Zeebrugge LNG terminal: from regas terminal to veritable LNG hub in NW Europe
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17 April 2013
Fluxys: gas infrastructure company for Europe
Zeebrugge LNG terminal: 25 years of operation
- Reception of LNG carriers from 7 500 m³ to 266 000 m³ (Q-Max)
- ~1 300 LNG carriers received: ~100 different ships
- 75 million tonnes LNG unloaded
At first: regas terminal for the Belgian market …

During initial supply contract:

- Regas terminal as security of supply instrument for Belgian market
- 1 terminal user
- Throughput capacity: 3.4 mt/y
- Facility acts as attractor for new gas infrastructure investments
... while developing the Zeebrugge area as key gas landing point

Zeebrugge area: throughput capacity of ~ 50 bcm/y = approximately 10% of border capacity needed to supply Europe

INTERCONNECTOR
1998
To Zeebrugge: 20 bcm/y
To UK: 27 bcm/y
ZEEBRUGGE BEACH TRADING
1998

LNG TERMINAL
1987
9 bcm/y

ZEEPIPE TERMINAL
1993
16 bcm/y

Interconnector pipeline ⇆ United Kingdom
Zeepipe from Norwegian gas fields
Zeebrugge Beach: attractive trading place providing price index

- 76 active traders
- 2012: net traded volume of 752 TWh
2004-2008: open season for open access terminal services

- 3 terminal users
- First capacity enhancement: doubling throughput capacity to 6.7 mt/y
As from 2008: creating an LNG hub for NW Europe

- Optimum take away capacity: security of supply instrument for NW Europe
- Developing the terminal as a versatile tool for our clients

Optimum LNG reception flexibility

Reload LNG: ships and tanker trucks

Pipe gas throughout NW Europe

Optimum destination flexibility
Receiving LNG carriers: anything goes

- Physical mooring: reception of any size LNG carriers: small - standard - Q-flex - Q-max (7,500 m³ to 266,000 m³ LNG)
- Contractual set-up: combining long-term contracts with spot deliveries
Take away capacity from the terminal: ample capacity to all neighbouring countries and systems

- United Kingdom: 27 bcm/year
- France, Italy and Spain: 20 bcm/year
- The Netherlands: 11 bcm/year
- Germany and further east: 13 bcm/year
- Luxembourg: 1.6 bcm/year
LNG price spreads: re-export opportunities
LNG ship loading: a flurry of destinations
LNG transport by road: truck loading service

- Capacity of 4,000 loadings/year
- Destinations: The Netherlands, UK, Germany, Poland
  - Industrial sites without pipe gas supply
  - LNG refuelling stations
  - LNG as fuel for shipping

![LNG transport by road: truck loading service](image_url)
Developing the Zeebrugge LNG terminal into a hub for small-scale LNG as well

LNG as bunker fuel: 40 mt/y potential

LNG as fuel for long-haul trucks: 5 mt/y potential
LNG as a fuel: environmental benefits

- Immediate impact on carbon footprint: on average 20% less CO₂
- Immediate impact on health footprint:
  > Particulate matter and SOₓ: negligible
  > at least 50-60% less NOₓ
- Fuel price

Source: ESA
- Ships: LNG refuelling installations in all 139 maritime and inland ports on the Trans European Core Network (2020-2025)
- Long haul trucks: LNG refuelling installations every 400 km along the roads of the Trans European Core Network (2020)
Shipping: severe sulphur emission standards key driver for changing over to LNG

0.1% as from 2015 in SECA zone

- Fuel oil: 1-3% S
- Marine Diesel Oil: 0.001 – 0.5% S
- LNG: S negligible

IMO standards included in amendments to Sulphur directive by the European Commission
LNG as fuel for truck transport

If you need LNG

- US: you will have to liquefy natural gas
- Europe: you could find it at large scale regas terminals, however
  - Seller’s reference: Asian LNG prices
  - Today’s market is too small to divert cargoes

Margin … but

- LNG trucks
- LNG refuelling station
- Quid excise tax?
- Quid LNG price?
LNG vs MGO price: room for market development

Main challenge: developing downstream LNG infrastructure

- LNG ships
- LNG bunkering infrastructure
- Quid regulation?
- Quid LNG price?
Loading of LNG trailers: already available

Loading of bunker barges and feeder ships: as from 2015

Cutting through the chicken-and-egg position: Fluxys to invest in downstream LNG chain in Belgium

Loading of LNG trailers:

Feeder ship

Intermediate storage

Bunker barge

LNG trailer

LNG

LCNG

CNG

Fluxys LNG terminal

Downstream: a closer look at what is needed
Reception of LNG carriers with capacity from 2 000 to 217 000 m³ LNG (including LNG bunker carriers)

- Unloading and loading
- Ship-to-ship transfers

Long-term market for bunker vessel loading developing: 200 berthing slots already sold under long-term contracts
Already supplied with LNG from Zeebrugge: LNG barges

Argonon: LNG powered barge for Deen Shipping

Greenstream LNG powered barge dedicated for Shell
... and LNG refuelling stations (some examples)

LNG 24: Zwolle (NL)

LNG Europe: Oss (NL)
CONCLUSIONS

- Zeebrugge LNG terminal: successful metamorphosis into versatile LNG hub for shippers to be active on the European market
  - Multi-shipper operation combining long-term contracts with spot deliveries
  - Optimum reception flexibility
  - Optimum destination flexibility: pipe gas and LNG

- LNG as fuel for ships and trucks
  - Significant market potential
  - Zeebrugge LNG terminal is ready
  - Challenge: developing downstream LNG infrastructure