

I. IDENTIFICATION DATA

Thesis title:	Prospects of bio-butanol as fuel for small machinery
Author's name:	Ramidi Vishwas Reddy
Type of thesis :	Master's thesis
Faculty/Institute:	Faculty of Mechanical Engineering
Department:	Department of Automotive, Combustion Engine and Railway Engineering
Thesis reviewer:	Martin Pechout
Reviewer's department:	Department of Vehicles and Ground Transport, Czech University of Life Sciences

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	A
<i>How demanding was the assigned project?</i>	
The assignment is up to date concerning an actual topic of utilization of butanol in small SI engines. As it contains both extensive literature review and conducting of experiments and evaluation work poses demanding topic appropriate to master thesis.	

Fulfilment of assignment	A
<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>	
Student fulfilled the assignment. Both main parts of the thesis, review and experimental results summary were successfully done. Despite the thesis extent exceeds typical range, no part is remarkably omitted.	

Methodology	A
<i>Comment on the correctness of the approach and/or the solution methods.</i>	
The approach of the student was correct. Student followed the assignment and covers main topics related to butanol usage in SI engines in its review part and experimentally obtained results by engine operation utilizing various mixtures of gasoline and two butanol isomers. Unfortunately, some more information could be obtained from experimental part (e.g. change in overall general efficiency).	

Technical level	B
<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>	
All important topics related to two butanol isomers, n-butanol and iso-butanol, are described as they were addressed in available literature. Experimental setup description provides all basic data concerning the procedure. Unfortunately, some more benefit could be obtained by addressing efficiency change and/or variation of air to fuel ratios for various blends.	

Formal and language level, scope of thesis	C
<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>	
Language level of the thesis is appropriate and only few expression and grammar imperfections can be found (e.g. usage "power plant" term instead of electric generator, "over the nine steady regime", "unburned hydrocarbon" in singular, "inde" instead of idle etc.).	
Formal aspects are largest weakness of the thesis. The four pages Discussion and Conclusion (in singular) are exhaustively long and such style summary would be beneficiary rather at the end of review section. Individual paragraphs are also very long (especially in results description part) so uneasy to read. Many units lacks their upper indexes, there is usually no space present between value and units and at some places are units omitted completely (for instance in Table 11 for each cycle duration).	
In many results listing tables are present multiple cells filled with repeated text (e.g. 12, 13 and 14) and font is deformed (narrow) while there is enough unused space next to the text and values. The font used in data series legend is usually very small and thus difficult to read while repeated information without an added value is included. Reported concentrations are	

usually same as reported in graphs (duplicity) and colours used do not follow any logical fuel based sequence so they are difficult to comprehend and compare individual fuels.

Selection of sources, citation correctness

A

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?

The sources were selected correctly and also cited in proper way.

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 skilfulness, etc.

Student has proven ability to process available literature on selected topic and create a comprehensive review. Also by conducting, data processing and evaluation the appropriate obtained skills are proven.

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.

Thesis is basically well done, but formal level shortens its added value significantly.

Questions:

What could be possible mechanism of increased HC during idle while CO has been decreased (as mentioned on page 92)?

How can be worsened engine startability overcome when high butanol share mixtures are used?

The grade that I award for the thesis is **B**.

Date: **17.8.2022**

Signature:

