

## **R E V I E W**

**in a competition for the academic position of "Professor",  
professional field 5. 5. Transport, navigation and aviation,  
study discipline "Ecology of transport vehicles",  
announced in SG No. 56/19.07.2022**

**with candidate Assoc. Prof. Dr. Eng. Zdravko Dintshev Ivanov,  
reviewer: Prof. Dr. Eng. Emil Marinov Ivanov**

### **1. General information and biographical data**

Assoc. Prof. Dr. Eng. Zdravko Dintshev Ivanov was born on 03.10.1957. In 1975, he graduated from the "Jordan Yovkov" high school in the city of Tervel. In the period 1978-1983, he studied at the Technical University of Varna, and he graduated from TU-Varna with a master's degree, specialization Internal Combustion Engines.

In 2004, he defended a dissertation on the topic "Investigation of the noise of the working process of automotive diesel engines" for the award of the educational and scientific degree "Doctor" in the scientific specialty 02.01.42 Internal combustion engines. He was awarded a scientific degree by the Specialized Scientific Council "Energy Technologies and Machines" at the Higher Attestation Commission, the scientific degree "Doctor" with diploma No.29295 from 23.08.2004.

In various periods, he worked as a designer at Varna - Development Base (1983-1985) and at Mayak - Dobrich at the Institute of Diesel Engines (1985-1988). In 1988, he joined the Technical University - Varna as an assistant professor in the Department of Transport Engineering and Technologies at the Faculty of Mechanical Engineering.

From 15.11.2006 he was elected Associate Professor at the department with the awarded diploma No.24050 from 29.01.2007.

He speaks German and Russian very well and has a very good knowledge of English. Has a driving license - categories A, B and C.

Has good computer and organizational skills. Works with software products: CAD systems, network software, Microsoft Office, etc.

Assoc.Prof. Ivanov is actively engaged in public and management activities. He is a member of the Scientific and Technical Unions - Varna and the Polish Scientific Society of Combustion Engines (PTNSS). He is the head of the Department "Transport Engineering and Technologies"; is a member of the Advisory Council to the Rector of TU - Varna; is a partner in the transport business; actively participates in the development of study documentation, etc. He is well known to his colleagues working in the transport sector.

## **2. General description of the submitted materials**

The submitted materials for the competition were presented to me in three folders, neatly laced. They include:

- List of scientific works related to the competition (publications, university textbooks and teaching aids);
- Abstracts of scientific works;
- Documents proving the candidate's scientific, teaching and implementation activities;
- Reference to the scientific and scientific-applied contributions;
- Statements about the credibility of the information;
- Reference, according to Law on Academic Staff Development in Bulgaria and Regulations for Holding Academic Positions at TU-Varna

(Art. 26 from ZRABS; Art. 60, para. 3 of PPZRASRB and art. 1, para. 2 of PURZAD in TU – Varna).

- And others.

A list of scientific works is attached, of which:

- Scientific works in a foreign language – 25 papers;
- Scientific works indexed in SCOPUS – 17 papers;
- A list of 33 scientific works with which he participated in previous procedures outside the scope of the scientific competition is given.

A total of 42 scientific publications in scientific journals and reports from scientific conferences are presented for participation in the competition.

In group B4 - Habilitation work, 10 scientific publications referenced in the SCOPUS database are presented, united as the thematic direction Studying the operation of engines with alternative fuels with improved environmental characteristics.

The candidate's research work can be presented in four thematic areas:

1. Noise and vibration environmental characteristics of internal combustion engines and transport vehicles– 8 papers.
2. Study of the working process of engines with fuel additives, use of alternative fuels with improved environmental characteristics – 15 papers.
3. Study of fuel supply parameters in liquefied petroleum gas as the main factor influencing the environmental characteristics of transport vehicles during operation – 8 papers.
4. Reduction of carbon emissions by optimizing the design of engines – 11 papers.

These scientific works are distributed as follows:

---

- B4 – 10 reports in publications that are referenced and indexed in world-renowned scientific information databases SCOPUS (with a formula for equating a monograph to an equivalent number of articles);
- Г7 – 7 scientific papers in editions that are referenced and indexed in world-renowned scientific information databases SCOPUS, which are not presented as the main habilitation thesis;
- Г8 – 25 publications in non-refereed peer-reviewed journals or in edited collective volumes.

Scientific reports have been presented at international conferences in front of scientific specialists from different countries. They are peer-reviewed and published by prestigious publishers.

### **3. General characteristics of the research and applied activities of the candidate**

On the basis of the materials submitted for the competition, it can be judged that the candidate's research activity developed in several scientific directions:

- Participation in national scientific and educational projects under the Scientific Research Fund - 3;
- Management of national scientific and projects under the Scientific Research Fund – 11;
- Participation in scientific forums for reporting and promotion of research projects;

Analysis of research results, formulation of scientific contributions and implementation in practice.

- The experience of the researcher and the materials obtained have served to improve the material base of the department.
-

The funds received from the projects and the professional experience have served to develop the student research activity.

The mobilities carried out under the Erasmus program are also important for his growth as a researcher. Two mobilities were carried out in Romania and Turkey.

#### **4. Assessment of the pedagogical preparation and activity of the candidate**

The presented report on the disciplines for the winter and summer semester of the classroom learning activity is an average of about 350 hours for the last three years. Ivanov has lectured and conducted exercises in 8 academic disciplines in the specialties of Transport Technology and Technologies, Automotive Technology, etc. The disciplines Ecology of transport vehicles, Dynamics and vibrations of internal combustion engines and transport vehicles, Testing and control of transport vehicles, Vibration isolation of internal combustion engines are relevant to the announced competition. Two books have been published on their subject with the author applying for the competition and co-authors (Dimitrov A, Sevastakiev V., Ivanov Z., Bekyarova, Z. Environmental characteristics of LPG and cars, Varna, 2006.; Dimitrov A, Ivanov Z. Automotive gas systems, ed. Technika, Sofia, 2002.), which are reported according to a previous competition and support students in the learning process.

The subjects read and the horarium were sufficient for the disclosure of a staff number for occupation of Academic Position "Professor".

The candidate's participation in scientific juries for the selection of Associate Professors (9 items), Chief Assistants (1 item), Doctor of Science (1 item) and Doctors (4 items), as well as the review of 2 doctoral theses, also helped to expand

contacts with other higher schools and colleges and to deepen knowledge in certain areas.

Assoc.Prof. Ivanov was the scientific supervisor of a total of 4 doctoral students, one of whom defended doctoral degree, 71 diploma projects and reviewed 85 diploma projects. He also participates in joint scientific activity with students and graduates in the scientific projects he leads.

### **5. Main scientific-applied and applied contributions**

On the basis of the presented research developments, results have been achieved, defining the following contributions, which I accept as a whole. The formulated 22 contributions, according to their scientific significance, are divided into three groups:

1. Scientific contributions - 5 items. They are related to developed methodologies and methods for research and analysis of the environmental and noise characteristics of internal combustion engines (ICE).
2. Scientific and applied contributions, 12 items. They are related to use of fuels, combustion processes, environmental characteristics of the engine and creation of approaches, models and algorithm for their research.
3. The applied contributions (5 items) are related to specific experimental studies, mainly on the noise characteristics and vibrations of specific objects - ICE.

I believe that some of the contributions could be compatible. It is possible to regroup in the following directions: a new scientific field or problem; a new theory or hypothesis; new methods; constructions, etc., which would further confirm the significance of the formulated contributions.

---

A reference is presented for 10 publications equivalent to a monograph and published in editions that are referenced and indexed in world-renowned scientific information databases, SCOPUS.

A reference is presented for citations - 27 items. in scientific publications, referenced and indexed in a global database with scientific information, respectively. The given citations are only for the period of the last three years.

The submitted materials demonstrate the candidate's significant scientific contribution to the research of the environmental characteristics of internal combustion engines.

The candidate has managed to materialize his ideas and research in development and adapt the means for ICE research - equipment and stands, which has enriched the material base of the department.

My personal impressions and the attached declarations prove that the information presented by the candidate is reliable and there is no plagiarism.

## **6. Significance of the contributions to the science and practice**

The materials presented by the candidate, the formulated contributions, approaches, methodologies and methods for the study of internal combustion engines provide an opportunity for a thorough analysis and study of the environmental characteristics of the engines. The scientific developments and qualification of the candidate can find specific application in practice.

On the basis of the presented documentation and analysis, I come to the conclusion that the quantitative indicators of the criteria for occupying the academic position "Professor" according to the regulations are fulfilled.

The information is presented in tabular form:

<b>№</b>	<b>Group of indicators</b>	<b>Points</b>
<b>1.</b>	Indicators of category A – min. 50	<b>50</b>
<b>2.</b>	Indicators of category B – min. 100	<b>120, 67</b>
<b>3.</b>	Indicators of category Г – min. 200	<b>303, 33</b>
<b>4.</b>	Indicators of category Д – min. 100	<b>270, 0</b>
<b>5.</b>	Indicators of category E – min. 150	<b>390, 0</b>
<b>6.</b>	Indicators of category Ж – min. 120	<b>1059</b>

Assoc.Prof. Ivanov is a recognizable person in the circles of specialists in internal combustion engines and transport. He enjoys the respect of his colleagues and specialists in the scientific field. His scientific developments are also accepted with respect. He participates in scientific forums at home and abroad, and he himself is the organizer of scientific conferences in the field of the ecology of transport vehicles.

### **7. Critical remarks and recommendations**

I have no critical remarks about the candidate. I believe that with the scientific research done, he could have applied for a professorship a long time ago. The materials for the competition are arranged very precisely and give the best possible information about his activity as a scientist and teacher.

I believe that his scientific research and publications have been in-depth and presented at serious scientific forums and have been accepted by specialists in the relevant scientific field with interest, which I take as a positive review for their credibility and significance.

I would make some recommendations that do not change the essence of my positive opinion:



- Deployments made are not reflected;
- I believe that intellectual property recognition can be claimed on the basis of the formulated contributions;
- Some contributions could be combined;
- The work with the students will be more widely reflected in the materials and I wish that he will continue to work so diligently with them in the future;
- I recommend that Mr. Ivanov become a member of the Union of Scientists.

#### **8. Personal impressions and opinion of the reviewer**

I know very well the scientific and teaching work of the candidate. I think he is distinguished by principle in his work, the ability to work in a team and to lead, to create a good organization when holding scientific forums, enjoying the respect of his colleagues from the department. A specialist in his scientific field, he also gained respect among internal combustion engine specialists.

#### **CONCLUSION**

Getting acquainted mainly with the materials presented to me on the competition and based on my personal impressions of the candidate, I come to the conclusion that he has achieved high scientific results. His activity as a scientist and teacher meets the requirements of the Regulations for Holding Academic Positions at TU-Varna and those according to Law on Academic Staff Development in Bulgaria.

I consider it reasonable to propose Associate Professor Zdravko Dinchev Ivanov, PhD, Eng., to hold the academic position "Professor" in the professional field

5.5. Transport, navigation and aviation, study discipline “Ecology of transport vehicles”.

16.11.2022 г.

Заличена информация  
по Регламент (ЕС)  
2016/679

(Prof. Dr. Eng. Emil Ivanov)

6