

Ultrasonic sludge treatment provides more biogas in Oskarshamn

The Ernemar sewage treatment plant in Oskarshamn has introduced an ultrasonic technique for surplus sludge. In addition, a biological sludge filter was installed. The production of biogas has increased and landfilling of sludge has decreased by 3 500 tonnes per year.

To increase the production of biogas and reduce the remaining volumes of sludge, the Ernemar sewage treatment plant in Oskarshamn chose to invest in new technology. The new ultrasonic treatment and the biofilter to dewater the sludge have been found to work largely according to plan, despite certain start-up problems. The technique has attracted great interest, both in Sweden and abroad. The biogas is used to heat the plant.

POSITIVE ENVIRONMENTAL AND ECONOMIC IMPACTS

- Carbon dioxide emissions have decreased by 351 tonnes/year.
- Gas production has increased by 187 000 m³/year.
- The plant consumes virtually no oil.
- The quantity of waste going to landfill has decreased by 3 500 tonnes/year.
- Emissions of nitrogen oxides have decreased by 260 kg/year.
- The quantity of nitrogen released to water has decreased by 5 800 kg/year.

Photograph: Kaj Nilsson



IMPLEMENTATION

The Municipality wanted to increase the gas production in the sewage treatment plant's digestion chamber by introducing ultrasonic treatment of sewage sludge. A solution involving thermal hydrolysis had been imagined at the outset. But that solution was too expensive. A decision was therefore taken to invest in new ultrasonic technology. At the same time a biological sludge filter was constructed to dewater the sewage sludge.

The ultrasound has the effect of disintegrating the organic matter in the sludge more effectively. This facilitates both dewatering and breakdown. The improved degree of digestion in turn leads to higher gas production.

The ultrasonic treatment works as planned after having been run in and adapted to the conditions at the treatment plant. The biological sludge dewatering worked well at first, but during the summer of 2005 the treatment plant had problems with clogging. A longer test period for the sludge filter would probably have made it possible to avoid the breakdown in operation. The filter fulfils the same function as reed beds at other sewage treatment plants.

POTENTIAL AND FUTURE BENEFIT

Creating sustainable and ecocycle-adapted water and wastewater systems is important both for the infrastructure of society and for environmental efforts. Re-using nutrients, energy and water is part of the adaptation of water and sewage systems to the ecocycle. It is therefore strategically important to develop, test and commercialise new environmental technology in the area of water and sewage treatment.

WHY BEST PRACTICE

Ultrasonic treatment of sludge is a new technique that has attracted strong interest both in Sweden and abroad. There have been several study visits to the sewage treatment plant. The local press has written about the project.

FOR FURTHER INFORMATION

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Contractors/providers:
Ultra Sonus AB supplied the ultrasonic system.

The project on the Internet:
www.oskarshamn.se

Further information on Best Practice
www.swedishepa.se/bestpractice
www.naturvarldsverket.se/mir

FACTS
LIP Oskarshamn 2000
Action 5
Environmental investment: SEK 15.1m
Grant: SEK 7.0m

