

Posudek recenzenta na diplomovou práci Andrey Skripnikov

The main goal of diploma thesis with the name „Power Supply of Long-Distance Gas Pipeline's Along the Line Consumers“ was to describe current support scheme of renewable energy sources in Russia and to compare current solution for power production with alternative one possibly based on renewable energy source.

I find the theme of work as were interesting especially in Russia where current use of renewable sources is close to zero as domestic fuels are abundant and cheap. But as seen all around in world it is only a question of time when renewables will find its role in Russia as well.

In first chapter author describes current situation of long-distance pipelines in Russia. I would appreciate if the beginning would be more general about consumption of energy in Russia and its transport, prices to give some beginning picture for situation we are not very familiar with. Author start with only one page and on next page describes current status of consumption point which I later subject to economic evaluation. To add, author describes current situation of electricity production on this off-grid site. At table one is first critical input to calculation – consumption of 7,2 m³/h natural gas or 24 m³/h of LPG. This would mean very low efficiency (5 %) and the number for LPG should be much lower as LPG has higher gross calorific value. If those values are not correct it would have big impact on result of work.

In second and third chapter, the current situation in renewables market in Russia is described. From my opinion this part gives a very good picture of almost no renewables in Russia and also the support scheme which is capacity based.

As most valuable part of the thesis I find chapter 4 with evaluation of wind potential on selected site with creation of wind speed model as a result of simulation and chapter 5 Economic Evaluation. From the model author has calculated probable variable diesel generator variable costs. The methodology of economic evaluation I find as standard. The main questions which are open is the input price of gas as in chapter 6 on page 50 LPG price of 0,3 USD is used, but the boiler is burning natural gas. And also the consumption of gas is precisely defined in thesis. In model the costs of boiler are given at 945 000 roubles. But if we consider 10,507 MWh of electricity production, 5 % efficiency we get 210 MWh of gas needed, that is roughly 20 000 m³. With price of 1381 roubles/ 1000 m³ we get 27 620 roubles/year. Even using European gas price of 24 USD/MWh we get 210*24*50= 252 000roubles/year. Compared to 945 000 roubles in model we have much lower variable costs that can dramatically change the result.

The methodology and sensitivity analysis is calculated in detail.

I generally agree with author's conclusion based on presumption that inputs of the model are correct.

Questions:

1) How do you see future of renewable energy sources in Russia, are you as sceptical as stated in official government plans?

2) Why do you use LPG price for gas price (the gas in pipeline is natural gas)? **Please recalculate and check your estimated costs for gas based on my suggestion above.**

3) Have you compared reliability of wind turbine and gas burner – and arising additional service costs?

4) What is the efficiency of gas boiler?

From formal side the thesis is more calculation and result oriented, structuring is clear. Author has proved his ability to work separately. The thesis has fulfilled its assignment. The main question is if the values for gas consumption and gas price are right. Based on above arguments I suggest mark:

B – 1,5 – velmi dobře – I suggest to adjust this mark depending on answer for question 2

V Praze dne 26.5.2015

Ing. Jaromír Fajman