

**Supervisor's report on dissertation "Autonomous hybrid power supply system based on wind generator, photovoltaic panel, and diesel generator" written by Alexander Karateev**

There are many small remote settlement regions in Russia. Connecting them to the central grid may not be always economically feasible or meaningful. That is why there is need for decentralized power supply, which was traditionally based on diesel fuel. Alexander considers the Karatayka village located in the North of Russia.

Alexander investigates possibilities to combine diesel power generation with renewable energy sources like wind energy and solar energy. He analyzes their feasibility based on geographic and economic criteria. The geographic criterion is based on reviewing wind speed and solar insolation. The economic criterion is based on applying the reduced NPV, IRR, ROI, PI approaches, where Alexander abstracts away from such cost components as maintenance, delivery, or salaries. The main message of all his propositions and results is reducing specific energy cost, diesel dependence, and CO2 emissions.

Formulas themselves are not numbered. Hence it is not straightforward to follow. Formula 30 is referred to two different formulas on page 33 and on page 34. Formula 30 on page 33 for profitability index has PV inside parentheses, which is redundant. Formula 30 on page 34 is in contrast incomplete because it should include an error term. Moreover, it is not clear if the CAPM model is specified for time series or cross-section data. This should be clarified during the defense.

The statement on page 38 "For project to be profitable easiest way is to increase LEC." requires explanation.

Cooperation with Alexander was a bit demanding because very often my comments were not timely incorporated or reflected in the earlier versions of his dissertation. Mistakes were constantly repeated, which led to inefficient use of time and consultation meetings.

For the dissertation I propose the classification B (very good).

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