REVIEWER'S OPINION OF FINAL THESIS

I. IDENTIFICATION DATA

Thesis name:	**Development of a virtual toolchain for Toyota Hybrid System powertrain NV assessment**
Author's name:	**Bc. Ivo Vodicka**
Type of thesis :	master
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Department of Automotive, Combustion Engine and Railway Engineering
Thesis reviewer:	Jeroen De Smet
Reviewer's department:	Toyota Motor Europe PT1 MBD

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment — **challenging**

Evaluation of thesis difficulty of assignment.

The topic of the thesis requires deep understanding of the mechanisms and physics as well as good proficiency of several simulation tools and softwares.

Satisfaction of assignment — **fulfilled**

Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.

Ivo managed to get the correct understanding of the problematics tackled in this project. He could proceed in an independent way delivering some valuable output for our further developments.

Method of conception — **correct**

Assess that student has chosen correct approach or solution methods.

Given the complexity of the project Ivo sometimes demonstrated difficulties to prioritise the problems faced and communicate them in an effective way. He always kept good and close communication with supervisor in order not to divert too much from the plan and approached the afore mentioned items in a pro-active way.

Technical level — **B - very good.**

Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.

Ivo learned quite quickly and independently the several simulation tools used in our group related to the assigned project. Additionally he broadened his understanding with literature study about the project topic as well as general technical topics related to the activities in MBD group.

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

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

In general good level, Ivo needs to pay some attention to the structure of his writings, similar to his oral communication.

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

Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.

All the study work and background information was correctly citated in the thesis. The results described are the outputs of his investigation work.

Additional commentary and evaluation

ČVUT
ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE

REVIEWER'S OPINION OF FINAL THESIS

Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.
Ivo finalized a project involving theoretical study of the complex matters as well as simulation software tools understanding and model improvement proposal based on physical testing on test vehicle and post processing of these data drawing the relevant conclusions. Through that he could cover a wide range of the required competencies for an engineer in Automotive R&D. He could proceed in an independent way delivering valuable output for our further developments, of which some improvement proposals were already implemented in the simulation toolchain thanks to his pro-active approach.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.

1. What was from your experience your biggest challenge during this thesis project and how would you handle it differently next time?
2. NVH being highly subjective performance, do you believe it is feasible to tackle it in a simulation (MBD) environment?
3. What else would be required to bring NVH performance to a simulation environment, referring to question 2?

I evaluate handed thesis with classification grade **B - very good.**

Date: **28.1.2020**

Signature: Jeroen De Smet