

## POSITION

in relation to awarding the academic rank of Associate Professor  
professional field 5.2. Electrical engineering, electronics and automatics,

Academic discipline Design of electronic systems,  
promulgated in State Gazette, issue 108/22.12.2020

*Candidate: Toncho Hristov Papanchev, PhD,*

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

### **1. Overall characterization of the pure scientific research and applied scientific research of the candidate.**

The research and scientific applied activity of PhD eng. Toncho Papanchev is in the field of research of the reliability of electronic converters and systems. It is related to the application of different approaches to mathematical description and, based on the analysis, offering solutions to increase reliability and selection of reservation criteria. Another thematic area is based on the analysis of the modes of operation of electronic converters (resonant converters and rectifiers with PFC), a forecast of failure intensity is made and limitations are given to be taken into account in the design to achieve greater reliability.

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

**Group A – Indicator 1:** The candidate has submitted a PhD diploma in the professional field 5.2. Electrical engineering, electronics and automatics, scientific speciality “Electronics”.

**Group B – Indicator 4:** There are 11 publications, equivalent to monographic work, on the topic “Research of the reliability of electronic converters and systems” with a total of 179 points (minimum 100 points are required). The publications are in the Scopus and WoS world databases, five of them are in journal with SJR.

**Group Γ – Indicator 7:** There are 7 publications with a total of 129.9 points.  
**Indicator 8:** 12 publications with a total of 107.3 points (total for group Γ - 237.2 points (minimum of 200 points required).) Three of the publications are stand-alone.

**Group Д – Indicator 12:** The contestant has submitted 104 points on this indicator (50 points are required), but when referring to the Scopus and WoS databases, the number of citations is significantly higher. It has an h-index of 5.

**Group Ж – Indicator 30:** - lectures on the last three years – PhD eng. Toncho Papanchev has held lectures on various disciplines in the field of electronic converters, has submitted 439 points on this indicator (30 points are required).

### **2. Evaluation of the pedagogical preparation and activities of the candidate.**

The teaching activity of Dr. Eng. Toncho Papanchev starts as an assistant in 2010 in the Department of Electronic Engineering and Microelectronics, and from 2017 is ch. assistant. Nine curricula of which he is a co-author are also presented. The programs include topics in the field of reliability of electronic equipment, semiconductor elements, and construction of communication equipment, virtual tools in electronics and others. The first is from 2016, and the last from 2020. He has been the head of numerous graduates. He also participated in the preparation of students for student scientific sessions at TU-Varna. He also spent 439 hours lectures in 14 subjects. There are a manual for exercises on "Reliability of electronic equipment"

issued by the publishing house of TU-Varna in 2020. All this gives me reason to believe that he has the necessary pedagogical skills.

### **3. Basic scientific and applied contribution**

*Scientific contributions* – To this category I would refer the created and verified mathematical model of reliability for power tools with improved reliability.

*Scientifically applied contributions* – These contributions are in the field of selecting an appropriate method for assessing the reliability of electronic converters and power electronic devices. The selection is based on a comparative analysis of different methodologies for assessing reliability.

Another group is *applied* contributions. The proposed approach provides sufficient reliability when using a simple mathematical apparatus.

*Methodological* contributions - These contributions are related to the development of laboratory exercises in several disciplines and the creation of methodological guidelines for doing laboratory exercises, described in the manual of laboratory exercises on the reliability of electronic equipment.

### **4. Significance of the contribution for science and practice.**

The importance of the above-described contributions on current topics such as reliability and trouble-free operation of electronic systems not only on highly responsible equipment can be seen from the citations of publications with his participation by many foreign authors. At least four of the publications are with SJR. The quantitative indicators for occupying the academic position have been fulfilled.

### **5. Comments 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 the methodological books for students and specialists in the field of electronic converters. I also recommend participating in several different scientific forums. In formulating the contributions, they are not clearly distinguished by type. They can be summarized and presented in smaller numbers.

### **CONCLUSION**

The materials submitted fulfill the requirements of LDASRB, of the Statute for its application and internal Statute of the requirements and the procedure for attaining academic rank at the Technical University – Varna. On the basis of the submitted scientific works, their significance and their contribution I find it reasonable to propose that PhD eng. Toncho Papanchev should be awarded the academic rank of “Associate Professor” in professional field 5.2. Electrical engineering, electronics and automatics, academic discipline “**Design of electronic systems**”.

**Date: 08.04.2021**

**Scientific Jury member:**

(Assoc. prof. PhD Dimitar Arnaudov)