DIPLOMA THESIS EVALUATION

Student´s name and surname: Nugzari Kardava

Name of the diploma thesis: Cavitation microjet and shock wave in a signal from impact load measurement

Supervisor of the thesis: Ing. Jan Hujer, Ph.D.

1. Diploma thesis evaluation

Evaluation	excellent	excellent minus	very good	very good minus	good	failed
Meeting the goal and fulfilling task of the thesis	x					
Quality of conducted survey		x				
Methodology of solutions		x				
Expert level of the thesis	x					
Merit of the thesis and its potential applicability of results		x				
Formal and graphic level of the thesis		x				
Student´s personal approach	x					

*Mark **x** in the corresponding box.*
Supervisor´s final evaluation is based on his/her overall subjective evaluation.
Grading is stated literally in the article no. 5, neither by a number, nor by a letter.

2. Comments and remarks on diploma thesis:

The diploma thesis covers a new method developed to identify and quantify an impact of individual phenomenons, as jet, splash and shock, during a single bubble collapse near a solid wall. The unique method is based on a measurement by PVDF sensors which are appropriate for this purpose. The student designed an experimental setup and proposed to apply a model based on "1/r law" for sound propagation. This model was used to joint the data from both PVDF sensors and signals analysis was done. Although the work contributes a lot in the field of cavitation research done at the university, it extends unknown questions and brings new ideas to be studied and investigated.

The thesis contains five chapters following from all tasks and goals assigned. The student brings a very good summary of the current state of knowledge in chapters "introduction" and "review of related literature". The chapter "methodology" describes in detail used devices, experimental setup, sensors and its calibration and finally signal processing. The chapter concerning results and analysis presents results for several ranges of stand-off parameters γ. The student gives an excellent description of phenomenons based on high-speed camera observation and analysis of the measured signal. I find that interpretation as a great benefit of this thesis. The student also comments problems that occurred during the experiment and that could help in ongoing research.

Regarding the linguistic and typographical level of work, I do not have any significant observation, just about bad-quality illustrations. Also, in some cases, the illustration descriptions could be more detailed.

3. Questions about diploma thesis:

(1) Could you briefly describe a method for generating bubbles you use? Can this method of bubble generation be shown in the p-T diagram?

(2) Formula (16) allows us to estimate the sensor resonance frequency. Unfortunately, the calculated value is wrong. Could you calculate the sensor resonance frequency correctly? Is the calculated value a real value? Is the real value affected by something?

(3) The experiment was done for several stand-off parameters in the range $0.8 \leq \gamma < 2$. Why not for range $\gamma < 0.8$? What do you expect that happens in case $\gamma < 0.8$?

4. Supervisor´s statement on results of the inspection carried out by the anti-plagiarism program in the STAG system:

The anti-plagiarism program included in the STAG system indicated no similarities with other documents.

5. Supervisor´s grading of the diploma thesis:

I suggest this work to classify as "Excellent minus".

Date: 17 June 2021, in Liberec

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Supervisor´s signature