CZECH TECHNICAL UNIVERSITY IN PRAGUE
Faculty of electrical engineering
Technická 2, 166 27 Prague 6, Czech Republic

Master thesis opponent's review

Master thesis:	**Feasibility Study to Implement a High Voltage Direct Current Transmission Link**
Author:	**Karol Patricia Cruz**
Thesis supervisor:	**Ing. Miroslav Vítek, CSc.**
Thesis opponent:	**Ing. Jan Švec, Ph.D.**

	Rating (1 – 5) (1 = best; 5 = worst):
1. Fulfillment of assignment requirements:	2
2. Systematic solutions of individual tasks:	1
3. Ability to apply knowledge and to use literature:	1
4. Thesis formal and language level:	1
5. Thesis readability and structuring:	1
6. Thesis professional level:	1
7. Conclusions and their formulation:	1
8. Final mark evaluation (A, B, C, D, E, F):	**A**
verbal:	**excellent**

Brief summary evaluation of the thesis (compulsory):

The student fulfilled all the assignment requirements. The thesis has a good structure with all the necessary chapters. The theoretical chapter about HVDC is a well done brief summary of all the main technical and economic aspects of different HVDC technologies. I must appreciate very much the chapter about general design considerations which includes many basic calculations for conductors, towers and converters choice. Even if the calculations are not sufficient for a real design, the author showed she is able to think about lots of important technical details. The economic part tries to compare different proposed HVDC lines versions from the investment and operational costs viewpoint. Although it was probably very difficult to find or estimate the cost heights, I consider this chapter as a properly done too. The thesis satisfies all the formal requirements. I appreciate the thesis as a nice proposal of a project possible in future year in European power systems.

Questions:

1. Can you explain the relation (35) on the page 52 – mainly the constants 0.2 and 0.8?
2. Can you evaluate the HVDC line proposal impact on the Czech ES?
3. Can you compare the HVDC line proposal with phase-shift transformers currently installed in 400 kV substation Hradec on the boarder-crossing lines to Germany?
4. Do you think the version with a new parallel corridor is more probable to be accepted than the version with high “supertowers”?

Date: 7th June 2017 Signature: