

OPINION

in a competition for the academic position "Associate Professor" in the higher education area 5. Technical sciences, professional field 5.2. Electrical engineering, electronics and automatics, Scientific specialty Electric Power Supply and Equipment, promulgated in State Gazette, issue 68/31.07.2020 for TU-Gabrovo, Department of "Electric Power Supply and Equipment" Candidate: Hristo Ibrishimov, PhD, Assistant Professor

Member of Scientific Jury: Assoc. Prof, PhD, Eng. Dimitar Arnaudov, TU-Sofia, Department of Power electronics

1. Summary of the scientific activity and achievements of the candidate

The research and scientific applied activity of Assistant Prof. Hristo Ibrishimov is in the field of electronic devices for electrical technology.

It is related to the modeling of electronic systems in electromagnetic systems. The topics are current and cover electrical energy converters for electrical technologies, electromagnetic systems for technological purposes, contactless energy transfer systems, ultrasonic transducers, 3D modeling of light fluxes.

In the competition for Associate Professor the candidate participates with publications equivalent to a monographic work. The performance of the indicators by groups according to the national minimum requirements of the LDASRB are as follows:

Group A – Indicator 1: The candidate has submitted a PhD diploma in the professional field 5.2. and an abstract of a thesis defended at the Technical University of Gabrovo and a PhD diploma.

Group B – Indicator 4: There are 11 publications, equivalent to a monographic work, on the topic "3D modeling of electromagnetic systems" with a total of 157 points (minimum 100 points are required). The publications are in the Scopus and WoS world databases. One paper has an SJR

Group Г – Indicator 7: There are 3 publications with a total of 73,33 points.
Indicator 8: 18 publications with a total of 146,33 points (total for group Г – 219,66 points (minimum of 200 points required). Five of the publications are stand-alone. A total of six stand-alone publications by groups B and Г.

Group Д – Indicator 12: The contestant has submitted 80 points on this indicator (50 points are required).

Group Ж – Indicator 30: - lectures on the last years – Asistant Prof. Ibrishimov has held lectures on various disciplines in the field of electronic converters. Six disciplines in the field of competition. The disciplines are from the curriculum of the specialty "Power Electricity and Electrical Equipment".

2. General characteristics of the candidate's activity

2.1. Evaluation of the pedagogical preparation and activities of the candidate.

The teaching activity of Ch. Assistant Professor Ibrishimov started as an assistant in 2014. in the Department of Power Supply and Electrical Equipment, and currently holds position "ch. assistant " in the same department. In 2015 he also received an PhD degree. Ch. Assistant Professor Ibrishimov is the author of a manual for laboratory work and a manual for preparing a term paper. He has participated in the development of 4 curricula. I believe that he has fulfilled the indicators in terms of methodological support of the learning process. The guided graduates are not mentioned in a separate document. He has created and modernized the laboratory base of two laboratories at the Technical University - Gabrovo.

2.2. Scientific and scientific-applied activity

The scientific activity of the candidate is reflected in the presented publications. He is a participant in two research projects co-financed under the programs OP SEIG and by the NSF of the Ministry of Education and Science. He is the leader of two research projects funded by TU-Gabrovo. He is also a member of the research team of a contract funded by the NSF currently being implemented.

2.3. Implementation activity

No documents have been submitted for the implementation activity, but from the publishing activity it can be seen that publications have been prepared on the basis of tasks set for solving by the industry with a specific application. For example in B.4.1 - application in a volume heating system, B.4.3. - application in ultrasonic system, D.7.2 - application in volumetric heating system, D.8.2 - reconstruction and modernization of inverter control system for induction heating.

3. Basic scientific and applied contribution. Significance of contributions to science and practice

Scientific contributions - These contributions are related to the creation of a mathematical model of the process of volumetric induction heating of cylindrical parts. Synthesis and creation of models of high-frequency transformer, system for inductive energy transfer with low power, model for studying the operating temperature of an industrial luminaire. A methodology for calculating the equivalent parameters of the inductor-detail system for series-connected inductors is proposed.

Applied scientific contributions - Design, development of a device for generating, forming, transmitting and receiving an ultrasonic signal with predefined parameters. Development of specialized application software in the software environment LabVIEW (National Instruments) for signal processing from ultrasonic sensors. Establishment of automated classifiers for recognition of alcohol content, at stages of milk coagulation, for recognition of the amount of dry matter in carbonated beverages, for recognition of plastics. Application of an artificial neural network as a classifier of hardness of steel parts.

Another group of applied contributions is related to development of a methodology for iterative design of secondary optical lenses for street LED luminaires and creation of a three-dimensional model for modelling an optical system of LED luminaires for indoor use, performing photometric system with secondary lenses and optimization lighting calculations have been implemented for streets with normalization of brightness by the criterion of maximum staircase.

4. Evaluation of the personal contribution of the candidate

I had the opportunity to talk to the candidate, as a participant or as part of an organizing committee of scientific forums. From the interview with him I am convinced of his personal contribution to the publishing and research activities. No separation protocols have been submitted for the publications.

5. Critical remarks and recommendations

I have no significant remarks on the presented materials, I recommend that the results of the author's research be presented in an appropriate way in scientific journals with impact factor and impact rank. Also to increase the number of scientific forums where he presents his results.

6. Personal impressions

My personal impressions are that Ch. Assistant Professor PhD Eng. Hristo Ibrishimov is a promising young university lecturer and scientist. He has the necessary competencies. I am convinced that his development in his academic career will increase the scientific capacity of the department and the university.

7. Conclusion

Having in mind the above, **I propose** Ch. Assistant Professor PhD Hristo Ibrishimov **should be awarded with the academic** rank of “**Associate Professor**” in professional field **5.2. Electrical engineering, electronics and automatics**, scientific speciality “**Electric Power Supply and Equipment**”.

18.12.2020

**Scientific Jury member: /signature/
/ Assoc. Prof. PhD Dimitar Arnaudov /**