

## Evaluation of the diploma thesis written by Luis Alberto Torres Tapia

Submitted diploma thesis with name „CFD Simulation of Heat Transfer in an Agitated Vessel“ was written by Luis Alberto Torres Tapia. The thesis is mainly focused on CFD simulation of some selected geometry using ANSYS CFD program. The work is logically divided into several parts. The first part deals with introduction into technology of agitation of liquid, and also includes information about geometry of impinging jet and its relation to agitation. Next part is focused on the methodology of evaluation of heat transfer coefficient, and also introduces basic dimensionless numbers. This part also includes several correlations following from literature review. Literature review part is not so big (approx. 2 pages). Really includes only one/two references to Petera (2017). It would be nice to make more extensive literature review especially if you should do a literature review concerning the heat transfer in agitated vessels. CFD chapter introduces fundamental equations of fluid flow and heat transfer without direct connection with main goal of this work, ignoring the fact, that the ANSYS Fluent solver uses these equations. I hope that author understands these equations and all quantities at least. Wouldn't it be magical? Final part of author's work contains its main content (23 pages). Author begins with geometry and mesh description where author follows from previous work and experiences. Then author performs a few numerical simulations focused on comparison of methods of heat transfer coefficient evaluation – determination of required total time solution, focused on comparison between two turbulent models, and also focused on simulations for different geometries. The part is closed by author's own final correlation for impinging swirling flow.

The work is typical work focused on CFD. Author shows his experience with creation of numerical model of real system using ANSYS CFD system, with numerical solving and interpretation of results. Author presents result as classical correlations as a relation between dimensionless numbers, and author also shows results in graphical form. The thesis is not so long and therefore contains not so much formal and factual errors and inaccuracies. Some of them I marked directly into text. I am not able to evaluate language purity of this work. Author accomplished the given tasks. With respect to the reasons above, I recommend the thesis to defence with evaluation

B (very good).

and I have only one simple additional question.

↔ Which parameters ( $d_m$ ,  $N_Q$ ,  $d$ ,  $S_W$ ) did you use during evaluation of equations (40 – 41, 46 – 48)?

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