



OPINION

by Assoc. Prof. Dr. Eng. Stefan Mateev Stefanov
Technical University - Varna
on Abstract for obtaining the educational and scientific degree
"Doctor"

by Mag. Eng. Daniel Krasimirov Kostadinov

Topic of the dissertation: “Research of the working process of a diesel engine operating with the addition of alcohol”

1. Relevance of the problem developed in the dissertation.

With the introduction of the norms for harmful emissions when operating diesel internal combustion engines from the Euro 1 standard in 1992, to the currently valid Euro 7 standard, diesel internal combustion engines manufacturers are investing a lot of effort and resources to reduce these emissions. Numerous studies and experiments are being conducted worldwide in this area.

The research in this dissertation examines the possibilities of using alternative fuels to improve the efficiency and environmental characteristics of diesel engines with electronic fuel control, equipped with modern Common-rail systems.

In this regard, we can define the dissertation work as relevant to contemporary conditions.

2. Indicating and assessing the most significant contributions in the dissertation, clearly stating the nature of the contributions:

2.1. Novelty for science (new theories, hypotheses, methods);

Theoretical calculations were made using a specialized software product AVL BOOST (subsequently integrated as a module in AVL CRUISE™ M after 2020), which is adapted to the objectives of the experiment. The system allows for precise study of parameters such as heat release, efficiency and emissions by entering real engine data.

2.2. Enrichment of existing knowledge;

The results of the dissertation can be used to improve the workflow of diesel internal combustion engines.

2.3. Application of scientific achievements in practice and realized economic effect.

To date, there is no data on implementation in practice and realized economic effect.

3. Critical notes on the presented work.

I have no critical notes on the presented work.



4. Motives and a clearly formulated conclusion.

The abstract is very well designed and structured and meets the requirements for the design of an abstract of the ZRASRB. Taking into account the large volume and precision of processing of experimental data from the conducted experiments, the indicated scientific - applied and applied contributions, as well as the theoretical statement, I believe that Mag. Eng. Daniel Krasimirov Kostadinov can be admitted to the defense of the dissertation.

06.06.2025.
city of Varna

Prepared the opinion:.....
/Assoc. Prof. Dr. Eng. S. Stefanov/