

# ETW Energietechnik GmbH

Marco Weiss – Managing Director



## Company.

Competence in the private sector.



More than **25 years experience** in the energetical utilisation of renewable gases as biogas, landfill and sewage gas, and in fossil fueled natural and mine gas combined heat and power (CHP) plants .

**100 % private ownership.**

## Company.

Competence in the private sector.



Turnover 2015: 31 Mio €.

Employees 2015: 85

Installed el. power: 380 MW

### Key Account Partner of

### Certification



EN ISO 9001: 2008  
Certified Company



## International.

We are already here.

As one of Germany's market leaders in the area of CHP station construction and service, ETW has also meanwhile established itself on the European market for energy systems with an export ratio of 40%.



### What are we looking for:

Deliver high-end gas technology and tailored local support to our customers worldwide.

**Products. Service.**

**ETW Service: 100% availability.**





Energietechnik GmbH

References. CHP Units 200 – 4500kW.

Diverse applications.

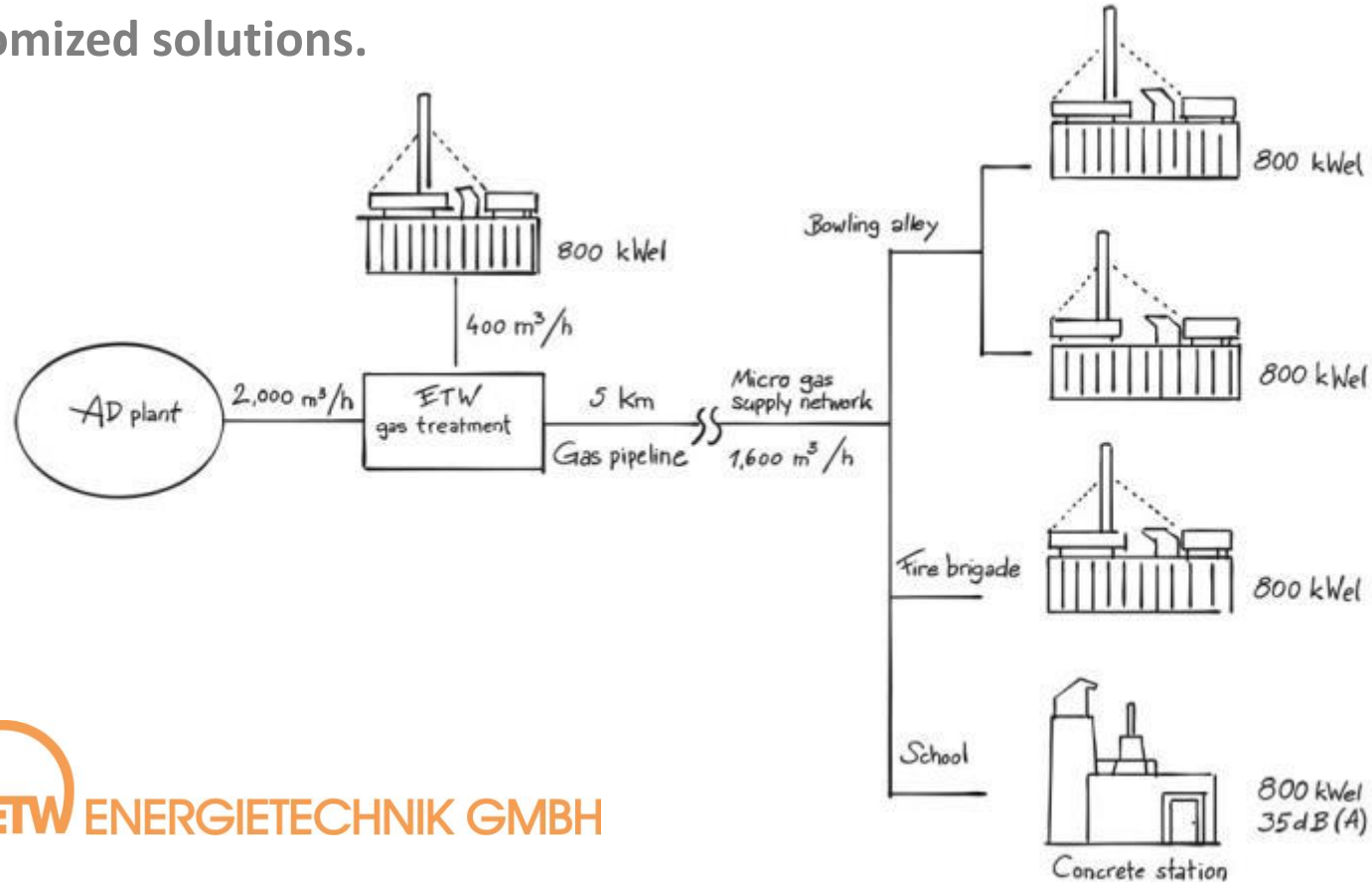


High efficient CHP technology.

## References. Biogas CHP.

Flechtingen (Germany). Gas Treatment 2000 m<sup>3</sup>/h. 5x CHP Units ETW 800 BG

### Customized solutions.



## ETW SmartCycle® PSA.

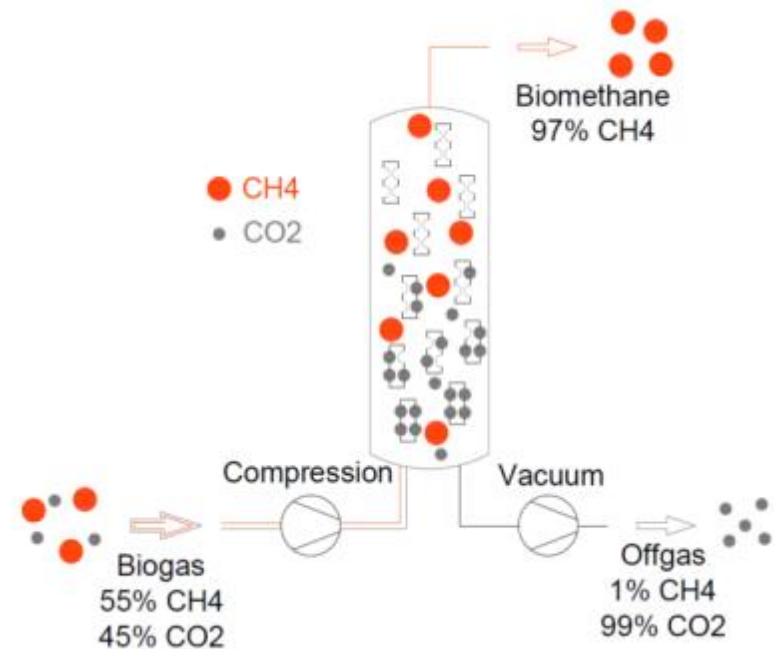
- Continuous CH<sub>4</sub> production
- > 99% CH<sub>4</sub> purity
- > 99% on-stream time  
(4 plants, total of 90.000 operation hours)
- Dry product gas @ 3 bar g
- 0,14 kWh/Nm<sup>3</sup> Feed gas
- Completely controlled process
- Zero chemicals, no membrane replacement, no water consumption



## ETW SmartCycle® PSA.

### How it works.

1. Biogas flows through the adsorbent at 3 bar g
2. Smaler molecules  $N_2$ ,  $O_2$ ,  $H_2O$ ,  $H_2S$ ,  $CO_2$  penetrate the pores in the sieve and are adsorbed.
3. The larger  $CH_4$  molecule is not adsorbed, thus separated from the  $CO_2$  molecules.
4. Biomethane  $CH_4 >> 97\%$  can be fed into the gas grid or compressed to CNG & LNG.
5. The saturated adsorbent can now be regenerated by vacuum, completing the cycle.
6. Vacuum regenerates the adsorbent, making it ideal for waste AD plants.



## Ranking of Adsorption Forces.

Hydrogen

Weak

Oxygen

Argon

Nitrogen

Carbon Monoxide

**Methane**

**Carbon Dioxide**

Ethane

Ethylene

Propane

Butane

Propylen

Ammonia

Hydrogen Sulfide

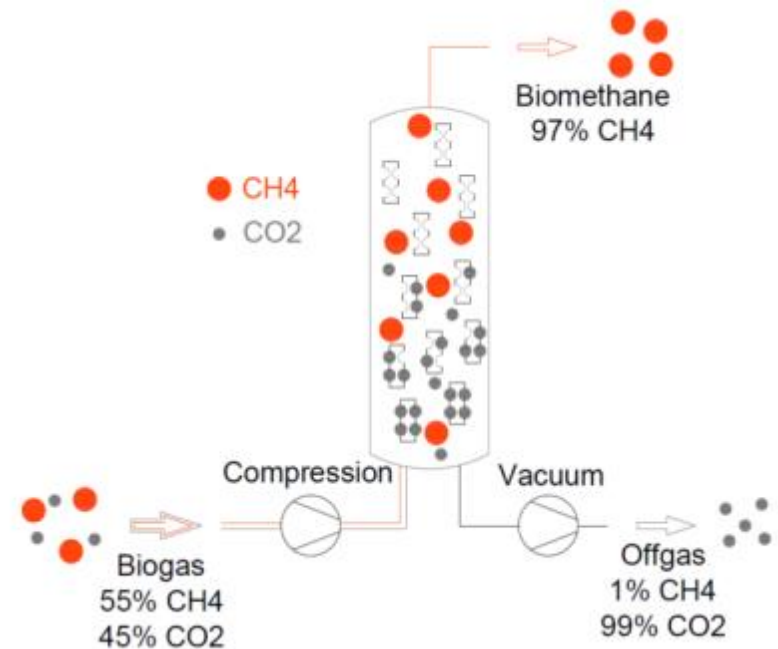
Mercaptanes

BTX

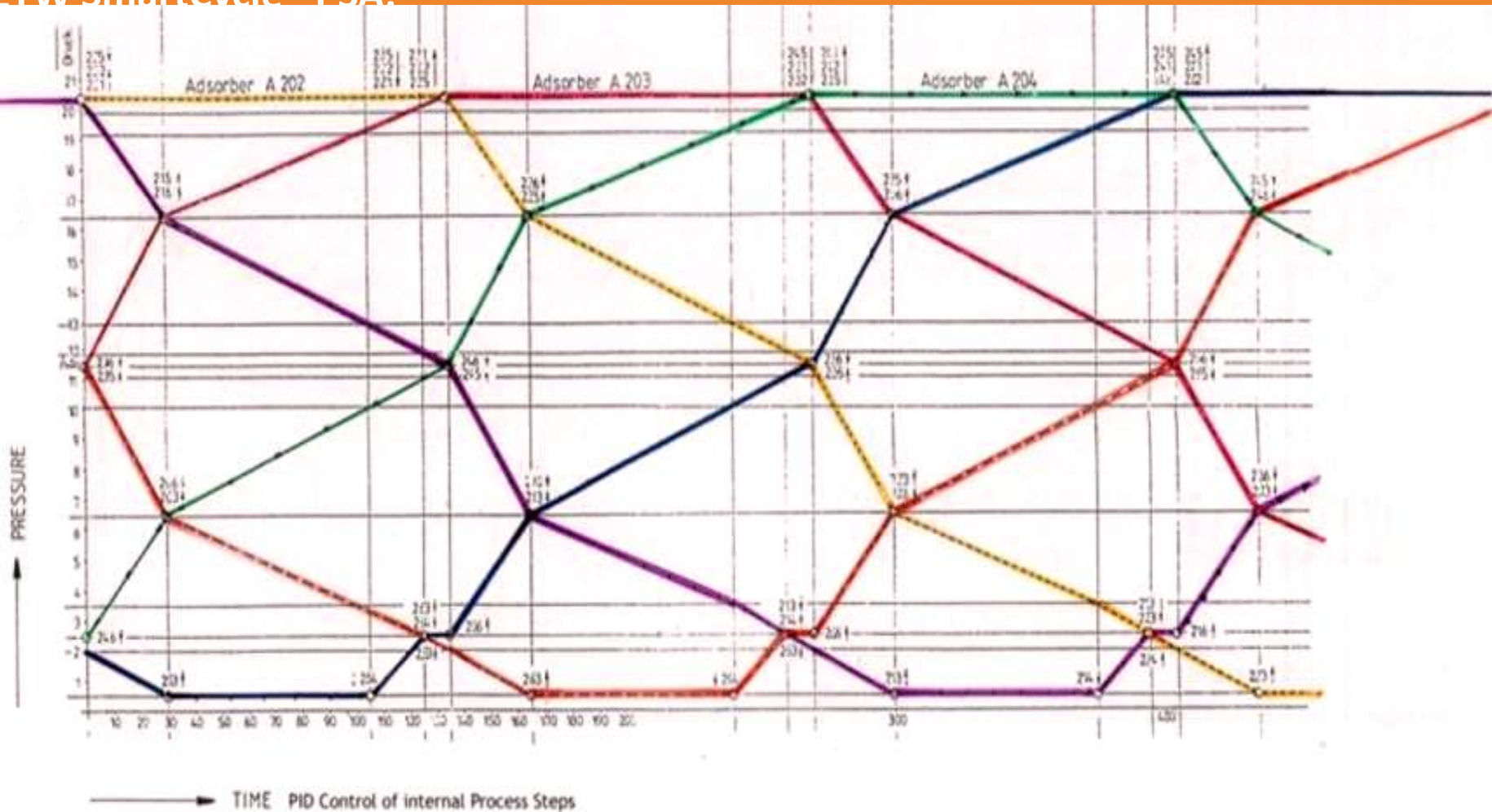
Styrene

Water

Strong



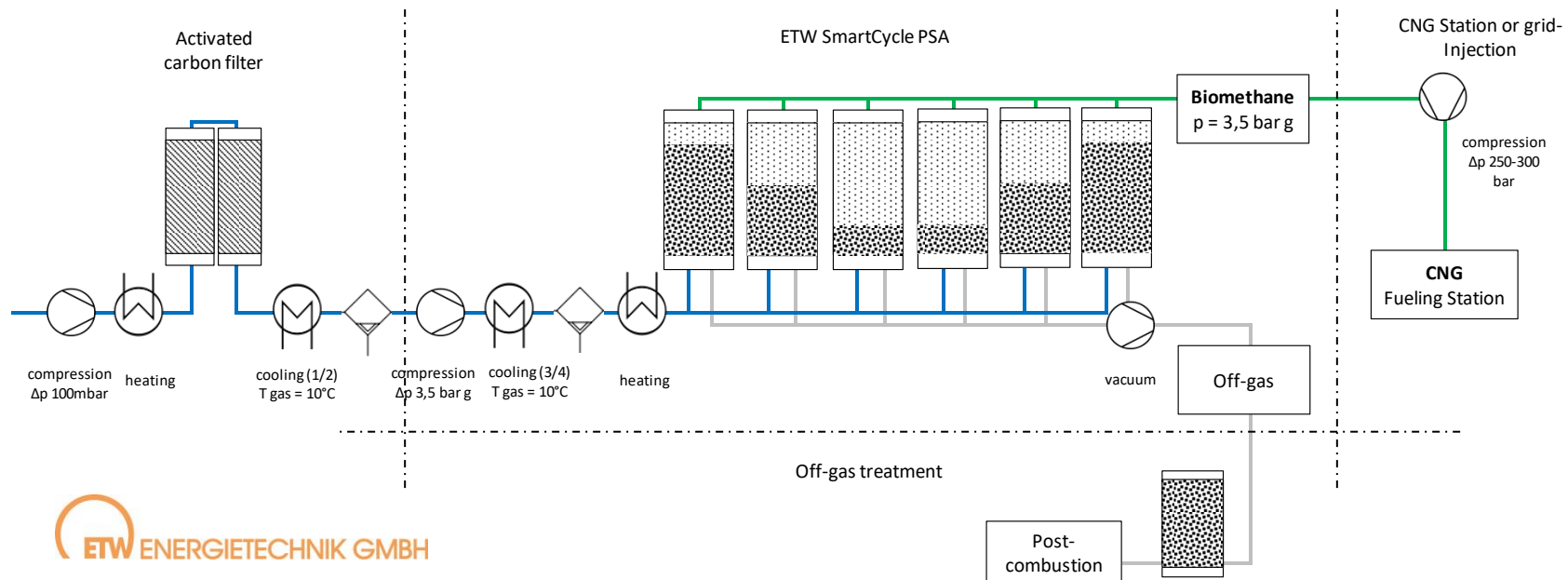
## ETW SmartCycle® PSA.



The automatic adjustment of cycle length results in a constant product gas composition (eg. 98% CH<sub>4</sub>)

## ETW SmartCycle® PSA.

- Self-sufficient cycle length control (Accordion principle)
- Gas-purity control mechanism
- Continuous gas production
- Smooth regeneration process of the adsorbent ensures its lifetime



# ETW SmartCycle® PSA.

COMPANY | PRODUCTS | SERVICE | REFERENCES | CONTACT

DE / **EN** / FR / RU



## ETW Biomethane plant

### Mature technology: Biomethane plant Seelow (DE)

**Project/Site:** Biomethane Plant Seelow (DE)

**Startup:** 2014

**Type:** Biomethane plant concentrating 1400 m³/h raw biogas up to 700 m³/h biomethane to be feeded into the public natural gas grid

**Module type:** ETW Biomethane Plant with a pressure swing adsorption unit (PSA) with a layered carbon molecular sieve.

#### References

Biogas CHP

Natural gas CHP

#### Biomethane plant

:: BMA 600 m³/h Laupheim-DE

:: [BMA 1400 m³/h Seelow-DE](#)

:: BMA 1400 m³/h Nonnendorf-DE

:: BMA 1400 m³/h Platten-DE

Landfill gas CHP

Mine gas CHP

Gas purification

Powerpacks

## References. Biomethane Plant.

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### ETW Biomethane plant

A convincing solution: Biomethane plant Laupheim (DE)

**Project/Site:** Biomethane Plant Laupheim (DE)

**Startup:** 2011

**Type:** Biomethane plant concentrating 600 m<sup>3</sup>/h raw biogas up to 300 m<sup>3</sup>/h biomethane to be feeded into the public natural gas grid

**Module type:** ETW Biomethane Plant with a pressure swing adsorption unit (PSA) with a layered carbon molecular sieve.

#### References

Biogas CHP

Natural gas CHP

#### Biomethane plant

:: [BMA 600 m<sup>3</sup>/h Laupheim-DE](#)

:: BMA 1400 m<sup>3</sup>/h Seelow-DE

:: BMA 1400 m<sup>3</sup>/h Nonnendorf-DE

:: BMA 1400 m<sup>3</sup>/h Platten-DE

Landfill gas CHP

Mine gas CHP

Gas purification

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## References. Biomethane Plant.

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### ETW Biomethane plant

#### Reliable: Biomethane plant Nonnendorf (DE)

**Project/Site:** Biomethane Plant Nonnendorf (DE)

**Startup:** 2015

**Type:** Biomethane plant concentrating 1400 m<sup>3</sup>/h raw biogas up to 700 m<sup>3</sup>/h biomethane to be feeded into the public natural gas grid

**Module type:** ETW Biomethane Plant with a pressure swing adsorption unit (PSA) with a layered carbon molecular sieve.

#### References

Biogas CHP

Natural gas CHP

#### Biomethane plant

:: BMA 600 m<sup>3</sup>/h Laupheim-DE

:: BMA 1400 m<sup>3</sup>/h Seelow-DE

:: [BMA 1400 m<sup>3</sup>/h Nonnendorf-DE](#)

:: BMA 1400 m<sup>3</sup>/h Platten-DE

Landfill gas CHP

Mine gas CHP

Gas purification

Powerpacks



## ETW Biomethane plant

### Efficient: Biomethane plant Platten (DE)

**Project/Site:** Biomethane Plant Platten (DE)

**Startup:** 2016

**Type:** Biomethane plant concentrating 1400 m<sup>3</sup>/h raw biogas up to 700 m<sup>3</sup>/h biomethane to be feeded into the public natural gas grid

**Module type:** ETW Biomethane Plant with a pressure swing adsorption unit (PSA) with a layered carbon molecular sieve.

#### References

Biogas CHP

Natural gas CHP

#### Biomethane plant

∴ BMA 600 m<sup>3</sup>/h Laupheim-DE

∴ BMA 1400 m<sup>3</sup>/h Seelow-DE

∴ BMA 1400 m<sup>3</sup>/h Nonnendorf-DE

∴ BMA 1400 m<sup>3</sup>/h Platten-DE

Landfill gas CHP

Mine gas CHP

Gas purification

Powerpacks

**High quality components. Oilfree compressor.**





Energietechnik GmbH

High quality components. Vacuum Pumps.





Energietechnik GmbH

**High quality components. Gas Analyzer.**





Energietechnik GmbH

High quality components. ETW SmartCycle® PSA





Energietechnik GmbH

High quality components. ETW SmartCycle® PSA



Thank you for your kind attention



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