

Thesis name: Improvement of the Voltage Quality in a Timber Processing Enterprise

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Thesis reviewer: Ing. Alena Pavlova, Ph.D.

### **Reviewer report**

In the paper different ways of electrical supply removed timber processing enterprise were considered. The author research two variants of power supply: connection to the weak network and supply by a diesel generator. In addition to this, she considers two options in each variant: high voltage equipment and low voltage equipment with soft starters. She studies the main feature of woodworking industries, very precisely and accurately describes the process of choosing equipment, and estimates the economic spending for each option.

The author chooses a logical approach to the solution, firstly she describes the manufactory, then chooses the equipment, and at the end, she makes an economical and sensitive analysis. As a result, she shows that using soft starters is beneficial in both cases: with the electrical supplying through the network and the generators.

The diploma thesis is in accordance with the required formal and language level, with some not crucial language mistakes. It is easy to follow, there are several tables and pictures, which simplify the understanding. However, in my point of view, some pictures are redundant here, they do not bring any useful information, namely pictures 2,3,4,5,6, and 7. Also, I would like to notice, that references are complete and accurate.

### **The drawbacks of the work:**

The title says that the author searching for a way of improvement of the voltage quality. However, the only thing she is doing for this is using soft starters. They provide gentle acceleration up to full speed and they are used only at startup, so, in a working process, the voltage is exactly the same as without soft starters. This equipment improves the start of motors, not voltage quality, that is why, according to my opinion, the aim of the work was not reached.

In a part 3.1.3 the author says that there are 2 depreciation methods and that she uses a nonlinear one, however she doesn't explain that choice and doesn't provide any discussion about it.

A timber processing enterprise belongs to the third category of the power supply reliability (it is written in this paper as well, page 27), however in 12 page she writes, that it belongs to the first category.

For comparison of 4 different scenarios author choose 3 economic indicators: NPV, EAA, IRR. I do not see the point to use the two last indicators. EAA is suitable for comparing the projects with different lifetimes, since all 4 projects have 30 years lifetime period, it does not make sense to use EAA. In addition to this, she writes that in this paper she can't use IRR, because she compares scenarios based on expenditures only, so it is not necessary to mention this indicator.

In the economical part it is not explained why there is no profit in the model, and why taxes are present with a minus sign. Also, the price for maintenance, overhaul, and generators is a constant for 30 years, it is a too rough assumption.

**Questions to clarify shortcomings and misunderstandings:**

1. You wrote that soft starters extent the service life of the equipment, how did you take it into account in your economical part of the work?
2. Your calculations show that it is profitable to use an existent overhead line, not diesel generators. How would the answer change if you considered the case where there is no overhead line near the manufactory?

Overall, a lot of work was made. I think, that the author deserves a master's degree, and I evaluate handed thesis with a classification grade **C - good**.