

EVALUATION STATEMENT

by Prof. Anatoliy Trifonov Alexandrov PhD, Technical University - Gabrovo of the materials submitted for participation in a competition for the academic position "Associate Professor" in the field of higher education - 5 Technical Science, in professional field - 5.2 Electrical Engineering, Electronics and Automation ("Electronization"), at the Center for Informatics and Technical Science of BFU

In the competition for the academic position of "Associate Professor", announced in the State Gazette, issue 80 of 16.10.2015, under Art. 67, p. 1, item 1 of the pandect for a full-time associate professor in a professional field - 5.2 Electrical Engineering, Electronics and Automation (Electrification) as a candidate participates Ch. Assistant Professor Eng. Daniela Zhekova Mareva PhD.

Grounds for giving an opinion on the competition: Order № UMO 172 / 01.09.2021 of the Rector of BFU and decision of the scientific jury of 10.09.2021.

The opinion has been prepared in accordance with the Law for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for implementation of the Law for the Development of the Academic Staff in the Republic of Bulgaria and according to the general requirements of BFU.

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

In the competition for the academic position of "Associate Professor" Ch. Assistant Professor Daniela Zhekova Mareva, PhD, participated with 23 scientific papers, of which 1 habilitation thesis, 4 scientific publications (G7-7, 10, 12, 13) in publications, referenced and indexed in world-famous databases with scientific information (Scopus), and 18 scientific publications (G8-P2-P6, P8, P9, P11, P14-P23) in unreferred journals with scientific review or in edited collective volumes.

Publications can be classified as follows:

- articles in proceedings of international conferences and magazines abroad - 3 issues [7, 10, 12];
- articles in magazines, yearbooks and journals - 4 issues [3, 8, 9, 19];
- articles in conference proceedings in Bulgaria - 15 issues [2, 4-6, 11, 13-18, 20, 21-23].

Seven of the works are independent [2, 3, 5, 6, 8, 9, 14], four of the works are with one co-author [4, 11, 17, 18], and 11 - with two or more co-authors [7, 10, 12, 13, 15, 16, 19-23]. In 10 of the publications the candidate is in first place [2, 3, 4, 5, 6, 8, 9, 11, 14, 15]. Six of the publications are in English [6, 7, 10, 12, 13, 15,]. One of the publications is in a magazine with SJR [7], as the magazine's SJR is 0.199.

The candidate in the competition covers and in certain indicators exceeds the minimum national requirements. In 2016 she defended her dissertation in the professional field 5.2 Electrical Engineering, Electronics and Automation in the scientific specialty "Electronization" on the topic: "Inverter for induction heating of fluids", Diploma: TUV-NS-2016-069 / 25.04.2016 (indicator A - 50 points) She presented: habilitation work - monograph "Semiconductor converters in electric arc welding", BFU, 2021, ISBN: 978-619-7273-95-0 (indicator B - 100 points); 4 scientific publications in editions, referenced and indexed in world-famous databases with scientific information (Scopus) (indicator G7 - 43.3 points) and 18 scientific publications in un-referred journals with scientific review or in edited collective volumes (indicator G8 - 221, 9 points); 6 citations (indicator D - 60 points). She has participated in 5 projects, of which 3 intra-university contracts of BFU, one national project to the Research Fund and one international ERASMUS project. There have been published 6 textbooks in disciplines studied at BFU, one of which is independent (indicator E - 56.67 points).

Ch. Assistant Professor Daniela Mareva PhD covers, and according to certain indicators exceeds the science metric data according to the minimum requirements of BFU. When 1 textbook

and 2 teaching aids are required, she presents 6 teaching aids. I accept that the non-presentation of a textbook is compensated by a significantly larger number of teaching aids, one of which is independent. In case of required 20 publications, of which 3 independent and 3 published in scientific forums abroad, Ch. Assistant Professor Mareva PhD presents 22 publications, 7 of which are independent and 3 - abroad. With the required 10 graduates, it presents a list of 23 successfully defended graduates. When required to participate in at least 3 projects, it submits a list for participation in 5 projects with final contracting authorities.

2. General characteristics of the candidate's activity

2.1. Educational and pedagogical activity

Ch. Assistant Professor Daniela Mareva PhD from December 2016 until now is a senior assistant at CITN at BFU. In the period from 2001-2014 she held the academic positions of "Assistant", "Senior Assistant" and "Chief Assistant" at CITN at BFU, and from 2000-2001 she was a teacher at the "College of Mechanical Engineering", Burgas

According to the presented reference for the hours of the classes held at BFU for the last 5 years, ch. Assistant Professor Daniela Mareva PhD has spent 1837 hours. There are lectures in 7 subjects ("Electronic Circuitry", "Power Supplies", "Measurement in Electrical and Electronics", "Electronic Elements", "Lighting and Installation Equipment", "Emergency Modes in Electrical Converters", "Engineering Equipment of hotels and restaurants"), seminars in 6 subjects ("Electronic circuitry", "Power supplies", "Specialized practice", "Electrical and electronics", "Lighting and installation equipment", "Engineering equipment of hotels and restaurants") and laboratory exercises in 12 disciplines (Electronic Circuitry, "Power Supplies", "Specialized Practice", "Electronic Elements", "Electrical Engineering and Electronics", "Measurement in Electrical Engineering and Electronics", "Signals and Systems", "Optical communications", "Conversion equipment", "Power electronic converters", "Lighting and installation equipment", "Emergency modes in electrical converters", "Engineering hotel and restaurant equipment").

Daniela Mareva PhD presents 5 manuals for laboratory exercises in co-authorship ("Optical Communications", "Measurement in Electronics and Electrical Engineering", "Electronic Elements", "Power Supplies", "Analog Circuitry") and one independent manual for laboratory exercises ("Electrical and Electronics"). In 11 academic disciplines "Electronic circuitry", "Electronic elements", "Electrical engineering and electronics", "Measurement in electrical engineering and electronics", "Engineering equipment of hotels and restaurants", "Optical communications", "Lighting and installation equipment", "Power electronic converters", "Power supplies", "Emergency modes in electric converters," Specialized practice") has developed training courses in Moodle. She was the leader of 23 successfully defended graduates.

Mareva's monographic work "Semiconductor Converters in Electric Arc Welding" can be used in the research work of students, PhD students and specialists.

The above data give me reason to evaluate the pedagogical training and activities of Mareva PhD as very good.

2.2. Scientific and scientific-applied activity

The scientific work of the candidate in the competition can be systematized in three main areas - "Induction heating of fluids", "Research and improvement of driver circuits of LED light sources" and "Improvement of inverter circuits used in welding units and improvement of their mode of operation by changing the specific characteristics of the welding arc".

According to the presented report on the research activity, Daniela Mareva PhD has participated in 5 projects, of which 3 intra-university contracts of BFU, "Energy-efficient electricity source"), a national project at the Research Fund (project for publishing a peer-reviewed Bulgarian scientific publication entitled "Electronic Journal of Computer Science and Communications") and an international ERASMUS project + Program KA2 Strategic Partnerships for vocational education and training ("Development of Innovative Learning and Practicing Modules, Implemented in Cloud Computing and IoT in Digital Industry").

3. Contribution

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

3.1. Scientific and applied contributions in the monographic work

- A classification of welding methods and different types of welding units has been made. The main types of schemes of actually operating welding units are shown and explained, as well as their advantages and disadvantages.
- 6 scientific developments of inverter welding sources have been implemented, which contribute to the improvement of the process quality.
- Pspice models of the power part of the circuits have been developed and their operation has been studied. Innovations and improved nodes of some schemes are proposed. Their performance, energy characteristics and subsequent improvements were studied. Methods and schemes for improving the switching characteristics of the converters are considered. Analytical expressions are also proposed for calculation of individual elements, on which the characteristics of the circuit solutions depend.

3.2. Scientific and applied contributions in publications

- The operating parameters of the LLC inverter are studied and compared. A complex assessment of its energy and electro technical indicators has been made.
- Methods for regulation of resonant inverters for induction heating, used in practice, are simulated. A total efficiency of a transformer less power circuit of an induction heating system of fluids of about 0.9 has been achieved. The obtained results from the simulation study were verified by the real experiments of an induction heating system.
- A high-frequency switching of the power converter is proposed, which allows correct operation of the output filter with lower values of the filter capacitor.
- It has been proven that the use of a combined type of PWM, leads to a lower ripple and a better power factor. The use of nanocrystalline materials allows further reduction of losses in the studied power converter.
- Semiconductor converters in electric arc welding have been studied.

4. Assessment of the candidate's personal contribution

Assessments of the significance of the contributions are the citations indicated in the competition documents. A list of 6 citations in scientific journals, referenced and indexed in world-famous databases with scientific information is presented.

This gives me a reason to conclude that Daniela Mareva PhD is a well-known author and has published in important scientific forums in the field of the competition. The quantitative indicators according to the minimum national requirements for holding the academic position "Associate Professor" are also fulfilled.

5. Critical remarks and recommendations

I did not find any significant omissions in the works of the candidate. I believe that the contributions can be summarized. I recommend preparing publications in scientific journals with an impact factor.

6. Personal impressions

I do not know Ch. Assistant Professor Daniela Mareva PhD. personally. I have no compatible publications with her. I am not a related person within the meaning of paragraph 1, item 5 of the Additional Provisions of the Academic Staff Development Act in the Republic of Bulgaria. My assessment of the candidate's contributions and results in the competition is good.

7. Conclusion:

Having in mind the above, I propose that Assistant Professor Daniela Mareva PhD to be elected "Associate Professor" in the field of higher education - 5 Technical Science, professional field - 5.2 Electrical Engineering, Electronics and Automation, specialty - "Electronics", at the Center for Informatics and Technical Sciences of BFU.

11.10.2021.

Member of the jury:


/ Prof. A. Alexandrov, PhD /