

I. IDENTIFICATION DATA

Thesis title:	Design modification of extruder of filament for 3D printing
Author's name:	Volodymyr Dudavskiy
Type of thesis:	bachelor
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Designing and Machine Components (12113)
Thesis reviewer:	Ing. Václav Čvančara
Reviewer's department:	Department of Designing and Machine Components (12113)

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	ordinarily challenging
<i>How demanding was the assigned project?</i>	
The project required the author to familiarize himself with the very specific area of filament extruder designs. Nevertheless, the project assignment was formulated in such a manner that it allowed the author to choose his own way.	

Fulfilment of assignment	fulfilled with minor objections
<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>	
As the modifications that increase the quality of the produced filament were proposed in the thesis, the assignment should be considered as fulfilled. On the other hand, more possible improvements could have been discussed and it is possible that some of the implemented improvements will develop problems over time. For example, since the material will fall freely to the ground without any arrangement, I believe there is a real risk of knots forming.	

Activity and independence when creating final thesis	C - good.
<i>Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.</i>	
At the beginning of the project, author was very active and in time started to find the necessary components. However, as the project progressed, the work enthusiasm waned and at the end he was in a time crunch.	

Technical level	D - satisfactory.
<i>Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?</i>	
Author should be credited with the ability to both, invent and find simple solutions. However, as a future engineer, he should put more attention on the quality and functionality of the implemented modifications.	

Formal level and language level, scope of thesis	B - very 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>	
Although author tends to slip into informal statements and sometimes a formal deficiency appears (for example in Table 6 the uniform number of decimal places is not observed), the language and formal level of the work is very good. It should be also mentioned that the author wrote the thesis in a language which is not his native language.	

Selection of sources, citation correctness	B - very good.
<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>	
The bibliographic citations are complete and meet the standards. 59 references prove author's active attitude, most of the sources are correct, the exception is for example reference 33, which I do not consider reliable.	

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.

The structure of the thesis is logical and organized. However, the chapter, where author describes various extruder designs, could have been longer and more detailed, while the first two chapters, where author describes different types of materials and technologies, are not that much relevant to the actual aim of the work.

Number of decimal places in the table in the Appendix A is inconsistent and meaningless.

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.

At first glance the thesis looks nice and organized, but in terms of content it is too superficial, and it lacks the engineering approach and thinking.

Question 1: In some serial production of sheet metal parts to maintain a constant speed of unwinding material in the production line, while the revolutions of the spool are being changed, devices called material accumulators could be used to solve the problem. Could a similar material accumulator solve the speed difference problem mentioned in the thesis? How could it look like?

Question 2: Author concludes the thesis by saying that his work "was just a small part that had to be done to get more ecofriendly filament production". What next steps would he suggest?

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

Date: **5.2.2024**

Signature: 