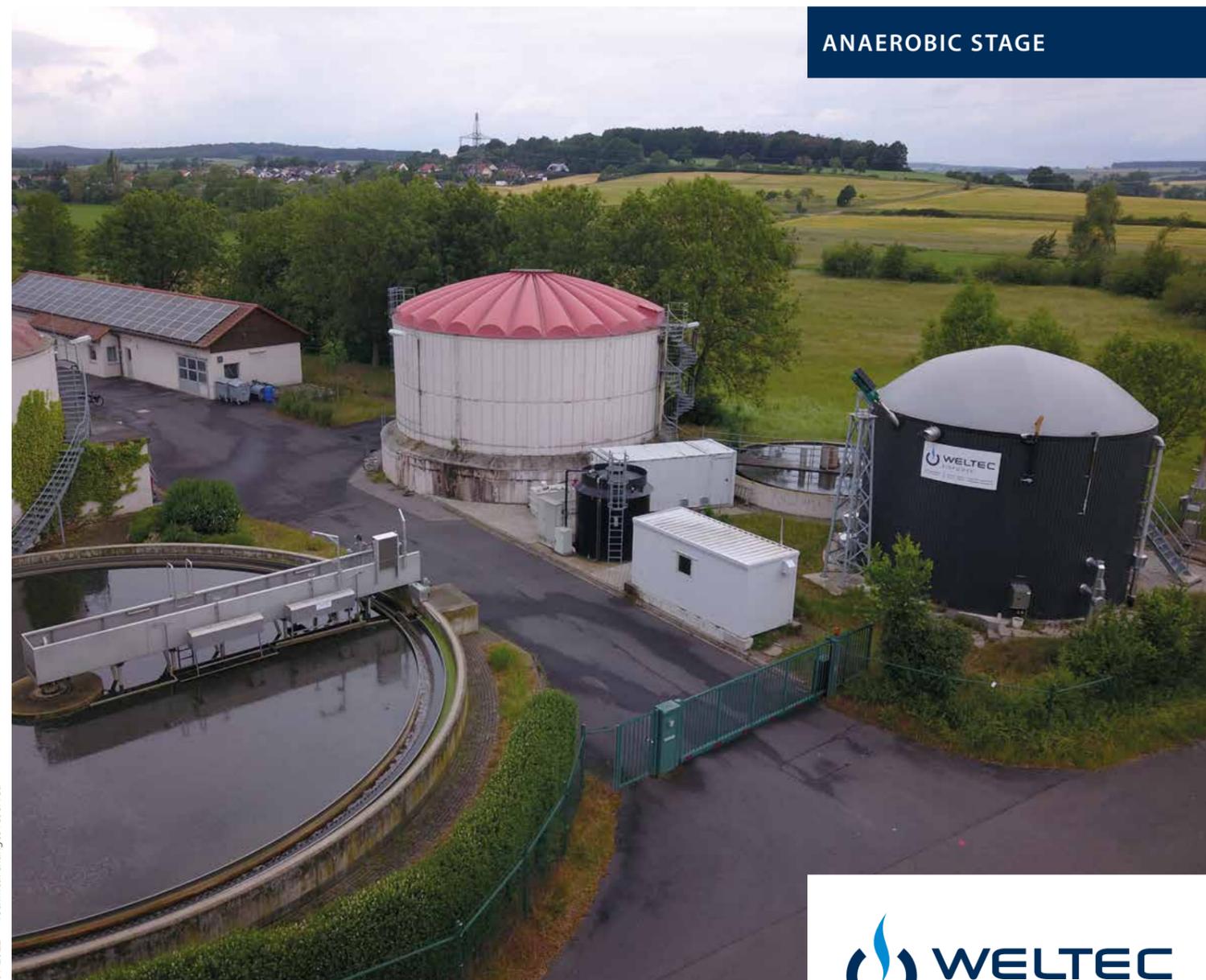




Energy from Anaerobic Sludge Stabilisation for Municipalities and Industry

ANAEROBIC STAGE



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Organic energy worldwide



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Video:
Construction of an anaerobic stage in southern Germany



Energy from Anaerobic Sludge Stabilisation

Fluctuating energy prices and rising sludge utilisation costs necessitate innovative concepts for wastewater treatment plants using aerobic sludge stabilisation. An inexpensive anaerobic reactor made of stainless steel is a solution that is easy to implement and has been successfully employed in the biogas sector for many years.

Simple Procedure, Great Effect

In the anaerobic stage of WELTEC BIOPOWER, the sewage sludge is digested under exclusion of air instead of aerobic sludge treatment in the open aeration tank. In addition, co-substrates from industry (e.g. production residues) can usefully support the process. Anaerobic digestion in the durable stainless steel bioreactor produces the valuable energy source digester gas. Based on a stable digestion process, greenhouse gas emissions can be avoided.

Additionally, the COD load is cut by about 30 percent. At the bottom line, this smart combination of wastewater treatment and energy production improves the performance of existing sewage treatment plants.

Maximum Efficiency through Tried-and-Tested Technology

To treat the raw sludge effectively, an anaerobic reactor of proven segmental design is installed. This construction method ensures custom-tailored, individual design of the digester and a short construction time. Inside, a diagonally installed long-axis agitator mixes the sludge in order to gently promote the microbiological transformation to methane. To buffer the accumulating digester gas, the stainless-steel tank is equipped with a flexible double-membrane roof.

The use of stainless steel always pays: This high-quality material is very durable, has a long useful life and is suitable for all climate zones. Moreover, stainless-steel contains require hardly any maintenance, resulting in low operating costs.

Thanks to its compact dimensions and the limitation to components really needed, the anaerobic stage occupies very little space. Thus, existing wastewater treatment plants can easily be upgraded.

Everything from One Source

WELTEC delivers more than the mere technology. All important steps on the way to anaerobic utilisation are handled by WELTEC – from the custom design and planning to the implementation and commissioning to the thorough training of the operating personnel.

- Technical and biological design
- Turnkey delivery of the plant, incl. earthworks
 - Sludge handling (storage and transport)
 - Ready-to-operate stainless steel bioreactor
 - Variable gas storage thanks to double membrane roof
 - Complete gas train (processing, CHP plant, flare stack)
 - Control unit (compatible with the plant control)
 - Integration in existing WWTP

Energetic Gain, Reduced Costs

The digester gas is used to generate electricity and heat on site, which can be used at the wastewater treatment plant. This self-consumption of electricity and heat enables wastewater treatment plants to reduce their energy costs by up to 40 percent. The volume of sewage sludge is also reduced, which lowers disposal costs.

The establishment of this environmentally friendly combination of energy generation, climate protection and sewage sludge reduction is supported by government subsidies, various regional and European investment programs. Not least because of this, an anaerobic stage is an economically attractive solution.



Practical Examples

Anaerobic stage for 32,000 PE in Lower Saxony

- Reduction of sewage sludge volume by 36%
- Electricity self-sufficiency of the WWTP: 40%

Savings

- Electricity costs: approx. 80.000,-€/a
- CO_{2eq} emissions: 664 t/a

Anaerobic stage for 16,000 PE in Bavaria

- Reduction of excess sludge production by 47%
- Energy self-sufficiency of the WWTP: 50%
- Organic matter degradation rate: 50%

Savings

- Energy costs: approx. 30.000,-€/a
- Sludge utilization: approx. 29.000,-€/a

Range of services

Population equivalents	8,000 - 50,000
Anaerobic reactor	Ø 7.68m - Ø 31.48m Height: 6.30 - 8.80m
CHP	20 - 350kW

GOALS & BENEFITS

- Low investment and favorable possibility to increase capacity of WWTP
- Sludge stabilization
- Reduced sludge quantity
- Avoidance of climate-damaging emissions
- Significant energy savings in the activation pool
- Extraction of digester gas suitable for producing energy
- Upgrade of existing wastewater treatment plant
- Little space needed
- Various subsidies and investment grants possible
- Additional use of co-substrates
- **Operating cost reduction**

