

OPINION

Authored by professor Ivo Krastev Malakov, PH.D, Technical University of Sofia,

concerning materials submitted for participation in competition for awarding the academic position of “Professor” in higher education area of Technical Sciences ; professional field Mechanical Engineering, scientific major “Metrology and Metrological Provision” (Quality management systems)

There is one applicant, associate professor Iliia Slavov Zhelezarov, for participation in the competition for awarding the position of “professor” announced in the State Gazette, issue 58 from 23.07.2019, and on the website of Technical University of Gabrovo (TUG) for the needs of department “Mechanical and precision engineering” which is a constituent unit of the Faculty of Mechanical and Precision Engineering of TUG.

1. Overview of content and results in the submitted works

The works submitted for participation in the competition include 1 monograph (B.3), 5 scientific publications in referenced editions indexed in world renowned data bases of scientific information (Г.7), 23 scientific publications in non-referenced journals with scientific reviewing or in edited volumes of collections (Г.8), 1 course-book (E.23), 1 study guide (E.24) and 8 other publications. Three of the submitted publications were published in international journals with Impact Factor and 2 other are included in SCOPUS database. Said publications are systematized in four thematic areas of applied metrology:

Publications made in the thematic area of “ Methods and means for measuring dynamic and static quantities “ are related to systems and devices for measuring dynamic and static quantities of moving objects and certain parameters of theirs. In thematic area “ Quality management systems based on ISO standards” are presented quality management systems which are based on the standards of International Standards Organization and analysis is made of their applicability in the sphere of higher education, internal and external evaluation of these systems plus the possibilities for improvement and enhancement of customers’ satisfaction. Also presented is the evolution of stages through which pass all models for illustration of systems for control and good practices of all leading organizations in this particular area. Here are reviewed various methods of measuring the efficiency and effectiveness of quality management systems as well as the instruments for their implementation. Publications in the thematic area “ Methods and instruments of quality management” are related with analysis of applicability of statistical methods and instruments of quality management. These include presentation of efficiency indicators, the elements for analysis and evaluation of quality management system’s efficiency. During selection and application of models and methods for analysis of the system it is necessary to plan risks and possibilities connected with the applicability of selected methods, the adequacy of efficiency indicators, the necessity of additional information, provision of resources, the level of competence and motivation of personnel, needs and anticipations of stake holders. In thematic area “Systems for management and control” publications are related to systems for management and control of quality and metrological characteristics of measuring systems and devices. Here are presented various methods of control, development, implementation and accreditation of systems for management of test and calibration labs in compliance with standard ISO/IEC 17025 as well as for optimizing processes of measuring and control of quality.

In my opinion the works submitted for participation in the competition are related to topical areas of both science and practice, and the candidate makes use of modern methods and means in solving the set problems and reaching the respective goals.

2. General description of candidate’s activity

2.1. Teaching and pedagogical activity (advising students and postgraduate students)

I assess the pedagogical background of the candidate, along with his teaching work, as fully corresponding to the level required by the academic position of “Professor” on the grounds of the following:

- He is involved in the development of curricula and reads lectures in the subjects “Quality management systems” ; “Industrial systems for control” ; “Quality management and control; “Metrology”; “Integrated systems for control” all of which are included in the syllabi of bachelor and master degree courses taught to full time and part-time students in the Faculty of Mechanical and Precision Engineering (FMPE).

The high academic level of delivered lectures is due to the candidate’s excellent professional preparation, his substantial pedagogical and research expertise plus the large number of specializations and certificates of competence from DGQ, DQS and EOQ, which are enclosed to his CV.

- Assoc. professor Zhelezarov has also authored a course-book on quality management systems and a manual for laboratory exercises in metrology and measuring equipment.

- He is one of the developers of specialized computer aided measuring system which is adapted to the needs students’ training.

- Likewise, he has advised over 50 graduates of both bachelor and master degree courses plus one PH.D student who defended a dissertation on “Modeling of non-circular small module gear transmissions with assymetric profile of teeth”.

2.2. Scientific and applied research activity

For his participation in the competition the candidate has submitted 1 monograph, 34 scientific publications (articles in journals and conference papers) 5 of which are published in referenced and indexed editions (3 of them being with Impact Factor and 2 are stored in the data base of SCOPUS). Out of all 34 publications (articles and papers), 12 are of sole authorship, 22 are written in co-authorship (7 with two co-authors, 10 with three co-authors and 5 others with more than three co-authors) ; in 10 of these works the candidate being the first author. 12 conference papers are written in Bulgarian, two others in Russian and 20 works - in English. He has also authored 1 course-book, co-authored 1 study guide and 2 manuals.

The publications do not replicate the articles, papers, course-books and manual which were submitted for reviewing in his previous competitions for awarding of PH.D degree and the position of Associate Professor.

Similarly, the list of citations for participation in the competition includes 8 citations in scientific editions which are referenced and indexed in world renowned data bases (Д.12), 9 are found in monographs and collection volumes with scientific reviewing(Д.13) and 12 in non-referenced journals with scientific reviewing (Д. 14).

Assoc. professor Zhelezarov has participated in quite a few national and international educational projects (9 national in 6 of which as project manager and 5 international in two of which as project manager). My opinion is that the candidate’s research and applied research activity are in topical problematic areas in which he employs advanced methods and means for resolving the set tasks and achieving the target results.

I am convinced that the bulk and quality of results in his scientific and applied research activity do meet the requirements for awarding the academic position of “Professor” and correspond to the stipulations of the Act for Academic Staff Development in Republic of Bulgaria (ASDRB), the Rule for Implementation of ASDRB, and the Rule for Acquisition of Academic Titles and Positions of TUG.

2.3. Implementation activity

The candidate’s activity in this area is impressive. From the submitted reference record it becomes evident that he has managed projects in over 200 organizations concerning development, implementation and improvement of quality management systems in compliance with ISO 9001, systems for environmental control in compliance with ISO 14001, systems for management of health and occupational safety in compliance with ISO 45001 and OHSAS

18001 ; energy management systems in accordance with ISO 50001; systems for management of test labs according to ISO 17025 and others.

3. Contributions (scientific, applied research and applicational). Significance of contributions for science and practice

The candidate has submitted a copyright reference concerning contributions which includes 3 scientific contributions, 9 pertaining to applied research and another 4 of applied character. First two scientific contributions refer to development of a new method of measuring moving objects parameters; development of mathematical apparatus which makes possible the definition of dynamic error in devices for measuring angular deviations of moving objects; and development of models which provide wide range of possibilities to work out analysis and synthesis of measuring systems whose dynamic accuracy is ensured through real time correction of dynamic error. Contribution number three is related to the development of method for analyzing models used to present management systems based on ISO standards and also methods, models and algorithms that ensure the operation of quality management systems, their measurement, analysis and evaluation as well as their improvement on the basis of analyzed data.

Applied research contributions present a completely developed system for measuring moving objects parameters with high dynamic accuracy; a measuring system designed to measure board and keel trim, yaw and roll of a boat; a model and system for internal and external measuring and evaluation of quality management systems; a comparative analysis of systems' models of quality management as well as methods for registering, measuring, systematizing, analyzing and evaluation of data and their applicability in particular model of presenting ; a model of management of risk and uncertainty in measuring results in a quality management system; an algorithm for analysis of measuring devices and measuring systems for control in terms of quantitative and alternative aspect; a method for control of involute cylindrical gears with asymmetric profile of teeth effected by means of measuring rolls; mathematical models of static and dynamic characteristics of measuring devices.

The group of applied contributions could include a developed, implemented and certified model of a quality management system for educational and research activity carried out at TUG; a developed model of a system for management of university laboratory for calibration of measuring devices; systematized statistical methods for optimization of management and manufacture; a developed model for evaluating the performance of quality management systems in institutes of higher learning by applying statistical methods and techniques in measuring and managing the quality of educational product during implementation of its life-cycle.

In my opinion the scientific and applied research contributions of the candidate are topical and important for the development of research work in the area of metrology and quality management systems. The submitted works are also of relevant importance to practice allowing for adequate level of applicability.

4. Evaluation of candidate's personal contribution

The personal involvement of the candidate can be appreciated by the number of completely independent publications 12 in total, whereas in 10 other publications he is the first author from a total of 34 works submitted for participation in this competition. This makes me to conclude that the contributions are the candidate's genuine work or accomplished with his leading role.

5. Critical remarks and recommendations

I have no particular remarks or objections concerning the scientific, applied research and application contributions in the works submitted by assoc. professor Zhelezarov.

I would recommend that the candidate be focused on fewer thematic areas of research and enhance his work with PH.D students.

6. Personal impressions

From the submitted scientific production and my personal impression of associate professor Zhelezarov's educational, pedagogical, scientific and research activity, I am fully convinced that the candidate is a highly qualified and well read scientist and academic teacher, possessing broad cultural spectrum and remarkable experience in terms of organization and management. Last but not least is the fact of his high credit of respect and authority that he enjoys among experts in Bulgaria and abroad.

7. Conclusion:

Drawing upon the content of the materials submitted for participation in this competition, my positive assessment of research, implementational and pedagogical activity of the candidate; the topicality and significance of accomplished scientific and applied research contributions, I propose to the esteemed jury that associate professor Dr. Zhelezarov be awarded the position of "Professor" in the higher education area of Technical sciences, professional field of Mechanical engineering and scientific major "Metrology and metrological provision" (Quality management systems).

15.11.2019

Member of jury: /signature/
/Professor Ivo Malakov/