Biogas Plant Inventory

Number of Plants

Number of plants by sector (2011)

Agriculture: 76 plants

Biowaste: 27 plants

Industrial waste water: 22 plants

Waste water treatment plants (WWTP): ~ 460 plants (~ 60 codigestion)
Biogas Plant Inventory

Gross gas production

![Chart showing annual gross gas production from 2000 to 2010 for different types of waste: Agriculture, Industrial waste water, and Biowaste.](chart_image)
Biogas Plant Inventory

WWTP – gross gas production
Biogas Plant Inventory

Upgrading plants

Number of plants

Gross gas production [GWh/year]

- Agricultural
- WWTP
- Blowaste
- Total

- WWTP
- Total

Country Report Switzerland - EREP SA
New biogas plants

Agricultural installations

- Bellechasse
  march 2012, 16.000 tpy, CHP

- Düdingen
  february 2012, 35.000 tpy, CHP

- Chézard St. Martin
  january 2012, 7.500 tpy, CHP

- Gollion
  autumn 2011, 8.800 tpy, CHP

- Fleurier
  octobre 2011, 10.000 tpy, CHP
Biogas plants under construction/ revision

Agricultural installations
Ferpicoz Le Mouret, Bure,
Cernier, Noréaz, Zwillikon, Satigny,
Diessbach (all with CHP)

WWTP
Frutigen (Codigestion), Geneva (revision of gas transformation)
Upgrading project

WWTP Geneva: Aïre Genève, 300’000 PE

Current situation

• Gas use: digester heating & sludge drying
• The rest of the gas is burnt without energy utilisation

Project (2013)

• Biogas upgrading and grid injection (15 GWh/an)
• Technology: PSA (Acrona-Systems)
• Costs: 5’500’000 CHF (~4’600’000 Euros)

## Financial support systems

### Feed-in tariff for electricity

<table>
<thead>
<tr>
<th>Power class</th>
<th>≤ 50 kW [CHF/kWh]</th>
<th>≤ 100 kW [CHF/kWh]</th>
<th>≤ 500 kW [CHF/kWh]</th>
<th>≤ 5 MW [CHF/kWh]</th>
<th>&gt; 5 MW [CHF/kWh]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic tariff [CHF/kWh]</td>
<td>0.28</td>
<td>0.25</td>
<td>0.22</td>
<td>0.185</td>
<td>0.175</td>
</tr>
<tr>
<td>Agricultural bonus [CHF/kWh]</td>
<td>0.18</td>
<td>0.16</td>
<td>0.13</td>
<td>0.045</td>
<td>0</td>
</tr>
<tr>
<td>Heat bonus [CHF/kWh]</td>
<td>0.025</td>
<td>0.025</td>
<td>0.025</td>
<td>0.025</td>
<td>0.025</td>
</tr>
<tr>
<td><strong>Maximum [CHF/kWh]</strong></td>
<td><strong>0.485</strong></td>
<td><strong>0.435</strong></td>
<td><strong>0.375</strong></td>
<td><strong>0.255</strong></td>
<td><strong>0.20</strong></td>
</tr>
</tbody>
</table>

*In Swiss currency! 1 Euro ≈ 1.2 CHF*

### Found for biomethane injection

- Voluntary support programme by the Swiss Gas Association
- Objective: injection of 300 GWh biomethane within 6 years


### Certificates for emission compensation

Projects reducing GHG emissions can get financial support

Studies and research projects

Appreciation of organic matter in LCA’s
Evaluation of how to integrate the impacts of organic matter (in compost and digestate) in LCA’s and how to quantify them
(M. Zschokke, Carbotech, K. Schleiss, UMWEKO GmbH)

MBR reactor: Digestion of manure and co-substrates
Efficiency improvement for economic and space savings
(J.L. Hersener, Ingenieurbüro Hersener / U. Baier, ZHAW)

Optimization of AD: Effects of thermochemical and enzymatic pretreatment and microbial additives
Improvement of anaerobic degradation
(U. Baier, ZHAW / J.L. Hersener, Ingenieurbüro Hersener)
Studies and research projects

Recently published reports

- Improvement of standardised digestion tests in batch reactors (in French)
- LCA: utilisation of catch crops for biogas production (in German)
- LCA: centralised vs. decentralised agricultural biogas production (in French)
- LCA of biogas production from different substrates (in English)
- Methane emissions in EPDM gas holders, economic and ecological consequences (in German)

Link to publications:
QM Biogas

Quality Management for Biogas Plants

Objectif: Improve quality of existing and future biogas plants

Folder covering:
- Construction and operation of biogas plants
- Planners, constructors, operators and controllers
- Broad information
- Checklists

Publication: 2012
QM Biogas

Kap. 1: Einführung & Übersicht
Kap. 2: Meilensteine & Verbesserung

Kap. 3: Modul Konzept & Planung
Kap. 4: Modul Realisierung
Kap. 5: Modul Inbetriebnahme
Kap. 6: Modul Betrieb
Kap. 7: Modul Modernisierung & Stilllegung

Kap. 8: Modul Störungen & Unfälle
Kap. 9: Modul Sicherheitsmanagement & Ausbildung
Kap. 10: Modul Substrate & Produkte

Kap. 11: Anhang
Ergänzende Checklisten, Merkblätter, Liste mit Normen & Richtlinien etc.