Fakultät für Maschinenwesen | RWTH AACHEN UNIVERSITY

Documentation of Research Projects

Last Name	Satura	First Name	Tomas
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ZIP Code City	6291AM Vaals	Phone	00421915460713
Country	Netherlands	Student ID	3 9 9 8 4 5
Institute (Fac. of Mech. Engineering)	AVT - Fluidverfahrenstechnik		
Supervising Professor	Andreas Jupke		
Supervising Academic Staff Member	Maximilian v. Campenhausen		

○ **Project Work (6 Weeks, 10 CP)** ◉ **Bachelor Thesis (8-10 Weeks, 15 CP)** ○ **Master Thesis (18-22 Weeks, 30 CP)**

Title of Thesis / Project Work (German / English)

in German

Entwicklung eines vereinfachten strömungsdynamischen Modells für einen Mehrphasenschlaufenreaktoren auf Basis einer komplexen CFD-Simulation

in English

Development of a Simplified Fluid Dynamics Model for a Multiphase Loop Reactor Based on a Complex CFD Simulation

Detailed Description of Content

Many fermentations have to be aerated and their efficiency is limited due to product inhibition. With the novel concept of a multiphase loop reactor, the yield of these fermentations can be increased by simultaneously supplying air or oxygen in one apparatus and separating inhibiting substances via liquid-liquid extraction.

In this work, the loop flow is to be further optimized so that the best possible flow conditions for the extraction can be determined. For this purpose, the flow behaviour under the influence of different operating settings is investigated in a multi-phase CFD simulation. The Open Source software OpenFOAM is available as a software tool.

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		Student ID	3 9 9 8 4 5

Intended Progress of Work

Tasks	Duration (in weeks)
Setting up the mesh	2 Weeks
Setting up the dictionarys	1 Weeks
Simulations and debugging	1 Weeks
Sensitivity analysis	1 Weeks
Developing simplified correlation	1 Weeks
Validation	1 Weeks
Documentation	3 Weeks
	Weeks
	Weeks
	Weeks
Duration in Total:	10 Weeks

Outline and time schedule have been set by mutual consent prior to beginning work on the research project.

Student: 9/09/2019 (Date) — (Signature)

Supervising Academic Staff Member: 05.07.'19 (Date) — (Signature)

Supervising Professor: 5.7.19 (Date) — (Signature)

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Actual Progress of Work

Day of Submission: 02.09.'19 Duration in Total: 10 Weeks

Grade: 1.0

03.09.'19 (Date) — (Signature and Stamp of Supervising Professor and Institute)

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