# O P I N I O N

**by Prof. Dr. Eng. Zvezditsa Petrova Nenova,**
**Technical University of Gabrovo**

**on the materials submitted for participation in the competition**
**for the academic position of Associate Professor**
**in the field of higher education – 5. Technical Sciences,**
**professional field – 5.2 Electrical Engineering, Electronics and Automation,**
**specialty – "Electric Power Supply and Electrical Equipment"**

In the competition for the academic position of Associate Professor, announced in State Gazette № 48/13.06.2025 and on the website of the Technical University of Gabrovo (TU-Gabrovo), for the needs of the Department of Electric Power Supply and Equipment at the Faculty of Electrical Engineering and Electronics, the sole applicant is Chief Assistant Professor Dr. Eng. Lyubomir Diyanov Dimitrov.

This opinion has been prepared in accordance with Order № 3-01-408/25.09.2025 of the Rector of TU-Gabrovo and the decision of the scientific jury for the procedure (Protocol № 1/ 26.09.2025).

**1. Overview of the content and results of the submitted works**

The candidate, Chief Assistant Prof. Dr. Eng. Lyubomir Diyanov Dimitrov, has submitted a total of **39** scientific works for participation in the competition for the academic position of Associate Professor. These include **37** scientific publications and **2** textbooks.

The submitted scientific publications are divided into three groups:

- Group B.4. Habilitation work – scientific publications (minimum of 10) in editions that are indexed and abstracted in world-renowned scientific databases – **10**.
- Group G.7. Scientific publications in editions that are indexed and abstracted in world-renowned scientific databases – **2**.
- Group G.8. Scientific publications in peer-reviewed, non-indexed journals or edited collective volumes – **25**.

A classification of the publications presented for the competition can be made as follows:

*By type:*

- Articles – **11**;
- Conference papers – **26**.

*By significance:*

- Publications in journals with impact rank (SJR according to Scopus) – **2**;
- Awarded publication – **1**;

In addition to the **2** publications with SJR, **10** more are indexed in Scopus (a total of **12** in Scopus).

The publication "Analysis of Electrical Quantities during Operation of Induction Motors with Frequency Control" was awarded Best Paper by the Union of Electronics, Electrical Engineering and Telecommunications at the International Scientific Conference UNITECH'2024.

***By place of publication:***

- Articles in international journals – **1**;
- Articles in national journals – **8**;
- Papers in the proceedings of foreign universities – **1**;
- Papers in the proceedings of Bulgarian universities – **1**;
- Papers in the proceedings of international scientific conferences abroad – **7**;

- Papers in the proceedings of international scientific conferences in Bulgaria – **11**;
- Papers in national scientific conferences, sessions, and seminars – **8**.

*By language:*
- In English – **20**;
- In Bulgarian – **17**.

*By number of co-authors:*
- Single-authored – **4**;
- With one co-author – **5**;
- With two co-authors – **15**;
- With three or more co-authors – **13**.

The content and results of the publications presented in the competition are in several main thematic areas:

I. Studies on the behavior and characteristics of electric vehicles and their components

II. Studies on aggregates, machines, and mechanisms in electrical equipment

III. Studies on the operational behavior of squirrel-cage induction motors

IV. Studies on variations of characteristic electrical quantities of electrotechnical facilities and installations

V. Research on power quality indicators, measurements, and analyses under real operating conditions of various types of electrical consumers.

As evidence of the candidate's recognition within the scientific community, Chief Assistant Professor Dr. Eng. Lyubomir Diyanov Dimitrov has provided a list of **24** citations of 7 publications. Excluding self-citations by all co-authors, the candidate has an h-index of **3** in Scopus. This demonstrates a positive impact of the candidate's publications in the respective scientific field.

**2. General characteristics of the candidate's activity**

**2.1. Teaching and pedagogical activity**

The candidate has teaching experience as an Assistant Professor (2010–2014) and Chief Assistant Professor (since 2016) in the Department of Electric Power Supply and Equipment at TU-Gabrovo. Between 2012 and 2015 he was a PhD student in the doctoral program "Electric Power Supply and Electrical Equipment" within the same department.

He has delivered lectures and laboratory classes in the disciplines Relay Protection, Operation of Automatic Devices and Systems, and Electrical Equipment, as well as laboratory classes in Electrical Equipment of Production Machines and Processes, included in the curricula of the Bachelor's Degree Program in Electrical Power Engineering and Electrical Equipment (full-time and part-time).

For the Master's Degree Program in the same field, he has conducted lectures and laboratory classes in Electrical Equipment of Automated and Robotic Devices and laboratory classes in Electrical Equipment and Electrical Equipment of Production Machines and Processes.

He has participated in the development of the syllabi for 5 courses in the bachelor's program and 2 courses in the master's program.

The candidate participates in the competition with 2 co-authored textbooks: "Electric Drives and Electrical Equipment" and "Electrical Equipment".

**2.2. Scientific and applied research activity**

According to the data presented in the documentation, Chief Assistant Prof. Dr. Eng. Lyubomir Dimitrov has participated in 2 projects under Operational Programs, 9 research projects receiving targeted state budget funding through the University Center for Research and Technologies at the Technical University of Gabrovo, and has served as principal investigator on 1 applied research contract with an external organization.

He has contributed to the establishment of 2 educational laboratories at the Department of Electric Power Supply and Equipment.

He has presented 4 certificates for completed training, qualification, and continuing education courses, as well as a Best Paper Award from the International Scientific Conference UNITECH'2024.

He is a member of the Territorial Organization of Scientific and Technical Unions – Gabrovo and the Chamber of Engineers in the Investment Design (KIIP), holding a restricted designer's license.

**2.3. Implementation activities**

Although no specific documentation of implemented developments has been provided, numerous publications, research contracts, and the applied research project with an external client demonstrate practical orientation toward the study, measurement, and analysis of the operational behavior of various types of electrical consumers – such as frequency-controlled induction motors, borehole pumps, industrial compressor systems, and electrical loads in medical facilities.

**3. Contributions. Significance of the contributions to science and practice**

I accept the contributions formulated by the candidate in the presented publications. They are of a scientific-applied and applied nature.

The following main *scientific-applied contributions* can be summarized:

- Development of a computer-based mathematical model for evaluating the occurring electrical losses in drive motors, as well as in individual components and energy losses under various operating conditions of the electric drive system.
- A proposed electromechanical model and presented operating modes of an electric drive for a pump unit with a high-voltage squirrel-cage induction motor.
- Research on the behavior of a new type of DC traction motor for electric transport vehicles.
- Obtained characteristics of electric vehicles and their corresponding components based on conducted studies of their operational functionality.
- Achievement of energy-efficient solutions for improving the performance of machines, and mechanisms in electrical equipment systems.

These contributions are related to the development and improvement of models, enrichment and development of existing solutions, obtaining new and confirmatory results in the thematic areas of the research.

The *applied contributions* can be summarized as follows:

- Studies on the operational performance of squirrel-cage induction motors.
- Experimental investigations of a new energy-efficient three-phase induction motor.
- Practical measurements and analyses of power quality during operation of various types of electrical loads, followed by comprehensive analysis of the obtained results.

**4. Evaluation of the candidate's individual contribution**

Out of the presented publications, 4 are single-authored, 5 have one co-author. The candidate has actively participated in numerous scientific conferences and forums, including International Scientific Conference UNITECH (2011, 2016, 2017, 2019, 2021–2024); Energy Forum (2017–2019, 2022, 2024, 2025); 8th International Conference on Energy and Environment CIEM 2017, University Politehnica of Bucharest, Romania; and Electric Vehicles International Conference & Show EV2019, Bucharest, Romania. One single-authored publication has been awarded. He works actively on research projects, many of which are directly related to the topics of his publications. All this confirms his active personal participation and contribution to the developments.

**5. Critical remarks and recommendations**

It is recommended that the candidate continue his research activity by publishing results in peer-reviewed scientific journals and by participating in international conferences and forums, both abroad and in Bulgaria.

He should expand his publication activity in journals indexed in Web of Science (Impact Factor) and Scopus (SJR).

As a future habilitated lecturer, he is also encouraged to supervise doctoral students in the accredited PhD programs of the Department of Electric Power Supply and Equipment.

**6. Personal impressions**

I have known Chief Assistant Prof. Dr. Eng. Lyubomir Diyanov Dimitrov since his time as a student and Assistant Professor at the Technical University of Gabrovo. Since obtaining his PhD degree, he has held the academic position of Chief Assistant Professor in the Department of Electric Power Supply and Equipment. He is an active, modest and responsible teacher and researcher.

I have no joint publications with the candidate.

**7. Conclusion**

Based on the presented data and the analysis performed, I consider that Chief Assistant Prof. Dr. Eng. Lyubomir Diyanov Dimitrov meets, and exceeds according to several criteria, the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, its Implementing Regulations, and the Regulations for the Acquisition of Scientific Degrees and the Appointment to Academic Positions at the Technical University of Gabrovo for appointment to the academic position of Associate Professor.

**In view of the above, I propose that Chief Assistant Prof. Dr. Eng. Lyubomir Diyanov Dimitrov**
**be appointed to the academic position of Associate Professor**
**in the field of higher education – 5. Technical Sciences,**
**professional field – 5.2 Electrical Engineering, Electronics, and Automation,**
**specialty – "Electric Power Supply and Electrical Equipment".**

07.11.2025 Member of the Scientific Jury:
/Prof. Dr. Eng. Z. Nenova/