REVIEW

From **professor, Ph.D, eng. Georgi Mitkov Pavlov,**
HTS "Todor Kableshkov"
Regarding the **" Associate Professor" competition** in 5. Technical sciences, professional field 5.5 "Transport, Shipping and Aviation", scientific specialty **"Electric equipment of the ship",** to the "ESEE" department at the EF of Technical University -Varna,
Announced in the State Newspaper, issue № 13/ 07.02.2023year.
with a candidate: **chief assistant professor Ph.D, eng Ginka Hristova Ivanova**

1. **Biographical data for the candidate**

Chief assistant professor Ph.D, eng. Ginka Ivanova was born on 13.04.1978 in the city of Varna. She completed her higher education at the "Nikola Vaptsarov" Higher Naval School, defending two master's degrees consecutively. In 2001 is a Master of Engineering in "Ship Electrical Equipment" and in 2008 in "Management of the fleet and ports".

From 07.2014 until now, she is a teacher at the Technical University of Varna, having successively held the academic positions of **assistant and chief assistant professor** at the Department of "Electrical Supply and Electrical Equipment" at the Faculty of Electrical Engineering of the Technical University of Varna. From 04.04.2018 is a PhD in the field of higher education 5. "Technical sciences", Professional direction 5.4 "Energy" (Electricity supply and electrical equipment of water transport). The topic of the dissertation is "Research and analysis of the quality of the ship's electrical energy and its influence on the operating modes of the ship's electrical system and ship's electrical equipment". It is noteworthy that in the period from 2001 to 2006 the candidate worked as an electrical engineer in Club Cruise m/v Van Gogh, Pullmantur Cruseros Passenger fleet, holds a certificate for ELECTRO-TECHNICAL OFFICER - IMO PROFICIENCY №33012, IMO M.C.6.09, №154/28.05.2015. She is a member of the Scientific and Technical Union - Varna, section "Electrical supply, electrical equipment and lighting equipment". It is an indisputable fact that its entire activity is in the field of the current competition and has largely contributed to its successful development in the academic and research sphere.

The total work experience as a teacher is nearly 9 years. He speaks English and Spanish at a very good level. Has excellent computer training, working freely with standard and specialized software products.

2. **General description of the presented materials**

2.1. Analysis of the submitted materials for the competition for " Associate Professor".

- ✓ Curriculum vitae (CV according to the European model);
- ✓ Copies of diploma for Educational Science Degree "Ph.D";
- ✓ Employment contract for occupying the Academic Position "assistant" and the Academic Position " chief assistant professor ";
- ✓ Lists of the publications submitted for the acquisition of the Educational Scientific Degree "PhD" and for the procedure for occupying the academic position of chief assistant professor;
- ✓ Reference for the fulfillment of the minimum national requirements for the academic position "associate professor" of the Law on the Development of the Academic Staff of the Republic of Bulgaria and Regulations on the Terms and Conditions of the Order for Holding an Academic Position at TU-Varna;
- ✓ Certificate for Electro-technical Officer - IMO Proficiency;
- ✓ Reference of the candidate's study load for the last three years;
- ✓ Reference for guided and defended graduates, as well as for joint work with students and PhD students in research projects;

- ✓ Reference for personal contribution to the modernization of the material and technical base of the "Electrical supply and electrical equipment" department;
- ✓ Reference for developed teaching materials, as well as other research activities;
- ✓ Certificate of participation in research projects and a copy of a contract for a project donation;
- ✓ Reference for participation with reports at international and national forums;
- ✓ Certificate of membership in professional organizations in the relevant scientific field;
- ✓ Documents proving international mobility;
- ✓ Reference and summary of original scientific contributions;
- ✓ General list of scientific works submitted for participation in the competition;
- ✓ Resumes of the scientific works participating in the competition, in Bulgarian and English;
- ✓ Declarations for the reliability of the information provided, for originality and plagiarism;
- ✓ List of scientific and applied works and developments, grouped according to the main indicators of the National Center for Information and Documentation, applied for the competition.

The submitted publications, a total of 24, in the competition for " Associate Professor " can be classified as follows:

- ➢ According to indicator B.4 - Habilitation work - scientific publications (10 items) in publications that are referenced and indexed in world-famous databases with scientific information (Scopus). The total number of points is 204;
- ➢ According to indicator Г.7 - scientific publications (5 items) printed in publications referenced and indexed in world-famous databases with scientific information (Scopus). The total number of points is 180;
- ➢ According to indicator Г.8 - scientific publications (9 items) in non-refereed journals with scientific review or published in edited collective works. Of these, 5 copies are accepted for review (4 copies were submitted for the competition for the academic position "Chief Assistant Professor"). Total number of points 38;
- ➢ Citations according to indicator Д (Д.12 and Д.13) - A total of 12 citations in scientific publications were noted, of which (referenced and indexed in world-famous databases with scientific information (Scopus)) there are 7, according to indicator Д.13 (in monographs and collective volumes with scientific review) are also 5 issues; Total number of points 85;
- ➢ Hours of guided lectures on indicator Ж – 570 hours.

I accept the works submitted by the candidate for review.

2.2.Implementation of the minimum national requirements from the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria and The Regulations for the Terms and Conditions for Holding an Academic Position at TU-Varna by the candidate, chief assistant professor Ginka Ivanova in the competition for Associate Professor

The result obtained from the processing of the data from the submitted works of the candidate for Associate Professor, regarding the implementation of the minimum national requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and The Regulations for the Terms and Conditions for Holding an Academic Position at TU-Varna is presented in table 1.

Table 1

A group of metrics	Minimum points required	Number of points of the candidate	Number of points for the individual indicators of the respective group
А	50	**50**	**50 т.** (Indicator А1)
В	100	**204**	**204 т.** (Indicator В1)
Г	200	**218**	**218 т.:** 180 т. (Indicator Г7)

			38 т. (Indicator Г8)
Д	50	**85**	**85 т.:** 70 т. (Indicator Д12) 15 т. (Indicator Д13)
Ж	30	570	**570 т.:** 570 т. (Indicator Ж29)
Total	**430**	**1127**	

It can be seen that the points scored by the candidate (1127 points) significantly exceed the required minimum number of points (430) for this academic position. In this regard, the candidate fulfills the requirements of the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria and The Regulations for the Terms and Conditions for Holding an Academic Position at TU-Varna.

3. General characteristics of the candidate's scientific-research and scientific-applied activities

In the materials for the current competition for "Associate Professor", eng. G. Ivanova presented a total of 24 publications, which I have classified and analyzed in section 2 of the review. Regarding the first group of publications (10 items), equivalent to the habilitation work, the following analysis can be made. These are scientific publications in English published in editions that are referenced and indexed in world-renowned databases of scientific information (all in Scopus). In three of them the candidate is the first author, in 4 issues he is the second, and in the rest the third or subsequent author.

The remaining publications attached to the competition for Associate Professor (10 in total), as mentioned above, are as follows: In publications referenced and indexed in world-famous databases with scientific information (in Scopus), 5 items are attached. The remaining 5 issues are in non-refereed peer-reviewed journals, published in yearbooks and proceedings of national and international scientific conferences. The number of publications in English is 7, the remaining 3 are in Bulgarian. The author presents 4 independent publications, in 2 of those co-authorship he is in the first place, in 2 he is in the second place, and in the rest the third or subsequent author.

The 10 publications presented in the competition, equivalent to a habilitation thesis, can be grouped in the following thematic directions:

1. Research and analysis of the ship's power and auxiliary electrical equipment and the possibilities of increasing its energy efficiency - 4 items (B4.2, B4.6, B4.7, B4.8);
2. Research and analysis of the energy efficiency of ships and yachts - 2 items (B4.3, B4.5)
3. Research and analysis of energy-efficient controls of asynchronous electric motors - 2 items (B4.1, B4.4);
4. Research of marine hybrid power supply systems - 2 items (B4.9, B4.10);

1. Publications B4.2, B4.6, B4.7, B4.8 represent developments and researches dedicated to separate systems, which are part of the ship's electrical equipment, with the aim of increasing their energy efficiency. In B4.2, the energy consumption of ship systems supporting the operating modes of technological equipment and air conditioning depending on the working modes of the ship (stay in port and sailing) was investigated. In 4.6, the modes of energy consumption in the electrical system of the passenger ship, class 1A1, are investigated. From the obtained results, the optimal working areas of the power transformers can be determined and their efficiency can be increased. In 4.7, the parallel operation of synchronous generators with torque fluctuations is studied by simulation. Recommendations have been made for quick recognition and elimination of such problems, and in 4.8 a simulation model implemented in the Sim Power System (Matlab) environment has been created for the study of a ship's power system. It is proven that the created simulation model can be used to study the operating modes of self-excited ship generators.

2. In publications B4.3 and B4.5, the influence of various parameters of the physical environment (in port, sailing, etc.) on the design and operational indicators of energy efficiency EEDI and EEOI for class 1A1 passenger ships on a real traffic route is investigated. An assessment was made of the share of electrical energy consumers and their influence on the change of EEOI, on fuel consumption. These results can be used to improve the energy performance of ships.

3. In publications B4.1 and B4.4, an energy-saving method of vector control of an asynchronous motor is proposed, in which the optimal value of the magnetizing current is controlled. Through the created mathematical model, electricity losses can be minimized. In publication B4.4, a similar study was conducted for asynchronous electric drive of a pump unit.

4. Publications B4.9 and B4.10 analyze the reliability indicators in conventional and hybrid marine power systems, and the results can be used to evaluate the overall reliability of the system. Also, a simulation study of a hybrid SAVe CUBE ship electrical power system adapted to a real ship is done.

I have also reviewed and evaluated the rest of the publications on indicators Г7 and Г8 very carefully. They can also be grouped into similar thematic areas.

For example:

1. Research and analysis of the ship's power and auxiliary electrical equipment and the possibilities of increasing its energy efficiency - 2 items (Г7.5, Г8.6,);

2. Research and analysis of the energy efficiency of ships and yachts– 6 items (Г7.1, Г7.2, Г7.3, Г7.4, Г8.8, Г8.9,);

3. Investigating opportunities to increase the efficiency of ship lighting – 1 items (Г8.7);

4. Research and analysis of the energy parameters of an industrial enterprise - 1 item (Г8.3)

The review and analysis of the topics of the publications show an extremely diverse, in-depth engineering research and applied activity of the candidate in the field of researching the processes in the ship's electrical power system and improving their electrical efficiency. All publications I accept and value very highly, as in my opinion they represent an original contribution to science and practice. I am sure that the applied and economic effect of the implementation of the obtained results, as well as the implementation of the recommendations from the analyzes of the conducted experimental studies, will be very large.

The applicant has submitted in the attached documents detailed references regarding participation in scientific research projects. It can be seen that there is active participation in 6 projects under the Scientific Research Fund, financed by the state budget, in accordance with the requirements of the Ordinance of the Ministry of Education and the Ministry of Science, 4 projects under the Scientific Research Fund, 1 project financed by the Scientific Research Institute. The diverse subject matter of the Scientific Research Practice is impressive, as well as the high practical implementation of the results obtained from the candidate's scientific research developments. The theme of all the projects is in the field of the competition and they were realized with the participation of students and PhD students. The candidate has invested his own financial resources for the development of the department's research and teaching activities. The developed devices, stands, algorithms, methodologies and programs are actively used for conducting scientific research and practical classes with the students of various specialties.

My conclusion is that the overall research and applied activity of the candidate for Associate Professor, chief assistant professor Ph.d. eng. Ginka Hristova Ivanova, is in the field of the competition (Electrical equipment of the ship). It is substantial in volume and content and is of a very high standard. The candidate is a well-prepared and established researcher who can discover, investigate and solve various engineering tasks with modern methods and means, and in this regard, I believe that he is a suitable candidate for the academic position of "Associate Professor".

4. Educational and pedagogical activity of the candidate

From the attached study load report, it can be seen that eng. Ivanova lectures in the Educational Qualification Degree "Bachelor" and the Educational Qualification Degree "Master" in a number of disciplines - Operation of the ship's electronic and electrotechnical equipment - 1 and 2 parts, Installation, maintenance, diagnostics and repair of the ship's electrical equipment, Ship's electrical equipment, Control and diagnostics of the ship's electronic and electrotechnical equipment, Operation of the ship's electronic and electrotechnical equipment, Marine electrical systems, etc. These disciplines are in the structure of curricula for a number of specialties. She participated in the development of the study programs for the above-mentioned disciplines.

The pedagogical preparation of the candidate is at a high level. He is a recognized specialist in the field of marine electrical equipment. The competition for Associate Professor is secured (there is an attached reference) with 8 disciplines in Educational Qualification Degree Bachelor and Master, with a total lecture schedule for the last three academic years of 570 hours of lectures.

Chief assistant professor G. Ivanova has an active participation in the construction of the educational and laboratory base and the application ú in the educational process. Stands, algorithms and control programs, measuring equipment for conducting research and practical training sessions with the students were designed and built with the lead and participation. It has invested significant financial resources in carrying out activities to modernize the material and technical base of the "Electrical Supply and Electrical Equipment" department, for which there is an attached report from the head of the department.

Actively participates in the development of educational documentation - curricula, lectures, seminar and laboratory exercises, etc. She supervised 3 graduates who successfully defended their diploma assignments in the field of the competition.

My opinion is that the educational and pedagogical activity of the candidate,chief assistant professor Phd. eng.Ginka Ivanova is fully oriented in the field of the competition and more specifically in the field of marine electrical equipment. **He is a well-prepared specialist in the field of competition, with excellent pedagogical training. The candidate's comprehensive and diverse activity and presented materials are at a very high level, and in this regard, I believe that he is a suitable candidate for the academic position of Associate Professor.**

5. Main Contributions

I agree with the author's stated contributions. In the presented publications, they can be mainly divided into scientific, scientific-applied and applied. I will evaluate the presented works according to the following general criteria for contributions:

1) Formulation (reasoning) of new solutions to an existing problem;
2) Formulation (substantiation) of a new theory or hypothesis;
3) Creation of new classifications, methods, constructions, technologies;
4) Obtaining and proving new (confirmatory) facts;

With regard to the publications equivalent to the habilitation work (by indicator B4), the contributions are mainly scientific (B4.2, B4.6), scientific and applied (B4.3, B4.5, B4.7, B4.8, B4.9 , B4.10) and applied (B4.1, B4.4, B4.6), and according to the generalized criteria I orient them to 1, 2, 3 and 4. Analytical methods have been created for the study of ship energy systems, as well as energy consumption and the quality of electrical energy. According to the author's original method, experimental studies of various parameters were carried out during a real route of movement of ships of different types in order to improve their energy and operational indicators. An energy-saving method of vector control of an asynchronous motor is proposed through an analytical study Auxiliary ship electric drives have been studied analytically and experimentally in order to optimize their operating modes and achieve higher energy efficiency. On the basis of the conducted analytical and experimental studies, results have been obtained that can have a wide application in practice.

In the other developments, I also evaluate the contributions as scientific, scientific-applied and applied, and according to the formulated generalized criteria - 1, 2, 3 and 4. Analytical models and computer programs have been developed for research and comparative analysis of the main parameters and characteristics of various types of industrial and ship systems. The functionality of the developed programs and algorithms has been confirmed in practice and the learning process. A number of experimental studies have been carried out using original methods, with the aim of solving specific problem tasks in various research sites. The obtained results of the analyzes are directly implemented in the operation of the studied objects, which achieves higher energy efficiency, sustainability and reliability in their main modes of operation.

6. Significance of contributions to science and technology

I estimate the significance of the contributions as very high, due to the fact that the scientific developments are in promising areas of technology, in the field of electrical equipment of ship electrical power systems. They are mainly related to the search for opportunities to minimize losses, increase the accuracy and energy efficiency of the studied objects, by means of research, development of algorithms, models. Specialized software products were used for modeling the main processes, original methods, criteria, approaches.Some of the scientific and experimental developments have been practically implemented in real objects and have proven their effectiveness and quality. The candidate is a recognized scientist at home and abroad. I consider that the presented contributions are the personal work of the candidate for Associate Professor.

7. Critical notes and recommendations

I have no critical remarks about the submitted materials of the candidate. My recommendations are the following:

- To continue his active research work in this promising field of technology;
- To activate its participation in research contracts and developments;
- To increase the realization of its developments in practice, in real objects;
- To prepare an independent textbook on one of the disciplines he teaches.

The general characteristics of the candidate, chief assistant professor PhD. eng. Ginka Hristova Ivanova is a long-time teacher with authority among colleagues and students, has passed all stages of the teaching activity, has a high level of scientific research activity, a well-known scientist in our country and abroad.

8. Conclusion

The thorough familiarization with the presented materials for the competition, the personal impressions of the quality of the candidate's work and appearances, the accumulated teaching and pedagogical experience give me reason to assert that the candidate for Associate Professor is a well-rounded teacher and specialist. It can be seen that chief assistant professor PhD. eng. Ginka Hristova Ivanova meets all the conditions and requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria and The Regulations for the Terms and Conditions for Holding an Academic Position at TU-Varna.

My conclusion is that chief assistant professor PhD. eng. Ginka Hristova Ivanova, can take the academic position "Docent" in the field of higher education 5. "Technical Sciences", professional direction 5.5. "Transport, Shipping and Aviation" (Ship e

13. 06. 2023 г. Member of a scientific jury

Sofia city /prof. PhD. eng. G. Pavlov/