

I. IDENTIFICATION DATA

Thesis title:	Pneumatic System for Gear and Clutch Control
Author's name:	Sai Kalyan Achanta
Type of thesis:	master
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Automotive, Combustion Engine and Railway Engineering
Thesis reviewer:	Ing. Michal Jasný
Reviewer's department:	Department of Automotive, Combustion Engine and Railway Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	ordinarily challenging
<i>How demanding was the assigned project?</i>	
The work contained within the thesis consisted mostly of utilizing the curriculum of master studies, it did not require coming up with any new technical solutions. However, it was a cooperation and development for a commercial partner which increased the demands on student.	

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>	
I consider the assignment as mostly fulfilled. Mr. Achanta worked on all main thesis parts (design of the pneumatic system for clutch operation and a test bench for this system, Simulink simulation of the clutch dis/engagement and gearchanges). I have no remarks regarding the first part – mechanical design of the pneumatic system. However, in the following parts I miss a more specific description of what is the goal and how it can be validated that it has been fulfilled. And at the end of these parts verification that these requirements have been met. All these seem quite vague to me. I understand that due to the cooperation with commercial partner, the amount of data approved for publication was limited. However, I would expect this fact to be at least mentioned or commented in the thesis, or the limitations described.	
E.g., at page 38: Requirements for the Clutch Actuation Mechanism – “Capable of achieving faster actuation speeds and high repeatability for cyclic usage.” Faster than what? And how much is “high repeatability”? Or at page 53: Requirements to perform the SIMULINK simulation – “To simulate the gear actuation for an automatic vehicle.” What exactly is an “automatic vehicle”? Or at page 44 “The control of the solenoid valve provides much better control over the clutch actuation.” – again, compared to what?	

Activity and independence when creating final thesis	B - very 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>	
Mr. Achanta worked very actively on his thesis and required little guidance from my side. He also regularly reported his progress. However, the final thesis was sent to me for review quite recently before the submitting deadline.	

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>	
The thesis shows that the author understands the topic at least on the level of basic principles and that he had to do some research for his design. However, the theoretical part could be more precise and in-depth in descriptive parts, especially in the section about clutches which is taught during the master studies. This relates to both text and images. The calculations always declare input values which is appreciated. Some statements were not fully understandable for me such as “The gearbox is designed to have a maximum number of interchangeable gears for ease of manufacturing.” on page 35. I miss the scheme of the test bench. I would also appreciate more elaboration and commentary regarding the Simulink results.	

Formal level and language level, scope of thesis**C - good.**

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?

The thesis uses readable English, which could be maybe more technical sometimes. The thesis is logically structured. In the appendix, chosen variants are highlighted. Unfortunately, many graphs are hard to read because of the small font (especially in Simulink chapter 3.4). Some images are not necessary and bring no additional value (such as figures 46 and 57).

Selection of sources, citation correctness**C - good.**

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?

Literature is sparsely cited throughout the theoretical part of the thesis. Only three pictures have their source listed. Especially information with numerical values requires citations such as "So, the time of a clutch pack engagement is short, usually under one second, during which time a large amount of torque is transferred until both surfaces are rotating at the same speed." at page 5.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

I respect Mr. Achanta for the amount of work he has done in a limited amount of time. I believe he learned quite a lot during the cooperation with an industrial partner. However, I would expect better technical detail and more precise task definition and evaluation.

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

Date: **18.1.2023**

Signature:

