O P I N I O N

by Assoc. Prof. Orlin Lyubomirov Petrov, PhD, University of Ruse “Angel Kanchev”

of the materials submitted for participation in a competition for the academic position of "Associate Professor" in
field of higher education – 5. Technical sciences,
by professional field - 5.2. Electrical engineering, electronics and automation,
specialty - "Electrical power supply and electrical equipment" (Electrical machines I)

In the competition for associate professor, announced in the State Gazette, no. 55/27.06.2023 and on the TU-Gabrovo website for the needs of the Department of "Electrical Power Supply and Electrical Equipment" at the Faculty of "Electrical Engineering and Electronics", as the only candidate participated Principal Assistant Dimitrina Yordanova Koeva, PhD.

1. Overview of the content and results in the presented materials

Submitted data of the candidate for the fulfillment of the minimum national requirements for holding academic position "Associate Professor":

Group of indicators	***Minimum number of points***	***Number of points of the candidate***	***Number of points by main indicators of a group and additional data***
A	50	**50**	Diploma No. TUS-IPF45-HC1-021 / 30.04.2014 from TU-Sofia, Faculty of Engineering and Pedagogy-Sliven by professional field 5.2. Electrical engineering, electronics and automation, scientific specialty "Electrical machines"
V	100	**295**	V4 – 11 scientific publications – 295 p.
G	200	**301,73**	G7 – 1 scientific publications – 40 p.
			G8 – 32 scientific publications – 261,73 p.
D	50	**150**	D12 – 15 citations in publications that are referenced and indexed in world-famous databases with scientific information - 150 p.
Total	400	**796,73**	

There are a total of 44 scientific publications presented. Of these, 29 are in English, and the remaining 15 in Bulgarian. Six of the publications are independent, and the rest are co-authored, and in 13 of them the candidate is the first author, and in the rest he is the second, third or fourth author. Of all publications, 11 are indexed and referenced in world-renowned databases of scientific information (Scopus platform).

According to indicator V, 11 publications with the equivalent of a monographic work, referenced and indexed in world-renowned databases with scientific information, from the above are presented.

The scientific publications presented in the competition for the appointment of AP "Associate Professor" do not repeat those announced in the abstract for the acquisition of

scientific degree "Doctor" (7 publications - 83 p., with a minimum of 30 points). I accept all submitted materials for review.

It was found that the publication indicated in indicator G7.1 is not found in the Scopus and Web of Science databases, i.e. it should be transferred to indicator G8 and this will result in a reduction of points in indicator G from 301.73 to 281.73.

It was also found that two of the presented citations 10.1 and 11.1 were not found in the Scopus and Web of Science databases, i.e. they should be transferred to indicator D14 and D13 respectively. This will result in a reduction in the D score from 150 to 135.

Considering the above, the presented points for all indicators are more than enough - 761.73, with a minimum number of points - 400 (almost double the minimum number).

The candidate has submitted a Document of fulfillment of the minimum requirements of TU-Gabrovo, from which it is evident that she also fulfills the requirements of TU-Gabrovo for holding AP "Associate Professor" (minimum number of publications, citations and issued teaching aids).

2. General characteristics of the applicant's activity

2.1. Educational and pedagogical activity (work with students and doctoral students)

The candidate taught full study courses (lectures and exercises) in ten academic disciplines and lecture courses in two disciplines. She participated in the development of educational documentation for six academic disciplines, included in the curricula of EQD "Bachelor", specialties "EEEO" and others. She participated in the development of educational documentation for four academic disciplines, included in the curricula of the EQD "Master", specialties "EEEO" and others.

She is the author and co-author of three teaching aids:

1. Rachev S., D. Koeva. Driving technique. Vasil Aprilov University Publishing House, Gabrovo, 2015 (243 pages);

2. Koeva D., S. Rachev. Energy technologies and ecology. Vasil Aprilov University Publishing House, Gabrovo, 2016 (133 pages);

3. Rachev S., D. Koeva, L. Dimitrov. Electrical equipment. Vasil Aprilov University Publishing House, Gabrovo, 2022 (233 pages, third revised and supplemented edition).

Under her leadership, 80 graduates defended their theses for the period 2016-2023.

2.2. Scientific and scientific-applied activity

Pr. Assistant Dimitrina Yordanova Koeva, PhD, began her scientific research as a member of a team dealing with research on electrical machines and their diagnostics and automation.

In 2014, the candidate defended her doctoral dissertation in the scientific specialty "Electrical machines" on the topic "Automated system for control, monitoring and diagnostics of wind generators".

The scientific activity of the candidate developed even after the defense of her dissertation, continuing to work in the field of electrical machines. This is evident from the subject matter of the presented scientific publications in connection with the competition. In addition, her research interests extend to other areas of science, such as: renewable energy sources; electrical loads; electric vehicles and their infrastructure.

She participated in scientific projects financed with funds from the state budget.

A patent for a utility model issued by the Patent Office of the Republic of Bulgaria was submitted to the competition documents.

2.3. Implementation activity

The candidate has participated in 5 and supervised 1 university projects financed with funds from the state budget for scientific research.

2 references from companies for implementation and consulting activities are presented.

A recognized application for a utility model has been submitted by the Patent Office of the Republic of Bulgaria (Koeva D., Avramov A., Ognyanov R. Galvanically separated current sensor, Patent for a utility model, No. 218/30.03.1999, Patent Office of the Republic of Bulgaria).

3. Contributions (scientific, scientific-applied, applied). Significance of contributions to science and practice

I fully agree with the formulated scientific, scientific-applied and applied contributions by the candidate, presented in the document "Author's reference for contributions in scientific works". They can be grouped as follows:

3.1. Scientific contributions

- Methodologies, algorithms and mathematical models of the electromechanical system of drive motors with industrial application have been developed;
- A comparative analysis of the qualities of different models for forecasting the consumption of generated and/or consumed energy by energy objects was carried out and on this basis adequate models were selected when establishing their degree of adaptation;
- Creation of a mathematical model, represented by a system of differential equations for specific electric drives, in order to minimize power losses;
- Estimated models have been developed for the consumption of electrical energy from charging stations;

3.2. Scientific and applied contributions

- Measurements were made and load schedules were taken of various types of non-linear loads in industry and the public sector. On this basis, an approach is proposed for the distribution of combined non-linear loads in view of the energy efficient and reliable operation of the power transformer;
- Through practical and mathematical model studies with a view to energy and economic efficiency, the work processes of electric motors driving vehicles are analyzed;

3.3. Applied Contributions

- An analysis of the specific technical characteristics of the operation of nearly 1700 asynchronous motors in two highly energy-intensive enterprises was carried out. chemical plant and food processing plant;
- Analysis of existing methodologies for monitoring and diagnostics of wind turbines and selection of sensors and their deployment to implement a reliable SCM.

The significance of the contributions to science is confirmed by the number of discovered citations - 13 pcs in publications that are referenced and indexed in world-famous databases with scientific information (Scopus and Web of Science), as well as 2 pcs in other editions.

4. Evaluation of the candidate's personal contribution

From the presented materials, I am convinced of the personal contribution of Pr. Assistant Koeva in publication and research activities. The candidate unequivocally demonstrates the ability to integrate into scientific teams, developing mathematical and computer models.

5. Critical notes and recommendations

I have no significant critical notes of the applicant's materials. They are well designed and present in detail all the necessary information. Some technical errors were made when determining total indicators - table. 4 and 5, but they do not significantly affect the final result.

It is an indisputable fact that the minimum required points for taking AP "Associate Professor" in TU-Gabrovo have been exceeded twice.

I recommend that part of the materials, of course after appropriate processing and formatting, be published in more prestigious international publications with an impact factor (IF).

6. Personal impressions

I have not met the candidate in person. My impressions of the presented scientific works and materials are positive. The study aids are written with a clear desire for the material to be clearly understood. The scientific works are on several different topics and are sufficiently in-depth.

My personal impressions are that Pr. Assistant Dimitrina Yordanova Koeva has the necessary competencies to develop her academic career, which will increase the scientific capacity of the department and the university.

7. Conclusion:

Bearing in mind the above, I propose **Principal Assistant Dimitrina Yordanova Koeva, PhD, to be elected as an "Associate Professor"** in the field of higher education - 5. Technical sciences, by professional field - 5.2. Electrical engineering, electronics and automation, specialty - "Electrical power supply and electrical equipment" (Electrical machines I).

08.11.2023

Member of jury: /signature/
/Assoc. Prof. O. Petrov/