



REVIEWER'S REPORT ON THE MASTER'S THESIS

Master's thesis title..... **Design of systems used in vehicles for military application**

Author **Bc. Maude Fouquet**

Reviewer **Ing. Václav Jirovský, Ph.D.**

Evaluation criteria and their classification

Fulfilment of the thesis requirements and goals..... F (failed)

Methodology a its application..... D (satisfactory)

Application of knowledge gained

by self-study and from professional literature F (failed)

Usage of groundwork and data from practice E (sufficient)

Professional level and contribution of the thesis E (sufficient)

Formal aspects of the thesis F (failed)

Further comments to the thesis:

The thesis is combination of two completely different topics as specified in the assignment. The first topic deals with methods of rigging an army vehicle, which is to be dropped off the flying airplane. The second topic deals with compliance review and risk analysis of an oxygen charging system. Whole thesis is presented on 46 pages of text distributed in five main chapters with number of graphically hard to distinguish subchapters.

Unfortunately, the presented thesis is quite hard to read due to two reasons:

1. very low level of English language - many of the sentences have had no sense until the moment, when the reviewer translated the words one by one to French and then read it in French. As a brief example can serve inappropriate application of several words: "burden" instead of load, "sector" instead of the mains supply, "resistance" instead of strength or resilience;
2. inconsistent text flow - the whole text looks like chronological but not logical presentation of the tasks, which were assigned at the company, where she had passed her internship. The 39 pages of work related to the topic of rigging a vehicle could be presented on a half of the space, if the student would present her works with "goal and solution" approach. For example, chapter numbered as 3.2.D.iv starting on page 22 contains some calculation, which could be understood as rotation of the car during the freefall, but with absolutely no

connection to preceding or following chapters and without any information, how were the calculations used. Furthermore, page 26 briefly describes realization of Python code to verify the behavior of the vehicle at the time of impact. This code is available in one two-page annex, but again, there is no clear description of inputs and outputs.

Even though the main topic looks interesting at the first sight, the application of predefined solutions (vehicle support and crush element) doesn't leave any space for student's engineering creativity, which shall be vastly integrated in the diploma thesis. Basically, the student only had to calculate a number of crush elements with defined behavior and number of tightening straps to support vehicle during landing process. The second topic deals with inspection of relevant documents supplied with the product and realization of what-if analysis for two undocumented situations.

Nevertheless, the only student's engineering approach could be found in chapter called "Verification of second step" with no reference to what is "second step". The chapter describes a simple experiment, which can be understood as a verification of the simplified calculation process of deformation of crush element used for minimizing the impact of vehicle landing on vehicle's structures. The description of the experiment is very brief - it lacks the answers to experiment specific "whys and hows" (i.e. how was the load released, how was the contact with crush element observed, why only six trials were performed, what was the angle of the crush element relative to vertical axis etc.).

The calculations presented in the thesis were often realized in MS Excel. Unfortunately, no Excel file is attached to the thesis and the text contains only the final results and tables (except the chapter 3.2.D.iv mentioned above). Especially the chapter 3.2.C dealing with binding of the vehicle to the landing platform refers to Excel table in the annex, which is just a screenshot of results. It is impossible to find out how the student obtained the final results.

As last, the thesis contains only four bibliographic sources. One is a link to the website, where the internship has been realized. The second is internet link to methods to tie equipment with ropes used for rock-climbing (unreferenced picture with force distribution form this single page is presented on page 14) and two other bibliographic sources refer to basic literature about mechanics. Overall, the thesis contains more unreferenced pictures, which originate in different bibliographic sources (i.e. pages 18, 21, 32, 33, 34, 40 etc.).

Finally, the overall content and quality of the thesis does not meet requirements for an average master's thesis, as the student has not proved engineering skills, which she shall attain during her studies. In addition, the thesis does not fulfill the assignment, where all the interface parts between the vehicle and crush element had to be designed together with manufacturing documentation (drawings). The required MS Excel file automating the rigging procedure for other vehicle is also missing. Thus, the reviewer recommends the complete revision of the thesis, where the student shall focus on engineering approach to the automated parametric procedure of the design of vehicle rigging process.

I do not recommend the master's thesis for the defence.

Summary classification of the master's thesisF (failed)

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reviewer's name

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reviewer's signature

In Prague September 8, 2017