

I. IDENTIFICATION DATA

Thesis title:	Mechanical Stability of Carbon fiber reinforced composite pipe for ion accelerator research facility
Author's name:	Sadig Ali Mohamed Salih
Type of thesis :	bachelor
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Process Engineering
Thesis reviewer:	Ing. Martin Dub, Ph.D.
Reviewer's department:	Department of Designing and Machine Components

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>How demanding was the assigned project?</i>	
The assignment is to study the behavior of the carbon composite tube under inner vacuum loading and radiation conditions. First, it must be stated that the topic is quite challenging for the bachelor thesis and is more like master thesis.	

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>	
The assignment is fulfilled.	

Methodology	correct
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
Methodology is correct. Author starts with the review, but it is too extensive (57 pages). It should be shorter and point out the important topics used in practical part. The experiment description, FE calculations, analytical calculation and results discussion follows.	

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 contains experiment, experimental data processing, FE calculations and analytical calculations. It is quite wide range for the bachelor thesis, and it must be evaluated positively. Author manages all these disciplines, although many of them are not a part of bachelor studies. Unfortunately, these parts are not connected and evaluated together. Author obtained strain in the tube from experiments. Then he performs FE calculation, but the loading is different, so the comparison is not done. Evaluated quantities are stresses and deformation. Author should compare strains in longitudinal and circumferential directions. Analytical calculation is also done, but it is not clear how the orthotropy of the material is considered. Furthermore, the loading of the tube by inner pressure only is misleading. The buckling analysis is also carried out, but the critical inner negative pressure is not determined.	

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 text range is too large for the bachelor thesis. It also contains lot of typing errors. The author did not read the work consecutively.	

Selection of sources, citation correctness	A - excellent.
<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>	

Citations are in standard form.

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.

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Questions:

- 1) Was the temperature in the chamber during irradiation measured?**
- 2) Recalculate the FE model with the loading conditions according to the experiment and compare the results (axial and circumferential strains).**
- 3) Explain the analytical calculation – how the orthotropy and multi-layered material is considered. Please recalculate it with the loading conditions similar to experiment/FE analysis and compare the results – outer atmospheric pressure has to be considered.**

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

Date: **18.8.2022**

Signature: