OPINION

UNDER THE COMPETITION FOR THE OCCUPATION OF THE ACADEMIC POSITION "ASSOCIATE PROFESSOR"

Field of higher education 5. TECHNICAL SCIENCES

Scientific specialty 5.2 "ELECTRICAL ENGINEERING, ELECTRONICS AND AUTOMATION" (POWER SUPPLY AND ELECTRICAL EQUIPMENT)

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One candidate has submitted documents for participation in the competition - **Assistant Professor Ginko Angelov Georgiev, PhD**

Prepared the opinion: Assoc. Prof. Dr. Eng. Silvia A. Letskovska, program coordinator of OP Technical Sciences, Center for Informatics and Computer Science, BFU – Burgas

I. Education and professional qualification

Ginko Angelov Georgiev was born on August 19, 1967. In 1985 he completed his studies at the MG "Acad. N. Obreshkov", Burgas.

In 1992 he obtained a Master's degree in VMEI - Varna / TU-Varna / in the specialty "Electrical supply and electrical equipment" with a qualification "Electrical Engineer".

In 1992 he won a competition and was appointed an assistant in the ESEO department of the Faculty of Electrical Engineering at VMEI - Varna / TU-Varna /. In 1995 he was appointed senior assistant at the same faculty. He worked in VMEI - Varna / TU-Varna / until 1999.

In the period 1999 ÷ 2006 Ginko Georgiev worked in Kuwait Oil Tanker Company as a ship's electrician. From 2006 to 2014 he held the position of "Technical Manager" in the company TEAM 5 Ltd. - Burgas.

He successfully defended his dissertation on the scientific specialty 02.04.15 "Power supply and electrical equipment" in 2012 at the Faculty of Engineering, Department of Electrical Engineering at VVMU "N. J. Vaptsarov" - Varna.

Since 2014, Ginko Angelov Georgiev is an assistant at the Burgas Free University.

II. General description of the materials submitted in the competition

The materials provided by the candidate Ginko Angelov Georgiev under the competition meet the requirements of Art. 24. (1) of ZRASPB1 and Art. 49 (3) of the Regulations for the development of the academic staff for holding the academic position "Associate Professor" at BFU:

1. Ginko Georgiev has obtained the educational and scientific degree "Doctor" (scientific specialty 02.04.15 "Electricity supply and electrical equipment", 2012, diploma №6 /24.09.2012 VVMU "NY Vaptsarov");

2. He held the academic position of "Assistant" for more than two years (3 years in the period 1992÷1995 in VMEI - Varna / TU-Varna / and seven years in the period 2014÷2021 in BFU);

3. The submitted published monographic work entitled "The imaging vector in frequency inverters" does not repeat the presented work on "Exploring the potential impact on energy efficiency in marine electricity systems" for obtaining the educational and scientific degree "Doctor".

The candidate has also provided the necessary according to Art. 50 (2) of the Regulations for the development of the academic staff for holding the academic position "Associate Professor" documents:

1. Information on the scientific contributions in the scientific field 5.2 "Electrical engineering, electronics and automation" (Power supply and electrical equipment);

2. Information and certificates for participation in projects (Study of transient processes in modern electrical equipment, Study of the operational reliability of electromechanical devices with variable frequency power supply, etc.);

3. Training courses or complete methodological units, included and prepared for the inclusion of e-learning platforms (Energy efficiency of electrical systems, Electrical machines, Electrical appliances, etc.).

According to Art. 50 (3) of the Regulations for the development of the academic staff at BSU, each center may set additional requirements to the candidates for the academic position (Appendix № 2).

The compliance of the documents submitted under the competition with the additional requirements of the Center for Informatics and Technical Sciences of BFU according to Appendix 2 is shown in Table 1.

Table 1.

№	REQUIREMENT	MATERIALS PROVIDED
1	Issued minimum: ▪ 1 textbook and ▪ 2 workbooks in disciplines studied at BFU.	▪ 1 textbook and ▪ 2 workbooks in disciplines studied at BFU.
2	Publications outside the dissertation for educational and scientific degree "Doctor" - at least 20, of which: ▪ at least 3 pcs. stand-alone publications and ▪ at least 3 pcs. publications compulsorily published in scientific forums abroad.	Publications outside the dissertation for educational and scientific degree "Doctor" - 23 publications, of which: ▪ 5 pcs. standalone and ▪ 4 pcs. publications in scientific forums abroad.
3	Management of graduates - at least 10 defended successfully.	Guidance and consulting of successfully defended graduates - 22 students.
4	Participation in at least 3 projects with final contractors international and national institutions.	Participation in 10 projects (leader of two of them) with final contractors international and national institutions.

III. Evaluation of the candidate's scientific works for the overall academic development

3.1. General characteristics of scientific production and publishing activity

The reference for the original scientific contributions, provided by the candidate, shows that his main developments and researches have a definite practical-applied and scientific-applied direction.

The scientific developments are related to research mainly in the fields of: frequency control of alternating current machines; the indicators for the quality of the electricity and the minimization of the inactive capacities in the power supply systems, as well as the assessment of their reliability; the creation of complex systems for conducting practical training in the training of specialists in the field of electrical equipment and power supply.

3.2. Scientific activity – dissemination and application of the scientific and practical achievements of the candidate among the scientific community

Ginko Angelov Georgiev is the author of the monograph on the subject "The imaging vector in frequency inverters". He is also the author of a textbook and two workbooks for the preparation of students studying the disciplines "Energy efficiency of electrical systems", "Electrical machines" and "Electrical appliances".

The main scientific fields to which the publications provided by the candidate belong are:

1. Electrical equipment. 1 monograph is provided; 8 articles (with serial numbers 4, 10, 12, 13, 15, 20, 22, 23);
2. Power supply. 6 articles were provided (with serial numbers 24, 25, 26, 27, 31, 32);
3. Quality of electricity. 6 articles were provided (with numbers 1, 3, 14, 16, 28, 29);
4. Use of energy from renewable sources and energy accumulation. 2 articles (numbers 17 and 22) are provided.

The scientific and applied contributions presented in the scientific works of the candidate are the result of conducted research and experiments – simulation and practical. They are mainly related to the characteristics of frequency inverters and power quality indicators, with proving the capabilities of the "imaging vector" as a powerful tool for research and construction of control systems.

Table 2.

SCIENTIFIC INDICATORS

Area 5. Technical sciences PN 5.2. Electrical engineering, electronics and automation

Indicators	Contents	Requirement (points)	Execution (points)
А	Indicator1. Dissertation for the award of educational and scientific degree "Doctor"	50	50
В	Indicator 3 or 4. Habilitation work - monograph	100	100
Г	Sum of the indicators from 5 to 11	200	217.5
Д	Sum of the indicators from 12 to 15	50	78
	Total	400	445.5

A model of soft starter electric drive has been created in Matlab, a simulation study of the starting mode of a powerful asynchronous electric drive has been conducted; new solutions for various electric drives have been proposed; a complex system for restoration of the power supply has been developed; a detailed analysis of the joint operation of power transformers, capacitor banks, cable lines and others in the conditions of asymmetric and non-sinusoidal load is performed and a method for complex evaluation based on the Theory of Experimental Planning is proposed; the expediency of using the "imaging vector" in combination with the method of "instantaneous power" for analysis and assessment of the state of power supply systems and the ability to influence interference caused by asymmetry and high harmonics, etc. has been proven.

The works of Ginko Angelov Georgiev receive the required number of points, which are necessary to meet the requirements for scientometric indicators (Table 2).

3.3. Participation in the implementation and management of projects

Ginko Georgiev has participated in 10 projects with contracting authorities from international and national institutions. Three of the projects are commissioned by international and national institutions, seven are funded by BFU. The work on these projects is not reported in Table 2, due to the fact that it is not part of the requirements for "associate professor".

IV. Participation in teaching activities, incl. scientific guidance and consulting of graduates

Ginko Georgiev leads lecture courses in the following disciplines: "Power Supply", "Electrical Equipment", "Electrical Machines", "Electrical Appliances", "Energy Efficiency of Electrical Systems". He has supervised or advised 22 successful defense graduates.

V. Evaluation of the monographic work submitted for participation in the competition for "Associate Professor" by the candidate

The monograph "The Imaging Vector in Frequency Inverters" was published in 2021, includes six chapters, a conclusion, used literature and has a volume of 107 pages.

The monograph examines the design features of alternating current machines – synchronous and asynchronous, as well as the possibilities for presenting the magneto-moving voltage (MD), inductions, flux couplings, currents and voltages with imaging vectors. The main emphasis is on the imaging current vector in three-phase windings and different coordinate systems. A methodology for building a speed control system for both asynchronous and synchronous permanent magnet motors is presented, taking into account all the limitations arising from the peculiarities of AC machines.

The full use of the DC link voltage in pulse width modulation (PWM) has been proven, a basic method for realizing the stator voltage vector used mainly in vector control systems. The results obtained in simulation and real tests of vector-controlled electric drives are presented, proving the advantages of vector control, including at speeds close to zero. The future directions in the development of the control systems of the modern electric machines are commented.

VI. Reflection (citation) of the candidate's publications in the national and foreign literature (publication image)

12 citations were provided to 6 of the candidate's publications. Publications presented at international forums abroad are mainly cited.

VII. Critical remarks and recommendations

The main recommendation to the candidate is to continue to work actively in the direction of updating the laboratory base of CITN.

VIII. Conclusion

The analysis of the documents of Assistant Professor Ginko Angelov Georgiev, PhD, Center for Informatics and Computer Science, BFU – Burgas, shows that the requirements of ZRASPB1 and the Regulations for the development of the academic staff for the occupation of the academic position “Associate Professor”, Scientific specialty 5.2 "ELECTRICAL ENGINEERING, ELECTRONICS AND AUTOMATION" (POWER SUPPLY AND ELECTRICAL EQUIPMENT) at BSU are completed, which is why I propose the application to be approved.

Date: 18.01.2022 Signature:……..

(Assoc. Prof. Dr. Eng. Silvia A. Letskovska)