Biomethane Injection: Outlook from a grid controller perspective

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Grid Controllers
Tasks Grid Controller

- Maintain and develop gas networks
  - Economically viable
  - Safe
  - Reliable
- Transportation of gas to businesses and consumers
  - 121,000 km
  - 6,5 mln. Connections
- Facilitating energy transition
- Reliability & safety: Biomethane
  - Gas quality: Effects on installle base
    - interchangebility of upgraded biogas with natural gas
  - Capacity/Connection:
    - Preserve infrastructure integrity, network reliability
Dutch Transitionpath

Development Public Gas Infrastructure

1840
Coal gassification

1940
City Gas distribution

1950
1.4 mln households connected

1951-1959
Nat. Gas Groningen

1960
Nat. Gas Coevorden

1965
1 mln household connections

1968
Landfill Gas

1974
CNG gasstation

1977
LNG for peakshaving

1986
first CNG/LNG fuel station connected

1989
6.85 mln connections (95% Households)

2009
3 biomethane connections

2010
>100 CNG fuel stations connected

2011
Biogas networks?

2013
Hydrogen networks?

2020
1000 CNG fuel stations?

Distribution of
City Gas

Distribution of
Natural Gas

Distribution of
Natural and Biomethane

Distribution of
?
Network

From Downstream Situation
Towards

Downstream Situation with local production biomethane:

• Feed in local network
• Feed in GTS network
Current situation & Expectations

- **Pilot Situation**
  - Start up: not always easy
  - New sites, different technologies, to comply with gasspec., measurement, many parties involved

- **Growth in local production**
  - Growth in production sites: 2011 > 10
  - Volume: installations from 50 m³ to 1000 m³/hr and up

- **Ambitions government**
  - Biomethane estimate (ECN 2010):
    - 2020: 24 PJ Biomethane, 5 PJ BioSNG (2% nat.)
    - SDE+?

- Growth in demand? Green Gas Fuelstations? Transport CNG?
- Technical innovations gas production
Facilitating

- Information
  - Website: [www.groengas.nl](http://www.groengas.nl)
- Customer: Location & opportunities
  - Feed in location: Demand vs. Production, Feed in in GTS network or Local networks
  - Central upgrade unit, more producers?
- Research
  - Measurement & Monitoring gas quality
  - Hepa
  - Dynamic Grid Management
  - Grid calculation & simulation
- Regulation
  - Development technical guidelines on feed in of biomethane, requirements
In progress

- Further development technical guidelines
  - Invoedvoorwaarden Gas – LNB
  - Aansluit & Transportvoorwaarden RNB
    - “Aanvullende voorwaarden invoeders gas V14”
    - Gas Quality: Upstream Compatibility
  - Protocols
    - “start up” installation and operational management
    - measurement of gas quality, methods
Questions
Distribution & Cost

Location & opportunities

- Feed in location: Demand vs. Production
- Optimal solution; costs
- Central Upgrade Unit
- Injection 40 Bar?
- Direct connection users & producers?