GREEN ENERGY FROM WASTE – NUMERICAL AND EXPERIMENTAL STUDY OF A MIXING PROCESS IN BIOGAS INSTALLATION – FOLLOW UP

The objective of the research is to develop a novel digestion installation for biogas production. The biogas yield depends substantially on the substrates composition, sludge loading rate and control over the organic matter break down. A good mixing between substrates (wet manure, organic material, biogas bubbles, solids and bacteria) must be achieved to increase the speed and level of biomass conversion process. This is investigated in the master assignment by application of the CFD numerical tools (Ansys-Fluent). The numerical study will focus on the sludge mixing process taking into account small and industrial scale digesters. Prediction and optimization of mixing performance of the digester are main target of the study. The 3D numerical research will reveal the significance of the studied parameters on the biogas yield and point out the most promising digester for an experimental investigation. Numerical results will be validated with available literature and experiments performed at facilities of project partners (HoST B.V., Saxion, Fachhochschule Münster. CFD/experimental work division will be approx. 70/30%

Microferm digester, from www.host.nl