

# ULTRAWAVES ULTRASOUND SYSTEM FOR IMPROVEMENT OF ANAEROBIC FOOD WASTE DIGESTION

## Mariks FWBP



### I. Specification of the plant

<b>Plant size</b>	<ul style="list-style-type: none"> <li>• 2 digesters à 1,800 m<sup>3</sup></li> <li>• 1 secondary digester à 1,800 m<sup>3</sup></li> <li>• 1 storage tank à 5,000 m<sup>3</sup></li> <li>• hydraulic retention time: 40 days</li> </ul>
<b>Capacity</b>	<ul style="list-style-type: none"> <li>• nominal capacity: 1.100 kW</li> <li>• el. power production: 700 kW</li> <li>• concentration of methane about 58%</li> </ul>
<b>Substrate</b>	<ul style="list-style-type: none"> <li>• 73 t/d of food waste or similar organic waste</li> </ul>

### II. Objective of the ultrasound test

- Intensification of anaerobic digestion process
- Increase of specific biogas yield

### III. Installation of the Ultrawaves ultrasound system

- continuous operation of one US-reactor (5 kW operating power) from April to August 2011
- Sonification of partial flow (34 m<sup>3</sup>/d) recirculated from secondary to main digester (see figure **Error! Reference source not found.**)

### IV. Results of the ultrasound test

- Intensification of anaerobic digestion process
- Increase of power input from 696 kW to 786 kW (13% increase; see figure 2)
- Decrease of volatile solids concentration from 56% to 52% in digestate (see figure **Error! Reference source not found.**)

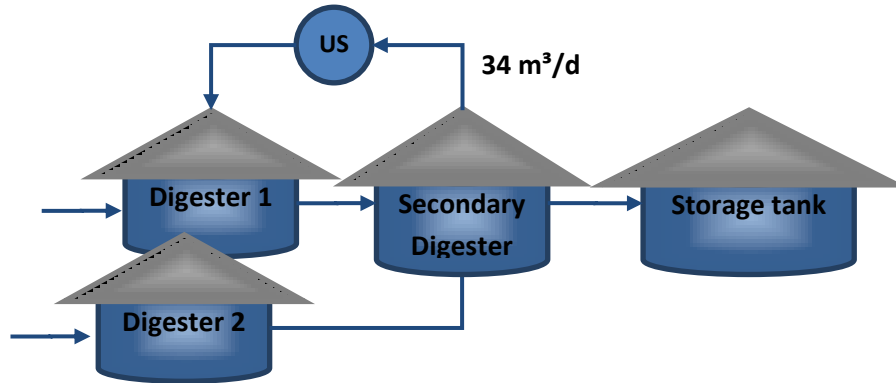


Figure 1: Plant layout of Mariks FWBP and integration of ultrasound system (US)

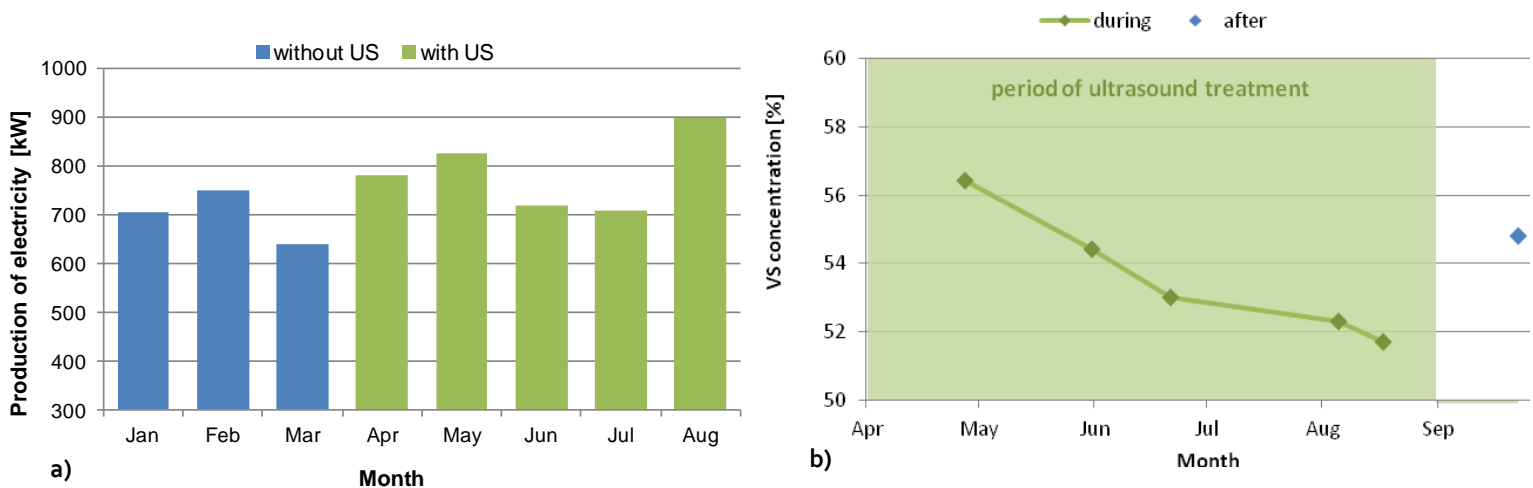


Figure 2: a) Production of electricity with and without ultrasound treatment, b) volatile solids (VS) concentration in the secondary digester during and after the period of ultrasound treatment

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