

STATEMENT

on dissertation thesis presented for obtaining the scientific degree "Doctor of Sciences"

Author of the dissertation: Assoc. Prof. Dr. Eng. **Iliyan Hristov Iliev**

Topic of the dissertation: **Optimization of electrical energy efficiency in reduced load mode and improvement of the quality and reliability of power supply systems**

Scientific direction: 5.2 Electrotechnics, Electronics and Automation

Scientific specialty: Theoretical Electrotechnics

Member of the Scientific Jury: Prof. Petko Hristov Petkov, DSc

1. Actuality of the dissertation thesis

The dissertation is dedicated to the study of the factors influencing electricity efficiency with the aim of rationalizing and optimizing electricity consumption in the country's industrial structure. It is well known that the problem of energy efficiency is one of the most significant problems on a global scale, which shows that the dissertation is relevant and the results obtained in it are useful for theory and practice.

2. Level of knowledge of the problem state

The author of the dissertation has been dealing with issues of electrical energy efficiency for the last 10 years and has a number of publications on the topic in national publications. The dissertation cites 294 works, which shows that the author is well acquainted with the research in the given field.

3. Relevance of the chosen research methodology to the dissertation aim and problems

Based on classical and modern approaches to studying the factors influencing energy efficiency, as well as the results of practical and applied research into energy processes in power systems, the author has proposed a number of methods for achieving electrical energy efficiency through optimization procedures according to various criteria. The results obtained show that there is a correspondence between the set goals and the achieved results in the dissertation work.

4. Main contributions of the dissertation thesis

The candidate's contributions are of a scientific nature (2 pieces) and of a scientific-applied nature (7 pieces). The developed methodology for determining mathematical models in the multifactor space for different output parameters and their optimization should be evaluated as a scientific contribution. The proposed theoretical approach was tested during the scientific-research innovative experiment, which confirms the reliability of the obtained theoretical results.

As a significant scientific-applied contribution, it should be noted the proof of the feasibility of operating the power supply system at voltage levels, lower than the nominal one, which leads to improved system efficiency and reliability. Important applied contributions are

also the proposed approach for determining partial power losses and the developed concept for determining non-symmetrical and non-sinusoidal modes.

5. Assessment of the dissertation publications

The dissertation has resulted in 12 publications, 11 of which were co-authored and presented at conferences in Bulgaria. Four of these publications are refereed in the Scopus database, and have not been cited to date, while the remaining 8 publications are in unrefereed conference papers. The author is present with a total of 10 articles in Scopus, which have been cited a total of 9 times. His h-index is equal to 2. This gives me reason to assess the publications presented in the dissertation as insufficiently representative.

6. Opinions, suggestions and remarks to the dissertation thesis

Some of the results obtained in the dissertation work may be published in authoritative foreign journals.

7. Fulfillment of scientometric requirements

I declare the fulfillment of the regulatory requirements regarding national and institutional scientometric data for the field of "Technical Sciences" for the acquisition of the scientific degree "Doctor of Technical Sciences" by a group of indicators as follows: A = 50 points; B = 100 points; D = 110.01 points; E = 117 points. (Citations 11.4, 11.15, 11.16, 11.17 (2 items) are hidden auto-citations of co-authors of the respective publications, which is why I reduce the total number of points for this indicator by 22 points). Since the minimum number of points is 350, and the fulfilled one is 377.01, the regulatory requirements are met.

CONCLUSIONS

Based on the contributions in the candidate's works and the fulfillment of the minimum scientometric requirements, I take the liberty of proposing to the Honorable Scientific Jury that Assoc. Prof. Dr. Iliyan Hristov Iliev be awarded the scientific degree "Doctor of Technical Sciences".

10.06.2025

Jury member:

/Prof. Petko Petkov, DSc/