

I. IDENTIFICATION DATA

Thesis title:	CFD analysis of feed pellets in fish tank (CFD analýza pelet krmiva v nádrži pro chov ryb)
Author's name:	Qais Elia Hanna Anz (453674)
Type of thesis:	bachelor
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Process Engineering
Thesis reviewer:	Doc. Ing. Štěpán Papáček, Ph.D.
Reviewer's department:	Jihočeská univerzita v Č. Budějovicích, FROV, Ústav komplexních systémů

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	ordinarily challenging
<i>How demanding was the assigned project?</i>	
The motivation of this work is taken from one journal article on the almost identical topic (CFD analysis of suitability of different solid feed pellets for aquaculture systems, cf. Papáček et al., 2020). The original part consists in comparison of CFD results for two slightly different geometries of fish tanks.	

Fulfilment of assignment	fulfilled
<i>How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.</i>	
This work follows all 4 prepared guidelines.	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The methodology for CFD simulations of the motion and residence time distribution (RTD) of solid feed pellets with different properties in a cylindrical fish tank was previously tested in various studies. However, more profound analysis of the role of both (i) material constant of solid particles, and (ii) fish tank design and operational parameters would improve this work substantially.	

Technical level	C - good.
<i>Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?</i>	
The thesis, mainly its structure, looks very well. The motivation for such a work is well explained, number of references is adequate. The critical evaluation of simulated results (mainly its validation), was out of the scope of this thesis.	

Formal and language level, scope of thesis	C - good.
<i>Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?</i>	
The formal and language level is good, but not equally high along the thesis, e.g. see the inconsistencies in equations (2.2) and (2.3), pp. 7 – 8, and furthermore (3.3) and (3.4), p. 20.	

Selection of sources, citation correctness	C - good.
<i>Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?</i>	
Citation ethics: This rather delicate point, i.e. how clearly are distinguished the propre results from that taken from the literature, e.g. it is note clear from the text if the experimental identification of feed pellets physical properties was done by the author or it was taken from the work Papáček, Š.; Petera, K.; Císař, P.; Stejskal, V.; Saberioon, M. Experimental	

& Computational Fluid Dynamics Study of the Suitability of Different Solid Feed Pellets for Aquaculture Systems. *Appl. Sci.* 2020, 10, 6954.

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

Please insert your comments here.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

The thesis, mainly its structure, looks very well. This work represents another attempt towards employing CFD code ANSYS Fluent for simulation of fish tank hydrodynamic conditions and RTD of solid particles in such systems. The discussion about the role of either material constant of solid particles, or fish tank design and operational parameters on RTD is a complex problem deserving further work. However, the first step has been made.

Questions:

1. Could you explain how the RTD can be minimize? Cf. your sentence (p. 4): *This is achieved through computational fluid dynamics (CFD) simulation and the determination of the optimal injection positions of the feeding pellets **to minimize the residence time distribution (RTD)** of the settling pellets, as well as maximize the expulsion of sedimented feeding pellets through the output of the tank.*
2. On Chapter 4.2.3, p. 28, you mention Fluid Structure Interactions. Indeed, this is very trendy topic, however, could you explain where, in your thesis, did you use it?
3. Look at Table 5 and Fig. 16. Are they consistent?

The grade that I award for the thesis is **C - good**.

Date: **20.8.2021**

Signature: