BUSINESS DEVELOPMENT & INNOVATION @ FLUXYS: 3 ENERGY HUBS

NG Opportunities
- Small scale LNG
- LNG fueling stations
- Satellite solutions

Green gas
- Biomethane
- Bio-LNG market
- Power-to-Gas and H2
- Carbon Capture and Storage

Fluxys 4.0
- New technology in daily operations
- Digitalisation
Novatek, Fluxys plan Rostock transshipment LNG terminal

Yamal LNG operator Novatek and Belgium’s Fluxys signed a land lease agreement with the Rostock port to build a mid-scale LNG transshipment terminal.

Image courtesy of Rostock Port.

Image shown for illustration purpose only.
ZEEBRUGGE LNG TERMINAL - A HUB FOR SMALL-SCALE LNG

Fluxys LNG terminal 380 000 m³ LNG

- **Existing activity**
- **Under development**

**LNG-fuelled ships**

- Feeder ship 15 000 m³ LNG
- Intermediate storage
- Bunker vessel up to 7 000 m³ LNG
- LNG trailer 40 m³ LNG
- LNG containers by rail
- LNG-fuelled trucks
- Remote industry
- Satellite grid

**Remote industry**

**Satellite grid**

**Intermediate storage**

**Bunker vessel** up to 7 000 m³ LNG

**LNG-fuelled ships**

**Existing activity**

**Under development**
COLLABORATION FLUXYS - TITAN
FIRST STEP FOR SMALL SCALE LNG IN ANTWERP

Objective: develop onshore/fixed and floating bunkering solutions

Based in the Port of Antwerp and will sail in the ARA region

Fluxys LNG terminal
380 000 m³ LNG

Bunker vessel
up to 7 000 m³ LNG

Feeder ship
15 000 m³ LNG

Bunker Barge / Bunker Pontoon
1,500 m³ LNG

LNG trailer
40 m³ LNG

“Small + Medium end user”
50-300-1,000 m³ LNG demand per operation

Picture of Flexfueler 001 that will operate in Amsterdam region
LNG FOR HEAVY TRANSPORT – AN ECONOMIC SOLUTION TO LOWER CO2 EMISSIONS

- LNG market is growing rapidly
  Competitive pricing of LNG, support mechanisms & favorable regulation

- 9 projects of LNG stations in Belgium alone
  Much more at European level (25 in Germany)

![Image of LNG fueling stations in Belgium](source)

- Fluxys board approved 2nd LNG fueling station
  Fluxys/Mattheeuws in Houdeng (La Louvière): commissioning Q4 2019

With the support of Mattheeuws
SATELLITE SOLUTIONS: DISTANCE TO GRID NO LONGER AN ISSUE

Satellite CNG by strategically positioning CNG compressor stations on the existing grid

Satellite LNG by using the existing infrastructure of the LNG terminal in Zeebrugge
FLUXYS ACTIVELY SUPPORTS BIOMETHANE IN BELGIUM

First biomethane injection in DSO grid on 11th November 2018

• Other projects in the pipeline
• To be connected to gas grid in cooperation between DSO’s and Fluxys

Green gas Register connecting green production with conscious energy users

• Creating Belgian market for Guarantees of Origin further valorizing green gas

Fluxys supporting bio-LNG in the Zeebrugge terminal
Hydrogen: the new energy carrier?

- Power-to-Gas could enable storage of intermittent renewable energy
- Gas grids represent the biggest batteries available today
- At first, injection in NG grid can be done up to 2%vol without any impact. Large volumes being studied

HyOffWind: First large scale P2G installation in Belgium

- Collaboration between Fluxys, Parkwind and Eoly
- Outcome feasibility study expected in 2019
- Subsidies have been granted by the federal Fund for Energy Transition
Carbon Capture & Storage (CCS): decarbonization of the industry

- Project with the Port of Antwerp is progressing
- Involvement in the CUST project in the North Sea Port
- Fluxys joins 2 CCS Projects of Common Interest

Open access infrastructure can enable the deployment of CCS in Belgium & Europe

Carbon Capture & Usage (CCU): enabling a circular economy

- Project for synthetic methane or methanol with Lhoist & Engie
- Partner in the development of the CCU hub in Ghent

Hydrogen & CO₂ transport infrastructure to help the development of new, future-proof industrial activities
The port regions in Belgium offer plenty of opportunities

Opportunities for TPA hydrogen/CO2 networks after L/H conversion

Collaboration with other energy industrials to lead to new projects
How to make it happen?

1. Clarify roles of the stakeholders
   - Who can engage in green gas activities (P2G – CCS)?
   - Enable gas TSO’s to invest to launch the market

2. European framework around Hydrogen and CO2
   - Stable regulatory framework
   - Apply unbundling to hydrogen and CO2 market?

3. Government incentives for early development
   - Business case of early project is very challenging and needs support through government incentives.
   - Interim solutions to lower electricity costs

4. EU Guarantees of Origin system
   - Guarantees of origin that are tradable across regions and countries is essential to capture the “green” value in the market.

Business case of early project is very challenging and needs support through government incentives. Interim solutions to lower electricity costs.