

I. IDENTIFICATION DATA

Thesis name:	Detection of high particulate matter emitters
Author's name:	Yuvanesh Suresh
Type of thesis :	Master's
Faculty/Institute:	Faculty of Mechanical Engineering
Department:	Department of Automotive, Combustion Engine and Railway Engineering
Thesis supervisor:	Michal Vojtisek
Supervisor's department:	Department of Automotive, Combustion Engine and Railway Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	Experimental research; challenging
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Evaluation of thesis difficulty of assignment.

The goal of the thesis was to analyze data from a roadside measurement campaign, with the goal to assess the feasibility of individual instruments to detect occurrence of vehicles with excess emissions of particulate matter. The topic is highly interdisciplinary and requires, in addition to the understanding of internal combustion engine technology, some command of aerosol science basics.

Satisfaction of assignment	Fulfilled to its entirety, excellent.
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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.

The student has analyzed data from measurement campaign at the exit of the Veleslavín bus terminal in Prague. Signal to noise ratio and detection limit was evaluated for three particle measurement instruments, of which two were selected for further work. Several methods of signal pre-processing (rolling maximum, rolling average, peak area) were evaluated, and fuel-specific emissions factors calculated. Correlation between emission factors calculated from two instruments and between results of repeated tests for vehicles detected two times are presented and discussed. In addition, particle size distributions and their correlation with high emissions were assessed, results for each vehicle compared with the numerical value of the type approval emission limit, and results for each Euro category plotted, showing high emitters.

Activity and independence when creating final thesis	Excellent
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Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.

The student has shown a professional attitude and worked diligently and independently, requesting a consultation each time when major progress was made or a difficulty was encountered. He came well prepared for each consultation, having done all the work that was agreed upon, and many times, he has researched external sources of literature. Mr. Suresh has participated in measurement campaigns and instrument maintenance, showing an interest and a positive attitude towards the experiment.

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

The thesis topic is that of experimental research. The writing demonstrates Mr. Suresh's knowledge in several areas which receive only a brief coverage in the curriculum - particle emissions, aerosol physics, signal processing – as well as acquisition of basic scientific skills, including research, experimental design, data processing, critical reasoning, and technical writing.

Formal and language level, scope of thesis	Professional
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Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

The writing is coherent, clear, the use of English is appropriate, free of obvious errors, and corresponds to professional technical/engineering English. The text is well structured and organized, graphics are relevant and well readable.

Selection of sources, citation correctness

Appropriate, correct.

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.

The sources were mostly selected by the student and in my opinion are well chosen and representative. The citations are correct.

Additional commentary and evaluation

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.

Please insert your commentary (voluntary evaluation).

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation.

The thesis has the quality of a professional engineering report. It is technically correct, information is presented in a logical order, selection of literature is appropriate, observations are competently described, opinions are supported by literature or own data, writing is of good quality. The student has mastered a specific area of interdisciplinary nature, and demonstrated experimental skills, technical knowledge, and mainly, the ability to find sources and work independently, all at a level corresponding to an achieved master's degree.

I evaluate the thesis with classification grade **Excellent**.

Date: **August 31, 2018**

Signature:

