Development of the biomethane market in the Netherlands

Mathieu Dumont
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Content

- Development of a vision document/roadmap within a public-private-collaboration working group
- Identifying main focus areas (feed-in tariff and certification)
- State of the art of development
- Gas quality requirements and grid access scenarios
- Further information
**Ambition for Green Gas**
(of working group Green Gas dec. 2007)

- **Short term target:** Replacement of natural gas by up-graded biogas 1-3%
- **Mid-term target:** 8-12% replacement of natural gas in 2020
- (4 billion Nm3/y), inclusive SNG production from biomass
- **Long term:** Up-scaling to 50% replacement of natural gas by Green Gas in the gas grid
Virtual Trade in Green Gas Certificates (www.vertogas.nl)
Approach: Speed up Team Green Gas (in the production chain)

Biomass
- manure
- cosubstrates

Digester

Biogas upgrading
- vpsa
- Gaswah
- Cryogenic
- Membrane

Consumer Green Gas
- Industry
- Horticulture
- Households
- Mobility

Permits and spatial planning policy

SDE and gas grid access

Access bioticket trade; excise duties

Positive list
Grid Injection Biomethane in EU
Total Overview Bio-energy Plants in NL: www.b-i-o.nl

Number of plants: 492

Installed Capacity:
- Heat: 1.892 MW
- Electricity: 1.512 MW
- Green Gas: 11.905 Nm3/h
### Overview Biogas Production in NL

<table>
<thead>
<tr>
<th>Type of biogas production</th>
<th>Number of plants</th>
<th>Capacity Heat (MW)</th>
<th>Capacity Electricity (MW)</th>
<th>Capacity Green Gas (Nm3/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Water Treatment</td>
<td>82</td>
<td>8</td>
<td>46</td>
<td>470 (N=3)</td>
</tr>
<tr>
<td>Landfills</td>
<td>41</td>
<td>0</td>
<td>15</td>
<td>1.625 (N=5)</td>
</tr>
<tr>
<td>Co-digestion</td>
<td>105</td>
<td>18</td>
<td>129</td>
<td>606 (N=2)</td>
</tr>
<tr>
<td>Organic industrial waste</td>
<td>13</td>
<td>0</td>
<td>18</td>
<td>5.312 (N=4)</td>
</tr>
<tr>
<td>Municipal organic waste</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>3.892 (N=6)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>252</strong></td>
<td><strong>37</strong></td>
<td><strong>219</strong></td>
<td><strong>12.530 (N=21)</strong></td>
</tr>
</tbody>
</table>

Link to official report statistical office NL:
TANKSTATIONS NEDERLAND

Tenzij anders aangegeven beschikken de geënumeerde tankstations over normale diesel en benzinestation.

- online lijst: Bekijk de lijst met aardgas / Groengas tankstations online.
- pdf file: Download de pdf file met aardgas / Groengas tankstations.

TOMTOM

Vleeg de locatie van alle tankstations direct toe aan je tomton door de knop hieronder te gebruiken.

- .ov2 file: het is ook mogelijk een .ov2 file te downloaden en later op je tomton te plaatsen. Deze bevat alle aardgas / groengas tankstations.

De tankstations op deze kaart bieden naast de reguliere brandstoffen ook de aangegeven schone brandstoffen aan.
National Biomethane Standards*

- Most biomethane standards are gas grid injection specs, predominantly in European countries
- Outside Europe: SoCalGas, “Rule 30” – more strict than the European ones
- Swedish SS 155438:1999 only one for direct utilization of biomethane as vehicle fuel
- Despite international work: national standards still important, still in use and up-dated
- European CEN work succeeding, but still ongoing

Most Important Parameters for Non-Conventional Source Gases

- Oxygen – corrosion and fouling in cavern storages
  - Dry pipelines allow higher levels; main source in biomethane is air for H2S removal, alternative removal methods exist

• Siloxanes – forms SiO$_2$ during combustion
  - Man-made, found in WWTP and landfill; Fouling of λ-sensors and EATS; Abrasion and clogging of engines

- Ammonia – corrosion risk
  - Easily removed during normal upgrading

• Halocarbons – corrosion and health concerns
  - Low risk probability since levels generally low, except some landfill gas
Several Strategies Gas Grid Injection

- Direct injection (limited for reason of gas demand)
- Development biogas/green gas hubs
- Injection with recompression in gas grid to higher pressure part of grid (e.g. transmission grid)
- Development of dedicated biogas grids with replacement of standard gas boilers
- Pressure setpoint control in the grid in order to use storage capacity of the grid (www.sg3.nl)
Further information

- www.iea-biogas.net
- www.greengasgrids.eu
- www.sgc.se
- www.biogaspartner.com
Thank you for your attention

Mathieu.dumont@rvo.nl