

OPINION

by Dr. Eng. NIKOLAY ATANASOV SHOPOV,

**Associate Professor at the Department of Electrical Engineering, Electronics and Automation,
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on a dissertation for awarding the educational and scientific degree "Doctor"

in: Higher education field 5. Technical Sciences; professional field 5.3. Communication and
Computer Technology;

Doctoral program "Automation of areas of the intangible sphere (medicine, education,
science, administrative activity, etc.)"

Author: Eng. Hristo Anastasov Kanevski

**Topic: "Application of computer technologies to improve environmental indicators in
road transport"**

Scientific supervisor: Prof. Dr. Eng. Slavi Yassenov Lyubomirov-"Paisiy Hilendarski"

University

1. General presentation of the procedure and the doctoral student

By order No. RD-22-93/17.01.2025 of the Rector of Plovdiv University "Paisiy Hilendarski" I am appointed as a member of the scientific jury in the procedure for the defense of a dissertation on the topic "Application of computer technologies to improve environmental indicators in road transport" for the acquisition of the educational and scientific degree "doctor" in the field of higher education: 5. Technical sciences, professional field 5.3. Communication and computer technology, doctoral program "Automation of areas of the intangible sphere (medicine, education, science, administrative activities, etc.) with the author of the dissertation M. Eng. Hristo Anastasov Kanevski. The set of materials on paper submitted by the doctoral student is in accordance with Art. 36 (1) of the Regulations for the Development of the Academic Staff of PU and PP of ZRAS in the Republic of Bulgaria. The doctoral student has attached 6 publications on the topic of the dissertation.

Assist. Prof. Eng. Hristo Kanevski completed his secondary education in 2011 at PGTT "Hristo Botev" - Smolyan.

During the period 2013–2016, Eng. Hristo Kanevski studied at Plovdiv University "Paisiy Hilendarski" in the bachelor's program in "Automotive Engineering", and in 2020 graduated as an engineer - master in automotive engineering at the Faculty of Physics and Technology of the same university. Since 2020, Eng. Kanevski has been an assistant professor at the Faculty of Physics and Technology of PU "Paisiy Hilendarski", and since March 2021 he has been a doctoral student.

I do not know Eng. Hristo Anastasov Kanevski personally, but I believe that he is successfully developing in the field of science, constantly improving his knowledge and skills.

2. Relevance of the topic

The topic of the presented dissertation is related to the development of new computer technologies for improving environmental performance in road transport. In recent years, increasing attention has been paid to the environmental characteristics of vehicles. Identifying pollutants and the mechanisms that created them is of paramount importance for road transport.

I believe that conducting laboratory tests of spark-ignition engines with simulated malfunctions is of utmost importance, as based on the research conducted, optimal fuel/air ratio modes for gasoline engines have been found, and the implementation of dynamic operating modes and fuel maps for engines has been recommended in order to reduce harmful emissions under different driving modes.

I believe that the problem under consideration is relevant and is related to improving the environmental performance of vehicles.

3. Knowing the problem

PhD student Eng. Hristo Kanevski has cited 131 literary sources in Latin. The bibliography includes titles of literary sources from 1994 to the present. The main part of the cited works have been published in the last 10 years. From the list of cited literary sources it can be concluded that the doctoral candidate has thoroughly understood the contemporary world situation and development trends of the problems solved in the dissertation work.

4. Research methodology

To achieve the goal of the dissertation "To investigate the possibilities for applying computer technologies to improve environmental performance in road transport. On this basis, to justify approaches for conducting research in the car in order to improve environmental performance in terms of CO, HC, CO₂" five tasks have been set, the solution of which leads to the achievement of the goal. The chosen methodology corresponds to the goal set in the dissertation and the tasks that lead to its achievement.

5. Characterization and evaluation of the dissertation work and contributions

After becoming familiar with the dissertation work and the applied scientific works of Eng. Kanevski, I believe that the developed ideas and the obtained results have become known to the scientific community in our country through publications and reports presented at conferences.

In the self-assessment of the contributions presented by the doctoral student, a total of 10 items are formulated, which are classified as scientific-applied (5 items) and applied (5 items). I believe that the presented contributions accurately reflect the results obtained by Eng. Kanevski.

In my opinion, the contributions relate to adapting known methods and algorithms and creating new constructions, technologies, software, and models in a relevant field.

6. Assessment of the doctoral student's publications and personal contribution

After a thorough acquaintance with the dissertation work and publications of Eng. Hristo Kanevski, I am convinced that the results achieved from the research and development were obtained

entirely with his participation. The results obtained in the development of the dissertation work are presented in six publications, in all of which Eng. Kanevski is the first author. One of the publications is indexed in SCOPUS and WoS. A report is a stand-alone paper. I believe that the doctoral student's publications on the dissertation reflect the main contributions that he claims.

7. Autor's abstract

The submitted abstract is 32 pages long and complies with the requirements for its preparation. It correctly reflects the main results and contributions of the dissertation work.

8. Recommendations for future use of the dissertation contributions and results

I believe that the results obtained are of important practical importance and should be applied in practice when adjusting the ignition angle and the ratio of the fuel-air mixture, given their influence on the quantity and composition of exhaust gases.

CONCLUSION

After a thorough acquaintance with the dissertation work and publications of Eng. Hristo Anastasov Kanevski, I am convinced that the results achieved from the research were obtained entirely with his participation. With the presented work, the doctoral student demonstrates his capabilities for research and solving scientific problems of a scientifically applied and applied nature.

The dissertation contains scientific-applied and applied results that represent an original contribution to science and meet all the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADSRB), the Regulations for the Implementation of the ADSRB and the relevant Regulations of the Paisii Hilendarski University.

Based on the analysis I give **positive** evaluation of the developed dissertation work and I consider it justified to propose Eng. Hristo Anastasov Kanevski to acquire the educational and scientific degree "doctor" in scientific field 5. Technical sciences, professional field 5.3. Communication and Computer Engineering Doctoral Program "Automation of Areas of the Intangible Sphere (Medicine, Education, Science, Administrative Activities, etc.)"

10.02.2025

Prepared the opinion:

Assoc. Prof. Dr. Eng. Nikolay Atanasov Shopov