



Master thesis opponent's review

Master thesis: Algorithm for optimal voltage level at Krasíkov substation operating reactive power equipment available.

Author: **Bc. Pedro Bazurto**

Thesis supervisor: **Ing. Pistora Martin**

Thesis opponent: **Ing. Lavr Vetoshkin**

Rating (1 – 5)
(1 = best; 5 = worst):

1. Fulfillment of assignment requirements:	<input type="text" value="2"/>
2. Systematic solutions of individual tasks:	<input type="text" value="2"/>
3. Ability to apply knowledge and to use literature:	<input type="text" value="1"/>
4. Thesis formal and language level:	<input type="text" value="2"/>
5. Thesis readability and structuring:	<input type="text" value="2"/>
6. Thesis professional level:	<input type="text" value="1"/>
7. Conclusions and their formulation:	<input type="text" value="2"/>
8. Final mark evaluation (A, B, C, D, E, F):	<input type="text" value="C"/>

verbal:

Brief summary evaluation of the thesis (compulsory):

The language and formal aspects of the thesis are fine. The chosen topic is industry related. The thesis was written in collaboration with the grid operator, making the work more practical. However, there are a few formal shortcomings in the text. First, there are typos or mistakes in equation (3.1) stator voltage in the q-axis. Also, some typos in the text (e.g. p. 60). Secondly, many figures are presented as screenshots, not as software-generated graphs. For instance, in figures 4.11 and 4.12 it is hard to see what exactly the figures depicted. Furthermore, the axes are missing labels. In my opinion, the student demonstrates quite proficient knowledge of Matlab, so he could do a better job creating figures. The last chapter is quite confusing for the reader. Section 4.3 is named optimal tuning of the algorithm. Nevertheless, the reviewer could not find criteria of optimality and, more importantly, objective function and the steps that the student made to reach optimal parameters for his algorithm. The student proclaims that the system shows adequate results. However, there is no evidence that he did find optimal parameters or that it is just random values. Figures 4.10 and 4.13 show that the system responds to disturbance and reaches reference levels in a few seconds. However, it is expected from PID controller, and the author did not properly describe the steps for PID tuning.

The overall text quality is fine, and the theoretical description of the problematics is decent. However, the student's task was to create an algorithm and find optimal tuning. The part about



optimal tuning is most confusing. There is a little description of how the optimal tuning was found nor the algorithms used. Therefore, the final grade is C (good).

Questions:

1. How did you find optimal parameters for your algorithm?
2. What objective function did you use? Did you consider the time response or overshoot of PID controllers?

Date: 14.06.2022

Signature:



Notes:

- 1) The total thesis evaluation needn't be determined by the partial evaluations average.
- 2) The total evaluation (item 8) should be from the following scale:

excellent	very good	good	satisfactory	sufficient	insufficient
A	B	C	D	E	F