

STATEMENT OF OPINION

by Assoc. Prof. Dipl. Eng. Boyan Angelov Dochev, PhD
of the materials submitted for participation in the competition
to occupy the academic position of "**associate professor**"
of **Plovdiv University "Paisiy Hilendarski"**

by: field of higher education 5. Technical sciences
professional direction 5.1 Mechanical engineering
the scientific specialty "Automation of engineering work and automated design systems"

In the "associate professor" competition, announced in the State Gazette, № 32 of 09.04.2024 and on the website of Plovdiv University "Paisiy Hilendarski" for the needs of the Department of "Mechanical Engineering and Transport" at the Faculty of Physics and Technology, as the only candidate participated Chief Assistant Dipl. Eng. Emil Velev, Ph.D, from the Department of Mechanical Engineering and Transport at the same faculty.

1. General presentation of the procedure and the candidate

The announced competition is for the needs of the "Mechanical Engineering and Transport" department at the Faculty of Physics and Technology of Plovdiv University "Paisiy Hilendarski", as documents for participation were submitted by only one candidate - Chief Assistant Dipl. Eng. Emil Velev, Ph.D.

Chief Assistant Dipl. Eng. Emil Velev, Ph.D completed his higher education at the Technical University of Sofia, Plovdiv branch. In 2015, he defended his dissertation work and obtained the title of doctorate. Since 2016, Chief Assistant Dipl. Eng. Emil Velev, Ph.D has been an assistant and subsequently a chief assistant in the Department of Mechanical Engineering and Transport at the Faculty of Physics and Technology, headquartered in the town of Smolyan. Chief Assistant Dipl. Eng. Emil Velev, Ph.D is a proven specialist in practice as a designer of tool equipment and a programmer-adjuster of metal-cutting machines with digital program control.

2. General characteristics of the applicant's activity

To participate in the announced competition, the candidate has submitted an independent monographic work (group B, indicator 3 - 100 points) with the required 100 points. and 21 pcs. scientific publications under group D indicator 7 and indicator 8 - a total of 267.18 tons. at required 200t. The monographic work is entitled "Manufacturing of metal parts using additive technologies" (189 pages), and was published in 2024 with ISBN 978-619-236-514-1. The scientific publications that are referenced and indexed in world-famous databases with scientific information are 3 [Γ 7.1], [Γ 7.2], [Γ 7.3], and the scientific publications in non-refereed journals with scientific review or in edited collective works are 18 numbers: from Γ 8.1 to Γ 8.18. The scientific publications presented in the competition are in Bulgarian (16) and English (5) languages. There are 7 scientific publications on the subject of the competition.

According to indicator D, the author's reference with citations of the works with which the candidate participated in the competition was presented, with 79 points out of the required 50 points.

The contributions contained in the candidate's works can be referred to the following groups:

- Scientific contributions - A methodology has been created for the construction of a roller hydromachine, as the dimensions of the rollers are determining, which facilitates the design of gerotor hydromotors [Γ 8.2].
- Scientific applied contributions: A methodology for restoring the gerotor pump of automobile hydraulic boosters is proposed [Γ 8.14]. The influence of the inlet diameter during injection molding using a hot nozzle was investigated by using the software product SoliWorks [Γ 8.12]. The processes of cavitation in hydromotors were studied by using computer simulation [Γ 8.13]. A theoretical model is proposed for improving the technical parameters of a hydromotor by changing the profile of the gerotor pair [Γ 8.3].
- Applied contributions: New types of gear pairs for hetotor hydro-motors are proposed, as well as a methodology for their generation [Γ 8.1], [Γ 8.2]. The practical possibility of different types of plastic with the same tool was investigated using the SolidWorks finite element analysis program [Γ 8.7], [Γ 8.12]. A practical approach is proposed for the restoration of a gerotor pump used in the hydraulic amplifiers of a car [Γ 8.14]. The advantages of additive manufacturing in mechanical engineering are shown, as well as its advantages over conventional manufacturing of details [Γ 8.6]. A tooth-depth comb was made using a thread-erosion machine by specific profiling [Γ 8.8].

The pedagogical qualification of the candidate corresponds to the level of the academic position "Assistant Professor". He conducts a lecture course on the disciplines: Processing of metals by plastic deformation; Programming and setting of metal-cutting machines with digital-program control; Automation of machine-building production and thermal processing of metals, guides and laboratory exercises.

Chief Assistant Dipl. Eng. Emil Velev, Ph.D participated as a lecturer at the University of Craiova, Romania under project BG05M2OP001-2.01-0026.

Under his leadership, 7 graduates defended their diploma theses, four of whom obtained the Bachelor's degree, and the other three received the Master's degree.

3. Critical remarks and recommendations

I recommend the candidate to increase the number of publications in prestigious scientific publications and direct his activity to major research projects and preparation of textbooks and teaching aids.

CONCLUSION

Based on my familiarity with the presented scientific works and the scientific, scientific and applied contributions contained in them, I find it reasonable to give my positive assessment and to recommend the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Physics and Technology for election of Chief Assistant Dipl. Eng. Emil Velev, Ph.D, in the academic position "Associate Professor" at Plovdiv University "Paisiy Hilendarski" in the field of higher education 5. Technical sciences, professional field: 5.1. Mechanical engineering, scientific specialty "Automation of engineering work and systems for automated design".

Date: 21.08.2024

Jury member:

(Assoc. Prof. Dipl. Eng. Boyan Dochev, PhD)