

OPINION

from Iliana Yordanova Marinova, D.Sc., Professor, Technical University of Sofia

of the materials submitted for participation in competition for an academic position "Associate Professor" in field of higher education - 5. Technical sciences, professional field 5.2 "Electrical engineering, electronics and automation“, specialty - „Electrical Engineering“, (Electromechanical Devices, Electric Machines).

In competition for an academic position "Associate Professor", announced in SG 60/20.07.2021 and on the website of TU-Gabrovo for the needs of TC-Lovech at the Technical University - Gabrovo, as a candidate participates Ch. Assistant Professor Milko Ganchev Dochev, PhD - Technical College - Lovech, Technical University of Gabrovo.

1. Overview of the content and results in the presented works

Assistant Professor Dr. Milko Dochev presented materials that, when compared with the minimum requirements for professional fields for an academic position "Associate Professor" according to 3PACPB and the Regulations for scientific degrees and for an academic position at TU-Gabrovo show:

According to indicator **A - 1** Existence of dissertation work for awarding of PhD are presented Diploma, issued by TU-Sofia, for awarding educational and scientific degree " Doctor " with dissertation theme " Dynamic modes and technical diagnostics of hand power tools ", as and a list of 11 publications used in dissertation. With the number of points, according to the requirements - 50, the number of points of the candidate is 50.

According to indicator **B - 3** Habilitation work - habilitation work is presented: M. Dochev, High-efficiency electric drives for power tools. Monograph, 2019, 160 pages. Publisher: Infovision - Lovech, 2019, ISBN: 978-619-7442-35-9. 18 publications of the author are cited in the habilitation work. With the number of points, according to the requirements - 100, the number of points of the candidate is 100.

According to indicator **Г - 6** Published book on the basis of defensive dissertation for awarding educational and scientific degree "Doctor" - two published books are presented - Dochev, M. Methods and tools for technical diagnostics of electric machines and hand power tools. Infovision Publishing House - Lovech, 2018, 233 pages, ISBN 978-619-7442-16-8; Dochev, M. Methods and tools for technical diagnostics of electrical machines. University Publishing House "V. Aprilov" - TU- Gabrovo, 2019, 161 pages, ISBN 978-954-683-591-8. With the number of points, according to the requirements - 30, the number of points of the candidate is 60.

According to indicator **Г - 7** are presented 2 scientific publications in publications that are referenced and indexed in world-wide databases with scientific information, but publication Spirov, D., M. Dochev. Soft-switching inverter-fed single-phase collector motor drive. Energy Procedia, 50, 2014, 744-750, ISSN 1876-6102. (Beirut – Lebanon, Energy Procedia, Volume 50, 744-750, ISSN 1876-6102 has been used in the habilitation work according to indicator B-3 and I do not accept it. The number of points of the candidate on this indicator is 20. According to indicator **Г - 8** 82 scientific publications are presented in unreferred journals with scientific review or in edited collective papers, as publications by indicator Г-8 from the Reference for scientometric indicators of Milko Dochev with the number 6, 16, 26, 28, 31, 44, 45, 48, 60, 61, 66, 71, 75, 82 participate in the habilitation work. The number of points of the candidate on this indicator is 726,84. With the number of points per indicator **Г-(Г6+Г7+Г8)** according to the requirements – 200, the number of points of the candidate e 806,84.

According to indicator **Д-12** 4 citations are presented in scientific journals, referenced and indexed in world-famous databases with scientific information. According to indicator **Д-14** 33

citations are presented in unreferred journals with scientific review. With the number of points, according to the requirements - 50, the number of points of the candidate is 106.

According to indicator **E-18** participation in OII BG 2004/016-711.11.01“, EU PHARE program is presented. The number of points of the candidate is 10.

From the comparison of the implementation of the minimum requirements for an AP "Associate Professor" it follows that all indicators are significantly exceeded. The research activity presented in the publications is determined by Ch. Assistant Professor Dochev as a qualified lecturer and researcher with the necessary knowledge and many years of experience in the field of competition.

2. General characteristics of the candidate's activity

2.1 Educational and pedagogical activity (work with students and doctoral students)

The educational and pedagogical activity is presented through the individual reports on the workload of the teacher Milko Dochev with academic work for the academic year 2019/2020. and 2020/2021, from which it is evident that the disciplines led by him are entirely from the professional field in which the competition was announced. He conducts lectures, laboratory exercises, term papers, course projects in disciplines such as Electrical Apparatus Part I and II, Electrical Machines, Low Voltage Switchgear, Electromechanical Devices, Design of Electrical Machines. For the last two years he has been the supervisor of 19 graduates. 3 textbooks are presented.

2.2 Scientific and scientific-applied activity

The research work of Ch. Assistant Professor Milko Dochev is in the field of electrical machines and power tools. He has participated in the development of 19 research projects, of which 7 he was a project leader.

A methodology and a mathematical model of hand power tools (REI) have been developed for studying the operating and energy characteristics of REI in dynamic and established modes; A methodology and program for verification of electromagnetic and resource calculations of single-phase collector motors (SCD) for REI have been developed; A monitoring system for experimental and analytical determination of the energy characteristics of inverter and classical drive with a single-phase collector motor of a power tool has been developed; systematization and analysis of defects and damages in hand power tools.

2.3 Implementation activity

The scientific and research developments have been tested in the company "Sparky - Eltos" EAD - Lovech; Devimax EAD - Lovech, ELDI ELECTRO - Sofia, Elektromont - Bozhilov ET - Bankya, Razsolkov ET - Velingrad, "I. Karolev ET - Sofia, "Zhichka - ET - Sofia," KOSARA " - EAD" - Sofia, etc., as well as in the learning process in TC - Lovech and lab. "Electrical Engineering" at UFT - Plovdiv. The candidate has participated as a leader or team member in 13 rationalizations, developments and patent applications, in 14 developments and realizations of stands and modules for renovation of the training base in TC-Lovech in the lab. Electrical machines and apparatus and lab. Operation and repair of electrical machines and apparatus, in the development and production of 7 samples of stands and devices for control and diagnostics of REI units. 14 implementation documents are presented.

3. Contributions (scientific, scientific-applied, applied). Significance of contributions to science and practice

From the presented habilitation paper on the topic "High-efficiency electric drives for power tools" and the author's reference for the contributions in it, the main scientific and scientific-applied contributions can be summarized as follows:

- analysis and development of constructive-technological and innovative solutions for increasing energy efficiency in hand power tools;
- development and application of analytical and circuit models for electrification of the

electric drive of hand-held power tools with single-phase collector motors through their electronic control to reduce their losses and increase their energy efficiency.

The main scientific and scientific-applied contributions of the publications outside the habilitation work are summarized as follows:

- Development of methods, methodologies and technical means for research and diagnostics of electric machines and hand power tools [Г8-5,11,12,13,14,15,22,27,31,41,62,67,69,74 и др.];
- Development and implementation of methodologies, systems, devices and technical means for automation of discrete production [Г8-3,4,6,7,8,10,16,17,23,24,25,27,29,30,33,36,37,38,40,42,51,63,64,65 и др.];
- Development, realization, and research of laboratory stands and equipment, devices, mathematical models and methodologies, demonstration models, etc. similar, as well as for teaching and research [Г8-1,2,9,19,20,21,32,44,45,46,47,76 и др.]

The publications are sufficient in volume, scientific level, promotion at national and international level and fully present the teaching and research activities of the candidate.

4. Assessment of the candidate's personal contribution

I highly appreciate the personal contribution of the candidate in the scientific papers and research projects presented in the competition. This contribution is clearly seen from the fact that in more than 50% of the presented publications the candidate is the first author, he is the leader of 7 research projects, in most rationalizations the candidate is in the first place and others. This shows that the developments and publications were made with the leading participation of Ch. Assistant Professor Dochev.

5. Critical notes and recommendations

I have no serious critical remarks on the works of Ch. Assistant Professor Dochev, and I recommend that he continue to work to achieve significant new results for education and industry.

6. Personal impressions

I know Ch. Assistant Professor Dochev from meetings at various scientific forums and I have excellent impressions as a colleague and specialist in the field.

7. Conclusion:

Given the above, I propose

**Ch. Assistant Professor Milko Ganchev Dochev, PhD –
Technical College - Lovech, Technical University of Gabrovo
to be elected "Associate Professor" in field of higher education - 5. Technical sciences,
professional field 5.2 "Electrical engineering, electronics and automation",
specialty - „Electrical Engineering“, (Electromechanical Devices, Electric Machines).**

5.11.2021

Scientific Jury Member:

/signature/
/Prof. I. Marinova/