

STATEMENT

on the competition for the occupation of the academic position **Associate Professor** in the professional field 5.2. Electrical Engineering, Electronics, and Automation, discipline "Power electronics", an official gazette, pcs. 93 dated 26.11.2019,
with candidate Dr. eng. Angel Stanimirov Marinov

Gave the statement: prof. Dr. Nikolay Madzharov, TU Gabrovo.

1. General characteristics of applicant`s scientific research and applied-research activities

Scientific researches and applied activities of the only candidate in the competition is in the field of analysis, modeling, development and research of power and control circuits of the power and control circuits of electronic converters of different power and application in electrical technologies, electric drivers, renewable energy sources and electric transport.

The candidate **Dr. eng. Angel Stanimirov Marinov** has submitted the following materials: 13 scientific publications, equivalent to monograph, scientific publications, citations, participation in international and national scientific and educational projects, lectures and exercises in different disciplines, participation in the modernization of the material and technical base of three departments in the Technical University of Varna, which fully covers the minimum national requirements for occupying the academic position "Associate Professor", for the field "Technical Sciences" in higher education, envisaged in Art. 2b of the ZRAS RB.

The summary of this information is as follows:

Group of Indicators A (at least 50 points) – PhD thesis for achieving Educational and Scientific Degree "Doctor"- **50 points**;

Group of Indicators B (at least 100 points) - published monograph or equivalent scientific publications (not less than 10) in editions that have been referenced and indexed in world-renowned scientific information databases - *13 articles and reports of varying numbers authors* – **Total 227 points**;

Group of Indicators Г (at least 200 points) – **Г7** scientific publications in refereed and indexed in the world database - *11 publications with different number of authors - 184 points*; **Г8** scientific publications in non-refereed journals with scientific review or in edited collective volumes - *25 publications with different number of authors - 224 points*. **Total 408 points**.

Group of Indicators Д (at least 50 points) – **Д12** citations – *5 publications have been cited a total of 8 times in scientific publications referenced and indexed in the world databases - 80 points*; **Д13** citations in monographs and collective volumes with scientific peer review - *2 publications were cited a total of 2 times - 6 points*; **Д14** citations or reviews in non-refereed scientific peer-reviewed journals - *5 articles were cited 7 times in total - 14 points*. **Total 100 points**.

Group of indicators Ж (at least 30 points) - lectures and exercises held at TU-Varna for the last three years - *91 hours in the disciplines PT, CE, E 1 and 2 part, MPS 1 part, IE*. **Total 91 points**.

2. Evaluation of the applicant's pedagogical and educational activity

Dr. eng. Angel Stanimirov Marinov defended his PhD thesis in 2012 at the Technical University of Varna. His teaching career began as an assistant at the Department of Electronic Engineering and Microelectronics in 2009 and then continued at the College in the structure of TU-Varna from 2016 to 2017. He habilitated in 2017 at the same college. At the end of 2017 he started working as an electronics engineer at "Mantov" LLC, and has been Head of Scientific Section at TU Varna since 2019.

Despite his short teaching experience, he participates in the teaching process (lectures and exercises) in six subjects of the bachelor's course and three of the master's course with quite diverse content of the curricula, which is evidence of his high qualification as a teacher.

He has participated in 15 projects since 2008. Six of the projects were funded by the budget; three - by the National Research Fund; three - by the Human resources development operational program; one - by FP7 program; two - by other international programs. The fact should be noted that a large part of his scientific work has been used in the modernization of the material base of 6 laboratories in different departments of the Technical University of Varna. In the years of 2013 and 2016 he implemented two ERASMUS mobility programs at the University of Ghent, Belgium. He is the author of two teaching aids, the subjects of which are directly related to the professional direction of the announced competition.

3. Basic scientific and applied-science contributions

I accept the contributions formulated by the applicant and summarize them in the following way:

Scientific contributions

1. New and confirming facts have been received in using modern magnetic materials and structures for designing and manufacturing of magnetic components used in power electronic converters [Г.8.8], [Г.8.9], [Г.8.15], [Г.8.16].
2. Improved algorithms have been developed for the modeling and testing of the "inductor-detail" system [B.4.1], [B.4.11], [Г.8.26] and the insulation and fireproof layers of induction furnaces [Г.8.24], [B.4.10].

Applied-science contributions

1. Improved new algorithms and electronic circuits have been developed for the research, evaluation and measuring the parameters of highly efficient PC [B.4.5], [Г.8.21], [Г.8.4].
2. PC circuits with improved electrical parameters using modern SiC MOSFETs with application in highly efficient electrotechnological devices have been developed and evaluated [Г.8.20], [B.4.3], [Г.7.1], [Г.8.17], [Г.7.3], complex power source for EV battery charging [Г.8.6], [Г.8.19.], [B.4.6], [B.4.2], electronic wind turbine system [Г.8.5.], [B.4.8], [Г.8.18].
3. Electronic circuits and structures related to new and improved radiator designs for heat transfer to a semiconductor switch have been developed, tested and verified [B.4.7], [B.4.4] and an improved electronic circuit of microprocessor-based current protection [Г.8.7].
4. On the basis of complex studies, new schemes and structures have been proposed, related to the application of piezoelectric polymer elements in estimating the amount and intensity of precipitation [Г.7.8], for measuring wind speed and direction [Г.7.9], for charge-sensitive amplifiers as an interface for piezoelectric polymer elements [Г.7.11], for the implementation of broadband pulse / echo medical imaging [Г.8.14] and for the extraction of energy from piezoelectric polymer elements.
5. Innovative solutions have been developed in the field of intelligent energy systems - an algorithm for indirect recognition of the electrical consumption of household consumers [B.4.12], [B.4.13], an electronic circuit for measuring current with wireless transmission of the data [Г.7.10], an electronic circuit for data measurement and processing applied to partial and full electrical dividers in power equipment [Г.7.6], a current transformer circuit with derived measurement accuracy over a large amplitude range of current measurement [Г.8.1].
6. A new electronic circuit for control, examining, coding and decoding of information from sensors for rotor position of DC brushless machines has been developed [B.4.9], [Г.8.25].

4. Significance of contributions to science and practice

The science and applied-science contributions of Dr. eng. Angel Marinov has contributed to the theory, practice and training as they are dedicated to current problems of the

development of modern transformers and their application. This is evidenced by the 17 identified citations. As a result of his publishing activities, he is known in the scientific world and has H-index of 4. The quantitative indicators presented meet the criteria for filling the academic position of Associate Professor.

5. Critical notes and recommendations

I have no significant remarks or recommendations pertaining to the materials submitted. I only note the following:

- teaching aids have not been included in the general lists of publications for the competition;

- it is appropriate to separate contributions from publications, equivalent to monographs from the other publications, and also contributions to be separated on research and research applied activity;

- the already good presentation of Dr. eng. Angel Marinov during the competition for the post of Academic position "Associate Professor" could have been made even better had documents for the practical implementation of his findings been presented.

CONCLUSION

My altogether evaluation is that the applicant has fulfilled the requirements necessary for the academic position of "Associate Professor" according to the national laws and the procedures for career development of the academic staff in the Technical University of Varna. Based on my statement of the works presented by the applicant, justified by the scientific and applied contributions, I would recommend Dr. eng. Angel Stanimirov Marinov for the academic position of „Associate Professor“ in professional field 5.2. Electrical Engineering, Electronics and Automation, discipline - "Power electronics".

Date: 26.02.2020

Jury member:

(prof. Dr. N. Madzharov)