

Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Tatiana Chernova

PhD Program: Engineering Systems

Title of Thesis: Specific aspects of peer-to-peer energy market design and operation

Supervisor: Assistant Professor Elena Gryazina, Skoltech

Name of the Reviewer:

I confirm the absence of any conflict of interest	
Alexander Nazin	Date: 19-08-1951

The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevance of the topic of dissertation work to its actual content
- The relevance of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications

The summary of issues to be addressed before/during the thesis defense

The thesis by Tatiana Chernova contains original and forefront work on peer-to-peer market design and operation. It covers aspects of ensuring feasibility of trades with the presence of user preferences and network charges in the distributed form for different network models, operation with energy storage systems, and risk-aware market design for market with intermittent renewable generation.

Thesis consists of three main chapters along with literature review, introduction and concluding remarks. The thesis is clearly written outlining original contributions to knowledge. The material is presented in a logical and structured way giving a comprehensive characterization of key aspects of peer-to-peer trading.

The thesis addresses a topical problem of designing local energy markets, particularly, peer-to-peer energy market, which is of increasing importance as countries around the world are searching for the ways to involve distributed energy resources in operation with maximum benefits to the system and consumers, and, in general, investigate new operational patterns.

Methods used in the thesis are classical and chance-constrained optimization proved to be relevant to the research question. In the Citation Network Analysis author underlines other possible methods to address the problem of peer-to-peer trading. Literature review section provides main references and summary of existing approaches for different applied methods.

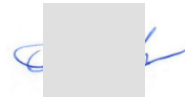
Results obtained are at the highest international standards. Their relevance has been recognized through journal papers (28 citations) and several conference proceedings. Additionally, author provides discussion of design requirements useful for the industry.

The research work and publications presented are of high quality. The thesis is recommended for defense.

Remarks

Following points may help in improving the thesis:

1. Provide discussion about alternative approaches to ADMM.
2. Provide discussion about accounting losses in the peer-to-peer trading.
3. Extend description of further directions of research in the field.
4. Provide references to the existing pilots of peer-to-peer trading.



Alexander Nazin

Provisional Recommendation

I recommend that the candidate should defend the thesis by means of a formal thesis defense