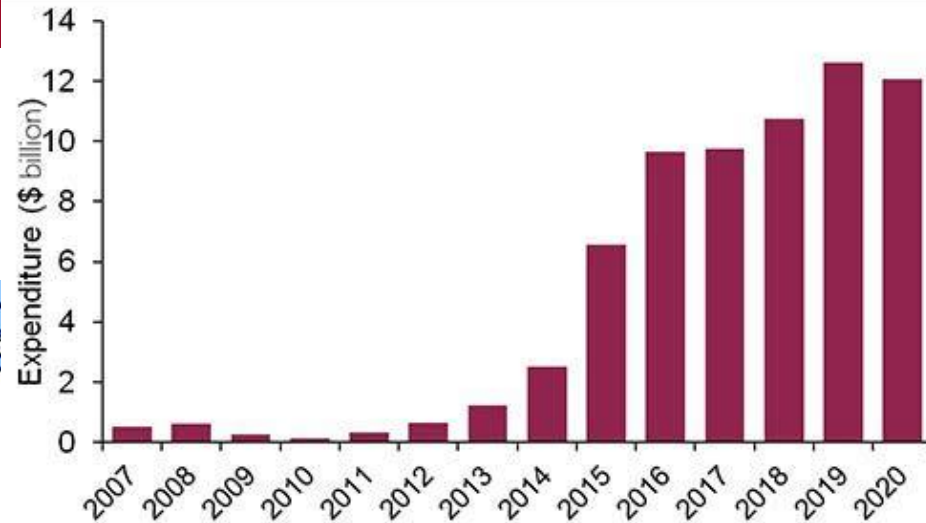


FSRU Golar Freeze

To Date, KSL has converted: 5 FSRU/FSU



# FLNG Global Demand



**LNG Portfolio**

# Land-based PreNEx project in Batam, Indonesia

What is PreNEx?

Keppel's proprietary natural gas liquefaction technology that offers safe, simple and reliable alternative to other LNG processes, and can be used for offshore and onshore applications.

- In collaboration with PT NAT Gas, a subsidiary of Leedon NOX, PreNEx LNG plant is currently under construction.



- LNG Plant Location : Tanjung Uncang, Batam Island
- Liquefaction Plant Capacity : 50 ton/day
- Regas Site : Karimun Island
- Purpose : 10MW power generation at Karimun
- Project Developer & Owner : PT NAT Gas, Indonesia

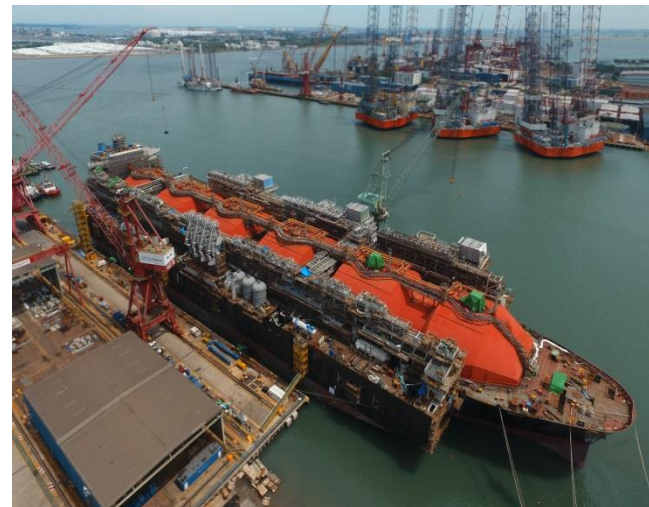
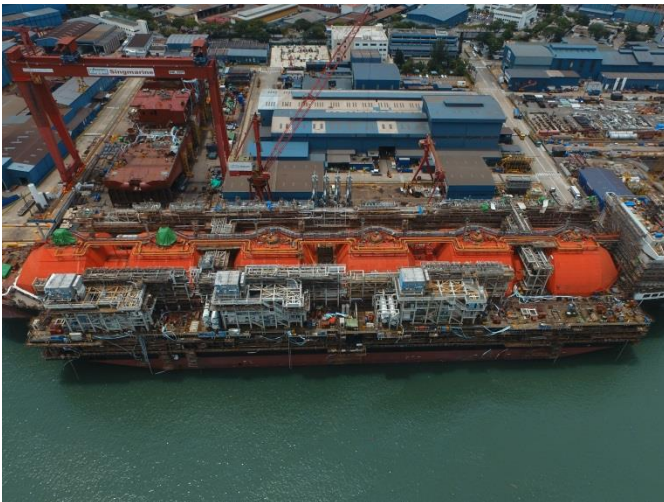
# FLNG Conversion

Gas to  
LNG

World's 1<sup>st</sup> Converted LNG solution with faster delivery timelines and more competitive pricing



*Conversion progress in Keppel Shipyard*



## Engine Retrofitting

- Conversion from HFO to LNG-fueled engine
- EPC by Keppel Shipyard for ships ranging from LNG carrier to large container ships



## 65T BP LNG Fueled ASD Tug

- Innovative solution that won MPA International Design Award in 2014
- Creates early demand for LNG Bunkering in Singapore



## LNG Bunkering License (SG)

- Leverage Shell's position as exclusive gas aggregator for Singapore
- Platform for Keppel to create pull through for our yards



LNG Portfolio

Keppel

Gas Technology Development

# LNG as Power Fuel

LNG to  
Users

Gas to  
Power

## Transportation Solutions



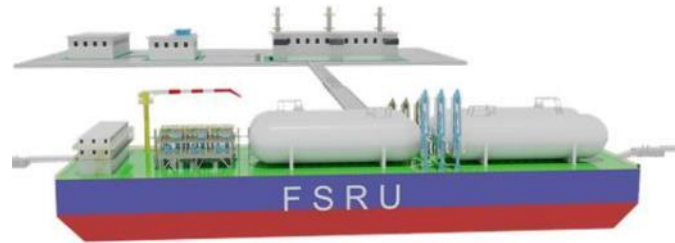
3,000 cbm Non-Propelled Barge  
Max. Draft: 3.8m



8,000/10,000 cbm Bunker Vessel  
Max. Draft: 4.8 - 6m



12,000 cbm Shuttle Barge  
Max. Draft: 3.5m



FSRU Barge

Storage Capacity up to 50,000cbm  
Near shore/Jetty Solution



Power Barge

Scalable from 50MW

LNG  
Portfolio

Keppel

Gas Technology  
Development

**END**