

STATEMENT

*by prof. PhD Eng. Anatoly Trifonov Aleksandrov, Technical University - Gabrovo
on the materials submitted for participation in a competition for the academic position of
"professor" in the professional field 5.2. Electrical Engineering, Electronics and Automation,
specialty "High Voltage Technics", announced in the State Gazette
No 7/ 23.01.2024, for the needs of the Department of Medical Equipment, Electronic and
Information Technologies in Healthcare of the Medical University – Varna*

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

In the competition for the academic position of "Professor" Assoc. Dr. Margreta Parashkevanova Vasileva participated with 33 scientific works, of which habilitation work - 10 scientific publications (B4.1 - B4.10) in editions, referenced and indexed in world-famous databases with scientific information (Scopus), 4 scientific publications (G7.1 - G7.4) in editions referenced and indexed in world-famous scientific information databases (Scopus), and 19 scientific publications (G8.1 - G8.19) in non-refereed peer-reviewed journals or in edited collective volumes.

The publications can be classified as follows:

- By place of publication: reports in proceedings of international scientific conferences abroad - 6 issues [B4.3, B4.4, G8.12, G8.13, G8.18, G8.19]; articles in international magazines and journals - 3 issues [B4.2, B4.7, B4.8]; reports in proceedings of international scientific conferences in Bulgaria - 13 issues [B4.1, B4.5, B4.6, G7.1, G7.3, G7.4, G8.1, G8.3, G8.4, G8.14 - G8.17]; reports in works of national scientific conferences, sessions and seminars - 9 issues [B4.9, B4.10, G7.2, G8.5 - G8.10]; reports in scientific works of universities - 2 issues [G8.2, G8.11].

- According to the language in which they are written: in English - 28 issues [B4.1 - B4.10, G7.1 - G7.4, G8.1, G8.3, G8.4, G8.8 - G8.10, G8.12 - G8.19]; in Bulgarian - 5 issues [G8.2, G8.5 - G8.7, G8.11].

- By number of co-authors: independent - 2 issues [G7.3, G8.1]; with one co-author - 8 issues [B4.9, G7.1, G7.2, G8.3, G8.10, G8.12, G8.13, G8.19]; with two co-authors - 13 issues [B4.1, B4.2, B4.4, B4.5, B4.6, B4.8, G7.4, G8.2, G8.4, G8.5, G8.8, G8.11, G8.15]; with three or more co-authors - 10 issues [B4.3, B4.7, B4.10, G8.6, G8.7, G8.9, G8.14, G8.16, G8.17, G8.18].

In 15 of the publications [B4.3, B4.4, B4.6, B4.9, G7.1 - G7.4, G8.1, G8.3, G8.12, G8.13, G8.14, G8.16, G8.19] Associate Professor M. Vasileva is in first place among the co-authors.

Prof. M. Vasileva meets and in certain indicators exceeds the minimum national requirements and the requirements of the Regulations for the development of the academic staff at the Medical University "Prof. Dr. P. Stoyanov" - Varna. She defended her dissertation on the topic: "Limiting overvoltages in 20 kV electrical networks" (Diploma for ONS "Doctor" No. 29589 dated 07.03.2005), scientific specialty "High Voltage Technique" (indicator A - 50 points).

She presented a habilitation thesis - scientific publications (10 items) in publications, referenced and indexed in world-famous databases with scientific information (indicator B - 195 items), 4 scientific publications in publications, referenced and indexed in world-famous databases with scientific information (Scopus) (index G7 - 93.33 points), 19 scientific publications in non-refereed journals with scientific review or in edited collective volumes (index G8 - 145.02 points) and 17 citations (index D - 170 points).

The candidate has research and implementation activity (indicator E - 203.34 points): supervision of a successfully defended doctoral student (indicator E17 - 60 points); participation in a national scientific or educational project (indicator E18 - 50 points); management of a national scientific or educational project (indicator E20 - 20 points); published university textbook (indicator E23 - 60 items); published university textbook (indicator E24 - 13.34 items).

Prof. M. Vasileva presented the list of 32 participations in 23 international conferences, congresses, symposia and forums in Bulgarian and English. According to the presented report on scientific research activity, Associate Professor M. Vasileva participated in 6 national scientific or educational projects, one of which she was the head of.

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

Prof. M. Vasileva has 28 years and 2 months of work experience in the specialty as a teacher. She successively held the academic positions of "assistant", "senior assistant", "principal assistant" and "associate professor" at TU-Varna in the period from November 1995 to September 2019. From September 2019 until now, she is an associate professor at Medical University - Varna.

Prof. Vasileva conducts classes in the disciplines "High voltage technology", "High voltage technique", "High voltage technique in medicine", "Electrotechnical materials", "Technical safety" and "Sanitary technology". According to the submitted report on the schedule of guided lessons for the academic years 2020/2021, 2021/2022 and 2022/2023, she conducted 466 hours, of which 276 hours were lectures and 190 hours were exercises. Prof. Vasileva is the chairman of many state examination committees for the specialty "Information technologies in health care", OKS "master". She participated in 4 scientific juries on procedures for obtaining the title of PhD, in 4 scientific juries on procedures for filling the academic position of "principal assistant", in 6 - for filling the academic position of "associate professor" and in 1 - for filling for the academic position "professor". She is the supervisor of 5 doctoral students, of which 3 have successfully defended.

Prof. Vasileva has extensive organizational and management experience. From 2011 to 2015, she was the Deputy Dean of the Faculty of Electrical Engineering, and from 2015 to March 2019, the Deputy Rector of the Technical University of Varna. From December 2019 until now, she is the head of the department "Medical equipment, electronic and information technologies in health care" at the Faculty of Public Health of the Medical University - Varna.

3. Main scientific and applied contributions

I accept the formulated contributions in the presented works. They have a scientific and scientific-applied nature and are related to proving with new means essential new sides in existing scientific problems and obtaining confirmatory facts in the field of electric power systems.

The contributions are in four thematic areas:

- Model studies of occurrence and limitation of overvoltages in electrical systems (B4.3, B4.4, B4.6 – B4.10, G7.1 – G7.3, G8.1, G8.3, G8.12, G8.14, G8.17, G8.19).
- Investigation of wave processes in grounding installations of power plants (B4.5, G8.8, G8.11, G8.13, G8.15, G8.16, G8.18).
- Electrical safety in power systems (B4.1, G8.2, G8.4, G8.5).
- Model studies of processes in electrical equipment (B4.2, G7.4, G8.6, G8.7, G8.9, G8.10).

3.1. Scientific contributions

- Three-phase simulation models of high-voltage electrical systems have been developed for the study of wave processes in the Matlab Simulink program environment and of atmospheric, switching and established overvoltages at a nominal voltage of 220 kV in the ATP-EMTP program environment (B4.04, B4.06, B4.09, B4.10, G7-01, G7-02, G8-12, G8-14; G8-17, G8-19).
- Simulation models have been created in the Matlab Simulink program environment to study the processes in grounding installations under the influence of a lightning current in a low-voltage electrical network for an arbitrary configuration and location of the lightning strike

and of single-phase residual current protection, which allow a more precise analysis of electrical safety (B4.1, G8.16).

- A dependence has been derived for determining the maximum contact voltage in an end corner cell of an earthing network for the case of a pulsed lightning current flowing at any of its points (G8.8).

3.2. Scientific and applied contributions

- Research has been conducted on the protective characteristics and energy resistance of surge protection devices in low, medium and high voltage electrical systems. Recommendations for the selection of protective devices are formulated (B4.3, G8.1, G8.3).

- Overvoltage levels for a 220 kV electrical substation are determined and ways to limit them are proposed. An analysis was made of the various factors influencing the levels of overvoltages. An approach is proposed for obtaining evaluation values regarding the reliability of the system for protecting electrical substations from overvoltages (B4.7, G8.19).

- Simulation models were developed in the Matlab Simulink program environment for visualizing the processes in the power systems (B4.8, G7.3).

- Dependencies are derived for determining the specific resistance and the relative dielectric permittivity of a soil. A method for considering a two-layer structure of soil when determining the maximum contact stress is proposed (B4.5, G8.13, G8.11, G8.15, G8.18).

- A computer program was developed to determine the risk of lightning damage. Two additional modules have been created to assess the effectiveness of protection against direct lightning strikes in wind energy parks and an assessment of the effectiveness of lightning protection has been made according to the current Bulgarian and European standards (G8.2, G8.4, G8.5).

- A simulation model of a solid dielectric with partial discharge developing in its volume is proposed in the Matlab Simulink program environment and a variant model study of partial discharge in different dielectric media is presented. Recommendations related to different magnitudes of applied voltage and different sizes of air inclusions are derived (G7.4).

- Model studies were done in Matlab Simulink of processes in 20 kV electrical networks under the influence of atmospheric overvoltages. Recommendations are offered for setting up fast-acting relay protections and for selecting the energy capability of metal oxide valve taps (B4.2).

- Model studies of LED drivers were conducted and recommendations related to their functional performance and efficiency were made (G8.6, G8.7).

- The parameters for modeling a current measuring transformer in Matlab are determined based on catalog information. The results of the model study of a current measuring transformer are presented and recommendations are made for its operation in various types of short circuits for the purposes of relay protection (G8.6).

- A substitute circuit of a metal oxide valve outlet has been developed for the study of thermal processes under the influence of atmospheric overvoltages. Model studies were done in Matlab (G8.10).

4. Significance of contributions for science and practice

An assessment of the significance of the candidate's contributions is the citations indicated in the competition documents. A list of 17 citations in scientific publications, referenced and indexed in world-renowned databases of scientific information, is presented. One of the articles was cited 9 times, and another - 8 times. This gives me reason to conclude that Associate Professor M. Vasileva is a well-known author and has published in important scientific forums in the field of the competition. The quantitative indicators for occupying the academic position "professor" at the Medical University "Prof. Dr. P. Stoyanov" - Varna and the minimum national requirements.

5. Critical notes and recommendations

In the works of Associate Professor M. Vasileva, I did not find any significant gaps. I think the contributions can be summed up. I recommend summarizing publications and publishing a monograph, as well as preparing publications with IF, independent publications and textbooks and teaching aids.

CONCLUSION

In conclusion, I can give a positive assessment of the overall scientific research and pedagogical activities of Associate Professor M. Vasileva, who fully meet the requirements for occupying the academic position of "professor". Sufficient and significant scientific and scientific-applied contributions have been received.

Based on my familiarity with the presented scientific works, their importance, the scientific and scientific-applied contributions contained in them, I find it reasonable to propose Assoc. Prof. Margreta Parashkevanova Vasileva to occupy the academic position of "professor" in professional direction 5.2 Electrical engineering, electronics and automation , specialty " High Voltage Technics ".

14.05.2024 г.

Jury member:

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/prof. A. Aleksandrov/