

## I. IDENTIFICATION DATA

<b>Thesis title:</b>	<b>Survey about Current State of Art of Electromobiles and Future Development Trends</b> <b>Survey about Current State of Art of Electromobiles and Future Development Trends</b>
<b>Author's name:</b>	<b>Vyas Shubhang.</b>
<b>Type of thesis :</b>	master
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Department of Electric Drives and Traction
<b>Thesis reviewer:</b>	Ing. Jan Bauer Ph.D.
<b>Reviewer's department:</b>	Department of Electric Drives and Traction.

## II. EVALUATION OF INDIVIDUAL CRITERIA

<b>Assignment</b> <i>How demanding was the assigned project?</i>	<b>ordinarily challenging</b>
Topic of the thesis is ordinarily challenging it consists of survey and simulation of EV.	

<b>Fulfilment of assignment</b> <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>	<b>fulfilled</b>
All points of the assignment were fulfilled. I would expect more detail in some points (2, 4, 6) and less in another (3).	

<b>Methodology</b> <i>Comment on the correctness of the approach and/or the solution methods.</i>	<b>correct</b>

<b>Technical level</b> <i>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?</i>	<b>E - sufficient.</b>
<p>From the first view the thesis seems to be on good level, but after detailed reading I have to conclude that some parts of the thesis i.e. chapter 2 is full of incorrect formulations and errors that show that author does not understand the problematics described in thesis. As example I don't understand why author deals with 1 phase AC machines and problems of their run up. Secondly author's statement that control of the PMSM is more difficult than of IM and that is why IM is best solution for EV prime mover is curious, compared to survey in chapter 1. Pythagorean depiction described by Fig. 5.2 is also very curious while labeling of angles with trigonometric functions. Own notation and inconsistency of variables makes the thesis difficult to read and understand (RPS instead of omega, rd as radius, d and s as distance, etc.. Labels of cells in appendix show this inconsistency too (Power in kWh, Energy in Watt). Same is obvious from notation of variable units sometimes in lower case sometimes in uppercase. Concerning the simulation model some equations in chapter 5 are not making sense but looking into excel sheet show that implementation is correct. Quality of the model is decreased by the fact that author has neglected possible acceleration and deceleration caused by the traffic during the simulated route, that is not error at all but it decreases variability of conducted simulations.</p>	

<b>Formal and language level, scope of thesis</b> <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>	<b>E - sufficient.</b>
<p>In the text are many typos showing that author has not invested time to proofread the text and correct them. These typos are decreasing the quality of the text itself (sleep instead of slip of IM, regenerative breaking instead of braking). Moreover quality of some pictures is very poor. In the thesis is mixture of handmade and computer made figures.</p>	

<b>Selection of sources, citation correctness</b>	<b>D - satisfactory.</b>
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*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?*

Literature is well cited, but some sources are questionable. I am not sure if Electrical4u is valuable source.

### **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.*

I evaluate the thesis as unbalanced. Some chapters are from my point of view very detailed and some chapters (2) are proving that author does not understand what he is writing. The text of the thesis is raw, several proofreading by author would help it.

On the other hand, I have to commend the author for his approach to solving the thesis, it was clear from the consultations that he was ready to go and that he was really researching the issue. I also commend the author for adding to his work on his own initiative an economic comparison of return on investment in EV and hybrid.

The chapters dealing with state of art are well done, but the chapters dealing with some technical issues are showing basic ignorance of the author.

The grade that I award for the thesis is **E - sufficient**.

#### **I have several questions to the thesis:**

Defend your statement that IM is better candidate for EV than PMSM and explain what difficulties you will have with FOC of both motors.

Can you show steps of calculation of equation 5.5?

On page 19 there are mentioned control methods used for electric drives explain what does they mean?

Explain principle of regenerative braking in Fig. 2.14

Date: **27.8.2019**

Signature: