LNG Rotterdam Gothenburg

Gothenburg 18\textsuperscript{th} of November 2014
Johan Zettergren
Guus Vogels
Elias Wästberg
The small-scale distribution chain

LNG Rotterdam Gothenburg
The sponsors

- LBBR part of Gate terminal (Gasunie and Vopak)
- Port of Rotterdam
- Port of Gothenburg
- Vopak
- Swedegas
Co-financed by the European Union

- The project has received 34.3 M€ funding in the TEN-T subsidy programme
  - Priority Motorways of the Sea (MoS)
- MoS contributes to the EU’s goal of achieving a clean, safe, efficient transport system
- The project adopts a classic MoS approach as it creates an open access, multimodal infrastructure and stimulates the sustainable movement of people and goods in accordance with the EU objectives for sustainable development
Status project, Rotterdam

*From LNG entry point to LNG hub*

- Refitted existing jetties (2013)
  - Medium size vessels (un)loading (5000m$^3$)
- Truck loading facility (January 2014)
- FID LNG Break Bulk Rotterdam; expansion development jetty 3 (July 2014)
- Financing agreement (Oct. 2014)
- Basin construction contract awarded (PoR Nov. 2014)
- Mobilisation of project team to site
Status project, Rotterdam

From LNG entry point to LNG hub
Status project, Rotterdam

From LNG entry point to LNG hub

- FID LNG Break Bulk Rotterdam; expansion development jetty 3 (July 2014)
- Start construction end 2014
- Dedicated basin ready December 2015 (PoR)
- Commissioning LBBR facility Q2 2016
- Ready for Operations mid 2016
Status project, Rotterdam

*From LNG entry point to LNG hub*

LNG distribution:
- Re-export (e.g. Baltic area)
- LNG trucking
- Inland shipping
- LNG Bunkering R’dam
  - Short-sea shipping
  - Long-haul shipping
- LNG by Rail

Phased approach:
- ELBBR
- LBBR 1\(^{st}\) phase
- LBBR 2\(^{nd}\) phase

Gate terminal  20??
Status project, Gothenburg

- Complete permit awarded May 27th
- Negotiations regarding port agreement completed
- EPC tender process completed
- PCI status awarded by the EC
- Clearance from EU competition authorities
- Port of Gothenburg offers a 20% LNG discount on top of a 10% environmental discount to stimulate the market uptake of LNG
- Substantial efforts by the consortium attempting to gain the market commitments
- Full project scope will not be completed in 2015
- Alternative solutions to be offered to make LNG available for bunkering in Gothenburg in 2015
Status project, Gothenburg

Phase 1
- Prefabricated vacuum insulated storage tanks ("bullets")
- Jetty
- Truck and rail (un)loading facilities

Phase 2
- Additional storage, flat bottom full containment tank
- Send-out equipment (re-gas + potentially another truck loading bay)
- Connection to Swedegas transmission grid
Current status of the small-scale LNG market - challenges

- Project initiated on the basis of anticipated market demand from short sea and inland shipping, trucking and industry purposes, mainly based on the implementation of the new SECA regulation (2015)

- Development has been slower since
  - Challenging business climate for shipping
  - Lack of transparency on the enforcement of the new SECA regulation
  - No or new national supporting policy frameworks (Norwegian NOx-fund, Finnish state subsidies)
Potential for LNG bunkering is substantial

- Total bunker market in region: 14 TWh
- Available market is considered to be 5 TWh (frequent visits)
- Estimated yearly fleet renewal rate of 6 %* within SECA gives approximately 15 years for fleet renewal
- Estimated share of by 2030 is 50 % of available market

* 2 % growth + 2 % normal renewal rate + 2 % increased renewal rate with SECA
Industrial segment is necessary to support

- Available oil replacement potential: ca 7 TWh
- Estimated 1/3 of available oil replacement market through the Gothenburg terminal by 2030
- Competitive advantage through rail car send out and Open Access principle

On top of this there are LPG volumes (5 TWh) that can be converted
Most heavy industries in north and mid Sweden have access to rail and get their oil and LPG supplied with rail today.

- Mid Sweden have steel industries and distance from Gothenburg is approx. 4-500 km

- North Sweden have mining and steel industries and distance from Gothenburg is 1 000+ km

- The focus area in south shows a more diversified industry. Distances from Gothenburg is approx. 250 km.

*Overview of major consumers and areas, not exhaustive or complete*
The small-scale LNG value chain develops

Value Chain LNG as bunker fuel as per 11th of November 2014

€/MWh_{eff}

- Commodity FOB GATE/Zeebrugge
- Shipping Gate to Gothenburg using Coral Methane (7.500 m³)
- Terminal handling, sendout to bunker barge
- MGO landed in Gothenburg, leaving spread for bunker parties and ship owners to invest

LNG Rotterdam Gothenburg
LNG fuelled ships are ordered

UECC orders two Dual Fuel Liquefied Natural Gas (LNG) Pure Car and Truck Carriers (PCTC) with 1A super Finnish/Swedish ice class

4 NEW VESSELS
LNG-FUELLED VESSELS TO BE BUILT

- Target to operate 8 to 10 LNG vessels
- To offer the most environmentally friendly solution on the market
- To improve the vessels' efficiency in order to maintain competitiveness
- To exceed all known future environmental regulations

+ Evergas, Fjordline, Viking Line etc...