

# Presentation - PRV

## Improving the efficiency of biogas production

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# Engineering company Rossow PRV Neubrandenburg, Germany

## Specialization in

- > Production and utilization of energy from biomass
- > Planning of heating, cooling and air conditioning systems
- > District heating systems

## Priority of work:

- > Production and energetically utilization of biogas
- > Improvement of biogas production efficiency in research and development projects



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## Examples of research products and patents



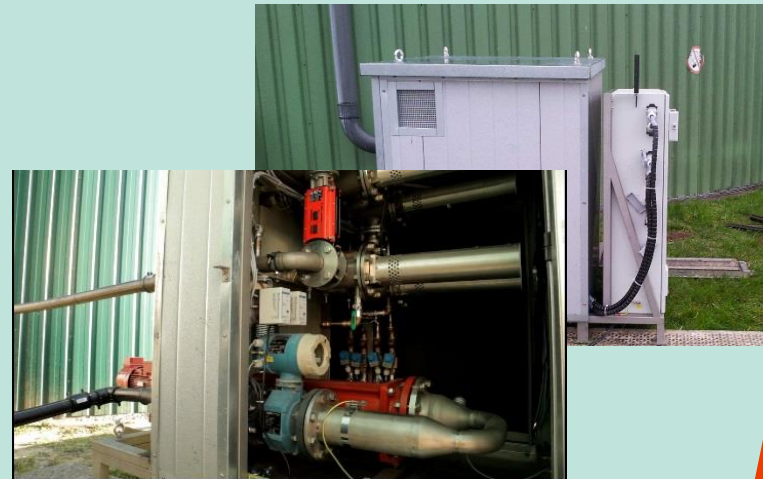
**Express Hydrolysis**



**High Performance Digester**



**PRV – Kombi Hydrolysis**



**Ultrasound Wave-Box**



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## Engineering and supervision of complete biogas plants

### Steps

- Concept, feasibility studies
- Planning, designing, engineering
- Consulting, coordination and supervision
- Assistance to commissioning
- Training of staff
- Consulting, assistance, service during operation



## Our experience – your benefit!

- Qualified and specialized staff  
(biologists and engineers of various disciplines)
- Long-term experience in engineering and construction of biogas plants since 20 years, more than 100 plants realized
- Pioneer in biogas technology
  - First farm-scale plant in North-East of Germany
  - First biogas plant in North-East of Germany running with energy crops
  - leading in advanced technologies for manure biogas production



## Possible cooperation

- Engineering/consulting companies, knowing specific conditions of the region, looking for biogas experts and advanced technologies
- Energy suppliers, with interest in expanding their profile with biomethane production
- Agricultural or agro-industrial companies, willing to make profit beyond cattle or chicken production, near to their core business
- Distributors, with contacts to agricultural companies and farmers
- Investors looking for efficient technologies for biogas production

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## Individual solutions

- Individual solutions, adapted to the local conditions
- Selection of proved and solid technical components of top quality
- Collaboration on the international market with well-known and potent suppliers
- Experiences in international cooperation  
(Spain, Denmark, Italy, Poland, Norway, Hungary, Ireland, UK, South Africa, Brasilia, Canada, Chile)



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## Purpose of our job

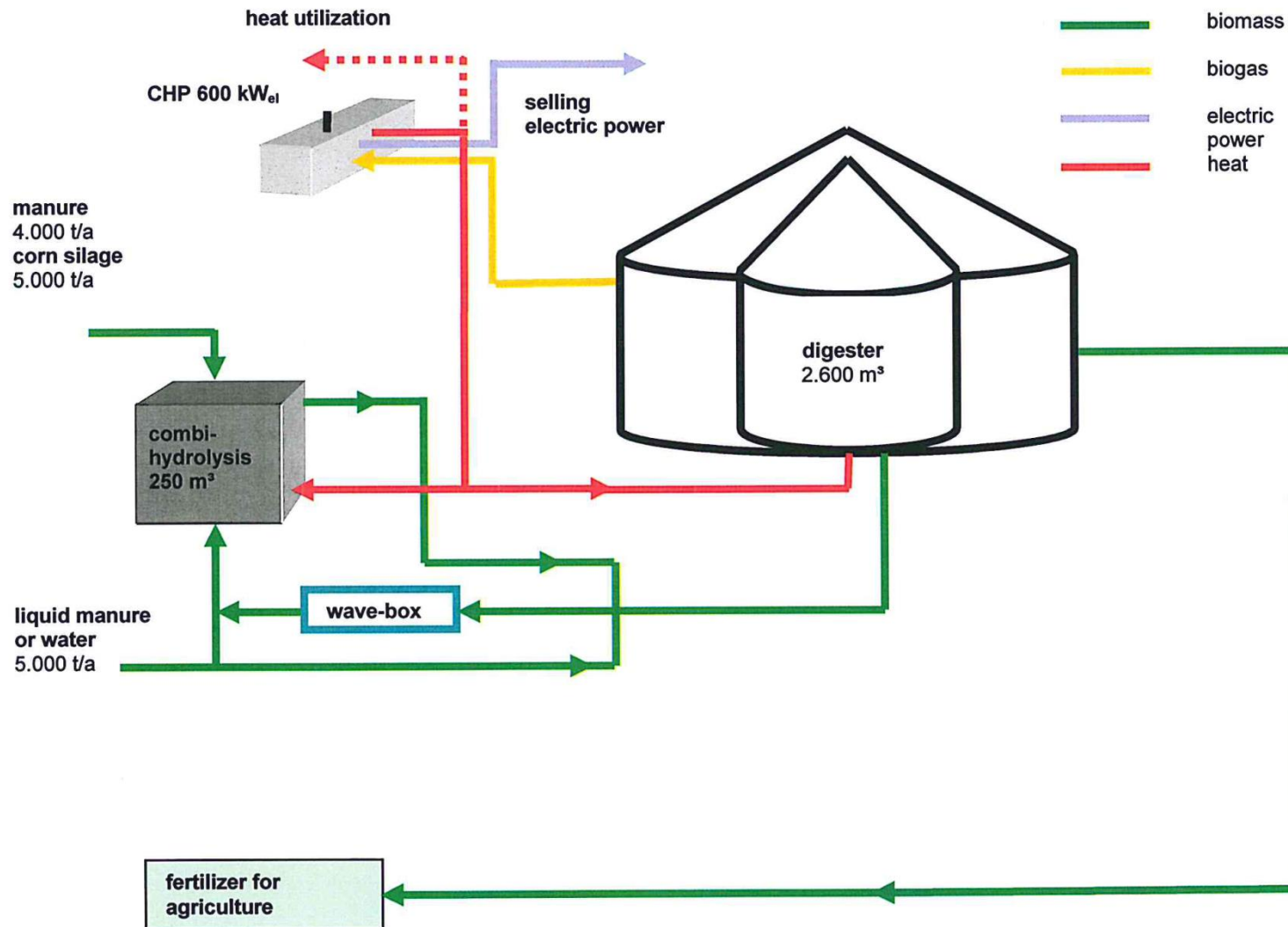
- Low costs for investment (approx. 2,000 € per installed kW) and low operation costs
- High performance of biogas plant:
  - > 90% availability of CHP
  - > 90% capacity utilization of CHP (up to 98%)
- Higher yield of biomethane from substrates (increasing value 15% to 20%)





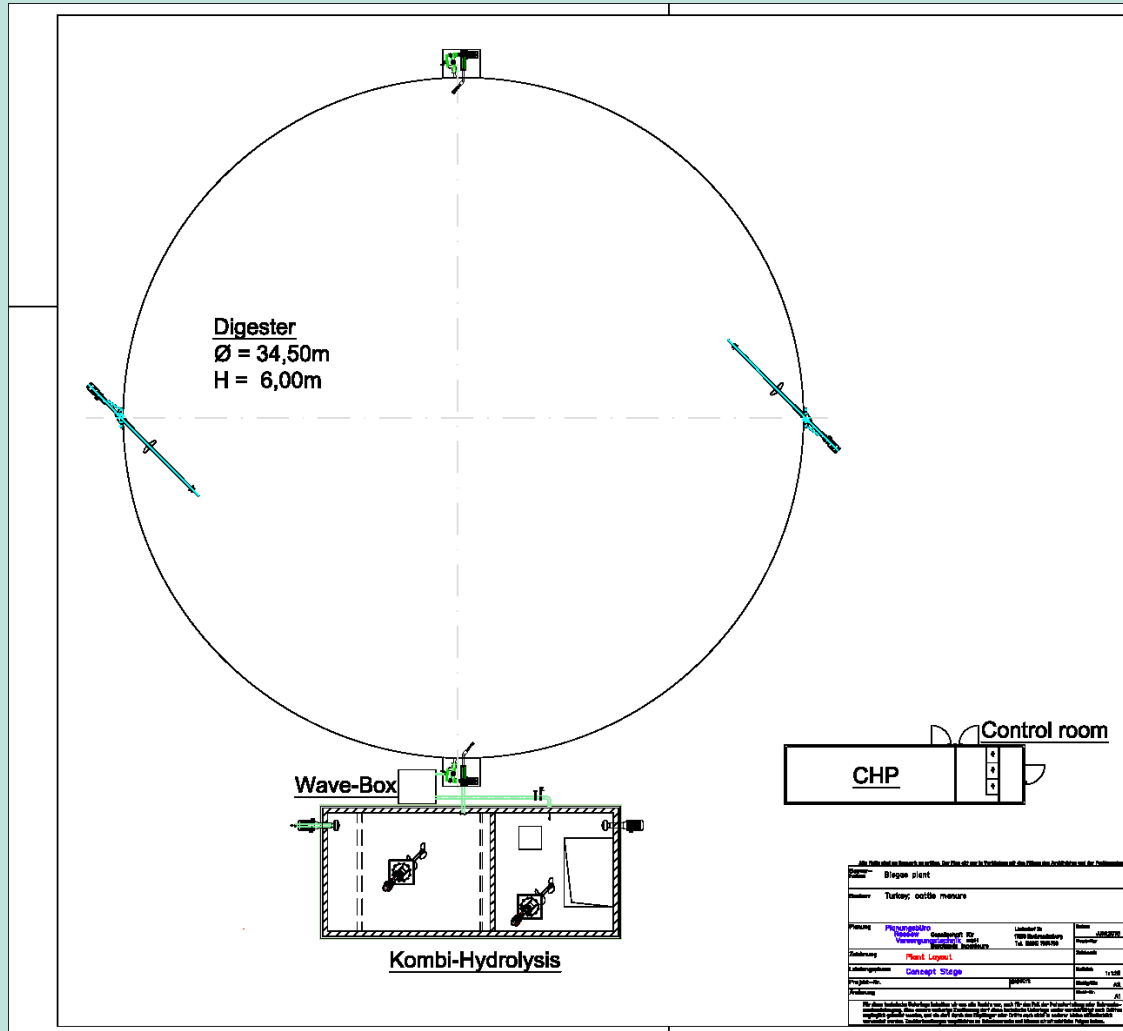
# PRV - Biogas plant 600 kW

## Example for manure biogas plant



# PRV - Biogas plant 1 MW in Turkey

## Layout and key figures for manure biogas plant



### Input:

45,000 t/a cattle slurry  
(18% dry matter)

### Yield:

3.4 Mill.  $\text{m}^3/\text{a}$  biogas

### Electrical energy:

8.4 Mill. kWh/a

### Availability: 8,400 h/a

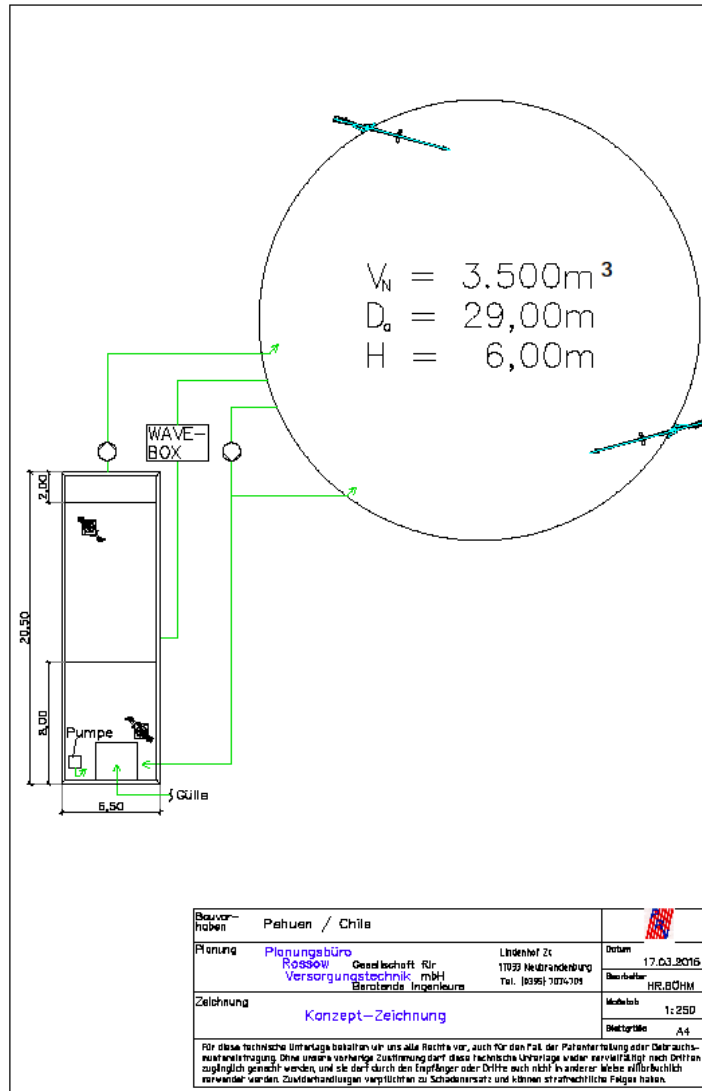
### Investment costs:

approx. 2.1 Mill. €



# PRV - Biogas plant 800 kW in Chile

## Layout and key figures for pig manure biogas plant



### Input:

31,500 t/a pig slurry

12,000 t/a pig manure

### Yield:

2.5 Mill. m³/a biogas

### Electrical energy:

6.2 Mill. kWh/a

### Availability: 8,200 h/a

### Investment costs:

approx. 1.7 Mill. €



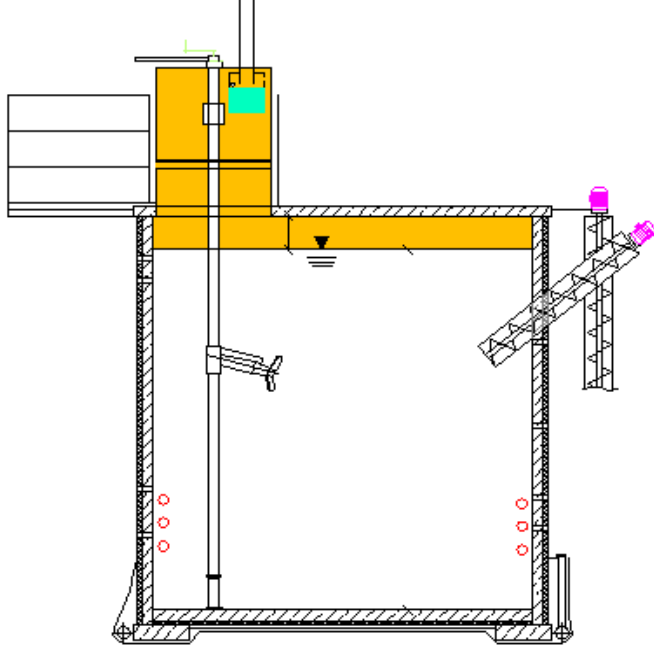
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## Different PRV- biogas plants

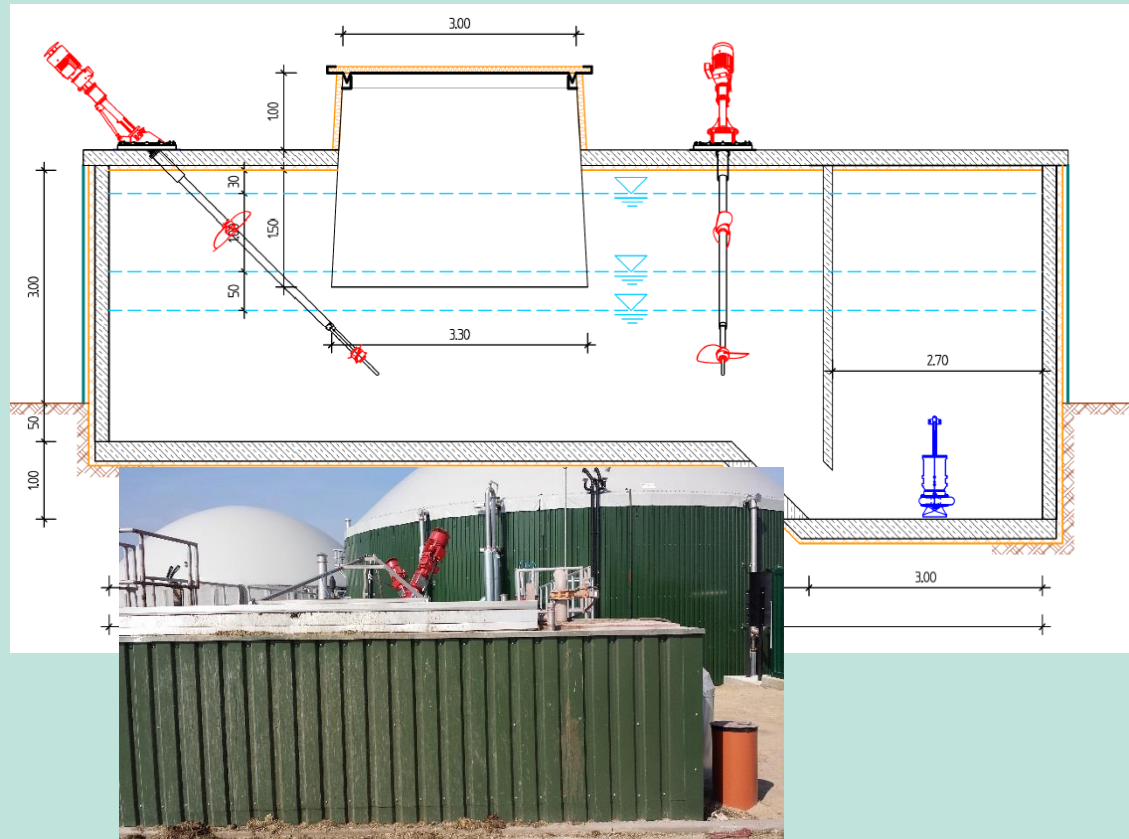


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## PRV-developed hydrolysis systems



Express- Hydrolysis



Kombi-Hydrolysis





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## Kombi-Hydrolysis Blumberg Efficient biogas production from pig manure and organic waste



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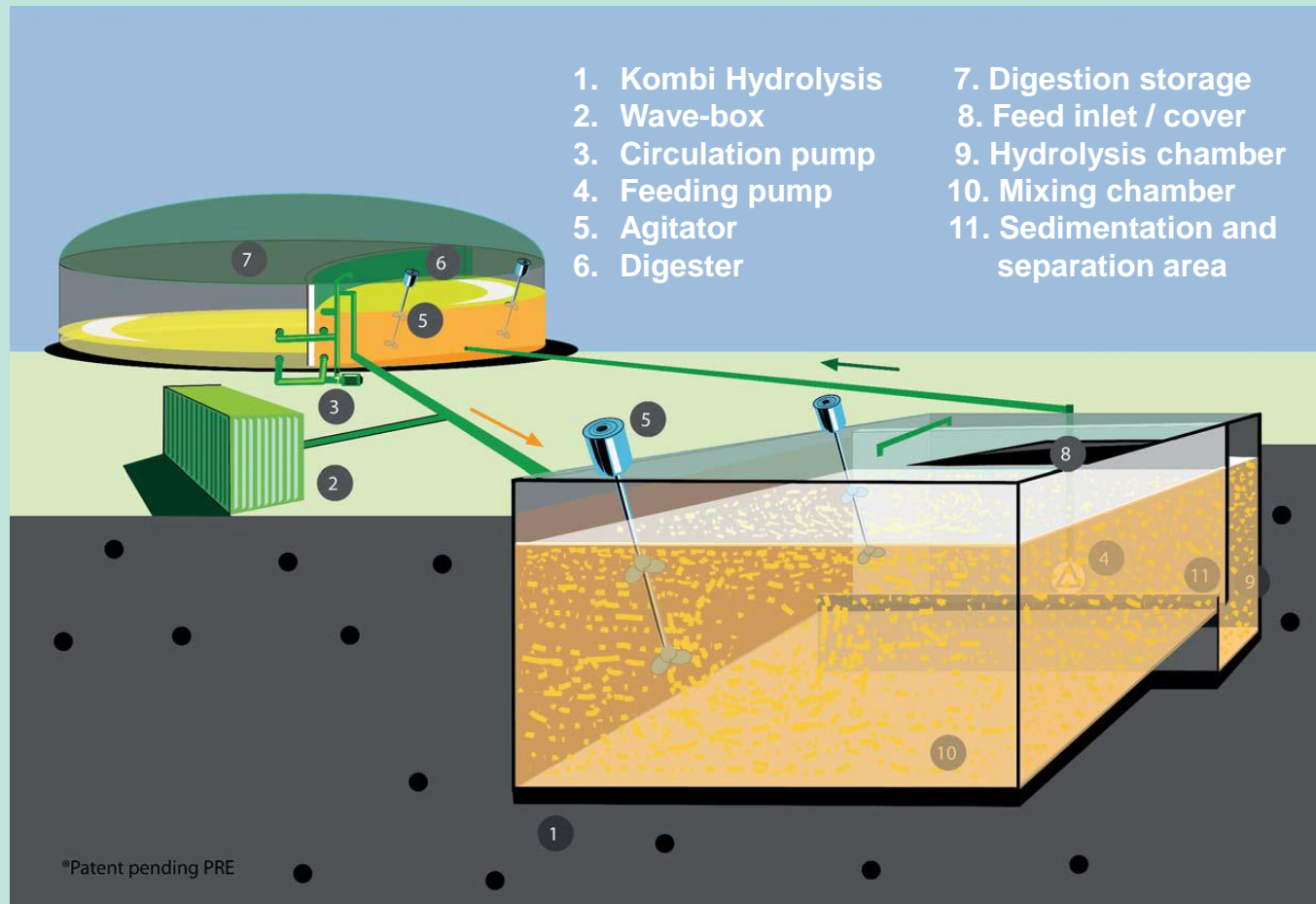
## Potzlow Biogas Plant (North-East Germany) with Kombi Hydrolysis

Feed: manure and dairy slurry



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## Patented system “Multi E” for efficient biogas production from manure and agriculture residues





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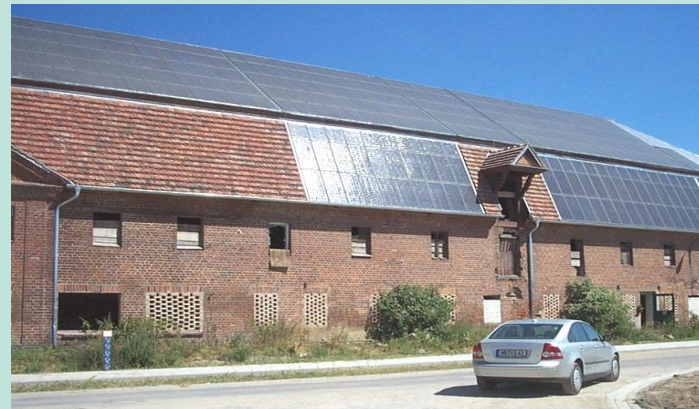
## Synergistic effects of Kombi-Hydrolysis and Wave-Box

- Increasing efficiency:
  - less remaining organics
  - different kind of substrates
  - methane yield up to 30% higher
- Lower investment costs:
  - approx.: 2,000 € per installed kW
- Less maintenance:
  - no mechanical feeder necessary
  - better viscosity of medium
  - less load for agitators and pumps
- More stability in biological process because of multi-cycling of substrates between Kombi-Hydrolysis and digester



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**Renewable energy village** with biogas plant, district heating and power generation by CHP; photovoltaic system



# PRV

**Our experience – your benefit!**

***Thank you for your attention***

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