

OPINION

Authored by Prof. D.Sc. Dimitar Andonov Dichev of Technical University - Gabrovo (TUG) concerning materials submitted for participation in competition for awarding the academic position of “Professor” in the area of higher education – 5. Technical sciences in professional field – 5.1 Mechanical engineering, scientific major Metrology and metrological provision

1. Information about the competition

This competition was announced in State Gazette, issue 58 from 23.07.2019 and on the website of TUG to meet the needs of department “Mechanical and precision engineering” which is constituent unit of the Faculty of Mechanical and Precision Engineering.

2. Information about the participants in the competition

There is one candidate/participant in the announced competition: associate professor Dr. Ilia Slavov Zhelezarov academic lecturer on permanent labor contract in the department of “Mechanical and precision engineering”, Faculty of Mechanical and Precision Engineering” of TUG.

Assoc. professor Ilia Zhelezarov has met completely the normative quantitative and qualitative requirements of the Act for Development of Academic Staff in Republic of Bulgaria in its part “Terms and Conditions for Awarding the Academic Position of Professor”.

The candidate has a master degree in “Precision engineering” and defended a Ph.D degree thesis on “Systems for measuring and management of quality of training in technical institutes of higher learning”. The topic of his dissertation is within the scope of the scientific major of the competition.

Mr Zhelezarov began his career in 1994 as operative programmer and adjuster of CNC machines in “Mechatronica” Ltd- Gabrovo. In 1995 he became assistant professor; in 1998 he was promoted to senior assistant professor and later in 2006 became chief assistant professor in “Metrology and measuring equipment” at TUG. Since 2007 he has worked as associate professor in the scientific major of 02.05.12 “Metrology and metrological provision”.

I would note that the educational and professional career of the candidate is marked by consistency, purposefulness and systematic development in the professional field and subject of this competition.

Associate professor Zhelezarov has submitted materials which do not duplicate the publications that he presented for his Ph.D degree and those of his previous competition for awarding the academic position of “Associate Professor”.

3. Overview of content and results in the submitted works

The scientific works of the candidate submitted for participation in this competition could be classified and summarized in four groups: a monograph, doctoral (Ph.D) dissertation, scientific publications – articles published in journals and papers presented at conferences, a course-book and a study guide. All submitted materials meet, in terms of quantity, the respective minimum of national standard requirements as stipulated by the Act for Development of Academic Staff in Republic of Bulgaria (ADASRB), the Rule for its implementation and the Rule of Procedure of TUG.

His monograph “Models and Methods of Analyzing Quality Management Systems” is a precise scientific development. In this monograph assoc. professor Zhelezarov derives and defines fundamental terms related to elements of Quality management systems; clarifies and interprets at high expert level the models of process-oriented systems for quality management; analyzes and classifies statistical methods of quality management; draws out valuable solutions concerning

applicability of proposed models and methods for analysis of the system. This work is an excellent illustration of how to integrate theoretical, methodological and implementation aspects of processes which are related to models of quality management systems as well as the methods of analyzing and evaluating the efficiency of systems for management. It also contains proposed personalized data obtained as a result of the fruitful expert practice of the candidate, thereby presenting a rich material for deriving optimum solutions related to improvement of quality management systems.

Mr. Zhelezarov's doctoral dissertation is also a serious and in-depth attempt at research in the field of the present competition for awarding the academic position of "Professor".

A total of 36 publications are submitted all of which were published within the period from 1998 to 2019; 8 of them are articles in journals, 26 are papers presented at scientific conferences; there are also two official impressions of the Manual on Quality of TUG. Five other publications are in referenced and indexed editions from the data bases of Web of Science and/or Scopus; three of them were published in journals with Impact Factor (Journal Citation Report®, Thomson Reuters), which is a clear evidence of the high level of research done by the candidate. Twelve of these publications are independent and the rest are co-authored as the number of authors varies from 2 to 5. Associate professor Zhelezarov is the first author of twelve of these publications and in seven of them his name is given as second co-author. This is another solid evidence that in all works Mr. Zhelezarov's contribution is the leading one, which is why I am confident that the formulations of investigated problems, the conducting of the respective audit expertise; analysis of data and publication of results are the exclusive merit of the candidate in this competition. With regard to the set of problems studied by associate professor Zhelezarov, his publications can be categorized in four major areas.

In the scientific realm of "Applied metrology. Methods and means of measuring dynamic and static quantities" there has been proposed a new model for investigation of dynamic error in devices and systems for measuring parameters of moving objects. On the grounds of this model there has been derived a method, which allows the design of a new generation of measuring systems that would feature far better quality properties and metrological characteristics as compared to those used today in that particular field.

The publications in "Applied metrology. Quality management systems based on ISO standards" are related to systems for quality management which are based on the standards of the international organization on standardization (ISO); the analysis of their applicability in the area of higher education, internal and external evaluation of these systems, and the possibilities for improvement and enhancement of customers' satisfaction.

In the area of "Applied metrology. Methods and instruments for quality management" the publications contain important scientific and applied research information which is related with analysis of applicability of statistical methods and instruments for quality management.

Publications pertaining to the area of "Applied metrology. Systems for management and control" aim at analyzing and deriving optimal solutions through systems for quality management and control.

The last group of materials submitted by assoc. professor Zhelezarov are included in a course-book and a study guide for lab exercises. The course-book "Quality management systems" makes observation of the development of quality management systems based on the standards of ISO and the methods for analysis and evaluation of the efficiency of management systems. In the study guide there are lab exercises for measuring linear dimensions, which are implemented with devices featuring digital output of data as well as processing of measurement results by means of applied software. These exercises are included in the curricula of all bachelor degree courses taught in the Faculty of Mechanical and Precision Engineering of TUG which include the subject "Metrology and measuring equipment".

Hereby I would like to point out the consistency and methodical planning which characterize the publication activity of the candidate over the last fifteen years, which is indicative of the sustainable scientific growth and development of associate professor Zhelezarov and his serious interest in the area of metrology and quality management.

4. General description of candidate's activity

4.1. Teaching and pedagogical activity

Associate professor Zhelezarov has substantial professional experience as university teacher in TUG where he has worked since 1995. He has passed all previous stages of his academic career beginning as assistant professor in 1995 and reaching the position of associate professor in 2007. This fact indicates that his professional maturity makes the awarding of professorship fully deserved. Such claim is supported by his workload which comprises 360 academic hours for four core subjects taught in bachelor degree courses and two other core subjects taught in master degree courses. All these give ample evidence that the department of "Mechanical and precision engineering" at TUG has evaluated highly his teaching and pedagogical skills and therefore entrusted him with a large scope of taught subjects.

4.2. Scientific and applied research activity

As stated previously the candidate participates in the competition with 36 scientific publications. The merits of these publications are in the creative approach in formulating the set of problems, the analytical interpretation of studied information, the correct organization of experimental research and audit expertise as well as the correctness of analysis which brings about to objective solutions of scientific and applied research character in the area of metrology and quality management. This is the product of the rich practical experience of associate professor Zhelezarov acquired by him through continuous in-depth research, experimental and applied research activity. In support of this claim I can point out that from 2001 till present Mr. Zhelezarov has participated in 14 international and national research and educational projects in 9 of which he was the project manager. The funds attracted by these projects amount to 450 000 BGN. All these provided a good ground for research and experimentation which was duly reflected by the candidate's publications whose quality is unambiguously proved by the high number of citations. From the reference I made at the time of writing this evaluation report it is evident that the publications of assoc. professor Zhelezarov have attracted the attention of the scientific community both at home and abroad. I have come across 32 citations in world data bases 11 of which are found in Web of Science and /or Scopus.

Concerning his administrative and research activity Mr. Zhelezarov has been a member of examination panels for hearing defenses of theses; he has also participated in juries for awarding academic degrees and titles and, on a number of occasions, have been appointed as assessor and reviewer of research projects and contracts. In addition, associate professor Zhelezarov now serves his second mandate as Vice-Rector of TUG and manager of Bulgarian-German Institute of Quality and Industrial Management; he also served as deputy director of the Center for Quality of Education at TUG. Another evidence that adds to his credit as distinguished worker in the area of metrology and quality management is his membership in various professional organizations of high renown. In my opinion the combination of so many successfully performed activities, which borders with pure workaholism, makes the candidate a desired team player and a scientist of national and international renown.

4.3. Implementation activity

Associate professor Zhelezarov has managed projects in over 200 organizations related development, implementation and upgrading of quality management systems; he also conducted training sessions in the same area with representatives of 400+ businesses. The total amount of attracted funds is impressive: 1,451,460 BGN.

5. Contributions. Significance of contributions in terms of science and application

In my opinion the contributions derived by the candidate are well balanced in terminology and content. I accept the submitted reference record of contributions. According to their character the scientific contributions can be classified into the following categories:

- development of new classifications, methods, constructions, technologies – contributions 1.1 and 1.3;
- formulation and defense of a new theory or hypothesis – contribution 1.2.

6. Evaluation of candidate's personal contribution

To me the personal contribution of associate professor Zhelezarov with regard to accomplished achievements in pedagogical, scientific and applied research activity is indisputable and significant. The circle of serious co-authors from Bulgaria and abroad, including doctoral students, is an evidence of the importance and significance of the problems under research as well as of teamwork skills in major scientific areas. It must be explicitly stated that obtained significant scientific results, concrete proposals and citations are largely due to the personal efforts, ideas, expertise and organizational skills of assoc. professor Zhelezarov.

7. Critical remarks and recommendations

I have no critical remarks and recommendations since the merits of the materials submitted by the candidate are of indisputable stance and they dominate my entirely positive evaluation.

8. Personal impressions

I have known associate professor Dr. Zhelezarov since his first day of work at TUG. Over the last 15 years he has made a remarkable progress in his development reaching the level of expert and scientist of international renown. Today associate professor Zhelezarov is a distinguished academic professional who is capable of identifying serious problems pertaining to the area which he, in my opinion, knows exceptionally well. His intelligent presence, kind attitude and wholehearted responsiveness have earned for him the deep respect of his colleagues from the circles of metrology.

9. Conclusion

Drawing upon above evaluation **I propose to the esteemed jury to award associate professor Dr. Ilia Slavov Zhelezarov the academic position of “Professor”** in the area of higher education – 5 Technical Sciences, professional field 5.1. Mechanical Engineering, scientific major “Metrology and Metrological Provision” (Quality management systems).

04.11.2019

Member of jury: /signature/
/Prof. D.Sc. Dimitar Dichev/