

Ultrawaves ultrasound system for improvement of anaerobic digestion on waste water treatment plants

Schleswig WWTP, 24837 Schleswig, Germany



I. Specification of the plant

- **Design capacity**
 - 75.000 PE
- **Actual loading**
 - 68.000 PE
- **Biological waste water treatment**
 - Biological P-elimination
 - Intermittent denitrification
 - Sludge age ca. 48 days
- **Sludge treatment**
 - Primary sludge
 - Thickened waste activated sludge (TWAS)
 - Co-substrate
- **Separate WAS thickening**
 - Static
- **Sludge stabilization**
 - Anaerobic, 1 digester (4,000 m³, mesophil)
 - Hydraulic retention time: 19 days
- **Digested sludge dewatering**
 - Chamber filter press
- **Sludge disposal**
 - Agriculture



Figure 1: Integration of the ultrasound system (US)

II. Objective of the ultrasound application

- Intensification of anaerobic digestion process
- Increase of specific biogas yield
- Reduction of residual sludge for disposal

III. Installation of the Ultrawaves ultrasound system

- Installation of one Ultrawaves ultrasound system (5 kW) in March 2011
- 30% of total TWAS flow treated with ultrasound

IV. Results of ultrasound treatment

- ✓ Compared to the start-up phase of the ultrasound application (May '11) the volatile solids degradation was increased from 57% to 66% (+16%), see figure 2
- ✓ From May 2011 to March 2012 the specific biogas yield has been improved by 32%, see figure 3

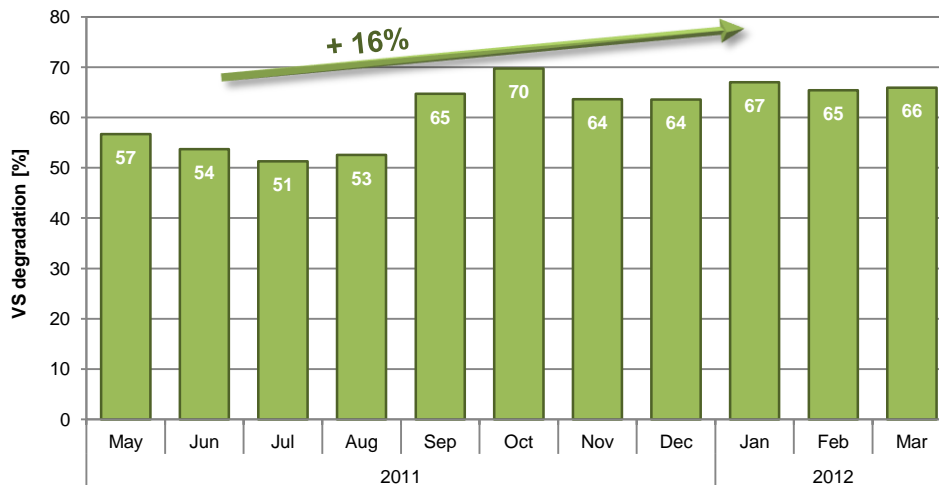


Figure 3: Increase of volatile solids degradation over time since start-up of the ultrasound system

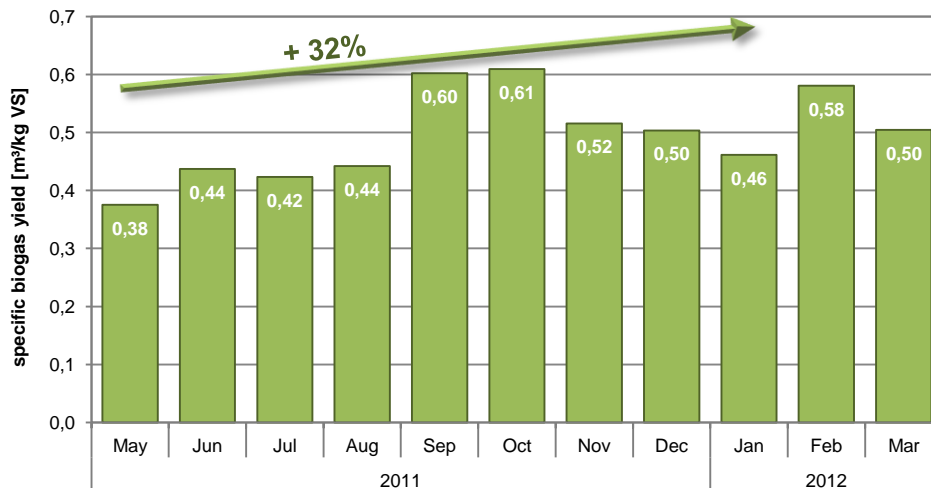


Figure 4: Increase of specific biogas yield over time since start-up of the ultrasound system

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