OPINION

by Associate Professor Eng. Iliyan Hristov Iliev, Ph.D.

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of 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 direction: 5.2. Electrical Engineering, Electronics and Automation,

specialty " Electric Power Supply and Equipment " (Electrical machines I).

Chief Assist. Prof. Eng. Dimitrina Yordanova Koeva, PhD participates as a candidate in the competition for the position of “associate professor”, which has been announced in The State Gazette, issue 55 from 27.06.2023 and also on the website of the Technical University of Gabrovo. This competition has been declared for the needs of the department of Electronics at the faculty of Electrical Engineering and Electronics.

1. General overview of the content and results of the works that have been submitted

The candidate Ch. Assist. Prof. Eng. Dimitrina Koeva has submitted the necessary materials and evidence needed for the competition for associate professor: application to the Rector, CV, copy of the diploma for her “PhD” educational and scientific degree, list and copy of the scientific papers and publications; the authors’ reference for all quotations, the authors’ reference for the scientific contributions and reference for the teaching and pedagogical activity, including a list of the graduates that have been supervised by Dr. Koeva, reference for her participation in different scientific research projects, reference that all national requirements and minimum requirements from the Technical University of Gabrovo, specified in the Regulations for the Acquisition of Scientific Degrees and Academic Positions at the Technical University of Gabrovo have been met.

The candidate in the competition Assistant Professor Dimitrina Koeva holds a diploma for the educational and scientific degree "Doctor" in the scientific specialty "Electrical machines" (No. TUS-IPF45-HC1-021/30.04.2014), issued by TU-Sofia. She has defended a dissertation on the topic: "Automated system for control, monitoring and diagnostics of wind generators" (indicator A - 50 points). In order to participate in the competition, the candidate has submitted 44 scientific publications.Eleven of the works that have been presented are equivalent to habilitation work and they have been published in editions, referenced and indexed in globally recognized database with scientific information (indicator C - 295 points).The following works have also been presented: one publication in a magazine, referenced and indexed in globally recognized database with scientific information and 32 scientific publications in non-referenced journals with scientific reviews or in edited collective volumes (group of indicators D.7 - 40 points and D.8 - 261.73 points); 12 quotations in scientific publications, referenced and indexed in globally recognized database with scientific information, and 3 quotations in non-referenced journals with scientific reviews (group of indicators D - 126 points, of which indicator D.12 - 120 points and indicator D.14 – 6 points). The candidate has one recognized application for utility model - Patent for a utility model No. 218/30.09.1999 (indicator E.26 – 40 points), and

three published textbooks by the university publishing house (indicator E.24 – 60 points). The candidate has participated in 6 scientific researches connected with different university projects and she was in charge of one of them. Dr. Koeva's H-index in SCOPUS is currently h=3 (https://www.scopus.com/authid/detail.uri?authorId=55359594700).

It is clear from the submitted information, that the candidate fully meets the minimum of the national requirements and the minimum of the requirements from TU-Gabrovo for the position of Associate Professor, and she even exceeds these requirements by all indicators. Therefore, the participation of Dr. Eng. D. Koeva in this competition is completely legitimate.

2. General description of the candidate's activities

2.1. Teaching practice (work with students and postgraduate students)

Ch. Assist. Prof. Eng. Dimitrina Koeva, PhD, is an established lecturer at TU-Gabrovo. She has 32 years of work experience in the field of higher education, as 7 years of them are a part of her teaching experience at TU-Gabrovo. According to the presented report on the schedule of classes that have been held at TU-Gabrovo for the last 5 years, she has spent 3499 hours with both full-time and part-time students in the following disciplines:

- "Electrical machines I", "Energy technologies and ecology", "Electrical equipment" and "Electrical equipment of industrial machines and processes", "Optimal design of electrical machines" and "Technical means of energy storage" for the specialty " Electric Power Supply and Equipment";

- "Electromechanical devices" for the specialties " Automation, Information and Control Systems", "Industrial and automotive electronics", "Communication technologies and cyber security" and "Technical safety".

Dr. Koeva is also the co-author of 3 textbooks:

- Rachev S., D. Koeva. Driving techniques, Vasil Aprilov University Publishing House, Gabrovo, 2015, ISBN 978-954-683-545-1. (243 pages);

- Koeva D., S. Rachev. Energy technologies and ecology, Vasil Aprilov University Publishing House, Gabrovo, 2016, ISBN 978-954-683-560-4. (133 pages)

- Rachev S., D. Koeva, L. Dimitrov. Electrical equipment, Vasil Aprilov University Publishing House, Gabrovo, 2022, ISBN 978-954-683-673-1. (233 pages), https://epublish.tugab.bg/component/jdownloads/?task=download.send&id=113&catid=37&m=0&Itemid=101

The candidate in this competition is the author/co-author of the study programs in the disciplines "Electrical machines I", "Electrical equipment", "Electrical equipment of production machines and processes", "Energy technologies and ecology", "Optimal design of electric machines", "Electromechanical devices" , "Energy-saving electric drives" and "Transient processes in electrical systems" for the specialty of " Electric Power Supply and Equipment".

Ch. Assist. Prof. Eng. Dimitrina Koeva has participated in the following activities at the Postgraduate Qualification Center at TU-Gabrovo:

- author/co-author of a training course plan for "Fitter of energy equipment and installations" (code 522040), specialty "Renewable energy sources" (code 5220408), professional direction "Electrical engineering and energy" (code 522);

- author/co-author of a curriculum for a training course on "Modern software products and approach to automated design in power supply and electrical equipment";

- author of a curriculum for a training course on "Optimal design of electric motors with industrial application - software and hardware solutions".

Dr. Dimitrina Koeva was the supervisor of 80 graduates who successfully defended their theses.

The above-mentioned facts give me reason to assess the pedagogical preparation and activity of Ch. Assist. Prof. Eng. Dimitrina Koeva, PhD as very good.

2.2. Scientific and scientifically applied activities

Ch. Assistant Professor Dimitrina Koeva, Ph.D., was in charge of a university research project by Contract 2104E/2021 - "Electric drives for electric vehicles and industrial applications, electrical components and systems - practical and model studies with a view to energy and economic efficiency". For the period between 2017-2023, she has participated in 5 different university research projects. In addition, Ch. Assistant Professor Dimitrina Koeva, PhD, is involved in one international educational project “European Vocational Skills Week 2020 BEE-VET 2019-1-BG0-KA202-062584” (Co-funded by the Erasmus+ Program of the European Union); 2020-1-BG01KA202-079042 (considered from 01.03.2021) and also in one national educational project - NP MES BG05M2OP001-2.011-0001 "Support for success", platform "Activities by interests".

Dr. Koeva has an active participation and several publications that have been awarded in conferences of the Scientific and Technical Union of Mechanical Engineering - Bulgaria, 2017 and 2018, Association for Promoting Electric Vehicles in Romania – 2019, International Scientific Conference INDUSTRY 4.0 – 2017, 2018, 2019 and 2021, International Conference "Ecological Truth" - University of Belgrade, Serbia - 2015, International Conference on Communication, Information, Electronic and Energy Systems, CIEES - 2021 and 2022; International Conference on Electronics, Engineering Physics and Earth Science, EEPES – 2022 and 2023.

Ch. Assistant Dr. Dimitrina Koeva was the reviewer of 10 scientific publications in magazines referenced and indexed in globally recognized database with scientific information. They are mentioned as follows: International Journal of Applied Power Engineering, ISSN 2252-8792, https:// ijape.iaescore.com – 1; International Conference on Communication, Information, Electronic and Energy Systems, CIEES – 6, (2021, 2022 and 2023); International Conference on Electronics, Engineering Physics and Earth Science, EEPES – 3 (2023).

2.3. Implementation activity

The candidate presents two references from companies for activities connected with implementation, development and consulting. One 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, scientifically applied and applied) and their significance to science and practice.

I accept the formulated contributions in the presented works, since they have both scientific and applied nature. They are related to providing new means and methods for solving

existing scientific problems. This is achieved by obtaining confirmatory facts in the field of research and modeling of processes in the electric power industry and, in particular, electric machines, as well as their use in the educational process.

Scientifically applied contributions in publications that are equivalent to habilitation work:

• Methods, algorithms and mathematical models of the electromechanical system of drive motors with industrial application have been developed [B.4.2 – B.4.4, B.4.9, B.4.10].

• Models for forecasting energy consumption by energy objects have also been developed [B.4.7].

• An approach to determine energy losses on an annual basis through parameters and values of about 1700 asynchronous motors (studied in two high-energy-intensive enterprises) has been presented. After identifying the technological, technical and other issues in the context of energy and resource efficiency management, key factors for energy efficient investments have been presented [B.4.6, B.4.11].

Scientifically applied contributions, other than those that are equivalent to monographic work:

• Models, algorithms and techniques for diagnostics that can be combined with the wind turbine control and monitoring system have been proposed. A model for building a system for diagnostics has been selected [D.8.6 – D.8.10, D.8.12, D.8.16].

• Various models for forecasting the consumption of generated and/or consumed energy have been studied in order to establish their degree of adaptation in the power system [D.7.1, D.8.26, D.8.28].

Applied Contributions:

• Various types of non-linear loads in the industry and the public sector are studied on the basis of the measurements and load schedules that have been taken. On this basis, an approach for the distribution of combined non-linear loads is proposed and it is connected to the energy efficient and reliable operation of the power transformer [D.8.5, D.8.18, D.8.19 – D.8.21, D.8.25, D.8.27].

4. Evaluation of the personal contribution of the candidate

My assessment of the candidate's contribution and results in the competition is high. The presented works, quotations and participation in projects correspond to the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB) and the Regulations for its implementation, as well as the minimum requirements of TU-Gabrovo for the scientific and teaching activities for acquiring the academic position "associate professor".

5. Critical notes and recommendations

I did not find any significant flaws or lack of information in the candidate's works. I believe that her contributions can be summarized. I recommend preparing the publications with IF.

6. Personal impressions

I know the candidate from her participation in different scientific forums in the country. The submitted materials for participation in the competition give me the reason to claim that Ch. Assistant Professor Dr. Dimitrina Koeva has excellent qualifications and is a well-known specialist in the field of electrical machines.

7. Conclusion:

Having the above-mentioned facts in mind, I suggest Ch. Assistant Professor Dr. Dimitrina Koeva, Ph.D, to be chosen for the position of "associate professor" in the field of higher education 5. Technical sciences, by professional direction 5.2. Electrical engineering, electronics and automation, specialty “Electric Power Supply and Equipment" (Electrical machines I).

09.11.2023 Member of the jury: /signature/

/Assoc. Prof. Dr. Eng. Ilian Iliev/