

# REVIEW

of the application package submitted for participation in the competition for a tenure track position "Associate Professor" in professional area 5.2 "Electrical Engineering, Electronics and Automation", the academic course on "Design of Electronic Equipment", Dept. of Electronics and Microelectronics, at the Faculty of Computer Engineering and Automation, Technical University of Varna, announced in the Bulgarian State Gazette no. 108 / 22.12.2020.

Applicant: **Eng. Toncho Christov Papanchev, PhD.**

Reviewer, Member of the Scientific Jury: **Prof. Todor Dimitrov Ganchev, PhD.**

## 1. General provisions and biographical data

The competition for the tenured position "Associate Professor" was opened by the Department Council of the Department of Electronics and Microelectronics (ETM), approved by the Faculty Council of the Faculty of Computer Engineering and Automation (FITA) and the Academic Council of the Technical University of Varna (TU-Varna). The only candidate who has submitted an application package and afterwards was admitted to the competition is Chief Assistant Professor Eng. Toncho Hristov Papanchev, PhD.

In brief, Toncho Papanchev graduated from the Higher Institute of Mechanical and Electrical Engineering - Varna (currently TU-Varna) as an Electrical Engineer in the year 1992. He followed a ten-semester educational program, which nowadays is recognized as equivalent to a Master degree. In 2015, the candidate acquired a PhD degree at TU-Varna with a speciality "Electronics by industry", code 02.20.08. His PhD dissertation, entitled "Research, analysis and evaluation of the reliability of electronic products", is closely related to the discipline "Design of electronic equipment" in this competition.

During the period 2010-2016, T. Papanchev occupied the academic position of Assistant Professor, and from July 2016, the academic position of Chief Assistant Professor at the Dept. of Electronics and Microelectronics. His teaching activity includes conducting laboratory exercises and lectures in 11 academic courses, coinciding or thematically close to the present competition.

## 2. General description of the submitted materials

In the application package submitted for participation in the current competition for a tenure track position "Associate Professor", T. Papanchev provided a list of 30 publications, of which I accept for review 28 scientific publications. Specifically, I excluded the publications G.8.11 and G.8.12, which are summaries of projects funded by the Dept. of Internal Projects of TU-

Varna and thus are not research papers. A detailed analysis of the provided application package follows in the subsequent paragraphs.

To satisfy the minimum requirements attributed to the group of indicators "B", the candidate has submitted 11 conferences papers, grouped thematically to meet the requirements of the indicator "B.4" as equivalent to habilitation work. These 11 publications are currently visible in SCOPUS. All publications, grouped in category "B.4", are co-authored with colleagues from TU-Varna, incl. 4 publications with three authors, 5 with four authors and 2- with five authors. Assuming that the authors' list is indicative of the actual contribution, it should be noted that T. Papanchev is the first author in two papers; in another two, he is second; in six, he is third; and in one is the fourth author. The observations mentioned above support the belief that the candidate has a significant contribution to the above publications.

To satisfy the minimum requirements corresponding to the group of indicators "G", the candidate has submitted two lists with a total of 19 publications, of which I accept 17 for review (excluding the project summaries mentioned above G.8.11 and G.8.12). Among these 17 publications, three he authored by himself (about 18%) and 14 were published in co-authorship with TU-Varna colleagues. Specifically, 7 of these publications, incl. one authored by him, are listed in indicator "G.7" -- publications indexed in the SCOPUS database. For the six co-authored publications, two are with two authors; three with three authors; one is with four authors. The candidate is the first author in two, the second author in two and the third author in the other two.

The list of publications, which are not indexed in SCOPUS or WoS, presented under indicator "G.8" consists of 12 titles, of which I accept for review the first 10 (excluding the abovementioned G.8.11 and G.8.12). Among these ten publications, two are authored by the candidate; two are with two authors; four are with three; one is with four; one is with five authors. The candidate is the first author in 1, second in 3, third in 3, and fourth in 1 publication among the eight co-authored publications.

Following the Bulgarian law requirements for the development of academic staff (ZRASRB) and the corresponding by-laws, the applicant has provided a list of 10 publications that were used for the acquisition of his PhD degree. A total of 5 publications were published in Bulgarian and 5 in the English language.

In summary, after reviewing all provided lists, abstracts and the full text of the publications in the application package, I accept these for review in the volume mentioned above. A summary of the research contributions reported in these publications is presented in Section 5 of this review.

To satisfy the minimum requirements attributed to the group of indicators "D", the candidate has submitted lists with a total of 12 citations from other authors. Of these, ten citations are in publications indexed in the SCOPUS database (indicator "D.12"), 0 and two are in non-referenced publications (indicator "D.14").

To satisfy the minimum requirements attributed to indicator "ZH", the candidate has provided information about 439 hours of lectures held in the last three years for full-time and part-time students, which significantly exceeds the minimum requirements for indicator "ZH".

A summary of the above analysis is presented in Table 1, which shows the correspondence between the groups of indicators specified in the minimal national and institutional requirements for occupying a tenured track "Associate Professor" in the thematic area "5. Technical Sciences", and the actual scores reported by the applicant.

**Table 1.** Correspondence between the indicators set in the minimal national and institutional requirements for occupying a tenured track "Associate Professor", in the groups of indicators for the scientific area "5. Technical Sciences", and the applicant's actual scores.

| <b>Group of indicators</b> | <b>Contents by indicators</b>      | <b>Minimum requirements for the tenure track position "Associate Professor"</b> | <b>Scores T. Papanchev</b> |
|----------------------------|------------------------------------|---|----------------------------|
| <b>A</b>                   | Indicator 1                        | 50  | <b>50</b>                  |
| <b>B</b>                   | Indicator 2                        | ---   | ---                        |
| <b>B</b>                   | Indicator 3 or 4                   | 100   | <b>179</b>                 |
| <b>G</b>                   | Amount of performance from 5 to 11 | 200   | <b>226</b>                 |
| <b>D</b>                   | Amount of indicators from 12 to 15 | 50  | <b>104</b>                 |
| <b>E</b>                   | Amount of indicators from 16 to 28 | ---   | ---                        |
| <b>ZH</b>                  | Indicator 29                       | 30  | <b>439</b>                 |
|                            | <b>Total by all indicators</b>     | 430   | <b>998</b>                 |

The comparison presented in the table shows that the candidate satisfies the minimum requirements for acquiring the tenure track position "Associate Professor" for all groups of indicators. Specifically, in the groups of indicators "B" and "D", he exceeds the minimum requirements significantly concerning the values for the scientific field "5. Technical Sciences", specified in corresponding Bulgarian Law. Finally, for the indicator "ZH", he exceeds several times the minimum requirements of the regulations specified in the corresponding by-laws of TU-Varna.

### **3. A general description of the RTD activity of the applicant**

The topics and the number of scientific publications of T. Papanchev submitted for participation in this competition show a steady interest in exploring the possibilities for improving the reliability of the electronic equipment. Of the 28 publications considered in this review, 18 (approximately 64%) are indexed in the SCOPUS database. According to the SCOPUS database, T. Papanchev has 19 citations (excluding self-citations), and SCOPUS h-index = 3. A summary of the contributions of T. Papanchev is presented in Section 5 of the review. For the most part, his claims for contributions are of a methodical and applied nature.

The candidate has participated in 12 projects. In one of these projects, he served as the Project Manager. Three of these projects were funded are under the national program "Student

Internships", and two others were funded under Bulgarian national programs focused on motivating the career development of doctoral students, postdoctoral students and young scientists. Finally, seven are RTD projects funded through the Sector "Internal Projects" of TU-Varna.

A reference for the international mobility of T. Papanchev with a duration of 5 days was provided at the University of Patras, Greece. It was implemented under the ERASMUS program in 2016.

#### **4. Assessment of the pedagogical qualification of the applicant**

The pedagogical activity of the candidate extends to almost 11 years -- from his appointment as an Assistant Professor at the Dept. of Electronics and Microelectronics, TU-Varna, in May 2010 until now. According to the submitted application package, the candidate has delivered 439 hours of lectures for three years. This workload covers 11 disciplines included in the curricula for:

- Professional Bachelor degrees in Medical Equipment and Maintenance of electronic equipment;
- Bachelor degrees in Electronics, Biomedical Engineering, Telecommunications, Renewable Energy Sources, Automation and Robotics; and
- Master degrees in Electronics.

Under this competition, the candidate presents one guide for laboratory exercises in the academic course Reliability of electronic equipment, developed in a team of two co-authors. The candidate has presented evidence for the co-authorship in nine curricula for various academic courses included in the Bachelor's and Master's degrees at TU-Varna.

According to the information provided by the candidate, during his teaching career, T. Papanchev supervised the diploma theses of 16 Bachelor or Master Students. The significant number of disciplines taught and the relatively large numbers of Bachelor and Master thesis supervision are reliable indicators for successfully transferring knowledge to his students.

#### **5. Major scientific and RTD contributions**

The publications presented in the present competition reflect a significant amount of research and applied research. The applicant presented in a synthesized form the most significant contributions in the groups of publications related to indicators "B.4", "G.7", and "G.8", which I accept. In total, he claimed 15 contributions in the following thematic areas:

- Reliability of electronic components -- analysis and evaluation of quantitative indicators of reliability,
- Reliability of electronic systems -- analysis of the design features of complex electronic systems, modelling, and comparative analysis,
- Operational reliability and maintenance of electronic systems,
- Stimulation models and elements of artificial intelligence.

In brief, the main contributions can be summarized as:

- Study on methods, algorithms, and design parameters related to the reliability of electronic systems and components.
- Study of methods and algorithms relating to the planning of measures to ensure the reliable operation of electronic systems,
- Research aiming to obtain new facts, verify, and validate known facts, or aiming to improve existing models for the maintenance of electronic systems and components,
- Synthesis of computer models and analysis parameters associated with the reliability of electronic equipment and approbation of verified algorithms in the construction of electronic components.

In conclusion, the contributions in these publications can be categorized as experimentally obtained new data, proving with new means already existing theories and hypotheses and confirmatory data, creation of new methods and models, developed methodologies for analysis and improved prediction of operational reliability of electronic systems, as well as the creation of methods and algorithms aiming to improve reliability.

Based on the composition of the authors' team of most of the publications and my impressions of the candidate T. Papanchev, I trust that the formulated contributions accurately reflect his significant involvement in the published work.

## **6. Significance of contributions to practice**

Regarding the significance of the contributions formulated in the candidate's publications, I consider the number of citations by independent authors and the participation in applied research projects:

(1) The candidate has participated in 7 RTD projects, which is a good indication for the practical benefit of his research and applied research activities;

(2) The applicant provided a list with 12 citations by independent authors of publications visible in SCOPUS, which indicates that the works of T. Papanchev attracted the attention of researchers working on similar topics.

## **7. Critical notes and recommendations**

I find the documentation well organized and convenient for inspecting the reported facts and do not have specific comments.

My only recommendation to T. Papanchev is to concentrate part of his efforts on gaining international recognition for his research by increasing the quantity and quality of his publications and by active participation in national and international projects. I believe that especially important for his career development is:

- To publish in international scientific journals indexed in WoS, SCOPUS, IEEE Digital Library, etc.
- To publish in scientific journals with an impact factor according to Thomson Reuters and those falling into the quarters Q1 or Q2 of WoS for the relevant scientific field.

- To create a research group to attract and implement projects funded by national and international scientific funds.

These efforts would significantly contribute to:

- supporting the promotion of TU-Varna in the national and international academic rating systems,
- increasing the general assessment in the institutional accreditation of TU-Varna, and
- increasing the assessment during the accreditation in professional field 5.2 "Electrical Engineering, Electronics, and Automation".

## **8. Personal impressions and opinion of the reviewer**

I have personal impressions of the research and teaching activities of the candidate because, during the period 2012 – 2017, we worked together in the Dept. of Electronics and Microelectronics. In this regard, I certify that over the years, Toncho Papanchev has proven his high efficiency and determination in solving problems related to the reliability of electronic systems and the theme of the competition.

## **CONCLUSION**

The application package presented in the competition provides the means for an objective and multifaceted assessment of the qualities of Chief Assist. Professor Toncho Hristov Papanchev, PhD. A formal comparison of the submitted documents with the minimum national requirements and the regulations of TU-Varna for the tenure track position "Associate Professor" unequivocally proves that the minimum requirements are met. Furthermore, for the indicator, "ZH" significantly over fulfilled.

In conclusion, the above said analysis motivates me to support T. Papanchev, emphasizing that he undoubtedly has the necessary qualities for the tenure track position "Associate Professor" in the professional field 5.2 "Electrical Engineering, Electronics and Automation".

Date: April 01, 2021.

Reviewer: \_\_\_\_\_

/Prof. Todor Ganchev, PhD/