



Technology Description (TD) for Substrate Pre-Treatment Technologies

Contact Information:

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	<i>Date (of filling the TD):</i>	30.11.2016		

Technology Description:

NAME OF TECHNOLOGY	Device for ultrasound disintegration of organic matter
ASSIGNMENT OF TECHNOLOGY	Biomass disintegration, pre-treatment before methane fermentation.
TECHNICAL READINESS LEVEL	<p>TRL 1 - basic principles observed TRL 2 - technology concept formulated TRL 3 - experimental proof of concept TRL 4 - technology validated in lab TRL 5 - technology validated in relevant environment (industrially relevant environment in case of key enabling technologies) TRL 6 - technology demonstrated in relevant environment (industrially relevant environment in case of key enabling technologies) TRL 7 - system prototype demonstration in an operational environment TRL 8 - system completed and qualified TRL 9 - actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)</p> <p style="text-align: center;">1 2 3 4 5 6 7 8 9</p>
TECHNOLOGY/EQUIPMENT AVAILABILITY	<p>technology licence sellers Technology supplier has a prototype functioning in technical scale. It is possible to test the technology for potential customers. The technology supplier is not a producing company.</p>



PATENT RIGHTS		YES /NO
METHOD OF MAKING THE TECHNOLOGY AVAILABLE	<i>Licence selling</i>	YES /NO
	<i>Licence granting</i>	YES/ NO
POSSIBLE END USERS OF TECHNOLOGY	<i>Please name end users/ contacts that should be invited to project workshops</i>	Biogas plant operators

Description of the technology/equipment:

The device for ultrasound disintegration of organic matter was developed by scientists at the University of Warmia and Mazury in Olsztyn and the authors are looking for potential investors willing to implement/develop the presented device. The purpose of the ultrasound disintegrator is to increase the susceptibility of substrate to anaerobic digestion due to disintegration of organic matter as a result of ultrasound-caused cavitation. The disintegration of substrates with dry mass up to 5% is possible.

The device compared to existing solutions reduces the demand for electricity at the same effectiveness. In this device, a significantly higher density of the introduced ultrasounds in comparison to other solutions, improves the efficiency of the disintegration process. Operation of the ultrasonic waves takes place almost at the whole flow through the device.

The device for ultrasound disintegration of the biomass (Fig. 1) consists of a cylindrical tank (1) with an inlet channel (2) and an outlet channel (3) on a side wall. Inside the tank (1), there are strings (4) fixed on two discs (5 and 6) that are located in the upper and lower part of the tank (1). The top disc (5) is connected to the disintegrating ultrasound generator (7), and the bottom disc (6) is connected with the instrument (8) that is used to pull the strings (4). The substrate with dry mass up to 5% flows by the inlet channel (2) to the tank (1). During the flow it contacts with vibrating strings (4). The conditioned substrate outflows from the tank by the outlet channel (3).

The device is patented (Patent No. 213950, decision from 2012).

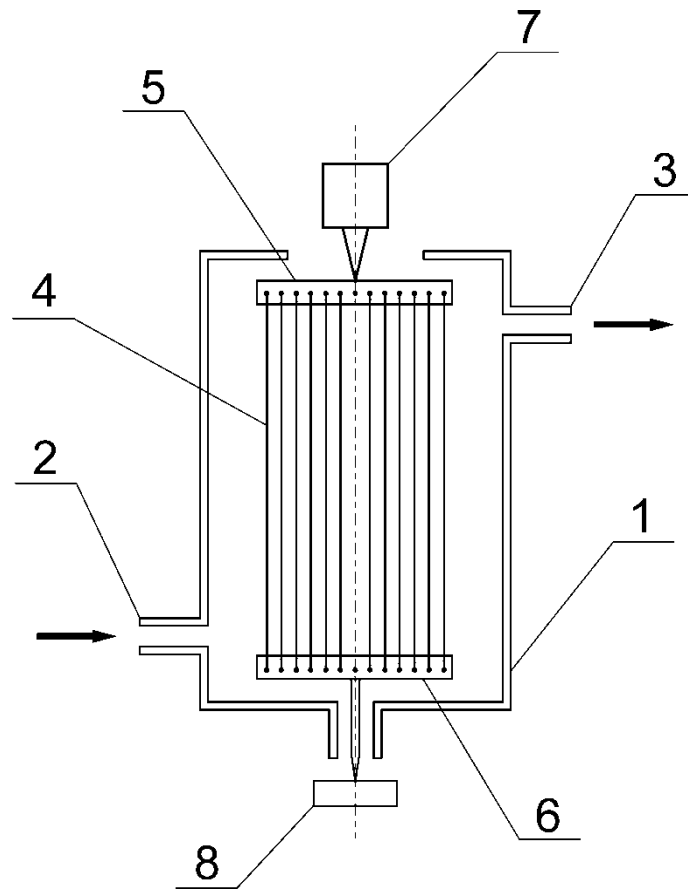


Fig. 1 Device for biomass disintegration

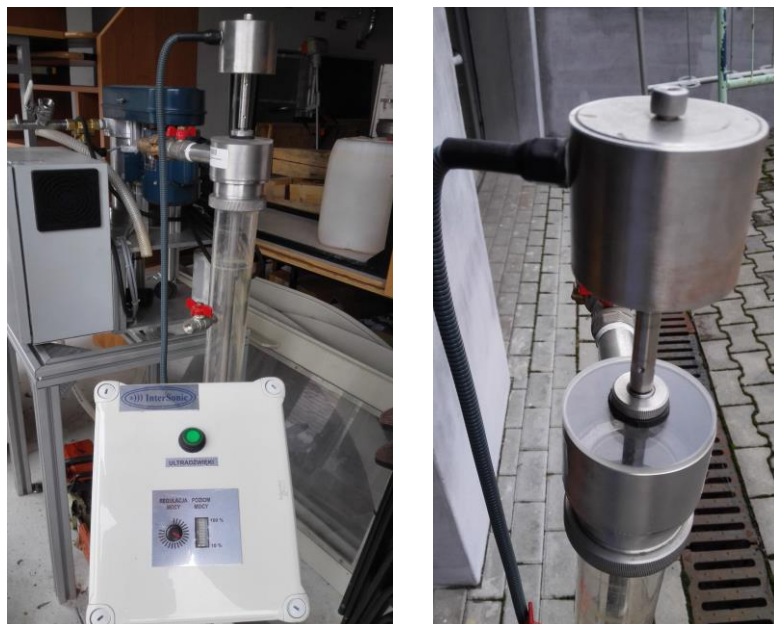


Fig. 2 Device for ultrasound disintegration of organic matter – photos of laboratory model