LNG Fuel Forum - Informa
Stockholm 20 – 21 September 2011

Creating a launch pad for LNG: Update on the work for establishing an LNG infrastructure in Northern Europe

Mogens Schrøder Bech
Danish Maritime Authority

Outline

The goal of the LNG infrastructure work, partners and organizational set-up

The green challenge – and LNG as a part of the solution

An infrastructure of filling stations and deployment in ships
  • The pilot project – in headlines
  • The infrastructure project – the main part

Preliminary conclusions from the baseline work package
Goals of the LNG infrastructure project

Identify and analyse critical enablers

Recommendations on establishment of an LNG infrastructure

- The LNG supply chain
- "Hard" on marine filling stations
- "Soft" on regulations, industry standards, etc.
- Validated through the industrial project partners

Relevant for central stakeholders

- Shipowners, ports, LNG providers, equipment manufacturers, industry organizations, countries, EU, IMO, etc.

The business case as target – the LNG supply chain

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Partners

States: Belgium, Denmark, Finland, Norway and Sweden

Regional: Council of Nordic Ministers

Ports: Port of Hirtshals (DK), Port of Zeebrugge (BE), Szczecin and Swinoujscie Seaports Authority (PL) and Port of Rotterdam

LNG terminals and gas distribution companies: Fluxys (BE), Gasum (FI), Gasunie (NL), Energinet.dk (DK), Energigas Sverige (SE), Gasnor (NO) and GazpromLNG (RUS)

The maritime cluster: Germanischer Lloyd (DE), Bureau Veritas (DK), MAN Diesel and Turbo (DK), Lauritzen Kosan A/S (DK)
Organization chart for the project

The green challenge – short and long term!

ECA provisions on fuel oil from 1 January 2015 in North European waters

- From 1.0 to 0.1% sulphur
- Operational costs of shipping
- Competitiveness of shipping
- Competitiveness of regions

Green demands will increase in the future

- A basic condition

Shipping must be developed as the green alternative
New competitive fuels are needed

Technology neutrality

LNG is an obvious alternative
• Transport, storage and distribution of natural gas
• Focus on the LNG supply chain

A facilitating LNG infrastructure is needed
• "Hard" on marine filling stations
• "Soft" on regulations, industry standards, etc.

How can we create this infrastructure?

Do we have a Gordian LNG knot?

Manufacturers can supply LNG engines, tank systems, etc.

In order to invest, shipowners need access to a system of LNG bunkering facilities

The LNG providers will invest only if there is a market

No momentum until the infrastructure problem is solved
• A broad infrastructure perspective is needed
• The problem is biggest for international shipping

Oil-based fuels, on the other hand
• A supportive and competitive infrastructure
• No major cash flow problems for the infrastructure
An infrastructure of filling stations and deployment in ships – the overall project

AN EU TEN-T Motorways of the Sea project

- LNG as fuel for international short sea shipping
- Total costs 26 mill. euro

A pilot project – Fjord Line Danmark A/S

- 9.0 mill. euro from TEN-T

An LNG infrastructure project

- 0.6 mill. euro from TEN-T

A combined top-down and bottom-up approach

The full scale pilot project

Supporting and developing a transport corridor

- From the South Western part of Norway
  - … to the Northern part of Jutland
  - … and further to the Continent

Ports

- Hirtshals base port
- Bergen, Stavanger, Kristiansand

The project

- Conversion of two new cruise ferries under construction for LNG
- A full scale pilot project
- Deployment in international short sea shipping
- An extensive measuring programme
- A maritime LNG infrastructure is needed!!
The LNG infrastructure project
- Central enablers for the use of LNG as a starting point
- From enablers to recommendations!!!!!!!

Safety
Local municipalities and public awareness
Technical possibilities for fuelling ship engines with LNG
Fuelling of other means of transport than ships from "maritime" LNG filling stations
LNG filling station dimensions
Economy as seen by a ship, a port and an LNG provider
The LNG market
The potential of LNG

Overview of planned work packages
Time schedule for reports

1. Inception – available report
2. Baseline report – Beginning October 2011
3. Draft feasibility report – 21 November 2011
   - Economic and financial aspects
   - Technical and operational aspects
   - Safety aspects
   - Draft recommendations
4. Draft final report 27 February 2012
   - Recommendations

End users
- Ships
- Trucks
- Cars
- Industry/power generation
- Gas grid
- Etc.

Large LNG terminal
Gas pipeline
Small-scale liquefaction plant
Intermediate LNG terminal
LNG bunkers/feeder vessels
Pipeline/direct filling
Baseline conclusions – North European LNG availability

The LNG market is expected to grow rapidly

LNG import and storage facilities are currently being developed and planned

LNG will be available in quite large quantities

Liquefaction is expected to increase until 2015-2017, mostly in the Baltic

Up to now, initiatives on distribution network are concentrated on larger bunkering ports, large ports or close to where large LNG terminals exist

“First movers” for investment in a small-scale LNG infrastructure are needed
Baseline conclusions – LNG as fuel from a shipowner perspective

Existing and proven engine technology
LNG requires larger tanks for storing fuel
LNG has an attractive price
High initial investment cost for shipowner
  • Pay back period
  • Second hand prices
Regulations and guidelines on bunkering are needed
Looking for alternatives!

Baseline conclusions – regulations

National and port authorities lack regulations and guidelines on the movement of small-scale LNG ships in ports
Lack of operational guidelines on LNG bunkering
Lack of standardized bunker stations on LNG fuelled vessel
The dividing line between public utilities and the private sector
(Shortage of seafarers with LNG experience)
Strategic aspects for a “hard” LNG Infrastructure

LNG terminals (ports)
- Import and direct distribution to end users
- Intermediate with or without land based storage facilities
  - Mobile – bunker ship, barge and truck – or a tap (direct filling)

The competition power of small scale liquefaction plants?

Clustering in the LNG supply chain/logistics
- A coherent bunkering network to support end users
- End user gearing in relation to maritime demand
- Migration strategies needed
- The division of work between public utilities, ports, LNG providers and private operators
- Who can take the lead?

A lot of uncertainties, for example
- Demand from end users – a wide variety
- Development of LNG technology
- Investment demands vary according to solutions
- Long-term investments models with scaling possibilities are needed

First mover advantages/strategies are obtainable

What will happen when the project is finalised?

The short answer
- Depends on the recommendations!

Likely developments
- Missing regulations and standards will be developed
- Motorways of the Sea Calls from the EU will be positive on facilitating LNG investments
- Investments in the private (and public) sector/ the business case as target
- Innovations
The LNG infrastructure goals – repeated

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The business case as target – the LNG supply chain

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Thank you for your attendance

Further information on www.dma.dk
North European LNG Infrastructure Project