

OPINION

from DSc. Georgi Atanasov Mishev – Professor in the Department of Mechanical Engineering and Transport

of the materials submitted for participation in the competition
to occupy the academic position "professor"
on Paisii Hilendarski University of Plovdiv

by: field of higher education: 5. Technical sciences

professional field: 5.1. Mechanical Engineering (Engineering automation and automated design systems)

In the competition for "professor", announced in the State Gazette, no. 96 of 17.11.2023 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the "Mechanical Engineering and Transport" department at the Faculty of Physics and Technology, as a candidate Assoc. Prof. Slavi Yasenov Lyubomirov, PhD from Plovdiv University "Paisii Hilendarski".

1. General presentation of the procedure and the candidate/s

By order No. PD-21-385 dated 16.02.2024 of the Rector of the Plovdiv University "Paisii Hilendarski" (PU), I have been appointed as a member of the scientific jury of a competition for the academic position of "professor" in the PU in the field of higher education 5. Technical sciences, professional field 5.1. Mechanical Engineering (Automation of engineering work and automated design systems), 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, documents were submitted by only one candidate:

Assoc. Prof. Slavi Yasenov Lyubomirov, PhD from Paisii Hilendarski University of Plovdiv.

The paper set of materials presented by Assoc. Prof. Slavi Yasenov Lyubomirov, PhD is in accordance with the Rules for the Development of the Academic Staff of the PU, and includes the following documents: a sample application to the Rector for admission to participate in the competition; resume 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"; a copy of a certificate for the academic position "associate professor"; list of scientific works; scientific works (copies of publications); certificate of compliance with the minimum national requirements; declaration of originality and authenticity of the attached documents; annotations of the materials under Art. 76. from PRASPU (in Bulgarian and English); self-assessment of contributions; list of citations; 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; certificates etc.

The candidate, Assoc. Prof. Slavi Yassenov Lyubomirov, PhD has submitted a total of 93 scientific works, 1 monograph, 1 book, 7 textbooks and teaching aids and a list of 14 scientific research developments. I accept for assessment 1 habilitation work - monograph, 52 scientific works that are outside the dissertation and are taken into account in the final assessment, 1 textbook, 1 teaching aid and participation in 14 scientific research projects. The following from the list has not been evaluated: the dissertation for the acquisition of the scientific and educational degree - doctor, 7 scientific works on the dissertation, textbooks and teaching aids - 5 copies, 1 book based on a protected dissertation work for the award of the educational and scientific degree "doctor" and 33 scientific works for the occupation of the academic position associate professor. A list of 41 noticed citations other than those used for the occupation of the academic post of associate professor is presented. Documents (in the form of memos) for a published patent or utility model application are also submitted. Owns a registered utility model with reg No 4664.

2. General characteristics of the applicant's activity

I evaluate the candidate's activity in two directions:

a) Assessment of educational and pedagogical activity

From the materials submitted for participation in the competition for the academic position of "professor" of Assoc. Prof. Slavi Lyubomirov, PhD it is evident that he has published 1 habilitation thesis - monograph "Digital tools and systems for automated design in mechanical engineering". He is the author of 1 textbook and one teaching aid. The 10 project-based e-courses developed by him are used for the training of students at the Faculty of Physics and Technology of PU "Paisii Hilendarski".

Assoc. Prof. Slavi Lyubomirov, PhD has provided a report on work with students and doctoral students, from which it is clear that there are 26 graduate students who have defended their diplomas and 27 reviews of theses. There are 38 publications with the participation of students and PhD students. Also, he is the scientific supervisor of 4 doctoral students.

This is proof of his undeniable teaching qualifications and high professional qualities.

b) Evaluation of the candidate's scientific and scientific-applied activity

Assoc. Prof. Slavi Lyubomirov has presented 1 habilitation thesis - a monograph that covers the current topic of digital tools and systems for automated design in mechanical engineering. The monographic work has a volume of 218 pages.

The distribution of scientific works by relevant headings, in the country and abroad, is as follows: 11 scientific publications in editions that are referenced and indexed in world-famous databases with scientific information and are published in Web of Science and Scopus. from group D7.1. to G7.11. 41 scientific publications in non-refereed peer-reviewed journals or in edited collective volumes are presented.

The candidate's presented scientific works do not overlap with his participation in other procedures.

Publications can be classified by type: articles – 6 issues; reports – 46 issues; awarded publications – 1 issue; by place of publication: articles in refereed international journals – 6 issues; reports in proceedings of international scientific conferences abroad - 19 issues; reports in proceedings of international scientific conferences in Bulgaria - 16 issues; reports in proceedings of national scientific conferences, sessions and seminars - 5 pieces; reports in scientific works of universities - 6 issues; by the language in which they are written; in English – 41 items, in Bulgarian - 11 issues; by number of co-authors: no independent publication; with one co-author – 7 issues; with two co-authors – 20 issues; with three or more co-authors – 25 issues.

Contributions and citations

Based on the scientific publications presented by Assoc. Prof. Slavi Lyubomirov, PhD the following contributions can be formulated:

Scientific contributions

1. Electronic systems have been developed to improve the harmful emissions of cars. The implemented and tested experimental methodology for the study of various engine malfunctions proves their effect on harmful emissions from the car [G8.15], [G8.16], [G8.24], [G8.26], [G8.27] and [D8.29], etc.

Scientific and applied contributions

1. Designing, printing, scanning and studying the properties of materials for additive manufacturing in 3D printing [D8.39]. The research focuses on fused deposition modeling (FDM) for prototyping. A comprehensive analysis of the scanning techniques [G7.8], [G7.9], [G7.11] and [G8.4] was performed, a 3D virtualized three-dimensional object of an existing building was generated using the Blender software, which was successfully interfaced with virtual reality tools [G8.38].

Applied Contributions

1. The principles and possibilities of Controllino PLC, as a means of control and management of automated processes, as well as prototypes for industrial purposes, were investigated [D8.10].

2. Implementation of 3D printing in the automotive industry, through the process of designing and manufacturing a functional part of the car [G8.37], etc.
3. 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 [G8.35].
4. A methodology for the automated design of devices in the conditions of CAD environments, used in the training of students of mechanical engineering specialties, is presented, prototypes of the models were created using a 3D printer Creat Bot PEEK - 300 [D8.40] and [D8.41] and etc.

The candidate has submitted a list of noticed citations a total of 41, apart from those used for the occupation of the academic position of associate professor. From the presented list of citations, it is noticeable that 21 citations are from foreign authors. The information on citations in scientific publications, referenced and indexed in the world-famous scientific information databases Web of Science and Scopus by year is as follows: for 2020, 5 citations; for 2021, 12 citations; for 2022 8 citations and for 2023 2 citations. A total of 27 citations in Web of Science and Scopus in the last 4 years. The remaining 14 citations are in peer-reviewed collective volumes and non-refereed peer-reviewed journals. 3 Impact Factor citations noted.

In the indicated number of citations, there are no self-citations.

The comparison between the table "Minimum national requirements" for opening of the procedure for the academic position of professor in professional fields and the table presented by Associate Professor Slavi Lyubomirov, confirms that the table presented fully meets the minimum national requirements.

Implementation activity

An application has been submitted by the Patent Office of the Republic of Bulgaria for the registration of a utility model with registration number 4664.

3. Critical remarks and recommendations

I have the following recommendation for the candidate Associate Professor Slavi Lyubomirov, PhD: it is necessary to publish the generated ideas and research methods, which will benefit young researchers, independently.

CONCLUSION

The documents and materials presented by Assoc. Prof. Slavi Yassenov Lyubomirov, PhD meet all the requirements of the Law on the Development of the Academic Staff in Republic Bulgaria

(ZRASRB), the Regulations for the implementation of ZRASRB and the corresponding Regulations of PU "Paisii Hilendarski".

The candidate's works contain original scientific and applied contributions that have received international recognition, a representative part of which has been published in journals and scientific collections issued by international academic publishing houses. The scientific and teaching qualifications of Assoc. Prof. PhD. Slavi Lyubomirov cannot be doubted.

The results achieved by Assoc. Prof. Slavi Yassenov Lyubomirov, PhD in the educational and research activities, **completely** correspond to the minimum national and to the additional requirements of the Faculty of Physics and Technology, adopted in connection with the Rules of the PU for the application of ZRASRB.

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 Assoc. Prof. Slavi Yassenov Lyubomirov for the academic position of "Professor" at PU "Paisii Hilendarski" in: field of higher education 5. Technical sciences, professional field 5.1. Mechanical Engineering (Automation of engineering work and automated design systems).

19.03.2024

Prepared by:

(Prof. Georgi Mishev, DSc.)