EVALUATION STATEMENT

with regard to a contest 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" (Electrification)

announced in SG no. 56 from 06.07.2021 and the site of the Burgas Free University

Candidate: Assistant Professor Eng. Daniela Zhekova Mareva PhD

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

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

In the competition the candidate Assistant Professor Eng. Daniela Zhekova Mareva PhD from the Center for Informatics and Technical Sciences of the Burgas Free University presented evidence. The analysis of the research and applied research submitted by the candidate - a monograph and a list of 22 articles and reports, as well as 6 textbooks, shows that the national minimum requirements are exceeded, as well as those of the Burgas Free University for employment. academic position "associate professor", presented by indicators:

• **Indicator A** - (50 of the required 50 points). A diploma for ONS "Doctor" from TU-Varna was presented.

• **Indicator B -** (100 out of 100 required points) The candidate has submitted a monograph entitled "Semiconductor converters in electric arc welding".

• **Indicator G** - (total 265.2 out of the required 200 points). 4 publications indexed in the Scopus database and 18 publications in other editions in Bulgarian and English are presented.

• **Indicator D** - (95 of the required 50 points). The presented reference for citations corresponds to the available information in the Scopus database - 8 citations and citations in monographs and collective volumes with scientific review - 5 citations.

• **Indicator E** - (60). A reference is attached. The candidate collects a total of 570.2 points for participation in the competition.

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

In my opinion, Assoc. Prof. Eng. Daniela Zhekova Mareva PhD 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: The candidate has 20 years of teaching experience as an assistant and chief assistant at CITN of BSU. The candidate has participated in the development of 14 disciplines in bachelor's and master's courses in the following areas: Electronic Elements, Measurements in Electrical and Electronics, Electrical and Electronics, Signals and Systems, Digital Circuitry, Power Supplies, Electronic Circuitry, Power Converters, "Converters , Optical Communications, Emergency Modes in Electrical Converters, Lighting and Installation Equipment and Engineering Equipment for Hotels and Restaurants.

Under the leadership of the candidate, 23 graduates have successfully defended.

The candidate is the author and co-author of 6 teaching aids.

3. Main scientific and applied scientific contributions

The works presented by Assistant Professor Eng. Daniela Zhekova Mareva PhD are in the competition area 5.2 "Electrical Engineering, Electronics and Automation" (Electronics).

The scientific work of the candidate in the competition can be systematized in three main directions:

• Induction heating of fluids [P3], [P11], [P12], [P13];

• Driver circuits of LED light sources - research and improvement [P2], [P7];

• Improvement of inverter circuits applied in welding units. [P1], [P4], [P5], [P6], [P10], [P16], [P17].

According to the presented report on the research activity, Dr. Eng. Daniela Mareva has participated in 5 projects, of which 3 internal university contracts of BSU:

- "Study of the possibilities of transistor inverters for induction heating of fluids";

- "Development and research of a highly efficient charger";

- "Energy efficient power source".

She has participated in a national project at the Research Fund (project for publishing a peer - reviewed Bulgarian scientific publication with the title "Electronic Journal of Computer Science and Communications") and an international project under ERASMUS + 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").

4. Contributions

I accept the formulated contributions in the presented works of Eng. Daniela Mareva PhD. 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 electrification.

4.1. 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 analyzed, as well as their advantages and disadvantages;
- ✓ Pspice models of the power part of the schemes have been developed and their operability, their energy characteristics and improvements have been studied;
- ✓ Analytical expressions are proposed for calculation of individual elements, on which the characteristics of the circuit solutions depend.

4.2. Scientific and applied contributions in the publications

- ➢ A complex assessment of the energy and electrical performance of the LLC inverter is presented;
- ➢ Implemented and simulated operation of resonant inverters for induction heating, used in practice. The results obtained from the simulation study were verified by conducting real experiments on an induction heating system;

- High-frequency switching of the power converter is proposed, which allows proper operation of the output filter with lower values of the filtering capacitor; ¬ It is proposed to use nanocrystalline materials to reduce losses in the power converter;
- Innovative studies of semiconductor converters in electric arc welding have been made.

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 science 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.

6. 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 by publishing papers in authoritative scientific journals and, if possible, to defend a major doctoral dissertation.

CONCLUSION

After getting acquainted with the presented scientific works, their significance, the contributions contained in them in the scientific, pedagogical and implementation activities, I find it reasonable to propose to the esteemed jury, **Assist. Prof**.. Eng. Daniela Zhekova Mareva PhD to take the academic position of "**Associate Professor"** in the professional field 5.2. "Electrical Engineering, Electronics and Automation" (Electronization), at the Center for Informatics and Technical Sciences of Burgas Free University.

Date: 15.10.2021 **JURY MEMBER:** .....

/ prof. Eng. Radostin Dolchinkov PhD/