

OPINION

**on the materials submitted for participation in the competition for the position of Assoc. Prof. in the field of higher education 5. Technical sciences,
Professional field 5.2. Electrical Engineering, Electronics and Automation,
Subject Electrical Engineering (Electromechanical Devices, Electrical Machines)
by Assoc. Prof. Eng. Nikola Draganov Draganov Ph.D., a member of the scientific jury
Technical College of Lovech at the Technical University of Gabrovo**

In the competition for taking the academic position of associate professor announced in The Official Gazette issue 60 of 20.07.2021 and on the site of Technical University of Gabrovo for the needs of the faculty of Mechanical Engineering, Computer Systems and Electrical Engineering at Technical College of Lovech with only candidate Eng. Milko Ganchev Dochev, Ph.D.

Reason for writing the resolution is an order № 3-01-394/29.09.2021 of the Rector of the Technical University of Gabrovo for appointment of jury according to a decision made by the Academic Board of the Technical University of Gabrovo with protocol №1 from 28.09.2021 and a decision of the scientific jury for the selection of reviewers taken on his first meeting held on 01.10.2021. with protocol № 63.

1. Survey of the content and results from the presented works

The scientific works and publications submitted by the candidate Eng. Milko Dochev, Ph.D for participation in the competition correspond as number, scientific topics, problems and contribution to the requirements for taking the academic position of "Associated Professor".

Presented scientific works include 2 textbooks, 1 exercise book, 2 books, one of which is a monograph, and 83 publications – articles and reports delivered at national and international scientific conferences. The monograph "Highly Effective Electric Drives" (2019, 159p.) corresponds with the topic of the competition and is represents adapted text to dissertation work. The presented independent articles and reports are 13, 65 are in co-writing, 10 in a foreign language, 2 of which are scientific reports presented at international conferences, registered in Scopus. The scientific works are grouped into six topical fields and the writer classifies his publications in subfields.

The first topical field includes research on hand power tools – technical diagnosis, mathematical models, simulations, regulation and control, energy research, exploitation and service, accessories and others. In this field the author unites 26 publications referring to the hand power tools as a differentiated class of specialized electric equipment.

The second part includes classified works connected with development and realization of laboratory and straining modules and stands in the field of electromechanical devices and electrical home devices. 13 publications are included in this part. Some of them are used for National competitions in Electrical Engineering, for students in professional high-schools, yearly in the laboratories of the Technical College of Lovech.

The third topical field is devoted to the electric drives, mechatronics and automatics. 19 scientific publications are included here. The last publications are also divided into several subfields.

The author has differentiated a fourth topical field dedicated to Textile engineering and it contains 9 publications.

The fifth topical field consists of 5 publications. They are technico-economic elaborations comprising scientifically-applied topics in the field of technico-economic research, as well as results from the elaboration and the application of methodology for economic analysis and strategies in the production and realization of electrical tools and other electrical and energy equipment.

Publications on a greater amount of considered issues having in mind the author's long-lasting co-work with firms in the fields of electromechanical engineering, energetics and specific significant issues of applied and scientifically-applied character are classified in a separate topical field.

Despite the detailed presentation of the topical fields I think they can be presented in a more summarized way.

2. General characteristic of the candidate's activity

Chief Assist. Dr Eng. Milko Dochev is a lecturer with many years of teaching at the Technical University of Lovech. He has taken both leadership and administrative positions. His main fields of study are teaching and research in the fields of electric engineering, electromechanical devices and hand tools.

A. Teaching activity

The candidate takes the position of Chief Assistant at the department of “Mechanical Engineering, Computer Systems and Electrical Engineering” at the Technical University of Lovech. He is a lecturer in Electromechanical Devices in the curriculum of the specialities Mechanical Engineering, Automotive Engineering, Electrical Engineering and Computer Systems and Technologies, and the disciplines Electrical Equipment - I and II, Electrical Machines, Electrical Machine Design and Low Voltage Commutation Equipment only to the students of speciality Electrical Engineering. He has supervised 428 graduates, edited more than 100 graduate projects and more than 20 reports and articles at scientific conferences.

B. Scientific and scientifically-applied activity

The contribution of the work of the candidate is mainly in the field of the competition. We find original ideas connected with methods and means of teaching disciplines, diagnosis of hand power tools, production automation and last, but not least modeling and research on electric drive systems with different applications.

After close inspection of the content of each scientific publication and analyzing the published results I will allow myself to classify the scientific and scientifically-applied works into the following topical fields:

- Developing teaching methodology in the field of electric drives. They include stands, research and demonstration models and methods that ensure and facilitate the process of education and research activities.
- Modeling, realization, and research on the electric drives for hand power tools. Developing methods for research on hand power tools with single-phase commutator motor.
- Modeling, realization and research on electric drives in the industry including sewing production, automated metalworking machines and discrete manufacturing.

3. Impact of the candidate's scientific work on the literature

Eng. Milko Dochev has documented 35 quotes altogether and almost all of them are in scientific publications and reports from authoritative editions and scientific conferences in the country. Three of the quotes are by foreign authors who work in this scientific field and are from conferences indexed in Scopus.

The collectivism of the scientific team with which the candidate has worked is evident in the published material and its quotations. All the authors, who have quoted the candidate's works, have co-publications with him. The last can be analyzed twofold but we can't say there are quotations from the author's own works.

4. Assessment of the candidate's contributions

In his long-lasting work as an Assistant and after that as a Chief Assistant the candidate Dr. Eng. Milko Dochev has contributed to the establishment and development of professional department “Electrical engineering, Electronics and Automatics” at the Technical College of Lovech. The curricula and the professional characteristics of the specialities are created as a result from his rich professional and pedagogical experience and under his supervision. He is the author of all the curricula of the disciplines he teaches and co-author of many other interdisciplinary disciplines which are a part of the curricula of the specialities “Electrical Engineering”, “Computer Systems and Technologies”, “Textile Engineering”, Mechanical Engineering”. Each discipline the candidate has worked on is ensured with rich laboratory with stands and models created by him or under his supervision. In addition to this he participates actively in the organization of the program and institutional accreditation of the university on the part of the Technical College.

5. Critical analysis and recommendations

After getting thoroughly acquainted with the candidate's materials for the competition including articles and reports, exercise books and books some remarks and recommendations referring to them are generated. They can be divided into the following categories:

A. After a closer inspection of the mentioned contributions, extricated from the scientific works classified according to topical fields, we notice a lack of logical connection, structuring and superfluous information. The works are classified incorrectly into topical fields and this has caused incorrect formulation of the respective contributions.

It would be a good idea to divide the contributions into scientific and scientifically-applied. Their characteristics shouldn't be mixed. The contributions should reflect briefly, clearly and exactly the most significant parts of the respective topical field which have contributed to the development of the science in that field. There are contributions in the presented works but they are few and mixed and this way they lose ground. They are blurred among unnecessary information.

B. The author's scientific publications are a mirror of his work. I read carefully and thoroughly all 83 publications, monograph and exercise books. As a result, from the received information I found the following: some of the listed reports are strongly inconsistent (11, 12), lack of any scientific thought (57), style (11,12,17,19,20,21,49,51), quality (17) and even scientific contributions (34, 35, 48, 76). There are publications with the participation of authors, who do not contribute to their scientific content (8, 35, 48, 49-52, 57). The presence of quoted titles, which do not correspond to the topic and the content of the particular report, makes a negative impression (2-8). Other reports are with identical content, but published at different places with different titles (19 and 20, 63 and 79, 49 and 51), still others even with changed co-writers (71 and 80).

C. Many high quality materials connected with project constructing, testing and exploitation of hand power tools are presented in the book called "A handbook to projecting power micromachinery". A large amount of data from a leading manufacturer of hand power tools "Sparky Eltos" Lovech is used. Despite the uniqueness of the applied information I think that the book is informational rather than educational. The applied methodology (4.2.1, p.77-108) is not written, there are no commentaries on the choice of the particular coefficients, on the way of defining the parameters. Methodology is presented as a printing of an Excel calculation table without methodology guidelines. In this respect it would be good to write it in detail, as methods, so that it is easily understood by the students and others who are concerned with it. The only laboratory exercise in the handbook (p. 112) is presented analogically. There are no tasks to fulfill, only an exclusively short theoretical part with given results from the experiment.

The books called "Methods and Means for Technical Diagnosis of Motors and Power Tools" and "Methods and Means of Technical Diagnosis of Electrical Machines" are 98% identical. The difference is that 2 chapters are added to the edition from 2019. They expand the content but correspond with it weakly.

D. It is understandable that the author has worked with a scientific team who have been inspired by his scientific ideas and elaborations. The evidence is that there are many quotes from authors the candidate has worked with and has publications with. However, there are quotes in reports the topics in which contrast and do not correspond to the quoted report (1, 7, 18, 21, 23, 28, 31, 32 from the list of the quotes). For example, a strong impression makes the report "Effectiveness of Frequency-controlled Drive in Sewing Machines" which is quoted in the report "Creating a Favorable Atmosphere in the Organization for Generating Creative Business Ideas."

Therefore, from all 35 quotes I recognize only 3 indicated with numbers 24, 25, 26 in the list of quotes.

There is no information on the graduates the candidate has supervised and the edited theses.

The remarks listed in this part do not have the purpose to undervalue the presented results but only to create a positive feedback for the author by reflecting the objective reality.

Conclusion

The scientific materials presented by Assist. Prof. Milko Ganchev Dochev give me grounds to assume that they correspond to the minimum requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria, the rules for its implementation and the Regulations of the Technical University of Gabrovo.

With reference to the subject mentioned above I give my consent for positive assessment and propose Eng. Ph.D. Milko Ganchev Dochev to be assigned the title of "Associated Professor" in the field of higher education 5. Technical Sciences in professional field 5.2. "Electrical Engineering, Electronics and Automation" at the Technical College of Lovech at the Technical University of Gabrovo.

Date: 01.11.2021

Prepared by: /signature/

/Assoc. Prof. Eng. N. Draganov Ph.D./