Statement

by Assoc. Prof. Dr. Veselin Yordanov Chobanov

Regarding the competition for the academic position of "Associate Professor" in the field of "Electrical Engineering, Electronics, and Automation" announced in Official Gazette 42/12.05.2023

with candidate: Assist. Prof. Dr. Mehmud Kadir Hasan

1. General Description of the Candidate's Scientific Research and Applied Activities

The competition for the academic position of "Associate Professor" was announced in the field of higher education - "Technical Sciences," within the professional direction 5.2 "Electrical Engineering, Electronics, and Automation," under the scientific specialty "Electrical Power Engineering (Electric Networks and Systems)" for the needs of the "Prof. Dr. Asen Zlatarov" University in Burgas. The only candidate participating in the competition is Assist. Prof. Dr. Eng. Mehmed Kadir Hasan.

Assoc. Prof. Dr. Mehmed Hasan completed his Master's degree in 2000 in the field of "Electrical Engineering" at TU-Varna. In 2010-2011, he specialized in Automotive Electronics - "Electric and Electronic Systems in Vehicles" at Mantenimiento de los sistemas electricos y electronicos de vehiculos Escuela de ofisio la Nucia, Spain. In 2021, he defended his doctoral dissertation at TU-Sofia and obtained the academic degree of "Doctor" in the scientific specialty "Electric Networks and Systems."

Dr. Mehmed Hasan participates in the associate professor competition with a monograph, 27 publications, and 6 textbooks and educational materials. Three publications are in journals indexed in the renowned SCOPUS database, while 24 publications are in non-indexed journals with scientific review. It is impressive that out of the 25 publications, 25 are sole-authored, and only two are co-authored. In the case of the monograph, 10 individual publications have been published, indicating the broad dissemination of contributions. The three textbooks are co-authored with another author, but the three educational materials are authored individually.

The minimum required points for the position of associate professor in the field of 5.2 "Electrical Engineering, Electronics, and Automation" have been fulfilled based on assessment criteria groups A and B, and exceeded in criteria groups C, D, and E:

Criteria A (Dissertation) – Minimum requirement for associate professor: 50 points – Candidate's achievement: 50 points;

- Criteria B (Monograph) – Minimum requirement: 100 points – Candidate's achievement: 100 points;
- Criteria C (Publications) – Minimum requirement: 300 points – Candidate's achievement: 380 points;
- Criteria D (Citations) – Minimum requirement: 100 points – Candidate's achievement: 122 points;
- Criteria E (Textbooks) – Minimum requirement: 100 points – Candidate's achievement: 163.3 points.

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

Assistant Dr. Mehmed Hasan has a strong pedagogical background. He has authored a total of 6 textbooks and educational materials to enhance the educational process. These resources are beneficial for student preparation and can be valuable tools for practicing electrical engineers.

3. Key scientific and applied contributions include

3.1. Contributions in the articles outside the monograph include

Scientific contributions:

- An integrated criterion for the efficiency of Active-Adaptive Electrical Networks (AAEM) is proposed, which combines the effects of increased functional reliability, energy efficiency, and economic effectiveness.
- A new methodology for analyzing the structural and functional reliability is developed, taking into consideration the specificities of AAEM and operational constraints.
- A novel approach for assessing energy efficiency in AAEM is formulated.
- A methodology for optimizing the integrated efficiency criterion is created, offering a valuable tool for comparative analysis of AAEM configurations.

Scientific applied contributions:

- Selection of criteria for evaluating the structural and functional reliability of AC power electronic modules (AAEM).

More Significant Contributions in Articles Outside the Monograph:

Scientific-Applicative Contributions:

- A methodology and mathematical model for determining the optimal value of the power factor of synchronous motors using experimental design theory have been created [Ref. G.7.1].
- A methodology for assessing the reliability of relay protection and automation devices during automatic switching to backup power has been developed [Ref. G.7.2].
- A methodology for assessing the operational reliability of Smart grid has been formulated [Ref. G.7.3], [Ref. G.8.14].
- A methodology for alternative study of the connection of decentralized generating sources to the distribution grid has been compiled [Ref. G.8.1], [Ref. G.8.6].
- Development of a methodology for statistical evaluation of asymmetry indicators of currents and voltages in low-voltage distribution networks [Ref. G.8.4] and for determining the correlation between asymmetry indicators of operating parameters and their duration [Ref. G.8.5].

- Compilation of a methodology for determining energy losses in distribution networks in normal, asymmetrical, and non-sinusoidal modes [Ref. G.8.9], [Ref. G.8.10].
- Development of a methodology for alternative study in the selection of the power of a small hydropower plant [Ref. G.8.11].

Applied Contributions:

- A methodology and algorithm for determining frequency after primary regulation in the power system have been developed. [Ref. G.8.2];
- A justified approach for selecting automation tools in Smart grid has been established. [Ref. G.8.3];
- A contemporary assessment has been conducted on the most significant challenges facing hydrogen energy [Ref. G.8.7]; modern technologies for converting solar energy into electrical power [Ref. G.8.13]; trends in the implementation of "smart" transformers in Smart grid [Ref. G.8.8], and others.

4. Significance of contributions to science and practice

The research in the monograph and all the publications is directly aligned with the theme of the competition. The methodologies presented and the obtained results hold significant importance for the establishment and operation of Smart Grids. The highlighted 27 citations of the published scientific works underscore their relevance and usefulness for researchers within the same scientific domain.

5. Critical comments and recommendations

I have no remarks on the scientific works of Dr. Mehmed Hasan. He conducts his research in a contemporary scientific field - the development and operation of intelligent electrical grids. I recommend that Dr. Mehmed Hasan continue his future research endeavors with doctoral students and publish in SCOPUS-indexed publications.

CONCLUSION

The presented monograph and publications encompass sufficient scientific, scientifically-applied, and applied contributions. I provide my positive evaluation. I recommend that Dr. Mehmed Kadir Hasan be appointed to the academic position of "Associate Professor" in the professional field of 5.2. Electrical Engineering, Electronics, and Automation, specializing in "Electric Power Engineering (Electric Networks and Systems)".

Date: 18.08.2023 r.

MEMBER OF THE JURY:
(Assoc. Prof. Dr. Eng. Veselin Chobanov)