

O P I N I O N

**of Assoc. Prof. Hristo Todorov Ibrishimov, PhD,
Technical University of Gabrovo,
regarding the materials submitted for participation in a competition
for the academic position of "Associate Professor" in
the Field of Higher Education - 5. Technical sciences, Professional Field - 5.2. Electrical
Engineering, Electronics and Automation, scientific subject – “Electrical Engineering”
(Electromechanical devices, Electrical machines)**

In the competition for associate professor, announced in the Official Gazette, issue 60 from 20.07.2021 and on the website of the Technical University - Gabrovo for the needs of the Technical College - Lovech, as the only candidate involved Chief Assistant Dr. Eng. Milko Ganchev Dochev.

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

The candidate submits for participation in the competition 1 monograph, two teaching materials based on a defended dissertation and 83 publications, of which 12 articles in journals with scientific review, 71 papers at scientific conferences. The scientific works submitted by chief assist. PhD Milko Dochev so that he can participate in the competition for holding the position of an associated professor could be summarized in the following main trends:

B Group A – Indicator 1: The candidate has submitted a PhD diploma in the professional field 5.2. and an abstract of a thesis defended at the Technical University – Sofia and a PhD diploma.

For the minimum required 100 points in group B, Milko Dochev presents: Highly efficient electric drives for power tools - monograph, Publishing House "Infovision" - Lovech, 2020, ISBN: 978-619-7442-35-9. It contains three chapters, a bibliography of 136 scientific articles, dissertations and textbooks, and is written on 159 standard typewritten pages.

The monograph describes issues related to research, analysis and development of various design, technological and circuit solutions to improve energy efficiency and energy performance of electrical hand tools. The basic concepts, normative base, requirements, standardization, condition, and development of the energy efficiency of electric drives in general and in particular, in the case of hand power tools are considered. The results of research and analysis of constructive-technological and innovative solutions and technical-economic analyzes for increasing energy efficiency, mathematical models, circuit solutions and various technical solutions for electrification of power tools in order to increase their energy efficiency are presented.

According to the scientometric indicators in group G, the candidate declares two teaching materials on the basis of a defended dissertation for the award of educational and scientific degree "Doctor" and 83 publications. The total sum of the points by indicators in group G is 946.48, as they are collected from the indicators G6-60 points, G7-40 points and G8-846.48 points. Group G publications can be divided into the following thematic topics:

1. *Developments in the field of hand power tools - technical diagnostics, mathematical models, simulations, control and regulation, energy research, operation and repair, accessories, etc.* In this topic, 26 publications related to hand-held power tools as a separate class of specialized electrical products are thematically combined.

2. *Development and realization of laboratory and training modules and stands in the field of electromechanical devices and household electrical engineering.* This thematic topic includes 13 publications related to topics in the field of development and implementation of laboratory, training and research modules and stands for testing and research of electric motors, electromechanical devices, household electrical appliances and others implemented in the educational process and research in Technical College-Lovech.

3. Electric drives and mechatronics. This thematic topic include 19 publications in the field of electric drives, mechatronics and automation.

4. Sewing equipment, textile materials and technologies - This thematic topic include 9 publications in the field of sewing equipment, textile materials and methods for their testing.

5. Technical and economic developments. The publications in this field are 5 and include topics of scientific and applied activities in the field of technical and economic research and results from the development and application of methodologies for economic analysis and strategies in the production and sale of power tools and other electrical and energy equipment.

6. Technologies, machine building, metalworking and other topics. There are 11 publications in this field of the electrical engineering, industry, energy, and solving specific problems of applied and scientifically applied activities.

Indicator 12 - Group D: The candidate in the competition has presented 106 points on this indicator (50 points are required).

2. General characteristics of the candidate's activity

2.1. Educational and pedagogical activity

The Candidate for the academic position of an associated professor, chief assist. PhD Milko Dochev, was appointed as an assist. prof. at the Department of Electrical Engineering at the Technical College-Lovech in 1993. He is a leading lecturer of 11 courses for Electrical Engineering and Computer Science and Technologies. He submitted 6 teaching materials for the competition and all were reviewed.

He is a lead lecturer of the courses: Electromechanical devices, Electrical machines, Design of electrical machines, Design of electrical machines - course project, Electrical devices I part, Electrical devices II part, Electrical devices - course project, Technologies in electrical engineering, Operation and repair of electrical machines and devices, Control and diagnostics of electrical machines and devices, Teaching practice.

The Candidate is an author of the study programs of the following academic courses: Electromechanical devices, Electrical machines, Design of electrical machines, Electrical apparatus I part, Electrical apparatus II part, Technologies in electrical engineering, Operation and repair of electrical machines and apparatus, Control and diagnostics of electrical machines and apparatus, Educational practice.

During his many years of teaching under his leadership, 428 graduates have successfully defended, he has been a reviewer of over 100 theses.

2.2. Scientific and scientific-applied activity

The scientific and scientifically applied activity of Ch. Assistant Professor Dr. Milko Dochev can be systematized in 6 thematic topics: Developments in the field of hand power tools - technical diagnostics, mathematical models, simulations, control and regulation, energy research, operation and repair, accessories, etc.; Development and realization of laboratory and training modules and stands in the field of electromechanical devices and household electrical engineering; Electric drives and mechatronics; Sewing equipment, textile materials and technologies; Technical and economic developments; Technologies, machine building, metalworking.

A document certifying his participation in a total of 19 research projects was presented, he was the leader of 8 university research projects on Bulgarian Scientific Funds. Information on the number of peer-reviewed papers from scientific conferences is also presented - 20.

2.3. Implementation activities

The Candidate, PhD Prodan Ivanov Prodanov, has submitted in official documents regarding his implementation activities issued by the following companies: Ilian Iliev - Georgi Iliev, Kosar Technik, NIK-98, Elektromont Bozhilov, Eldi Electro, Devimax, Kai-2000, Itzo Karolev, Zhichka.

The review of the materials submitted for participation in the competition gives me reason to convincingly claim that Ch. Assistant Professor Dr. Milko Dochev has excellent qualifications and very good achievements in the field.

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

I accept a large part of the contributions, formulated by the author on the basis of the publications, for participation in the competition for "Associate Professor" - a total of 83 scientific articles and papers:

Scientific-applied contributions:

1. Development of methods, methodologies and technical means for research and diagnostics of electric machines and electrical hand tools;
2. Development and implementation of methodologies, systems, devices and technical means for automation of discrete production;
3. Various technical solutions for electrification of power tools have been developed and studied in order to increase their energy efficiency;
4. The efficiency of the introduction of damping windings in the armature and the stator to improve the switching in the machine has been proven;
5. A mathematical description of the processes during operation of a single-phase collector motor and presentation of the mathematical model in the state space is made.

Applied contributions:

1. Development, realization and research of laboratory stands and equipment, devices, mathematical models and methodologies, demonstration models, for teaching and research activity;
2. An adaptive magnetizing current observer has been developed for electric drive of a power tool with a single-phase collector motor to determine the angular velocity of the rotor.

4. Evaluation of the personal contribution of the Candidate

I consider that the contributions are the personal work of the candidate. Ch. Assistant Professor Dr. Milko Dochev is a long-term researcher and lecturer with over 30 years of experience in research related to the topic of the competition. After acquaintance and analysis with his developments and achievements of the presented materials for participation in the competition, namely: monographic work, 83 publications in journals and scientific conferences, 16 of which are independent and 30 publications in which the candidate is in the first place, I think that the candidate has a serious personal contribution and leading participation in them.

5. Critical comments and recommendations

I don't have critical remarks and recommendations to the presented materials. I would like to recommend to the candidate to expand the scope of his participation in other scientific conferences and journals with impact factor (IF).

6. Personal impression

I don't know the candidate personally, but I believe that research and the results achieved so far in the field of diagnostics of electrical machines and increasing their energy efficiency, reveal very well the creative potential of the candidate.

7. Conclusion

Taking into account the above mentioned, I propose Chief Assist. Prof. Milko Ganchev Dochev, PhD, to be awarded the academic position of Associate Professor in the field of higher education – 5. Technical sciences, Professional field - 5.2. Electrical Engineering, Electronics and Automation, scientific subject – “Electrical Engineering” (Electromechanical devices, Electrical machines).

10.11.2021

Member of the jury: /signature/

/Assoc. Prof. Hristo Todorov Ibrishimov/