



Master thesis supervisor's review

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

Author: Pedro Bazurto

Thesis supervisor: Ing Martin Pistora

Rating (1 – 5)
(1 = best; 5 = worst):

- | | |
|--|--------------------------------|
| 1. Fulfillment of assignment requirements: | <input type="text" value="1"/> |
| 2. Self-reliance and initiative during the thesis solution: | <input type="text" value="1"/> |
| 3. Systematic solutions of individual tasks: | <input type="text" value="1"/> |
| 4. Ability to apply knowledge and to use literature: | <input type="text" value="1"/> |
| 5. Collaboration and consultations with the thesis supervisor: | <input type="text" value="3"/> |
| 6. Thesis formal and language level: | <input type="text" value="3"/> |
| 7. Thesis readability and structuring: | <input type="text" value="3"/> |
| 8. Thesis professional level: | <input type="text" value="1"/> |
| 9. Conclusions and their formulation: | <input type="text" value="2"/> |
| 10. Final mark evaluation (A, B, C, D, E, F): | <input type="text" value="B"/> |

verbal:

Very good

Brief summary evaluation of the thesis (compulsory):

The thesis deals with a current topic of voltage control at transmission system, which becomes all the more important with the penetration of decentralized resources and phase-out of the central power plants connected to the transmission system. Student successfully created a model of the 400 kV substation Krasíkov and the devices connected to it. The model demonstrates successful cooperation of all the devices, optimally utilizing the VSR where the reactive power range of the synchronous machines are (nearly) depleted.

Unfortunately, the optimizing algorithm is not extensively described. Instead, it's embedded in the reactive power controllers of each device. That would only work if all the devices communicated with each other.

The conclusions of the thesis reflect the aforementioned statement. They, however, fail to produce recommendations for further study or a practical rollout.

In general, the thesis is at a very high professional level, close to practical use. It meets all the guidelines. Therefore, I recommend it for oral defence.



Question: Based on your simulations, can you draw a recommendation for further reactive power sources to be installed in the system? Would you recommend installing devices with continuous regulation (like synchronous condensers) or discrete regulation (like VSR)? Why?

Date: 14th July 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