

REVIEW

by **Prof. Dr. Anatoliy Trifonov Aleksandrov**, Technical University of Gabrovo

of submitted materials so as to participate in a competition for holding the academic position of **associated professor**

in the area of higher education: 5. **Technical Sciences**,

professional trend: 5.2. **Electrical Engineering, Electronics and Automation**,

scientific subject: **Electric Power Supply and Equipment (Electronic devices in power generation)**

Senior assist. prof. Hristo Todorov Ibrishimov is participating in the competition for associated professor, published in the Official Gazette, issue 68/31.07.2020 and on the website of TU-Gabrovo, for the needs of the Department of Electric Power Supply and Equipment at the Faculty of Electrical Engineering and Electronics, Technical University of Gabrovo.

1. Brief background data

Hristo Todorov Ibrishimov was born on 10.08.1983. During the period 2003 - 2007 he was a student at the Technical University of Gabrovo (TU-Gabrovo) and graduated as a bachelor of Electronics gaining the qualification of an Engineer in Electronics. During the period 2007 – 2008 he followed a master degree course in Electronics at TU-Gabrovo, and in the years 2009 to 2012 he was a PhD student at TU-Gabrovo. In 2015 he was granted a PhD degree in Industrial Electronics.

During the period 2009 – 2014 he worked as a programmer at TU-Gabrovo. In 2014 he was appointed an assist. prof. and in 2016 – a senior assist. prof at the Department of Electric Power Supply and Equipment at the Faculty of Electrical Engineering and Electronics at TU-Gabrovo. From 09.02.2016 to 01.10.2016 and from 28.10.2016 until present he has been working as an Expert in Computer Networks and Systems under a second employment contract. Hristo Ibrishimov is the only Candidate applying for the competition for the academic position of an associate professor published in the Official Gazette, issue 68/31.07.2020 and on the website of TU-Gabrovo, for the needs of the Department of Electric Power Supply and Equipment at the Faculty of Electrical Engineering and Electronics, professional trend: 5.2. Electrical Engineering, Electronics and Automation, scientific subject: Electric Power Supply and Equipment (Electronic devices in power generation).

The competition was announced by a decision of the Academic Council of TU-Gabrovo (Minutes №9/16.07.2020) and by a decision of the Faculty Council (Minutes №5/13.07.2020), on a proposal from the Department Council of the Department of Electric Power Supply and Equipment (Minutes №12/30.06.2020).

2. General overview of the submitted materials

Senior assist. prof. Hristo Ibrishimov is applying for the competition with 31 scientific works, of which: equivalent to a monography – 10 publications published in journals which are refereed and indexed in world-renowned data bases providing scientific data (index B.4) [B.4.1 – B.4.10]; 3 scientific publications in journals which are refereed and indexed in world-renowned data bases providing scientific data (index Г7) [Г.7.1 – Г.7.3]; 18 scientific publication published in scientifically reviewed journals and proceedings (index Г8) [Г.8.1 – Г.8.18]. Two guides in *Electronic Devices in Power Generation* for term papers have been submitted.

The publications can be classified as follows:

- papers in reviewed scientific journals abroad – 1 [B.4.1];
- papers in the proceedings of international conferences in Bulgaria – 30 [B.4.2 - B.4.10, Г.7.1 - Г.7.3, Г.8.1 - Г.8.18].

The Candidate is an independent author of 5 publications [Г.7.2, Г.8.15 - Г.8.18], he has a co-author in 2 publications [Г.7.1, Г.8.10] and the rest 24 publications has two and more co-authors [B.4.1 - B.4.10, Г.7.3, Г.8.1 - Г.8.9, Г.8.11 - Г.8.14]. The Candidate is the first co-author

of 2 of the collective works [B.4.9, Г.8.11]. Fourteen publications are in English and 17 in Bulgarian.

3. Effect of the scientific publications on the scientific community (known citations)

Senior assist. prof. Hristo Ibrishimov has submitted a list of 8 citations of 4 scientific works and one of them has been cited 5 times. All citations are in journals which are refereed and indexed in world-renowned data bases providing scientific data

On that basis I can conclude that the Candidate is a well-known author who has published in high-impact journals and periodicals in the area of the competition.

4. Overview of the content and results of the works submitted

The Candidate meets the minimum national requirements and considerably exceeds particular indicators. He holds a PhD diploma in Industrial Electronics (№0039/07.07.2015) awarded by TU-Gabrovo. The topic of his PhD thesis is *Investigating and Modelling Inductors for Volumetric Heating with Differentiated Zones of the Electromagnetic and Thermal Field*. (indicator A – 50 points). He has submitted 10 publications in journals which are refereed and indexed in world-renowned data bases providing scientific data, which is equal to a monography (indicator B – 175 points). He has submitted 3 publications in journals which are refereed and indexed in world-renowned data bases providing scientific data and 18 scientific publications in non-refereed peer-reviewed journals or in edited collective volumes (group of indicators Г7 - 73,33 points and Г8 - 146,33 points), 8 citations in journals which are refereed and indexed in world-renowned data bases providing scientific data (indicator Д12 - 80 points). The Candidate has participated in 3 national projects (indicator E18 – 30 points) and has published two university teaching materials (indicator E24 – 40 points).

Group of indicators	Minimum national requirements for the academic position of an associated professor	Senior assist. Prof. Hristo Ibrishimov
A	50 p.	50 p.
Б	-	-
B	100 p.	175 p.
Г	200 p.	219,66 p.
Д	50 p.	80 p.
E	-	70 p.

Senior assist. Prof. Hristo Ibrishimov covers the scientometric data according to the minimum requirements of TU-Gabrovo and exceeds particular indicators. The minimum requirement is 20 publications, of which 4 to be independent, and the Candidate has submitted 31 publications, 5 of which are independent. The minimum requirement is 5 citations and the Candidate has 8 ones. The minimum requirement is 2 teaching materials and PhD Ibrishimov is an author of two teaching guides.

Indicators	Minimum national requirements for the academic position of an associated professor at the Technical University of Gabrovo”	Senior assist. Prof. Hristo Ibrishimov
Total number of publications	20	31
Independent publications	4	5
Number of known citations by other authors	5	8
Published textbooks and teaching materials	2	2
Leadership of projects and contracts	1	2

5. General characteristic of Candidate's performance

5.1. Teaching practice (work with undergraduate and postgraduate students)

Senior assist. prof. Hristo Ibrishimov is an approved lecturer at the Technical University of Gabrovo. He has 11-year experience, of which 6-year teaching experience at TU-Gabrovo.

According to the submitted reference for his workload over the last 4 years, he has spent 1798 academic hours with part-time and full-time students delivering the following courses:

- *Electronics and Fundamentals of Automation* to students following a degree course in Electric Power Supply and Equipment;

- *Electronic Devices in Power Generation, Fundamentals of Automation and Electromagnetic Compatibility* to students following a degree course in Electric Power Engineering and Electric Equipment.

The Candidate is an author of 2 teaching materials - 1 guide in *Electronic Devices in Power Generation* for laboratory practice and 1 guide in *Electronic Devices in Power Generation* for term papers. He is an author of the following study programmes in *Fundamentals of Automation* and *Electromagnetic Compatibility* for students following a degree course in Electric Power Engineering and Electric Equipment

Senior assist. prof. Hristo Ibrishimov has taken part in the set-up of a lab in Electronics and has supervised 36 undergraduate and postgraduate students who have successfully graduated.

The above data make me confident that the Candidate's teaching practice is very good.

5.2. Scientific and scientific-applied activities

Senior assist. prof. Hristo Ibrishimov was a leader of 2 university scientific research projects (Contract 1911E/2019 *Electromagnetic compatibility and lighting characteristics of LED lighting* and Contract 2012E/2020 *Investigating the electromagnetic compatibility of LED lighting*). He participated in two projects under Operational Programmes (Project BG05M2OP001-1.002-0002 – *Smart Mechatronic, Eco- and Energy-saving Systems and Technologies* under Operational Programme *Science and Education for Smart Growth* and Project BG051PO001-4.3.04-0051 – *Development and Implementation of Virtual Technologies for Sustainable Development of Distance Learning at TU-Gabrovo* under Operational Programme *Development of Human Resources*) and in a national scientific research project *Optimal Design and Control Of Energy-saving Systems* under the Scientific Research Fund.

PhD Ibrishimov holds certificates for active participation in two conference - RADMI 2010, Энергоэффективная техника и технологии в жилищно-коммунальном хозяйстве and ET 2020). He has an awarded paper at the International Conference on Computer Systems and Technologies, CompSysTech'10, Sofia, Bulgaria. He has participated in the following scientific forums: Unitech, RADMI 2010, ELECTRONICA 2019, CompSys Tech '10, ELECTRONICS, Lighting 2016, 2020, etc..

The Candidate's works could be systematized in the following 4 thematic trends:

1. Contactless recognition of substances, materials, mixtures and characteristics on the basis of physical processes occurring on the surface or in the volume of the objects under study in the propagation of ultrasonic waves. The reflected ultrasonic wave, which contains data on the object, has been used for analysis.

A device for generating, emitting and receiving ultrasonic signals with parameters set in advance has been developed [B.4.2]. Procedures for recognizing alcohol percentage [B.4.3], milk coagulation [Г.8.4], amount of dry matter in carbonated beverages [Г.8.8], and plastics [Г.8.5, Г.8.7] have been presented. A system for controlling the deviation in the vacuum of packaged bulk products has been synthesized [Г.8.6]. An artificial neural network for a classifier of hardness of steel pieces has been applied [Г.8.1].

2. Computer-assisted modelling of processes, phenomena, devices and systems

Models for electromagnetic and thermal field upon induction heating have been developed [B.4.1], [B.4.5], [B.4.8] and [Г.7.1]. A methodology for defining the equivalent parameters of

the inductor-piece system in inductors for volumetric heating connected in series has been proposed [Г.7.2]. Systems for controlling power sources of induction heating have been modernized and adapted [Г.8.2] and [Г.8.3]. Components and units of high-frequency converters have been modelled [Г.8.18]. Models for contactless transmitting of energy of low capacity [B.4.9] and LED lighting and secondary lenses of different purposes for street, indoor and outdoor lighting have been developed [B.4.6, B.4.7, Г.7.3, Г.8.15].

3. Studies of electronic devices in power generation

The photometric characteristics and colorimetric characteristics, and temperature modes of LED lighting have been studied [B.4.4, B.4.10, Г.8.13]. An electricity audit of existing lighting networks in the town of Gabrovo, town of Pavlikeni and urban areas in the Municipality of Pavlikeni has been presented [Г.8.12, Г.8.14].

4. Development and implementation of virtual technologies for sustainable development of distance learning

An E-Learning System and Virtual Library at TU-Gabrovo have been developed [Г.8.10].

The possibilities for training target groups and blended learning in the master degree course of Automotive Electronics have been studied [Г.8.9] and [Г.8.11]. Models for distance learning of students have been built [Г.8.16, Г.8.17].

6. Contributions.

I accept the contributions formulated in the works submitted. They are of scientific-applied and applied nature and they are related to the proof of new aspects of existing scientific problems by means of new tools and to the obtaining of confirmatory facts in the area of investigating, modelling and applying electronic devices in power generation and their use in the teaching process.

6.1. Contributions in the publications equivalent to a monography

Scientific-applied contributions

- A device for generating, emitting and receiving ultrasonic signals with parameters set in advance has been developed [B.4.2].
- Automated classifiers for recognizing alcohol percentage have been developed [B.4.3]
- A mathematical model for volumetric induction heating of cylindrical pieces has been built [B.4.1, B.4.5, B.4.8].
- A model for contactless transmitting of energy of low capacity has been synthesized [B.4.9].
- Models for LED lighting and secondary lenses of different purposes for street, indoor and outdoor lighting have been developed [B.4.6, B.4.7].
- The photometric characteristics and colorimetric characteristics, and temperature modes of LED lighting have been studied [B.4.4, B.4.10].

5.2. Contributions in the publications, except those equivalent to a monography

Scientific-applied contributions

- A methodology for defining the equivalent parameters of the inductor-piece system in inductors for volumetric heating connected in series and for modelling an inductor-piece system in induction hobs has been proposed [Г.7.1, Г.7.2].
- A model for a high-frequency planar transformer of a transistor converter has been proposed [Г.8.18].
- Classifiers for recognizing the stages of milk coagulation, the amount of dry matter in carbonated beverages, plastics, the hardness of steel pieces and the deviation in the vacuum of packaged bulk products have been developed [Г.8.1, Г.8.4, Г.8.5, Г.8.6, Г.8.7, Г.8.8].

Applied contributions

- A comparative photometric analysis of secondary lenses of polycarbonate, polymethylmethacrylate and acrylic diffusion materials has been presented, as well as a dynamic temperature model and colorimetric characteristics upon changing the supply voltage of industrial LED lighting [Г.7.3, Г.8.13, Г.8.15].
- Systems for controlling power sources of induction heating have been modernized and adapted [Г.8.2, Г.8.3].
- An E-Learning System, a Virtual Library, and distance learning models designed for training of students at TU-Gabrovo have been developed and implemented. The possibilities for training target groups and blended learning in the master degree course of Automotive Electronics have been studied [Г.8.9, Г.8.10, Г.8.11, Г.8.16, Г.8.17].
- An electricity audit of existing lighting networks in the town of Gabrovo, town of Pavlikeni and urban areas in the Municipality of Pavlikeni has been done, as well as electrotechnical calculations so as to replace the existing lighting with LED lighting [Г.8.12, Г.8.14].

7. Evaluation of the personal contribution of the Candidate

I highly evaluate the contributions and results of the Candidate. The submitted works, citations and participation in projects meet the requirements stipulated in the Act on Development of the Academic Staff in the Republic of Bulgaria and its implementing Regulations, as well as the minimum requirements of TU-Gabrovo in relation to the research and teaching activities so as to hold the academic position of an associate professor.

8. Critical comments and recommendations

I didn't find any significant deficiencies in the Candidate's works. I believe that the contributions could be summarized. I also recommend writing IF publications in the future.

9. Personal impressions

I know senior assist. Prof. Hristo Ibrishimov as an esteemed colleague. I don't have any collaborative publications with him. We are not related parties as defined in paragraph 1 (5) of the Supplementary Provisions of the Act on Development of the Academic Staff in the Republic of Bulgaria

Conclusion:

Taking into account the above mentioned, I propose senior assist. prof. Hristo Todorov Ibrishimov to be selected as an associate professor in the area of higher education: 5. Technical Sciences, professional trend: 5.2. Electrical Engineering, Electronics and Automation, scientific subject: Electric Power Supply and Equipment (Electronic devices in power generation)

14.12.2020

Reviewer: /signature/
/Prof. A. Alexandrov/