Review by opponent of the Diploma thesis

Topic:	**Designing parallel working wind power station in South Kazakhstan**
Author:	**Bc Assylbek Igissenov**
Scientific advisor:	**Ing. Július Bemš, Ph.D.**
Opponent:	**Jan Gerstberger**

Thesis is covering problems of wind power potential and development of wind power park In South Kazakhstan illustrating technical and economic feasibility on one selected site. In the first part of the thesis Author described the reasons why the wind power plants should be built in South Kazakhstan as well as the political and natural conditions. In the second part there is described technical background in detail. The third part describes theory of economics evaluation and puts technical and economic background together into the financial model. The last part is dedicated to sensitivity analysis with detailed description of its outputs as well as detailed description of probability of happening.

In my opinion, instructions present in thesis specification sheet (Zadání diplomové práce) have been fully met.

The appearance of the thesis is on the high level, the frequency of typos is low.

Author of the thesis managed to replace crucial economical inputs which are not publicly available by statistical numbers published by agencies such as IRENA or IEA. Author realized that these inputs taken from the agencies may be very rough or even misleading and described that the uncertainty could be partially eliminated by proper interpretation of sensitivity analysis.

I don’t think that the thesis itself is 100 % practically useful, but author showed that he can think about the things connected with economical evaluation of wind power construction and operation. With access to proper information the author will be able to extend the model and properly evaluate wind energy investment opportunities.

I recommend grade this thesis

A – excellent

using the ECTS grading scale and I recommend work for defense.

I have several questions:

1) In Chapter 2 you used roughness coefficient. Could you please give us very briefly examples of roughness coefficients in different types of landscapes?
2) In the Energy production evaluation chapter there is mentioned noise level. Do you know to which point is referred noise level?
3) In the chapter 2.4.1 there is mentioned distance between turbines. Why there is an “up to” distance?
4) In the costs analysis on the page 43 there is mentioned that maintenance and repair costs are variable – dependent on energy production. Could you tell how dependent the maintenance and repair costs are (e.g. production will be 50 % of assumed so maintenance costs will be xx % of assumed)?

Prague, June 5, 2017
Jan Gerstberger