

REVIEW

of the documentation, submitted for participation in the competition for the occupation of the academic position "Professor" in the scientific area of "5. Technical sciences"; professional field „5.1 Mechanical engineering“, speciality – Metrology and Metrological Equipment, applicant Assoc. professor d-r eng. Iliya Slavov Zhelezarov, „Department of Mechanical and Precision Engineering”, „Faculty of Mechanical and Precision Engineering”, Technical University of Gabrovo

By Prof. D.Sc. Georgi Dimitrov Todorov, Technical University of Sofia

1. Contest information

The competition for the occupation of the academic position of "Professor" in TU-Gabrovo has been announced in the State Gazette, no. 58 dated July 23, 2019 and on the website of TU-Gabrovo for the needs of the „Department of Mechanical and Precision Engineering”, „Faculty of Mechanical and Precision Engineering”.

2. Information about the candidates in the competition

One candidate participated in the competition - Assoc. Prof. Iliya Slavov Zhelezarov, PhD, Lecturer in the „Department of Mechanical and Precision Engineering”, „Faculty of Mechanical and Precision Engineering” at the Technical University of Gabrovo.

The candidate Assoc. Prof. Iliya Zhelezarov has fully complied with the normative quantitative and qualitative requirements of the "Law on the Development of Academic Staff in the Republic of Bulgaria" in the part - "Conditions and Procedure for Occupation of the Academic position “Professor”.

Assoc. Prof. Zhelezarov is a master in the professional field of "Mechanical Engineering" and "doctor" in the same specialty "Metrology and metrological assurance" with the theme "Systems for measuring and management of the quality of training in the higher technical schools".

Assoc. Prof. Zhelezarov started working in 1994 as an operator, CNC programmer and operator of CNC machines at “Mechatronics AD” -Gabrovo, and since 1995 has been an assistant, later a senior assistant (1998) and a chief assistant (2006) in Metrology and Measurement Technique at the „Department of Mechanical and Precision Engineering”, TU Gabrovo. From 2007 till now He is associate professor in the scientific specialty 02.05.12 “Metrology and metrological insurance” at TU-Gabrovo. The applicant's educational qualification and professional development are entirely in the professional field and specialty of the competition and demonstrate purposefulness and systematic nature.

3. General description of the materials presented

The Candidate submitted a total of 37 scientific papers for participation in the competition for the professor (outside the ones for obtaining the doctoral degree and for the habilitation as an associate professor):

- one monograph;
- 5 scientific publications in refereed and indexed in the World recognized databases with scientific information publications (SCOPUS, WEBofSc);
- 23 scientific publications in non-refereed scientific peer-reviewed journals or in editorial volumes;
- 8 other publications

One Textbook and one Study guide were also presented.

Twelve of the publications are single authored. I accept that in all these papers, Assoc. Prof. Zhelezarov has a leading share or significant contribution, which means that the published results are the main merit of the candidate.

The Publications, presented by Assoc. Zhelezarov cover the relevant minimum national requirements within the meaning of the "Law on the Development of Academic Staff in the Republic of Bulgaria", the Rules for its implementation and the Specific Rules of TU-Gabrovo. The papers were printed out in the period 1998 - 2019.

4. Impact of the applicant's scientific publications in the scientific community (known citations)

The list of citations for participation in the competition includes 8 citations in scientific publications, abstracted and indexed in in the World recognized databases with scientific information publications (SCOPUS, WEBofSc), 9 in reviewed Monographs and collective Volumes and 12 in non-refereed journals with scientific review.

5. Review of the content and results in the submitted works

The monograph "Models and methods for the analysis of quality management systems" is a good and well-founded scientific development with demonstration of theoretical-practical approaches, methods and process-oriented quality management systems. In the monograph, Assoc. Prof. Zhelezarov analyzes, evaluates and classifies statistical methods for quality management related to models of quality management systems and evaluation of their efficiency. The author's practice data is analyzed as a basis for generating optimal variants, allowing improvement of the quality management systems.

As an subject field, the Publications of Assoc. Prof. Zhelezarov may be refer to three segments of Applied Metrology.

In "Methods and Means for Measuring Dynamic and Static Values", a new model is proposed for investigating the dynamic error of means and systems for measuring the parameters of moving objects. Based on the model, a method has been developed that allows the construction of measurement systems with significantly better quality indicators and metrological characteristics than existing means. Possibilities for application of statistical control of technological processes with control charts by quantitative trait and card control are considered. In this field, an analysis of inductive systems for the contactless transmission of energy during dynamic charging of electric vehicles is also made.

Publications in the field of "Quality Management Systems" and ISO-Based Systems relate to "Quality Management Systems", research into their applicability in Higher Education, internal

and external evaluation of these systems, opportunities to improve and enhance satisfaction with published Scientific and applied research related to the applicability of statistical methods and quality management tools - university quality management systems, harmonized with international quality standards, function effectively and create the prerequisites for improving the quality of training and receiving feedback from students and staff users. Relevant to the Law on Higher Education in Bulgaria and is the basis for the Accreditation procedures (institutional and / or programm) of the higher technical schools.

The last group presents publications related to Quality Management and Control Systems and Metrological Characteristics of Systems and Measuring Instruments. A non-contact “echo” based method for identifying materials by means of pulses in the ultrasonic range is presented, in which the initial information is processed by a method of recognition based on a “self adapted” system; a carbon steel surface roughness test method, treated with an abrasive high pressure water jet, using full factor DOE, and the correlation between surface roughness and process factors is derived; method for the control of involute spur gears with asymmetric tooth flank profile by means of rollers based measuring and dependencies for determining the size of rollers for asymmetrical tooth profile, with and without inclining the teeth. The prerequisites for the normal functioning of a laboratory for calibration of measuring instruments with implemented control systems in accordance with ISO/IEC 17025 are analyzed. Processes, proposed to optimize measurement and quality control, using DOE, are based on the Taguchi approach.

The materials include one Textbook and one Manual for Laboratory Exercises. The “Quality Management Systems” textbook study the development of quality management systems and methods for analyzing and evaluating the effectiveness of the Management Systems.

The Manual for Laboratory Exercises related to measuring linear dimensions. The Exercises program is in the Curricula of the Students of the „Faculty of Mechanical and Precision Engineering”, Technical University of Gabrovo”, who study the course "Metrology and Metrological Equipment".

6. Applicant's activities

6.1. Educational and pedagogical activity

The Applicant has considerable professional experience as a university lecturer at TU-Gabrovo. He has gone through all academic positions, from assistant professor (1995) to assoc. professor (2007) . This demonstrates sustainable upward professional development. His teaching activities are done in four major disciplines for a Bachelor's degree and two Master's degree Courses. All the Facts are proof that pedagogical skills having a wide range of subjects taught.

6.2. Scientific and applied scientific activity

Based on the rich experience of Assoc. Prof. Zhelezarov, gained through his practical training since the beginning of his career, he is an accomplished scientist with extensive research, theoretical, methodological, experimental and applied activity. In evidences of this are the attached facts for the period from 2001 up to now, which shows that Assoc. Prof. Zhelezarov has

participated in 14 International and National Research and Educational Projects, of which 9 he was the Leader. The funds raised for these Projects are over BGN 450,000. This active scientific and experimental work, reflected through the applicant's publications, the quality of which is quoted by International Impact. Applicant's publications have been cited at home and abroad, with 32 citations in the worldwide databases, of which 8 are in Web of Science and / or Scopus w/o self-citations.

In terms of administrative and scientific activities, Assoc. Prof. Zhelezarov is a two mandates Vice Rector of TU-Gabrovo, Manager of the Bulgarian-German Institute for Quality and Industrial Management, was also Vice Director of the Quality Training Center in TU-Gabrovo.

7. Contributions. The Impact of the contributions to science and practice

I accept the contributions, made by the applicant in a structural and meaningful way, with one exception.

The third scientific contribution from the author's report, namely:

1.3 An analysis of the models for the presentation of management systems based on standards of the International Organization for Standardization (ISO), on the basis of which systematic methods for measuring, analyzing and evaluating the effectiveness of quality management systems and implementation tools have been systematized them. Methods, models and algorithms for ensuring the operation of quality management systems, their measurement, analysis and evaluation, as well as their improvement on the basis of the analyzed data, are presented.

I would refer to “Scientific – applied” contributions, not aligned to “Scientific contributions”. In relevance of this opinion is its classification by author into the field: *"Applied metrology. Quality management systems based on ISO standards". (B 3.1, D 8.9, D 8.15)*

8. Assessment of the applicant's personal contribution

In my estimation, the contribution of Assoc. Prof. Zhelezarov in the achieved results from the pedagogical, scientific and scientific-applied activities is significant and there is no doubt. The number of co-authors from Bulgaria and abroad also impressed, demonstrating the scope of research and teamwork. I believe that scientific and applied results and citations are largely personal contributions of the author.

9. Critical notes and recommendations

Notwithstanding a number of semantic and technical notes to the materials presented, I believe that they are not essential to my overall positive impression of the applicant's production and activities. I recommend the Applicant to continue his research in the field of Metrology and Standardization with Applied and Innovative focus.

10. Personal impressions

I personally know the candidate - Dr. Zhelezarov from our joint work on the preparation and now – in the implementation of project BG05M2OP001-1.001 "Construction and development of centers of excellence" - "National Center for Mechatronics and Clean Technologies".

Assoc. Prof. Zhelezarov is a high-level professional who has the capacity not only of a Researcher, but also of a good Manager and a fair Partner.

11. Conclusion

On the basis of my review of the presented materials on the competition, as well as my personal impressions, the relevance and importance of the scientific and applied contributions worked out in the research, teaching and pedagogical activity, as well as its contribution to the development of the research activity at TU Gabrovo, I can confidently recommend Assoc. Prof. Iliya Zhelezarov, PhD, to be selected and appointed as “PROFESSOR” in the scientific area of “5. Technical sciences”; professional field „5.1 Mechanical engineering“, speciality – Metrology and Metrological Equipment, at „Department of Mechanical and Precision Engineering”, „Faculty of Mechanical and Precision Engineering”, Technical University of Gabrovo

12. 11. 2019

Reviewer: /signature/

/Prof. D.Sc. Georgi Todorov/