DIPLOMA THESIS EVALUATION

Student´s name and surname: Mohammad Yousef Hdaib

Name of the diploma thesis: Experimental study of foaming agents in water and their application in the metal foaming.

Supervisor of the thesis: prof. Ing. Karel Fraňa, 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 work deals with the issue of determining the quality of foams for use in production technologies of metallic foamed materials. Using a suitable method of determining the quality of foams, it is possible to estimate the quality of the resulting materials.
The basic idea is to evaluate the image of the resulting foam and determine the quantitative ratio of the size of individual bubbles in the foams.
The work consists of setting up an experiment and designing a method for evaluating foams.
The work is very theoretical. The student approached the problem of describing the behavior of foam, which represents a typical two-phase problem with a free interface.
At the same time, the work is devoted to determining the appropriate concentration of a mixture of water and ethanol. As it was found in the work, only for a narrow interval of ethanol concentrations in water, a stable foam is formed, for which it is possible to further evaluate the foam quality.
The work is very beneficial for the management of product metallic foams.

The weak point of the work is mainly its formal form. Some conclusions of the experiments are too general and some results require deeper discussion.

3. Questions about diploma thesis:

Page 41 and 42: Graph 13 shows the effect of foaming time on bubble size? What exactly is plotted in the graph? Is this the maximum bubble size?

The number of bubbles and the size depending on the foaming time is given by only 3 points. Why not more points were measured when the evaluation method is fully automatic?

Why is the maximum tracking time of the generated foam in experiments limited to 55s?

Bubbles are formed not only by the gas flow, but also by the nozzle diameter. How does the nozzle diameter affect the stability of the foam and what effect does it have on the quality of the resulting foam?

Foam formation is also given by the conditions on the free surface resp. The solid surrounding walls will cause the foam to deform and thus be affected by the size of the bubbles and the cell layer of the foam. Has this effect of a solid wall been studied?

Will the resulting foam have only one layer or is there a bubble interaction between the layers?

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

According to the plagiarism tool in the STAG system, the match is evaluated as 0%.

5. Supervisor ´s grading of the diploma thesis: very good

Date: 17.06.2020, in Liberec

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Supervisor´s signature