

ACADEMIC REVIEW

ON: competitive selection process for holding the academic post of **Professor**, announced by the Technical University of Varna in State Gazette, №38 / 10.05.2019 in the professional field of **Electrical Engineering, Electronics and Automation**, specialty **Electronization**,

with sole candidate **Assoc. Prof. ANTON SLAVCHEV GEORGIEV, PhD.**

Assessor: **Prof. Ivan Borisov Evstatiev, PhD**, University of Ruse "Angel Kanchev" - Ruse.

1. General description of the materials presented

The candidate has submitted a dissertation for the academic degree of Doctor of Science, monograph, the titles of a total of **156** publications, **21** textbooks and teaching handbooks, a list of citations in articles refereed in world-renowned databases and a list of citations in articles, in non-refereed journals with scientific review, or in edited collective volumes; a list of reviewed scientific publications - articles, textbooks and teaching handbooks.

In order to participate in the competitive selection process, in accordance with the new scientometric requirements for holding the academic post of Professor, the candidate submitted:

- Dissertation for obtaining the academic degree of Doctor of Science;
- monograph;
- A list of **54** scientific publications not used in his first and second dissertations and in his first habilitation;
- **12** publications refereed from 12 world-famous databases (from the list of 54 publications);
- **3** textbooks and **12** teaching handbooks;
- a list of **99** citations in articles refereed in world-renowned databases and a list of citations in articles, non-refereed in scientific reviewed journals or in edited collective volumes;
- a list of reviewed scientific publications - articles, textbooks and teaching handbooks;
- references for participation in **14** research projects and **14** international projects;

- a list of **11** reviews of textbooks and teaching handbooks.

A reference for organizational activity and further engagement with more than 50 positions is also submitted.

It should be noted that **12** of the scientific papers presented are refereed in Skopus, and **29** are cited in Skopus.

The author has RG Score **24.38** and h-index **5**, according to <https://www.researchgate.net>, or h-index **7** and i10-index 4, according to <https://scholar.google.bg/citations?user=RzjrL1wAAAAJ&hl=en> .

2. Brief biography of the candidate

Assoc. prof. Anton Georgiev was born in Burgas. He completed his secondary education at the Mechanical Engineering School in Burgas. He is a master of Electrical engineering, specialty Communication Technology at the Technical University of Varna. In 1994 he defended his doctoral dissertation titled: "Problems of the operational reliability of sealing telephone systems". Between August 1986 and March 1988 he gained engineering experience as an engineer at the Bulgarian Telecommunications Company.

Since 1998, he began his 30-year teaching experience at the Technical University of Varna - as an assistant, senior assistant and chief assistant. Since May 2004 Anton Georgiev is Assistant Professor / Scientific specialty "Electronization", code 02.20.08/, at the Department "Electronic Equipment and Microelectronics", Technical University of Varna.

He holds a Doctor of Technical Sciences degree since February 8, 2016. The doctoral dissertation is titled: "Development, research and analysis of new possibilities for improving the operational reliability of electronic systems".

General characteristics of the candidate's activities

3. Educational and pedagogical activities

According to the submitted documents and references, the most important achievements of Assoc. Prof. Georgiev in the field of educational and pedagogical activities are **20** bachelor and **2** master lecture courses. They are as follows:

Developed lecture courses and lecturing before the habilitation on the following disciplines:

- Electronic components;

- Design of electronic equipment;
- Semiconductor elements and integrated circuits;
- Analog circuitry;
- Electronics;
- Electronics – part 1;
- Design and reliability of communication equipment.

Developed lecture courses and lecturing after the habilitation on the following disciplines:

- Electronic components - Bulgarian-language training, English-language training;

- Design of communication equipment - Bulgarian-language training;

- Design and technology in electronics and communications - Bulgarian language training, English language training;

- Design and reliability of electronic equipment - Bulgarian-language training, English-language training;

- Semiconductor devices and integrated circuits - Bulgarian-language training;

- Semiconductor devices - Bulgarian-language training, English-language training;

- Semiconductor elements - Bulgarian-language training;

- Electronics - part 1 - Bulgarian-language training;

- Electronics - Bulgarian-language training;

- Semiconductor devices and technologies - Bulgarian-language training, English-language training;

- Semiconductor devices and analog circuitry - Bulgarian-language training;

- Analog circuitry - Bulgarian-language training;

- Design and reliability of communication equipment.

Master's course lectures on the following disciplines:

- Reliability and diagnostics of electronic equipment;

- Reliability of electronic equipment.

According to the list submitted, he has written **11** reviews of textbooks, teaching handbooks and research projects.

Assoc. Prof. Georgiev is a mentor of **5** PhD students, **1** of them already defended PhD degree, **1** is deducted with the right of defense and **3** are still in training.

He is the author of **21** textbooks and teaching handbooks, of which **3** textbooks and **12** teaching handbooks are presented for the competitive selection process for holding the academic post of Professor.

I believe that the teaching and pedagogical activity of Assoc. Prof. Anton Georgiev fully meets the necessary requirements for opening a procedure for a Professor.

4. Scientific and applied scientific contributions

From the materials presented, it follows that Applicant's scientific and applied scientific contributions are associated mainly with research related to the reliability of electronic equipment - selecting the appropriate number of redundant electronic blocks, norming of the number of recoverable spare parts, norming of the number of non-recoverable spare parts, providing accurate information on the reliability of newly developed electronic products, etc.

Other areas of research are related to assessing the reliability of lightning protection equipment in power distribution substations, exploitation and development of radar systems, telecommunication systems and networks, electronic devices for creating stage effects and more.

Reference to the statistics of the world's leading rating agency <https://www.researchgate.net> for reporting the achievements of scientists, researchers, lecturers, higher education institutions, universities and research institutes, shows that several times the author has been named the most read Bulgarian writer in the world.

The large number of publications in the fields considered, the dissertation thesis for the academic degree of Doctor of Science, the high number of citations (85), as well as the reference from the "researchgate" rating agency for most read Bulgarian author, characterize Assoc. Prof. Georgiev as an established scientist in the field of the announced competitive selection process, recognized by the scientific community at home and abroad.

I would like to emphasize that the subject of his scientific and applied research activity is extremely relevant, due to the increased requirements for the reliability of electronic equipment.

5. Implementation activities

Implementation activities are presented with participation in **28** national and international projects, of which Assoc. Prof. Georgiev is the head of **4**.

The themes of the scientific research and applied works and projects fully correspond to the subject of the candidate's research and pedagogical activities.

The economic impact of all these practical implementations is undisputed.

6. Basic scientific and applied scientific contributions

I agree with the author's vision about the contributions. They are scientific, applied scientific and applied.

A. Contributions in the dissertation for holding the academic degree Doctor of Science and in the monograph "A new concept for enhancing the operational reliability of electronic systems"

I believe that there are scientific and applied scientific contributions in the dissertation and in the monograph. They could be summarized as follows:

Scientific contributions

1. Scientifically based and optimized approaches have been developed for the maintenance and repair activities of complex electronic systems, including inactivity zones.

2. Mathematically reasoned response for the presence of a clear refusal, a model, that takes into account the factors, affecting the efficiency of the electronic systems as well as an algorithm for optimizing the redundancy of electronic systems whose reliability should not be lower than specified have been developed.

Applied scientific contributions

The Applied scientific contributions can be summarized as:

1. With the development of new maintenance strategies, an adequate solution to the issues of importance for the practice related to the scope and content of disaster recovery has been found. They relate to the readiness factor, the newly introduced "cost and benefit ratio" and "profit", which evaluate the impact of the chosen maintenance strategy on the cost-effectiveness of the operation of the system.

2. A universal decision-making method for the frequency of preventive control and measurement procedures for assessing the technical status of electronic systems has been developed. Therefore, new criteria for evaluating maintenance efficiency are proposed and analytical expressions are mathematically substantiated, providing objectivity in the evaluation, including information from identical systems of this class and the specific impact of control systems on the effect of implementing a specific strategy.

B. Contributions in publications, not including the monograph and the dissertation for holding the academic degree of Doctor of Science

Scientific contributions

Scientific contributions are related to the enrichment of knowledge in the field of reliability of electronic products, systems and equipment. They are as follows.

Creating new models for evaluating the reliability of electronic products [IV.3.1 – 1, IV.3.1 – 3, IV.3.1 – 7, IV.3.1 – 8, IV.3.1 – 10, IV.3.1 – 11, IV.3.1 – 12, IV.3.2 – 2, IV.3.2 – 31, IV.3.2 – 32, IV.3.2 – 34, IV.3.2 – 35, IV.3.2 – 36, IV.3.2 – 37, IV.3.2 – 38].

A new approach is proposed to evaluate the reliability of lightning protection facilities in power distribution substations [IV.3.1 – 2, IV.3.1 – 9, IV.3.2 – 8, IV.3.2 – 32];

New ways to improve operational reliability by improving the maintenance of electronic systems are proposed [IV.3.1 – 6, IV.3.2 – 1, IV.3.2 – 7].

Possibilities for applying the Bayesian theory are explored in cases where insufficient data is available about the reliability of particular types of products [IV.3.2 – 3, IV.3.2 – 9, IV.3.2 – 10, IV.3.2 – 11, IV.3.2 – 28, IV.3.2 – 29, IV.3.2 – 30].

Applied scientific contributions

Proposed and implemented are concrete measures and procedures to increase the reliability of:

- telecommunication systems and networks [IV.3.2 – 5, IV.3.2 – 6, IV.3.2 – 8, IV.3.2 – 23, IV.3.2 – 27, IV.3.2 – 32];

- lightning protection equipment in power distribution substations [IV.3.1 – 2, IV.3.1 – 9, IV.3.2 – 8, IV.3.2 – 32];

- medical electronic devices and equipment [IV.3.1 – 3, IV.3.1 – 10, IV.3.2 – 9, IV.3.2 – 10, IV.3.2 – 11];

- electronic devices for creating stage effects [IV.3.1 – 7, IV.3.1 – 12].

Applied contributions

FPGA-based radar system parts have been developed [IV.3.2 – 4, IV.3.2 – 33]. [IV.3.2 – 4, IV.3.2 – 33].

Telecommunication systems and networks have been investigated and measures have been proposed to improve their reliability [IV.3.2 –5, IV.3.2 –6, IV.3.2 –8, IV.3.2 –23, IV.3.2 –27, IV.3.2 –32].

The interconnections between the design of the transformers and their electrical parameters have been explored [IV.3.2 –13, IV.3.2 –16, IV.3.2 –19, IV.3.2 –20, IV.3.2 –21, IV.3.2 –22, IV.3.2 –24, IV.3.2 –25, IV.3.2 –26].

I believe that the scientific, applied scientific and applied contributions in the papers presented to initiate procedure for the academic degree of Professor are of great importance for the development of modern theory for evaluating and providing the required reliability of electronic equipment. As an acknowledgement to this comes the fact that scientists from Bulgaria and all over the world are highly interested in the scientific works and publications of assos. prof. Georgiev.

Educational and methodological contributions

They are contained in the **3** textbooks and **12** teaching handbooks and in the over **20** lecture courses taught by the applicant. These include the educational and methodological features of the training in Electronics for undergraduate and masters students in the specialty Electronics, the manuscript of the dissertation for obtaining the academic degree Doctor of science, the subject of which is related to the educational process.

Methodological contributions are contained also in both monographs, which can easily be used and as a textbook in the relevant discipline.

I believe that the educational and methodical contributions fully meet the requirements for participating in competitive selection process for holding the academic post of Professor.

7. Significance of the contributions for science and practice

From the given contribution elements of the candidate it can be concluded that they have scientific, scientific-applied, applied, and scientific-methodical character and that they are subject to an extremely important topic for the electronics industry - the reliability of electronic equipment, systems and components.

His scientific works have been published in the scientific papers of well-known national and international scientific forums. Many of the publications have been referenced in well-known abstracts, including such with an Impact Factor.

It must be specified that his overall research and teaching activity is practice-related and has solved important problems of the economy in our country.

In Bulgaria, assoc. prof. Georgiev is well known to the scientific community and to the “users” of his research and development work - the enterprises of the electronic and communication industry.

8. Assessment of the applicant's personal contribution

In the submitted scientific works for the present competitive selection process, Prof. Georgiev is a single author of the dissertation for obtaining the degree “Doctor of Science”, monograph, **13** textbooks and teaching handbooks and **19** single publications.

82 citations have been presented, most of them from foreign scientists. The candidate has been the manager of **4** research and implementation contracts.

Considering this information, it can be confidently asserted that assoc. prof. Georgiev's personal contribution to the presented scientific works is beyond any doubt.

9. Critical notes

In the further activity of the applicant I would recommend to consider the following:

To focus his attention on expanding the implementation of his developments in practice.

To lead bigger in aspect of thematic and finances research and development projects.

10. Personal impressions

I know assoc. prof. Anton Georgiev in person from meetings at scientific conferences and accreditations. His extensive publishing activity is remarkable, widely known in Bulgaria and abroad. It is no coincidence that he has been stated by the world's leading rating agency <https://www.researchgate.net> for reporting the achievements of scientists, researchers, lecturers, higher education institutions, universities and research institutes, **as the most read Bulgarian author in the world.**

Prof. Georgiev is fluent in 3 foreign languages - English, German and Russian, which allows him to communicate easlily with scientists from all over the world.

I think that as a scientist and expert he has very high qualities and great potential for development. With the successful completion of this competition, Technical University Varna will be enriched with capable well-trained expert – lecturer, researcher, implementer and organizer.

11. Fulfillment of the NACID requirements for meeting the minimum national requirements under Art.2b, para. 2 and 3, respectively the requirements of Art. 2b, para. 5 of the Law For The Development Of Academic Staff In The Republic Of Bulgaria, stipulated in the Regulations for the Application of the Act for the Development of the Academic Staff in the Republic of Bulgaria for holding the academic post of Professor in professional field 5.2. Electrical engineering, electronics and automation and a PhD degree

The candidate's publishing and scientific activities presented for the opening of competitive selection process for the academic post of Professor in the professional field of Electrical Engineering, Electronics and Automation, specialty Electronization, at Technical University - Varna Assoc. Prof. Anton Slavchev Georgiyev fully cover the minimum requirements for the academic post of Professor and academic degree of Doctor of Science.

12. Conclusion

Based on the knowledge of the submitted materials for holding the academic degree of Doctor of Science, monograph and the other publications apart of them, the teaching, research, applied, implementation and organizational activities, the diverse and responsible administrative activities, the fact that he has established reputation in Bulgaria and abroad, give me the reasons fully convinced to propose **assoc. prof. Anton Slavchev Georgiev to hold the academic post of Professor** in professional field 5.2. Electrical Engineering, Electronics and Automation, specialty Electronization, at Technical University - Varna.

25.09.2019
Ruse

Assessor:
/Prof. Ivan Evstatiev, PhD/