THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Simulation ofT ransmission Error U sing FEM**
Author's name:	**Bc. Yujin Kim**
Type of thesis :	master
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	U12120
Thesis reviewer:	Ing. Michal Vasicek, Ph.D
Reviewer's department:	Porsche Engineering Services s.r.o.

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**challenging**
How demanding was the assigned project?	
I do consider assignment of the thesis as challenging due to the following reasons: • Requires extended knowledge of the gear design. • Requires extended knowledge of the FEM.	

Fulfilment of assignment	**fulfilled**
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.	
Assignment was fulfilled completely at a high level. I do appreciate thorough description of steps and decisions made and its justification.	

Methodology	**correct**
Comment on the correctness of the approach and/or the solution methods.	
As the assignment required, development of the topic has been made step-by-step in order to cover both advantages and disadvantages of a method and its evaluation on different levels of model complexity. It is clear that student utilized such approach in the best way also for herself and well extended her knowledge.	

Technical level	**B - very good.**
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?	
All the steps made are clearly described and discussed. Modelling approach and options of a used FEM software were chosen correctly and well balance ratio of model accuracy and computational resources. The only few recommendations/missing information I have: • Energy balance graph of individual simulations • Was a simulation time-step somehow limited (mass scaling engaged)? • Have any mesh size sensitivity study been made?	

Formal and language level, scope of thesis	**A - excellent.**
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?	
All the formal, stylistic and linguistic requirements were met at a high level. Work is very comprehensive, illustrative and easy to read.	

Selection of sources, citation correctness	**A - excellent.**
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?	
All the requirements were met at an excellent level.	

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.

Questions for defense:

1. Is it feasible to use implicit solver for the same simulation? Are there any limitations?
2. What changes need to be made to introduce gear model with real tooth surface and calculate TE?
3. Coarsening of the mesh doesn't seem to have significant benefit in a models for explicit solver. Why?
4. How could a stiffness of bearings be introduced to the third model?

The grade that I award for the thesis is **A - excellent.**

Date: **6.9.2020**   Signature: Michal Vasicek