

OPINION

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Of the materials submitted to the competition for the academic position of associated professor

at University of Plovdiv „Paisii Hilendarski“

by: field of higher education: 5 Technical sciences

Professional field: 5.1. Mechanical engineering

(Engineering automation and automated design systems)

In the competition for the academic position "associated professor" announced in the State Gazette, no.32 of 09.04.2024 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of Mechanical Engineering and Transport at the Faculty of Physics and Technology, as a candidate participated Dr. Emil Georgiev Velev from Plovdiv University "Paisii Hilendarski".

1. General presentation of the procedure and the candidate

By order No. PD-21-1415 dated 08.07.2024 of the Rector of Plovdiv University "Paisii Hilendarski" (PU), I have been appointed as a member of the scientific jury of a competition for the academic position of "associate professor" in the PU in the field of higher education 5. Technical sciences, 5.1. Mechanical Engineering (Automation of engineering work and systems for automated design), announced for the needs of the Department of Mechanical Engineering and Transport at the Faculty of Physics and Technology. For participation in the announced competition, a single candidate submitted documents: Chief Assistant Professor Emil Georgiev Velev, Ph.D., from Plovdiv University "Paisii Hilendarski". The presented by Emil Georgiev Velev, PhD, set of materials is in accordance with the Regulations for the Development of the Academic Staff of the PU, and includes the following documents: application form to the Rector for admission to participation in the competition; CV in European format; a copy of a higher education diploma with an acquired educational and qualification degree "master"; copy of diploma for the educational and scientific degree "doctor"; list of scientific works; scientific works (copies of publications); certificate of compliance with the minimum national requirements; annotations; self-assessment of the contributions; declaration of originality and authenticity of the attached documents; work experience document; documents for academic work; documents for scientific research activity; documents for participation in scientific research projects and other documents such as certificates, etc.

For participation in the competition, Emil Georgiev Velev, PhD, has presented 21 publications and 1 monograph. 21 publications and 1 monograph are accepted for review. A list of 16 citations is presented.

Emil Georgiev Velev, PhD, meets the minimum national requirements for holding the academic position of associate professor, and the indicators for the individual groups are as follows: group A - 50 points (from 50 min.), group B - 100 points (from 100 min.), group D – 267.18 points (from 200 min.), group D – 79 points (from 50 min.).

According to the presented data on the groups of indicators for occupying the academic position "associate professor", it is clear that Chief assistant professor Emil Georgiev Velev, PhD, meets the requirements of Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), PPZRAS and PRASPU.

Chief assistant Emil Georgiev Velev, graduated from Technical University - Sofia, Plovdiv branch in 1991 with master's degree in "Technology of Mechanical Engineering and Metal Cutting Machines" and qualification "Mechanical Engineer". In 2015 has obtained educational and scientific degree doctor (Ph.D) in the " in Professional filed 5.1 "Mechanical Engineering", Scientific specialty: "Technology of mechanical engineering" at TU-Sofia. Since 2016 works as a lecturer on a basic employment contract at the "Paisii Hilendarski" university (PU), Department of "Mechanical Engineering and Transport" at the Faculty of Physics and Technology of the PU, and since 2019 holds the academic position of chief assistant professor.

The professional biography of Chief Assistant Professor Emil Georgiev Velev gives me reason to conclude that the candidate has a high educational and professional potential for research and teaching activities.

2. General characteristics of the applicant's activity

During the last four academic years (2019-2023), the candidate has an average classroom workload of about 300 hours, delivering lectures on the disciplines "Automation of machine-building production", "Heat treatment of metals", "Processing of metals by plastic deformation", "Programming and adjustment of metal-cutting machines with CNC", as well as exercises in academic disciplines related to the scientific specialty of the associated professor competition. Emil Georgiev Velev, Ph.D , has provided a report on work with diploma thesis students, from which it is clear that there are 7 graduates led by him , who have defended their degrees. From the materials submitted for participation in a competition for the academic position "associated professor" of Emil Georgiev Velev, Ph.D., it is evident that he has published one habilitation thesis - a monograph with the topic "**Production of metal parts using additive technologies**". The monographic work has a volume of 183 pages. The distribution of scientific works by relevant headings, in the country and abroad, is as follows: 3 scientific publications in sources that are referenced and indexed in world-renowned databases with scientific information in Scopus from group D7.1. to G7.3.

18 scientific publications in non-refereed peer-reviewed journals or edited collective volumes are also presented. A list of 16 citations is provided, four of which are from sources indexed in Scopus. Based on the scientific publications presented by Dr. Emil Georgiev Velev, it can be reasonably summarized that the main scientific contributions are:

1. Methods have been developed for the construction of a roller hydromachine, determining the dimensions of the rollers, improving the technical parameters of a hydro motor, by changing the profile of the gerotor pair, as well as deciphering the gerotor gear pair [Γ 8.1], [Γ 8.2] and [Γ 8.3].

2. The possibilities of reducing the impact of plastic parts by using such extracted from sustainable extracted materials have been studied [Г 8.4], [Г 8.5].

3. The processes of cavitation in hydromotors were studied by using computer simulation [Г 8.13].

As a scientific and applied contribution, Dr. Emil Velev formulated:

- New types of gear pairs for heretor hydromotors have been proposed, as well as a methodology for their generation has been created [Г 8.1], [Г 8.2].

In addition, as applied contributions are formulated:

1. The possibility of using different types of plastic with the same tool was investigated. SolidWorks finite element analysis program [Г 8.7] is used, as well as the influence of the inlet diameter on the injection molding process [Г 8.12.]

2. A practical approach to rebuilding a gerotor pump used in automotive power amplifiers is developed and illustrated. A methodology for restoring the gerotor pump of automotive hydraulic boosters is presented [Г 8.14].

3. The advantages of additive manufacturing in mechanical engineering are shown, as well as its advantages over conventional manufacturing of details [Г 8.6].

Based on the scientific production presented, it can be concluded that the quantitative indicators of the criteria for occupying the academic position "Associate Professor" have been met according to all the indicators of the minimum national requirements.

3. Critical remarks and recommendations

From the submitted materials for the competition for associate professor, it can be seen that only three out of 21 scientific publications are indexed in Scopus, and in all three Dr. Emil Velev is the last author.

I recommend Dr. Emil Velev to strengthen his publication activity as a first author in publications with an impact factor that are indexed in Scopus and Web of Science, thus his scientific output will receive a wider international distribution.

I recommend Dr. Emil Velev to participate in more scientific projects - national and international.

In the academic work, the lack of developed electronic courses to be used by FTF students makes an impression.

CONCLUSION

The documents and materials presented by Chief assistant professor Emil Georgiev Velev, PhD, meets all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of the ZRASRB and the relevant Regulations of PU "Paisii Hilendarski".

The candidate in the competition has submitted a sufficient number of scientific works published after the materials used in the defense of the ONS "Doctor"(Ph.D). The candidate's works contain scientific and scientific-applied contributions. The scientific and teaching qualifications of Chief assistant professor Emil Georgiev Velev, PhD, meets the requirements of the competition. After getting acquainted with the materials and scientific works presented in the competition, analyzing their significance and the scientific, scientific-applied and applied contributions contained in them, I find it reasonable to give my positive assessment and

recommend the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Physics and Technology at Plovdiv University "Paisii Hilendarski" for the election of the Emil Georgiev VeleV, PhD, in the academic position of "associated professor" at PU "Paisii Hilendarski" in: field of higher education 5. Technical sciences, 5.1. Mechanical Engineering (Automation of engineering work and automated design systems).

02.09.2024

Reviewer:.....
/prof. Dimitar Tokmakov, Ph.D/