

Master – Thesis

11.03.2025

Multiphase CFD Simulation of different agitator geometries in bio-gas fermenters

Description

A multiphase CFD Study of three different agitators in biogas plants has to be carried out. The two phases are a liquid, non-newtonian phase and a solid particle phase with different fractions of varying equivalent diameters. The transient simulation aims to analyze the particle distribution after a certain mixing time. Due to the high computing requirements the simulation will be carried out on the LRZ Linux cluster (HPC – High performance computing).



Figure 1: Long axis agitator [1]

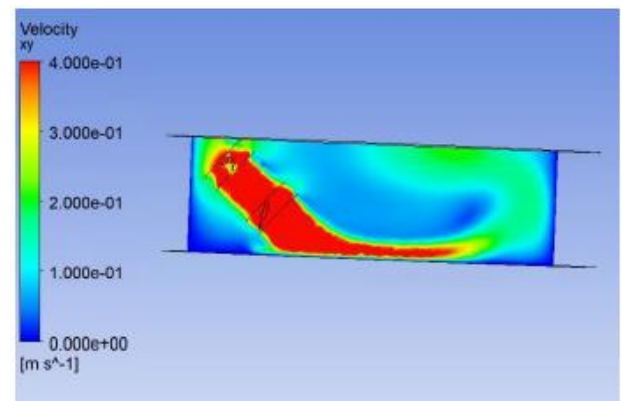


Figure 2: CFD Simulation Long axis agitator [1]

Tasks

- Literature research
- Defining target parameters
- CFD Simulation setup and calculation
- Comparison of the three different geometries by the defined target parameters

Requirements

- Advanced knowledge of Ansys Fluent

If you think you are the right candidate to solve this task please contact me.

Earliest start of thesis: 1st April 2025

Contact

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[1] Chen Yantian, "Investigation of Mixing in Biogas Digesters with Different Agitators by Computational Fluid Dynamics", Mast Thesis, Professur für Regenerative Energiesysteme, Technical University of Munich, Campus Straubing, 07/2024