

Master – Thesis

09.02.2026

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 three phases are a liquid, non-newtonian phase, a solid particle phase with different fractions of varying equivalent diameters and a gas phase. The transient simulation aims to analyze the particle distribution after a certain mixing time and investigate various parameters important for the interpretation of the mixing quality. 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]

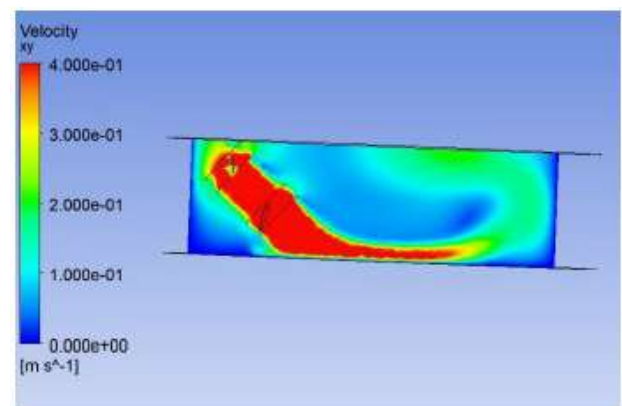


Figure 2: CFD Simulation Long axis agitator [1]

Tasks

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

Requirements

- Advanced knowledge of Ansys Fluent
- Data analyzing in Matlab/Python/Excel

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

Earliest start of thesis: 15th March, 2026

Contact

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