Biogas Upgrading

Advances in Grid Injection

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Advances in Grid Injection
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## ARW
- Austrian Research Centers GmbH
- 1.33%

## ENERGIECOMFORT Energie- und Serviceverwaltung GmbH
- 100.00%
Company Profile Wien Energie Gasnetz GmbH

- Customers: 690,000
- Natural Gas Transmission/Year: 2.1 Billion m³
- Total Grid Length: 3500 km
- Employees: 1060
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Natural Gas Sources (8 Billion m³/y)

- Russia: 63.7%
- Germany: 10.2%
- Norway: 7.3%
- Biogas: 0.4%
- Domestic Production: 18.8%
Why are there no (or little advances)

- No economic incentive for grid injection
- Costs compared to Natural Gas
- Reservations about Gas Quality
- Big is beautiful
Main Conference Topics

• 3rd Energy package
  – Separation of gas supply from trading (OU, ISO, ITO)
  – Harmonizing powers and duties of national regulators
  – Creation of a new European Regulation agency
  – Smart metering

• Security of Supply
  – Upgrading of Gas Transmission Systems
  – Advances in the development if LNG and storage infrastructure
  – Open up new natural gas resources (Nabucco…)
  – Establishment of natural Gas exchange (CEGH)

• Biogas Grid Injection ?: No Contribution
The Climate action and renewable energy package

• Reduction of overall emissions to at least 20% by 2020 (below 2005 levels)
  – 21 % in ETS sector
  – 10 % Non ETS Sector (Austria -16%)

• Increase the share of renewables in energy use
  – 20% in total energy use (National target for Austria 36%)
  – 10 % minimum share for biofuels by 2020

• Cutting energy consumption by 20% of projected 2020 levels

• National Action plan (to be submitted until 30.06.2010)
  – Agreement on significant share of biogas in gas grids
Natural Gas usage Vienna (2 Billion m³/year)

- 10% share of biofuels (Bio CNG)
- Non ETS target, Renewable share
- ETS Targets,
- Non ETS target, Renewable share

- Power production/District heating: 49.97
- Industry: 13.64
- Households/SME: 34.98
- District heating: 1.35
- CNG: 0.07
Wien Energie Measures towards Grid Injection

- Partner Project Bruck/Leitha
  - Full Scale Injection Project Bruck/Leitha

- Company Partner Bioenergy 2020+
  - R&D Efficiency Increase in Substrate Utilization
  - Optimization Upgrading Technology

- Feasibility Study
  - Analysis of Injection Potential for WEG
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Feasibility Study: Objectives

- Substrate Potential
- Feasibility of short term potential (- 3 Years)
- Feasibility of mid term potential (- 5 Years)
- Feasibility of long term potential (10 years)
Feasibility Study: Evaluation Methodology

• Evaluation of Substrate Potential
  – High share of Organic Waste in Residual Waste (175,000 t/y)
  – Composition: Mainly Kitchen Waste and Food Products
  – Assumed Biogas Potential: 10,000,000 m³ (50% directed to Anaerobic Treatment)

• Grid Injection Point
  – Injection Grid: 4 bar Grid
  – High Interconnectability → High Availability of Injection Points
  – Restrictions: 41h on 30 days (2008)
Feasibility Study: Injection Point
Feasibility Study: Evaluation Methodology

• Evaluation of Substrate Potential

• Grid Injection Point

• Evaluation Criteria
  – Substrate Availability, Source and Composition
  – Waste Treatment/Anaerobic Digestion Technology/Plant Location
  – Upgrading Technology
  – Legal Compliance
  – Economic/Operating Efficiency; Rating

• 5 Biogas Plants identified and evaluated
Potential Analysis: Conclusion

- **Short Term**
  - Grid Connection of Existing Plant (within the Gas Grid of Wien Energie)

- **Mid Term**
  - Grid Connection of Existing Plant (within the Gas Grid of Wien Energie)
  - Grid Connection of Existing Plants (Within Regelzone)
  - Increase Plant Output of Existing plants

- **Long Term**
  - Development of a new Plant Location
Es leben die Stadtwunderwerke