



Bachelor thesis opponent's review

Master thesis: Wind Energy; A Sustainable Support for Electricity Shortages in Lebanon
Author: Mahmoud Azhari
Thesis supervisor: Ing. Ghaeth Fandi, Ph.D.
Thesis opponent: Ing. Martin Čerňan

Rating (1 – 5)
(1 = best; 5 = worst):

1. Fulfillment of assignment requirements:	<input type="text" value="3"/>
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="3"/>
5. Thesis readability and structuring:	<input type="text" value="3"/>
6. Thesis professional level:	<input type="text" value="2"/>
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: Good

Brief summary evaluation of the thesis (compulsory):

The work focuses on the use of wind energy to cover the shortage of electricity in Lebanon. The introductory part of the thesis focuses on a brief overview of renewable energy technologies. The following chapter 2. Methodology does not fit completely into the context of the work, it is rather an assumption that should have been presented in the case study. Furthermore, the work is followed by a research part focused on the technology of wind power plants. The practical part of the work consists of a valuable description of the current situation in the Lebanese energy sector. Within this part, the Lebanese energy system is introduced, problematic aspects are identified and a starting point is proposed in the form of the use of wind power plants in selected areas and in the form of other measures. The areas were selected based on the analysis of meteorological data. At the end of the thesis, a simplified case study for a wind farm is created, proving the potential of using wind farms. The work, especially in the introductory part, could be solved more systematically. I especially appreciate the work in Chapter 5. From the formal and linguistic point of view, it is possible to find reproaches in the work (for example, the divided figure 1, the description of figure 4 is on the next page, ...). In the work I did not find in more detail point 2 of the assignment: Environmental impacts of thermal power plants - it is very briefly mentioned in the first paragraph of the introduction. I therefore recommend the thesis for defense with a rating of C (Good).



Questions:

1. Why is the effective capacity for Hraiche power plant higher than capacity (Table 1)?
2. To what extent is the distribution / transmission system ready to connect new sources in the considered areas?

Date: 21.1.2021

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