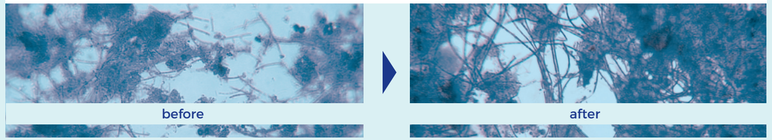
READY FOR THE FUTURE WITH ULTRASOUND

With the ultrasound disintegration the continuous implosions of countless microscopic little steam bubbles are destroying with their respective shear forces the biological cells. This increases the substrate surface and boosts the enzymatic activity in the digester. Consequence is an increased degradation acceleration, which leads to an increased biogas yield. Also the sludge viscosity will be decreased significantly as well as the dewatering capability of the sludge will be improved. The ultrasound technology can be individually adjusted to the respective sludge properties and leads to significant cost savings on WWTPs.

APPLICATIONS	EFFECT	YOUR BENEFITS
Disintegration of surplus sludge	‣ Increase of biogas yield of up to 25 % ‣ Reduction of sludge waste of up to 15 % ‣ Improved dewatering ‣ Reduction of filamentous bacteria ‣ Reduction of viscosity	‣ Gain of electric and thermic energy ‣ Reduction of disposal costs ‣ Saving of auxiliary substrates ‣ Avoidance of foam problems ‣ Improved digester agitation ‣ Improved CO_2 footprint
Disintegration of return sludge from secondary sedimentation	‣ Reduction of surplus sludge ‣ Improved denitrification ‣ Improved sedimentation ‣ Savings on external carbon sources	‣ Saving of disposal costs ‣ Saving of external C - sources ‣ Avoidance of bulking sludge ‣ Avoidance of foam problems ‣ Improved CO_2 footprint

The problem of the fiber bacteria Microthrix parvicella, the typical root cause of foam and bulking sludge, is significantly reduced through ultrasonic treatment.



POSSIBLE INTEGRATION

SERVICE

- System analysis to verify potential of cost reduction in sewage sludge operations
- System analysis to determine the use of sludge disintegration to fight bulking sludge
- System analysis to identify potential
- Balance of materials
- Planning, manufacturing, installation and commissioning of a customised disintegration module
- Measurement and process technology support while transition into continuous operation
- Process optimisation
- Quotation and implementation as a turnkey solution – no hidden costs
- Leasing models available
- Personal, competent and non-binding advice at any time

WEBER ENTEC

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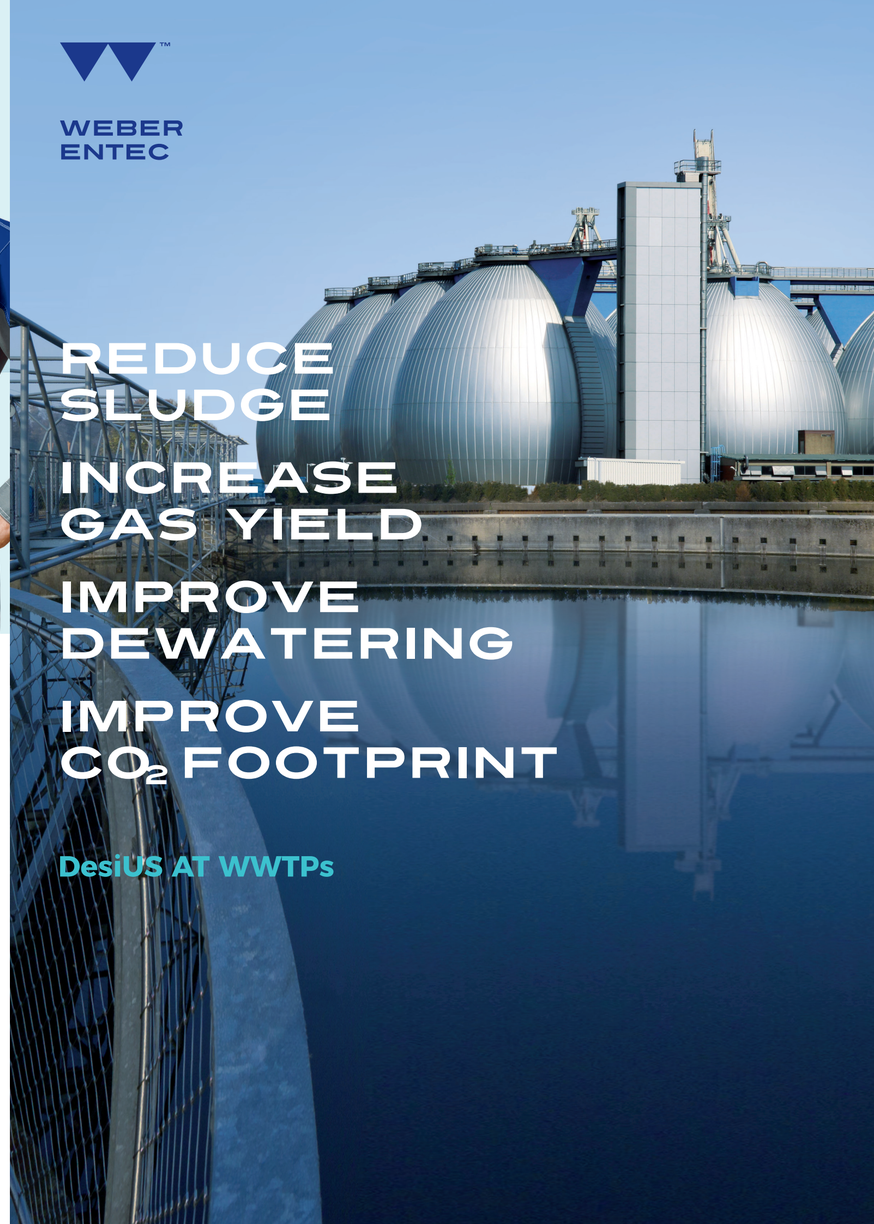


REDUCE SLUDGE

INCREASE GAS YIELD

IMPROVE DEWATERING

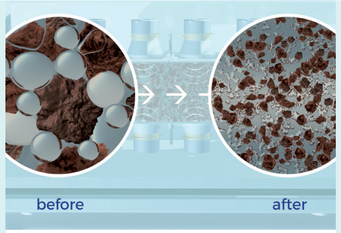
IMPROVE CO_2 FOOTPRINT

DesiUS AT WWTPs

Flow-through cell BioPush: The BioPush is the core technology of the DesiUS. This new generation ultrasound provides long lifetime, zero maintenance and operational reliability.

WEBER ENTEC – THE COMPANY

Weber Entec GmbH & Co. KG is a subsidiary of Weber Ultrasonics AG, one of the global leaders in ultrasonic components. The main focus of Weber Entec is the turnkey design and construction of ultrasound based applications in environment technology, especially ultrasonic treatment of biogenic materials also known as disintegration. Because of its broad range of expertise, the company is a one-stop source for manufacturing, plant construction, sales, system analysis and process optimisation.

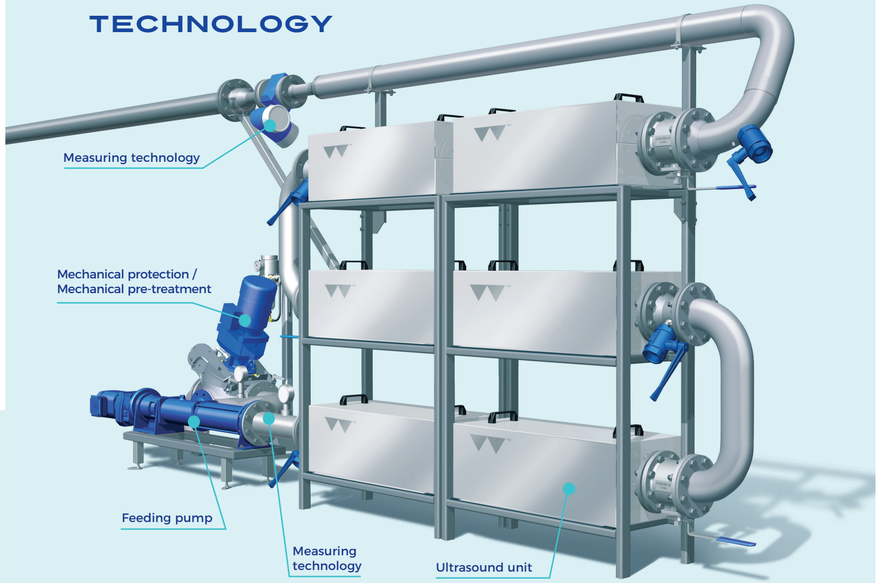


Effect of cavitation implosion on the sludge

INNOVATIVE ENVIRONMENTAL TECHNOLOGY

The use of ultrasonic disintegration leads to significant cost reduction within water treatment plants of all kinds. A new generation of ultrasound technology is made available with the DesiUS (Disintegration Ultrasound) – internationally recognized and approved.
Through its robust and specific design the DesiUS is predominant towards its competitors in regards to reliability as well as cost- and energy efficiency. The increased gas yield and sludge reduction contribute significantly to the improvement of the CO_2 - and energy efficiency balance on WWTPs.

TECHNOLOGY



DesiUS – HIGH STANDARDS IN EFFICIENCY AND DURABILITY

Focus of the R&D for the DesiUS has been the requirement to achieve the highest possible ultrasonic cavitation performance along with the highest machine reliability. The core technology of the DesiUS is the BioPush flow-through cell, which due to its high-performance surface converter generates a homogeneous cavitation field within the reactor. The energy efficiency and the impact on the sludge is significantly higher as with the traditional ultrasound technology. On top of this the BioPush is due to its design 100 % maintenance free.

Thus problematic substrates, such as highly thickened mixed sludge of municipal water treatment plants can be treated efficiently. In principal, a macerator is installed upstream of the turnkey plant. Its main purpose is to protect the machine from hazardous particles. Via a screw pump the sludge is led through the sound field with controlled speed to adjust the required specific energy. A PLC control system along with all necessary sensors for process control and supervision provides user-friendly, robust and trouble-free operation.

TECHNOLOGY ADVANTAGES

- Very high efficiency – 50 % and more savings compared to other disintegration systems
- Very low-maintenance (required only for pump and macerator)
- High degree of operational reliability
- Optimized adaption towards the specific requirements
- Low space requirement through small and compact construction
- Easy installation through Plug & Play
- Fast amortisation
- Clogging free
- Continuous process
- Treatment of substrates up to 15 % DM possible



BALANCE EXAMPLE FOR A WWTP WITH APPROX. 200.000 POPULATION EQUIVALENTS

Reduction of disposal costs 1.168 t through 8 % less sludge to dispose	**71.000 Euro per year**
Additional electrical energy gain 368.200 kWh through 12 % higher gas yield	**58.000 Euro per year**
Additional thermic energy gain 667.000 kWh through 12 % higher gas yield	**40.000 Euro per year**
Reduction of polymer costs 1.2 t polymers at 5 % savings	**3.449 Euro per year**
Energy consumption of the DesiUS approx. 12 kW	**21.000 Euro per year**
Energy for nitrogen back load 45.000 kWh	**6.800 Euro per year**
Maintenance costs (max.)	**6.000 Euro per year**

Potential savings per year

139.000 €