

I. IDENTIFICATION DATA

Thesis title:	Simulation of Transmission Error Using FEM
Author's name:	Yujin Kim
Type of thesis:	master
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Automotive, Combustion Engine and Railway Engineering
Thesis reviewer:	Lukáš Kazda
Reviewer's department:	Department of Automotive, Combustion Engine and Railway Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	extraordinarily challenging
<i>How demanding was the assigned project?</i>	
The goal of the assigned project was very ambitious. Trying to simulate a phenomenon that is usually simulated by other tools than FEM. The student had to build a new model from scratch with almost no previous experiences with Abaqus software. It was also clear that the simulations would be very time consuming. With regards to it, I evaluate the assignment as extraordinarily challenging.	

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>	
Student fulfilled both theoretical and practical parts of the thesis assignment	

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>	
After initial phase of lower activity, the thesis was consulted weekly and later sometimes almost on daily basis. The student was able to work independently without any problems.	

Technical level	B - very good.
<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 procedure which the student chose is appropriate. The thesis is on high level from technical point of view. It's clear though, that the student is not very experienced in creating mesh of FEM model. Some elements are unnecessarily skewed others are small due to not neglecting chamfers.	

Formal level and language level, scope of thesis	A - excellent.
<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 thesis is organized in a logical way and the structure is clear, so anyone with technical knowledge who wasn't acquainted with the work can understand it. All figures and tables are well described and labeled.	

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>	
The student refers to multiple research papers in theoretical part of her thesis. The selection of sources is adequate. Students work is clearly distinguished from work of others. Bibliographical citations meet standards.	

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 thesis was an exploration of potential use of FEM in predicting transmission error. The student built a new model that can be further improved. The results of the simulations aren't precisely matching real measurements since it's still a simplified model, but basic trends can be visible.

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.

The goal of the thesis was extremely demanding, and the student clearly had a struggle to successfully finish it given all the circumstances. However, she made a robust theoretical research on possible methods of predicting transmission error. Then she continued step by step from making the simplest model to a model of an assembly. The data measured on a test stand and data from FEM model were expected to be more alike.

Could you suggest other ways of modelling the assembly model than simple solid elements? Make a few examples of entities that can be used to simplify the model if possible.

Would you recommend using this method any further? If so, what would you specifically recommend to improve in future work on this model?

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

Date: **18.8.2020**

Signature: