

I. IDENTIFICATION DATA

Thesis name:	Co-Simulation of distributed flexibility coordination schemes
Author's name:	Markus Stroot
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Control Engineering
Thesis supervisor:	Thomas Offergeld, M.Sc.
Supervisor's department:	Electrical Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>Evaluation of thesis difficulty of assignment.</i>	
Markus was asked to implement a simulation environment for coupling multi-domain simulations of energy systems with control and optimization structures. The topics covered by his thesis were very diverse and ranged from evaluating software architectures to mathematical optimization of energy systems. Overall the thesis comprised of several challenging tasks, each of which required expert knowledge in its domain.	

Satisfaction of assignment	fulfilled
<i>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.</i>	
Markus fulfilled the assigned tasks to full satisfaction. Markus displayed exceptional creativity in developing solutions to the challenges encountered during realization of the designed simulation environment. Markus showed particular interest in extending the simulation environment with valuable additional functionality while also implementing a potential use case for demonstration of the environment.	

Activity and independence when creating final thesis	B - very good.
<i>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.</i>	
Markus presented his work at regular intervals in a comprehensible way and always offered his own ideas of how to tackle specific challenges during consultations showing a great deal of independence. Markus could improve upon his time scheduling, however there were no major discrepancies between planned and actual completion of intermediate thesis milestones.	

Technical level	A - excellent.
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
Markus' thesis topic was a combination of several domains of electrical and software engineering. Markus researched relevant literature diligently, identifying state of the art of similar concepts in scientific publications. He assessed the solutions outlined in these publications and chose sensible approaches of integrating existing knowledge into his work.	

Formal and language level, scope of thesis	A - excellent.
<i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	
Markus' thesis shows excellent command of the English language in a scientific context. His phrasing was well chosen throughout the thesis and the thesis showed no shortcomings in formal aspects.	

Selection of sources, citation correctness	B - very good.
<i>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</i>	



SUPERVISOR'S OPINION OF FINAL THESIS

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.

Markus based his thesis upon different comparable concepts that were published in the scientific community during the last few years. He screened the very high number of publications on the topic of energy system simulation and identified a sufficient number of sources that were most relevant to his own thesis, however he could have identified a wider variety of sources overall. He correctly distinguished his own work from existing related work and cited his sources to full satisfaction.

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.

The goals of the thesis were achieved to full satisfaction. In some aspects the work done during the thesis goes beyond the expectations formulated in the task description. Markus showed particular proficiency in the software engineering aspects which were at the center of the thesis while also developing a good understanding for the domains of energy system simulation and mathematical optimization. Markus was always determined to identify good solutions to the issues he encountered and required minimal aid from his supervisors.

He confidently defended his thesis in a comprehensible way with excellent command of English in front of his peers and supervisors.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Overall Markus proved to be a very capable and motivated student with the ability to quickly acquire expert knowledge in topics new to him. The degree of independence Markus showed in overcoming challenges of high complexity along the way is a commendable virtue.

I suggest the classification grade A - excellent.

Date: 26.8.2020

Signature: