STANDPOINT

regarding competition for the occupation of an academic position "Associate Professor" in a professional direction **5.13 General engineering,** in the study discipline "Engineering methods for modeling and analysis", Faculty of Mechanical Engineering, Technical University – Varna, published in State Gazette, issue 53 form 20.06.2023

with the candidate: **chief assist. professor eng. Maria Ivanova Konsulova-Bakalova, PhD**

Member of the scientific juri: **Assoc. Prof. eng. Stefan Marinov Kazakov, PhD**

I. General characteristic of the candidate's research and applied scientific activity

Scientific publications: Ch. Assistant Professor eng. Maria Ivanova Konsulova-Bakalova, Ph.D., for her participation in the competition, submitted one monograph, 44 scientific publications, of which 34 in non-refereed journals and 10 in publications referenced and indexed in world-famous databases, as well as 5 teaching aids.

Citations: 53, of which 17 in monographs, 12 in non-refereed journals and 24 in publications referenced and indexed in world-renowned databases.

II. Evaluation of the candidate's pedagogical preparation and activity

I do not personally know Ch. Assistant Professor eng. Maria Ivanova Konsulova-Bakalova, PhD, but the presented documentation shows the rich experience in the teaching activity in the Department of Mechanical Engineering and Metal Cutting Machines Technology, as well as experience in the development of lecture courses and laboratory exercises.

III. Basic scientific and scientific-applied contributions

1. Main contributions of a scientific and scientific-applied nature

Monograph - habilitation work: "Automation of Engineering Work. Automated Design and Analysis

1.1. Scientific and applied contributions, amounting to proving and improving new aspects and possibilities of existing research methods. More specifically, it is about obtaining an approach (tool) for joint use of data preparation procedures (clustering and task dimensionality reduction (Ch.5) with known software products for design and simulation analyses.

1.2. Scientific-applied contributions, reduced to obtaining and proving new facts and approaches for reducing the dimensionality of factor spaces in complex multidimensional objects using singular decomposition and orthogonal transformations of real physical systems and descriptions (Ch.5).

1.3. Scientific and applied contributions, reduced to the use of confirmatory facts with the help of CAD/CAE systems in solving a wide range of tasks: study of heat distribution after and during welding, design and simulation of the load of towing equipment, study of cutting tools, computer gearbox design analyses, fluid analysis for power unit research, injection molding simulation (Ch.4).

1.4. Contributions to implementation, enabling the creation of conditions for sharing some of the obtained results in research and teaching practice. The library of types of analyzes and solved tasks created at the initial stage pursues the achievement of specific educational goals (Ch. 2, 3 and 4).

2. Contributions from scientific publications in publications referenced and indexed in world-renowned databases with scientific information or in non-refereed journals with scientific review according to the attached bibliography.

2.1. Scientific and applied contributions, reduced to the use of known and improved methods to obtain new and confirmed facts. In this group contributions for included:

2.1.1. Development of methods and technologies proving the possibilities of application of CAD/CAE systems in design in a wide range of areas and physical realizations:

- computer technologies in designing in the SolidWorks environment of engineering products;
- computer simulations in the analysis of cutting tools;
- computer technologies in the design of injection molding products.
- simulation models have been created for the study and analysis of thermal processes in the study of the state and processes of air plasma cutting, welding and nitriding.

2.1.2. Conducting tests on engineering products and technologies in real or laboratory conditions (tools and technological processes)

2.2. Scientific-applied contributions, reduced to the use of the author's own program for processing and recognition of one-dimensional and multidimensional signals, developed and presented in Chapter 5. from the monograph on the study of automated systems for information processing and management in various areas: intelligent measurement systems, data visualization and feedback in the assessment of the state of ecosystems in systems for the diagnosis of stationary and transport energy.

2.3. Applied contributions related to the application of modern teaching methods in engineering specialties. Approaches for combining different software products in the learning process are proposed, as well as electronic and distance learning opportunities in disciplines related to design and calculations.

IV.   Significance of contribution to science and practice

The scientific work presents methods and algorithms from which it can be concluded that the author has extensive experience in the field of automation and computer systems for engineering design. The literature used in the scientific work is up-to-date and up-to-date, which makes the book useful for future research, training and work of specialists with systems for automated design and analysis.

V.   Critical notes and recommendations

I have no significant comments to the scientific work. From the submitted materials for participation in a competition for the employment of AD associate professor, I can note that the candidate ch. Assistant Professor eng. Maria Ivanova Konsulova-Bakalova, Ph.D., has very good knowledge in the field of automation of engineering work. I would recommend the graphic images to be of higher quality.

VI.   Conclusion

Based on the acquaintance with the presented scientific works, their importance, the scientific and scientific-applied contributions contained in them, I find it reasonable to propose **ch. Assistant Professor eng. Maria Ivanova Konsulova-Ba** academic position "Docent".

Заличена информация
по Регламент (ЕС)
2016/679

8.11.2023   Member of Scientific

/Assoc. Prof. eng. Stefan Marinov Kazakov, PhD/