EnviTec Biogas

BIOGAS FROM AGRICULTURAL AND INDUSTRIAL WASTE

Eng. Marcello Barbato – Regional Business Development - SEA
EnviTec Biogas AG – Company Profile

• EnviTec Biogas covers the entire value chain for the production of biogas
• Market leader in Europe

• Foundation of company in 2002 with 20 employees
• Since July 2007 listed on the Frankfurt Stock Exchange
• Headquarter and Administration in Lohne, Lower-Saxony
• Sales and Project Execution in Saerbeck, Northrhine-Westfalia

• 148,8 Mio. Euro Turnover in 2013
• Thereof abroad 45,1 Mio. Euro in 2013

• 350 employees worldwide

As of 2014-07-02
EnviTec Biogas AG – Company Profile

Daughter companies & strategic cooperations in 14 countries

- Germany
- France
- United Kingdom
- Italy
- Czech Republic
- Slovakia
- Hungary
- Lithuania
- Latvia
- USA
- India
- China
- Japan
- Philippines
- In the set-up phase: Malaysia, Thailand, Indonesia
EnviTec Biogas AG – Company Profile

Plants in Operation (as of 2013-12-31)

- Installed capacity: 365.9 MW$_{el}$
  - Germany: 270.1 MW$_{el}$
  - International: 95.8 MW$_{el}$
  - Thereof Own Investment: 57.2 MW$_{el}$

- Type of plant
  - Agricultural plants: 333.5 MW$_{el}$
  - Waste to energy plants: 32.4 MW$_{el}$

467 plants in total
# EnviTec Biogas AG – Company Profile

## Integrated Business Model

### Construction
- Planning
- Permission
- Realization
- Commissioning
- Repowering

### Service
- Biological Service
- Technical Service
- 24-Hour-Hotline
- Insurance

### Own Operating
- Operation and Own Investments
- Plant Management
- Purchase of Raw Material
- Logistic

### EnviTec Energy
- Direct Marketing of Electricity
- Purchase and Sale of Biomethane
- Green Heat from Biomethane CHP
Biogas – an allrounder

- Process of energy generation

Preparation and pre-treatment of feedstock

- Feedstock blending
- Crushing
- Separation of contaminants before inserting into the fermenter
EFB Pre-Treatment

Dissolver

- Multi-feed capable
- More gas out of less substrate
- More gas in less time due to shorter retention time in the fermenter
- Less agitator power needed due to better consistence
- Separation of stones and external bodies (bottom hopper)
- EnviTec Biogas Protected Know-How
Biogas – an allrounder

• Process of energy generation

Preparation and pre-treatment of feedstock

• Recirculation from digester
Biogas – an allrounder

• Process of energy generation

Preparation and pre-treatment of feedstock

• Recirculation from digester
Biogas – an allrounder

• Process of energy generation

Biogas production through fermentation (system tank)

• Wet fermentation, mesophilic process

• Fully blended system
Biogas – an allrounder

- Process of energy generation

Fermented residue storage

- Usage of fermented slurry as fertilizer
Biogas – an allrounder

- Process of energy generation

Biogas utilization

- Electricity and heat generation
Biogas – an allrounder

- Process of energy generation

Biogas utilization

- Gas upgrading
Biogas – an allrounder

- Process of energy generation

Biogas utilization

- Gas upgrading
EnviThan – BIOGAS UPGRADE TO BIOMETHANE

Functionality of a Membrane

The gases have different penetration rates

Control variable: partial pressure ratio
EnviThan – BIOGAS UPGRADE TO BIOMETHANE

Schematic structure

biogas-production

cooling
H$_2$S-removal

compression

cooling condensation

filtration

3-stage Gas-separation

biomethane injection

RTO*

* Regenerative thermal oxidizer
Gas Upgrading

Location: Güstrow (Germany)
Capacity: 5 x 2,4 MWel
In operation since: December 2009
Input material: Liquid manure, renewable raw material

Features:
• World’s largest biogas processing biogas park
• Production of 10,000 m³/h gas
• Supply 50,000 inhabitants with gas

References
HISTORY CASE
Gas Upgrading

Location: Köckte (Germany)
Capacity: 1,7 MWel
In operation since: September 2013
Input material: Pig and cow slurry, corn

Features:
• Production of 350 Nm³ biomethane
• 192 kWel CHP
References

Waste to energy plants

Location: Kishiwada (Osaka, Japan)
Capacity: 249 kWel
In operation since: March 2015
Input material: Waste from food

Features / Special characteristics
• Complete container solution
• Power to the public grid
• Heat utilization by the adjacent factory
HISTORY CASE
Agricultural Biogas Plants

Location: Stanley, New York (USA)
Capacity: 541 kWel
In operation since: August 2013
Input material: Manure from 1,500 Holstein dairy cows, feed refusal, yogurt processing wastes and food waste

Features:
• Biogas Project of the Year 2014.
• Since beginning of 2014, the average degree of capacity utilization exceeds 91%.
HISTORY CASE
Agricultural Biogas Plants

**Location:** Udine (Italy)

**Capacity:** 330kWel

**In operation since:** August 2011

**Input material:** Broilers manure, cow slurry, corn waste

**Features:**

The heating produced by the plant is used to warm up the chicken farm. Reduction of ammonia content in the residue.
Location: Cremona (Italy)
Capacity: 250kWel
In operation since: 10-2010
Input material: Pig slurry

Features: The heating produced by the plant is used to warm up the pig farm.
HISTORY CASE

Waste to Energy Plants

Location: Ribeauvillé (France)
Capacity: 1,4 MWel
In operation since: January 2012
Input material: Waste from supermarkets, pig slurry
Features:
• Hygienization
• Biogas boiler
• Heat transport to swimming pool of casino
• Heating of residential building
Thank you

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