

Review of diploma thesis

Title: **Integrating flexibility and characteristics of active distribution grids into a large-scale European multi-energy system model**

Name of student: **Steffen Kortmann**

Student's task was to create a software model for multi energy system modelling and to implement it. The final goal is to find impacts on flexibility and transport needs in the transmission and distribution systems. The student prepared an analysis of the current state of the research and found a methodology for modelling of MES. The issues of input data gathering, appropriate clustering and regionalisation were solved. The open source software was used for final calculations of the task. Author solved problems that occurred during the work on diploma thesis. He accomplished all points of the diploma work successfully. The minor problem from my point of view is the lack of description of economic parameters of the model. Finally I can state that the diploma thesis shows a very good engineering and research competence of the author.

The author studied many text materials that are properly cited. Then he implemented his knowledge and integrated it in the methodology that can be used in similar problems.

In the final part of the diploma work the student presents some interesting outcomes from his calculations.

Formal level of the work is acceptable, I can find some minor reference errors.

Questions for the author:

1. What gases belong to greenhouse gases (Page12)?
2. What is the final form of π -branch after linearisation (Page 14 and 39)?
3. Explain how you got cost coefficients used in your model (for generation and transmission/distribution).
4. Present your opinion how electricity tariffs should be changed to reflect fairly the needs for flexibility of different subjects in the distribution network.

The final assessment of the diploma work is

– A excellent –

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