Sludge conditioning for improved biosolids processing through cell lysis

Small footprint, modular design that allows for immediate start-up (Plug & Play) of system

Low maintenance and easily integrated to SCADA instantaneous performance updates

Extend the life of your loaded digester

Improvement or elimination of bulking and foaming sludge

interested in the Sonolyzer™ pilot program? Call us at 1.855.GO.OVIVO to learn more!
Biosolids (or sewage sludge) are the solid organic particles produced in wastewater treatment processes. The amount of sludge generated at wastewater treatment plants is continually increasing. The processing, beneficial utilization and/or disposal of biosolids commands a treatment cost varying from 40-60% of total wastewater treatment expenditures in typical plants.

Due to these extensive costs, and any potential future restrictions on the use of biosolids, the management, reduction and minimization of sludge quantities to be handled has a significant impact on the economic and operational conditions of any wastewater treatment plant.

SLUDGE DISINTEGRATION

The Sonolyzer™ technology provides effective sludge reduction via ultrasound cavitation bubbles. The advantage of ultrasound treatment is that it does not require chemicals or extreme environmental conditions (either pressure or temperature).

HOW IT WORKS

Ultrasound is present in a wide range of intensities in frequencies beyond human hearing (20KHz or more). Ultrasound applied at high intensity and low-to-medium frequencies generates cavitation in water.

The cavitation is the rapid creation, growth and collapse by implosion of microscopic bubbles.

This cavitation is used to rupture or disintegrate biomass for sludge treatment and minimization.
**ANAEROBIC DIGESTION**

Anaerobic digestion is the predominant sludge stabilization method used to degrade complex organic substances in the absence of free or dissolved oxygen. The biological processes of anaerobic digestion involve three distinct stages. The solids present in the sewage sludge are brought into contact with a very diverse population of microorganisms. These hydrolyze, ferment and gasify the original long-chain organics and any successive products of each step into stabilized biosolids, methane and carbon dioxide.

The rate-limiting step in the anaerobic digestion process is hydrolysis. The Sonolyzer ultrasound unit is specifically directed at this stage. Treatment with the Sonolyzer reactor enhances the performance of anaerobic digestion due to its disintegration action on flocs and cells in the digester feed biomass. This enhanced performance is accomplished by using ultrasonically generated cavitation micro-bubbles, which are increased in size until they implode creating acoustic waves.

**APPLICATIONS**

The most common application for the Sonolyzer unit is treating TWAS prior to digestion. At this location, typically only 33% to 50% of the sludge is Sonocated to achieve the desired results. Alternate locations are possible for an external carbon source (creating additional COD) or controlling bulking sludge/foaming in aeration basins (The cavitation action will break up filamentous bacteria, reducing foaming problems).

When using an external carbon source, specialized organisms need to be present to maintain the biological process. In the case of the Sonolyzer the same organisms that are present in the biological process take this newly available COD and continue the enhanced biological nutrient removal process.
GETTING STARTED

Ovivo will assist with determining if the Sonolyzer technology is the solution for your plant. To get started contact your local Ovivo representative and complete the following steps:

- Fill out and return the Sonolyzer questionnaire
- Provide a sludge sample for lab testing
- Pilot the Sonolyzer system (optional) to show the improvement in the digestion process and/or additional COD application.

To help interfacing with the existing wastewater treatment plant or facility, the Sonolyzer pilot unit is an all in one trailer assembly design. The system has been fitted with quick connects on the sludge inlet and outlet connections, sludge feed and discharge pumps and controls for an almost fully automated operation.

SONOLYZER™ PILOT PROGRAM

The capacity of the demonstration unit is approximately 30 m³/d (7,925 gallons/d) to 50 m³/d (13,209 gallons/d). Typically only 33%-50% of the total sludge flow is treated by the Sonolyzer unit to achieve the desired results. The weight of the demonstration unit is estimated to be 4,500 lb dry weight and its dimensions are 8.5 ft. high x 8.5 ft. wide x 20 ft. long (plus 4’-8” for the hitch). The trailer is an Interstate make, model: VICTCC20TA2.

Ovivo® Connect™ portal is an innovative and intuitive application that allows our customers to use ‘SmartTags’ installed on our equipment (or a web URL) to access a personalized customer zone. Access your equipment documentation, find contract references, track service logs, manage spare parts, and plan your next maintenance to get the most out of your equipment.

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