

EVALUATION STATEMENT

in a competition for the academic position of "Associate Professor"
in the field of higher education 5 "Technical sciences"
in professional field 5.2 "Electrical Engineering, Electronics and Automation"
(Power supply and electrical equipment) announced in SG no. 87 of 19.10.2021
and the website of the Burgas Free University

Candidate: _____ Dr. Eng. Ginko Angelov Georgiev
lecturer at Burgas Free University

Member of the scientific jury: Prof. Dr. Eng. Radostin Simeonov Dolchinkov
Center for Informatics and Technical Sciences,
Burgas Free University

1. General biographical data

Ginko Angelov Georgiev was born on August 19, 1967. He graduated from the Secondary School "Acad. N. Obreshkov" in Burgas in 1985.

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". After winning a competition from 1992 to 1995, Dr. Georgiev was an assistant, and from 1995 to 1999 - a senior assistant in the ESEO Department of the Faculty of Engineering at the Technical University - Varna. He successfully defended his dissertation in 2012 at VVMU "N. J. Vaptsarov", Faculty of Engineering, Department of Electrical Engineering in the scientific specialty 02.04.15 "Electricity supply and electrical equipment".

Since 2014 he has been an assistant at the Center for Informatics and Technical Sciences at BSU.

2. General characteristics of the research and scientific-applied activity of the candidate

Dr. Ginko Angelov Georgiev, Ph.D. scientific publications in unrefereed journals with scientific review or in edited collective volumes and 1 textbook and 2 textbooks.

The monograph is from 2021 entitled "The imaging vector in frequency inverters" and has a volume of 107 pages.

The independent works of the candidate are 5 [10, 13, 14, 28, 29], one of the works is with one co-author [15], and 17 - with two or more co-authors [1, 3, 4, 12, 16, 17, 19-27, 31, 32]. Six of the publications are in English [16, 17, 21, 22, 31, 32].

Dr. Georgiev has participated in 6 research projects at BSU, and was the leader of two of them.

The candidate provided information on 12 citations.

The analysis of the research and applied research presented by the candidate shows that the national minimum requirements are exceeded, as well as those of the Burgas Free University for holding the academic position "Associate Professor", presented by indicators:

– He has defended a dissertation on "Study of opportunities for impact on energy efficiency in ship power systems" and on 24.09.2012 received a diploma for educational and scientific degree "Doctor" in 02.04.15. "Electricity supply and electrical equipment of the ship" (indicator A - 50 points).

– Author of a monograph (indicator B - 100 points).

– Presented are: 23 publications (indicator D - 217.5 points), of which 2 publications are in publications, referenced and indexed in world-famous databases with scientific information, and 21 scientific publications in non-refereed journals with scientific review or in edited collective volumes (indicator group G7 - 23.3 points and G8 - 194.2 points);

→ 12 citations, of which in scientific journals, referenced and indexed in world-famous databases with scientific information - 6 pcs. (indicator D12 - 60 points), in monographs and collective volumes with scientific review - 6 pcs. (indicator D13 - 18 points) - (indicator D - 78 points).

The candidate collects a total of 445.5 points for participation in the competition.

3. Assessment of the pedagogical preparation and activity of the candidate

In my opinion, Dr. Eng. Ginko Georgiev has a very good pedagogical training and develops a successful pedagogical activity, which is entirely with the requirements for holding the academic position of "Associate Professor". The reason for formulating such a conclusion gives me the presence of the following facts:

- From 1992 to 1995 Dr. Georgiev was an assistant, and from 1995 to 1999 - a senior assistant in the Faculty of Engineering at the Technical University - Varna.
- Since 2014 he has been an assistant at the Center for Informatics and Technical Sciences at BSU. According to the presented report on teaching staff, he has given lectures, seminars and laboratory exercises in the disciplines: "Electrical Machines", "Electrical Appliances", "Electrical Supply", "Electrical Equipment", "Energy Efficiency of Electrical Systems".
- There are 2 manuals developed:
 - Guide for seminars and laboratory exercises on electrical machines, ISBN 978-619-253-010-5;
 - Guide for seminars and laboratory exercises in electrical appliances, ISBN 978-619-253-009-9).
- There is one textbook developed in the e-learning platform ("Energy efficiency of electrical systems") and 5 training courses in the e-learning platform.
- He was the head of 22 graduates.
- Participated in the development of curricula

4. Main scientific and applied scientific contributions

I accept the formulated contributions in the presented works. They have a scientific-applied character and are related to proving and new means of significant new countries in existing scientific problems and to obtaining confirmatory facts in the field of power supply and electric propulsion.

4.1. Scientific and applied contributions in the monographic work

- The ways for drawing up structural schemes for vector control of asynchronous motors and synchronous machines with permanent magnets are analyzed and presented;
- Vector controlled electric drives are studied and the tendencies for development of electric machines are presented;
- Pulse width modulation is considered as a main method for realization of the stator voltage vector in vector control systems.

4.2. Scientific and applied contributions in the publications

In the publications the research work of the candidate can be considered in 4 main directions:

4.2.1. Contributions in the field of "Electrical equipment" [M, 0, 4, 10, 12, 13, 15, 20, 22, 23]

- The differential equations of the asynchronous machine by the Laplace method are solved and a way to determine the parameters of the asynchronous machine by capturing the imaging vector of the starting current and the inverse Laplace transform is proposed;
- Models have been created in Matlab and a simulation study of the starting mode of powerful asynchronous and laboratory frequency electric drive has been made;

- The possible causes of accidents of asynchronous electric drives in BDZ and NRIC have been studied. The electrical losses in induction motors in transient mode are determined;
- The possibilities for development of electric drives by increasing the number of phases in electric machines are considered. Asynchronous motors in vector control of voltage and current, with and without feedback have been studied;
- A complex system for restoration of the power supply has been developed;
- The possibilities for development of electric drives by increasing the number of phases in electric machines and hence imposing tolerance to their faults are shown.

4.2.2. Contributions in the field of "Electricity supply" [24, 25, 26, 27, 31, 32].

- An assessment of the reliability of electricity supply in the sectoral structure of the country was made, using the method of equivalent conversion. Recommendations for different types of reservations are given;
- The impact of electricity quality indicators on the reliability of electrical systems has been assessed. The joint operation of power transformers, capacitor banks and cable lines in the conditions of asymmetric and non-sinusoidal load is analyzed. An approach to complex estimation based on the theory of experiment planning is proposed;
- The probability of penetration of electromagnetic disturbances into the control, relay protection and monitoring systems, caused by the high multiplicity of overvoltages during the switching processes, has been confirmed;
- It has been proven in studies conducted at Solvay Sodi that current resonance occurs at reduced load in the higher frequencies, while in reactive load compensation the probability of overload of capacitor banks shifts in the lower frequencies.

4.2.3. Contributions in the field of "Quality of electricity" [1, 3, 14, 16, 28, 29]

- Experimental results of the depicting voltage vectors and phase currents during operation of asymmetric and nonlinear loads powered by a synchronous generator are obtained. It has been proven that the imaging vector is a powerful tool that can be used for fast and high-quality assessment of the processes that occur in such a power supply system;
- Electricity supply systems in Bulgarian companies have been studied. The dangers of electrical resonance according to the levels of high harmonics are shown and recommendations are made for its avoidance;
- 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 affect interference caused by asymmetry and high harmonics;
- It is justified that when using the "imaging vector" the components of the total power are determined in a generalized way in case of disturbances of the power systems with higher harmonics and asymmetries.

4.2.4. Contributions to the use of energy from renewable sources and energy accumulation [17, 22]

- The production of hydrogen from a fuel cell using electricity obtained from a photovoltaic plant was studied;
- A complex system for monitoring and analyzing the cycle of technological processes has been developed - production of electricity from renewable energy sources, production and storage of hydrogen and inverse conversion of energy into electricity; - Software applications for processing, storage and visualization of data received from meteorologists have been created;
- The mobile application for receiving information about the production of energy from the photovoltaic plant in real time has been developed.

5. Significance of contributions to science and practice

In my opinion, the volume and quality of the research work carried out by the candidate and the respective contributions from it cover the requirements of the law for the development of the academic staff in the Republic of Bulgaria. The scientific-applied and applied contributions shown in the publications demonstrate the results of the candidate's activity and are of essential importance for implementation in the educational process, for practical application in the field of electric power and engineering practice. Proof of this are the achieved scientometric indicators, which exceed in quantity and quality the criteria for holding the academic position of "Associate Professor" at BSU.

Critical remarks and recommendations

In the materials and documents submitted by the candidate for participation in the competition, I did not find any omissions of a fundamental nature. I recommend the candidate to continue his successful teaching and scientific career, publishing works in authoritative scientific journals and, if possible, to defend a major doctoral dissertation.

CONCLUSION

After getting acquainted with the presented scientific papers, their significance, their contributions to the scientific, pedagogical and implementation activities, I find it reasonable to propose to the esteemed jury, Dr. Eng. Ginko Angelov Georgiev to be elected "Associate Professor " in the professional field 5.2. "Electrical Engineering, Electronics and Automation" (Power Supply and Electrical Equipment), at the Center for Informatics and Technical Sciences of Burgas Free University.

Date: 18.01.2022.

Member of the jury:

/ prof. Dr. Eng. Radostin Dolchinkov /