Master thesis review

Thesis subject: Application of stand-alone photovoltaic system
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Photovoltaic systems will be a very effective source of electricity in the future and, in many cases, it could supplant all other electricity sources (depending on the type of consumption). Therefore, the focus of the thesis addresses current issues and interestingly projects conditions pertaining to the Russian Federation.

Access to the task:
The author estimates the overall effectiveness of the photovoltaic system. The thesis is split into four chapters. The first part briefly describes renewable energy in the world and in the Russian Federation. The second part then focuses in detail on the photovoltaic system. The third part provides technical calculations of generated electricity, and the last part focuses on in-depth financial evaluation of the photovoltaic system.

The author could have given more detailed information about the electricity environment in the Russian Federation, including existing legislation, conditions for connection to the grid, and any obstacles that may prevent implementation, etc. However, the thesis contains all relevant parts and is logically divided into individual chapters. The author clearly demonstrates excellent orientation in the given field. I especially appreciate the technical calculations of generated electricity with respect to all relevant influence factors.

Chosen solution:
The author proceeded logically by first describing the photovoltaic system, then providing technical calculations pertaining to generated electricity and finally evaluating the system from different economic standpoints.

The author did not forget the technical lifespan of individual components (such as the invertor) and the benefits of a solar tracker. At the same time, the author sufficiently employed sensitivity analysis to individual inputs and the possible utilization of the photovoltaic system in two different applications – one being industrial enterprise and the second being the sale of generated power to the grid.

Results achieved, benefits and the potential practical use:
The thesis yields financial results for both applications: negative for industrial enterprise and positive for the sale of generated power to the grid.

The deciding factor influencing the results is the existing price of electricity for industrial companies and households.

Unfortunately, the theoretical results of this thesis could be put to better practical use if the legislative environment in the Russian Federation were more in evidence.

Is the thesis in line with given norms, operational and safety instructions?
Given that the photovoltaic system is the standard one, all norms are probably fulfilled. I cannot comment on the operational and safety instructions as they were not included.

Formal structure and orientation:
As stated earlier, the thesis is clearly structured and understandable. Further, it provides all standard source and bibliography references, lists of abbreviations, etc.
I have not any other comments on the formal structure and orientation.

Final mark:
A - 1

Questions:

1. Can the positive results of the thesis (sale of generated electricity to the grid) be applied in the Russian Federation?
    a. If yes, what are the conditions and what is the price of the electricity from the photovoltaic system?
    b. If no, could there be any other practical use of the photovoltaic system, or how would conditions have to change for a positive solution?

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