

REVIEW

by competition for the academic position "PROFESSOR"

Field of higher education 5. Technical sciences

Professional direction 5.5 Transport, shipping and aviation

Scientific specialty 02.08.12 "Transport and storage of oil, gas and solid mineral products"

The competition has been announced at the Department of Techniques and Technologies in Transport and Mechanical Engineering, Faculty of Technical Sciences at the University "Prof. Dr. Asen Zlatarov" - Burgas

With candidate: Yordanka Tsankova Tasheva, Ph.D., Assoc. Eng.

Reviewer: Prof. Dr. Eng. Lilo Petkov Kunchev

The review was prepared according to Order No. RD - 236/15.07.2024 of the Rector of the University "Prof. Dr. Asen Zlatarov" Burgas

1. General conditions and biographical data

Assoc. Prof. Yordanka Tsankova Tasheva, PhD, eng., was born on September 28, 1974 in the city of Burgas. In 1998, she graduated higher education with the educational and qualification degree "Master" in the specialty "Chemical Technologies" with the professional qualification "Chemical engineer" and the specialization "Oil Technology and Chemotology", as well as the second specialty "Industrial Management" (Diplom for higher education for Master's degree with registration number 004052/1998 issued by "Prof. Dr. Asen Zlatarov" University - Burgas). In 2006, he successfully defended the educational and scientific degree "Doctor" in the scientific specialty 02.10.23 "Technology of natural and synthetic fuels" on the topic "Methods for obtaining ecological middle distillate fuels" (Diplom for educational and scientific degree "Doctor" No. 30335/06.04.2006 issued by the Higher Attestation Commission). From 2005-2006, she held the position of "Honorary assistant" at the "Production Technologies" department. From 2006-2011, she held the academic positions of "assistant" and "Head. assistant" in the Department of "Industrial Technologies and Management". Since 2011, after winning a competition, she holds the academic position of "Associated Professor" in the same department until now. A Certificate from the University "Prof. Dr. Asen Zlatarov" - Burgas with No. 1845/31.05.2024 with assurance that Assoc. Prof. eng. Yordanka Tsankova Tasheva, PhD works as a teacher with an employment contract No. 645/20.04.2006 until now at the University.

By Order No. RD - 236/15.07.2024 of the Rector of the University "Prof. Dr. Asen Zlatarov" - Burgas, Prof. Dr. Hristo Bozov, MD, on the basis of Article 4, Paragraph 2 of the Federal Administrative Procedure Act in the Republic of Bulgaria, in connection with the announcement by the University in State Gazette No. 43/May 17, 2024 competition for filling the academic position "PROFESSOR" and report with Reg. No. 2240 of 02.07.2024, as well as Protocol No. 8/11.04.2024 of the Decision of the Faculty of Technical Sciences on a proposal of the Department "Techniques and Technologies in Transport and Mechanical Engineering" (Protocol No. 6/08.04.2024), in connection with the procedure for occupying an academic position "Professor" in area 5. Technical sciences by professional direction 5.5. Transport, shipping and aviation, scientific specialty 02.08.12 "Transport and storage of oil, gas and solid mineral products" I am confirmed as a member of the scientific jury. At the first meeting, Protocol No. 1 (29.07.2024) of the Scientific Jury, I was elected as a reviewer.

According to the competition procedure, no violations were found, and all requirements were met.

2. General description of the presented materials

The candidate for the academic position "PROFESSOR" Assoc. Prof. PhD. eng. Yordanka Tsankova Tasheva has attached all the necessary documents certifying the fulfillment of the minimum national requirements according to the current: Law on the Development of the Academic Staff in the

Republic of Bulgaria, Regulations for the Implementation of the Development Law of the academic staff to it and Regulations on the terms and conditions for holding academic positions at the University "Prof. Dr. Asen Zlatarov" - Burgas.

For participation in the competition, 44 scientific publications, 1 monograph, 1 textbook and 2 manuals were submitted in addition to the publications submitted for obtaining the title of "Doctor" and the academic position "Associate Professor":

*Y. Tasheva, A. Dimitrov, Ecological use of natural and synthetic fuels and their waste - monograph. Libra Scorp, Burgas, 2024, 296 pages, ISBN 978-619-273-031-4;

*10 pcs. scientific publications published in refereed and indexed editions, world-famous databases with scientific information (C.4.1., C.4.2.,....., C.4.10);

*10 pcs. scientific publications published in refereed and indexed editions, world-famous databases with scientific information (D.7.1., D.7.2.,....., D.7.10);

*24 pcs. scientific publications published in non-refereed editions with scientific review or in edited scientific volumes (D.8.1., D.8.2.,....., D.8.24.);

*Tasheva, Y. Operating materials and characteristics in transport, 2023, Libra Scorp, 180 p., ISBN 978-954-471-996-8. The textbook is for training students in the disciplines: "Operating materials in transport", "Operating characteristics of fuels and oils" and "Operating materials and ecology";

*Tasheva, Y., A. Dimitrov. Chemistry and Technology of Petroleum and Petroleum Products Laboratory manual, 2020, Libra Scorp, 204 p. ISBN 978-954-471-694-3;

*Tasheva, Y., A. Dimitrov. Performance and Environmental Performance of Oils, 2024, Libra Scorp, 136 pages, ISBN 978-619-273-045-1.

Of the attached 44 scientific publications in 21 nos. the candidate for the administrative position "PROFESSOR" is the first author, of which 9 nos. are independent and 15 pcs. is second author. So far, 25 items have been noticed on the publications of the competition. citations in the refereed and indexed publications in the world databases with scientific information (Scopus/Web of Science).

Of the presented materials, no monograph is reviewed because it was reviewed before its printing. Study materials and the candidate's participation in projects are also not reviewed. All of these will be taken into account in the final evaluation of the applicant.

All documents are submitted in the required form on an electronic medium:

- author's abstract of a dissertation for the award of ESD "Doctor";
- monographic work C.3.1;
- scientific publications under Indicator C (C.4.1., C.4.2.,...C.4.10.); by Indicator D(D.7.1., D.7.2.,.....D.7.10.), (D.8.1, D.8.2.,D.8.24.); by Indicator D (D.12.1., D.12.2.,....., D.12.25.); by Indicator E (E.17.1.,...E.17.3.), E.19.1.,...E. 19.3), (E.20.1., ...E.20.3.), (E.23, E.23.1.), (E.24, E.24.1., E.24.2.);

- author reference of contributions to scientific works;
- reference to the candidate's scientific research and applied activity;
- a certificate of compliance with the minimum requirements under the recruitment competition for AP "PROFESSOR";

- reference for lectures given by the candidate for the last six full academic years, delivered at the University "Prof. Dr. "Asen Zlatarov" - Burgas, in academic disciplines from the professional direction of the competition.

Declarations of equal participation in co-authorship have been submitted for 15 scientific works in number as well as for the monograph with a content of 296 pages. Since the applicant did not submit a separate protocol for co-authorship of all scientific publications, the reviewer assumes that they are equal for all authors .

The scientific publications that are not included in the monographic work can be grouped in the following thematic directions related to the professional direction of the competition:

1. Research and comparison of different compositions of petroleum fuels on fuel consumption, as well as corresponding assessment of the influence of the composition of different fuels on the efficiency of the car when using intelligent control and management systems and comparing the influence of the change in the composition and operational indicators of fuel on the power, economic and environmental indicators of the engine (C.4.2., C.4.6, D.7.6., D.7.7., D.8.2, D.8.4);

2. Modern technologies for improving the yield of products from primary oil processing, as well as the operational and environmental characteristics of fuels and oils by improving their composition on the one hand by cleaning them from unwanted components by an alternative method, and on the other by adding of various additives of petroleum and non-petroleum origin to various petroleum mixtures and, accordingly, their research and analysis (C.4.1., C.4.3., C.4.4., C.4.5, C.4.9., C.4.10., D. 7.1., D.7.2., D.7.3., D.7.4., D.7.8., as well as publications under indicator D.8, as follows: D.8.1., D.8.8, D.8.10, D. 8.11, D.8.12, D.8.13, D.8.14, D.8.15 ... including D.8.23).

3. Assessment of the impact of the use of fuel-lubricants and transport on the ecology and protection of the environment and human health (C.4.7., C.4.8., D.7.5, D.8.3, D.8.4, D.8.24).

Group	Content	Minimum number of points required by ZARASRB and University "Prof. Dr. A. Zlatarov"	Candidate Points
A	Indicator 1	50	50
	1. Dissertation work for the award of the educational and scientific degree "Doctor"	50	50
B	Indicator 2	-	-
C	Indicators 3 and 4	200	302
	3. Monography, ISBN 978-619-273-031-4	100	100
	4. Habilitation work - scientific publications (not less than 10) in publications that are referenced and indexed in world-renowned databases with scientific information - 10 publications	60/n for each publications	202
D	Sum of indicators from 5 to 11	500	568.37
	7. Scientific publication in publications that are referenced and indexed in world-famous databases with scientific information - 10 publications	40/n or apportioned pro rata based on contribution protocol	353.33
	8. Scientific publication in non-refereed peer-reviewed journals or in edited collective volumes – 24 publications	20/n or apportioned pro rata based on contribution protocol	215.04
D	Sum of indicators from 12 to 15	200	250
	12. Citations or reviews in scientific publications, referenced and indexed in world-renowned databases with scientific information or in monographs and collective volumes - 25 citations	10	250
E	Sum of indicators from 16 to the end	200	180
	17. Guidance of a successfully defended PhD student – 2 PhD students in agricultural management	40/n	60
	18. Participation in a national scientific or educational project – 4 projects	10	40
	19. Participation in an international scientific or educational project – 1 project	20	20
	20. Management of a national scientific or educational project	20	0
	23. Published university textbook or textbook that is used in the school network - 1 stand-alone textbook	40/n	40
	24. A published university textbook or a textbook that is used on the school network – 2 co-authored manuals	20/n	20
	TOTAL	1150	1350.37

The candidate for holding an academic position has fulfilled the minimum national requirements for holding the academic position "PROFESSOR" in the field of higher education 5. Technical sciences, professional direction 5.5 Transport, shipping and aviation, specified in the Law on the Development of the Academic Staff in the Republic of Bulgaria and The Regulations for the Application of the Law on the Development of the Academic Staff to it, as well as the Regulations for the Terms and Conditions for Occupying Academic Positions at the University "Prof. Dr. Asen Zlatarov" - Burgas.

With a minimum requirement of 1150 points by group of indicators for the academic position "PROFESSOR", the candidate's personal total number of points is 1350.37 points. The points for Indicator A are 50 with the required 50, for Indicator B (B.3 to B.4) are 302 with the required 200. The sum of the points for indicator D (D.7 and D.8) are a total of 568.37 with the required 500 according to the Regulations for the terms and conditions for holding academic positions at the University "Prof. Dr. Asen Zlatarov" - Burgas. The sum of the points under indicator D (E.12) is a total of 250 with a required 100. The sum of the points under Indicator E (E.17, E.19, E.20, E.23 and E.24) is 200, with a required 200.

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

A reference was presented by Deputy. rector of research and project activities of the University "Prof. Dr. Asen Zlatarov"- Burgas Assoc. Dr. Svetlana Zheleva for the participation of Assoc. Dr. Eng. Yordanka Tsankova Tasheva in the development of the following scientific research projects such as:

Scientific leader of intra-university projects:

*Contract No. NIH-391/2017 on the topic "Research of the composition of heavy oil fractions", (2017-2018), financed by the NHTD fund;

*Contract No. NIH-383/2015 on the topic "Obtaining a high-octane additive by modifying alkenes" (2015-2016), financed by the NHTD fund;

*Agreement No. NIH-276/2012 on the topic "Obtaining commodity automobile gasoline through alternative methods", financed by the NHTD fund.

As a member of a scientific team in the following projects:

*Agreement No. NIH-296/2013 on the topic "Prediction of the biodegradation and toxicity of some sulfur compounds and arsenic hydrocarbons of petroleum origin with supervisor Assoc. Dr. Yana Koleva, financed by the NHTD fund:

*Agreement No. NIH-301/2013 on the topic "Influence of biocomponents on the physicochemical and operational properties of commodity gasolines" (2013-2014) headed by Associate Professor Dr. Todor Palichev, financed by the NHTD fund:

*Contract No. NIH-461/2021 on the topic "Research of parameters characterizing the comfort of a car (2021-2022), with head ch. associate professor, Dr. Zlatin Georgiev, financed by the NHTD fund:

*Contract No. NIH-464/2022 on the topic "Research of performance characteristics of sensors and reliability of fuel nozzles for new and used cars", (2022-2023), with supervisor Assoc. Dr. Magdalena Dylgerova, financed by the NHTD fund:

*Contract No. NIH-480/2023 on the topic "Study of exhaust gas recirculation system and the level of harmful emissions from cars in an urban environment, (2023-2024) headed by Associate Professor Dr. Vasil Bobev, financed by the NHTD fund.

From the reference it is clear that the candidate for JSC "Professor" for the period (2018-2023) is the head of the team from the University participating in 3 National scientific and educational projects financed by the National Research Fund, as well as a member of 3 Scientific and educational projects financed by European funds.

My assessment of the candidate's scientific research and applied scientific activity is **positive**.

4. Evaluation of the pedagogical preparation and activity of the candidate.

Assoc. Ph.D. Eng. Yordanka Tsankova Tasheva has extensive pedagogical experience in teaching students for the "professional bachelor", "bachelor" and "master" degrees. A report on the candidate's lectures for the last six years is presented: for (2018-2019) - 435 hours; (2019-2020) - 465 hours; for (2020-2021) - 435 hours; and for (2021-2022) - 624 hours; for (2022-2023) - 876 hours; and for (2023-2024) - 825 hours. She gave lectures on the following academic disciplines included in the curricula for the Professional Bachelor's College of Education; "Operating materials and characteristics of fuels and oils" and "Operating materials and ecology", for OCS "bachelor"; "Operating Materials in Transport", "Oil and Gas Technology", "Petroleum Chemistry", "Commodities", "Medical Commodities", "Economics of the Enterprise" and for OKS "Master"; Oil and Gas Technology, Oil and Gas Chemistry and Technology, Small Business Management, Tax Warehouse Technology, and Oil and Gas Construction. She participated in the development and updating of 24 items. curricula.

Three certificates are presented for increasing the qualification of the candidate in 2022 by projects: for successfully completed studies in English, level A1 - A2 - 160 hours; on "Skill for development, implementation and management of digital educational content" and successful training on "Ecological monitoring and applications of the ecosystem approach in the protection of water and marine environment".

Assoc. Ph.D. Eng. Yordanka Tsankova Tasheva is the supervisor of two successfully defended doctoral students:

*Mag. Eng. Anton Todorov Palichev, on the topic "Modern trends in the production of automobile gasoline" in the doctoral program "Technology of natural and synthetic fuels /sh. 02.10.23/ from Mon 5.10. Chemical technologies, area of higher education 5. Technical sciences protected on 07/08/2015.

*Mag. Eng. Dimitrinka Slavova Ivanova on the topic "Investigation of pollution with road sediment along main and secondary transport arteries" in the city of Burgas" in the doctoral program "Ecology and environmental protection" from PN 4.2. Chemical sciences area of higher education 4. Natural sciences, mathematics and informatics protected on 04.11.2022.

For the period from 2013-2023, he was the scientific supervisor of 27 units. successfully defended diploma projects in the special "Transportation Equipment and Technologies" - 9 items, in "OHT - Oil and Gas Technology" - 17 items. and on the magazine "Technology and Management of the Oil and Gas Industry" - 1 issue.

The assessment of the candidate's educational and pedagogical activity is **positive**.

5. Basic scientific and scientific-applied contributions

Note:

Publications B.4.2 and B4.6 are in direction 5.5 Transport, shipping and aviation. They are joint research in which I am directly involved, which does not give me the right to pronounce on their scientific value.

C.4.2. Tasheva Y., E. Dimitrov, L. Kunchev, Effect of treated gas oil under effective performance of engine, Oxidation Communications, 43, 3, p. 536, 2020, ISSN 02094541.

C.4.6. Tasheva Y., E. Dimitrov, L. Kunchev, Exploration comparison of contemporary diesel blends under effective performance of engine, Oxid. Commun., 46, 2, 2023, p.434, . ISSN 02094541.

The presented monograph examines the pollution of the environment, which leads to the violation of ecological norms. It has been established that of all energy sources, 40% is obtained from oil, with 20% of the planet's pollutants being from oil products. The slow but sure destruction of the environment is the reason for an innovative approach in the production of fuels. The implementation of innovative methods and installations for the processing of solid fuels, oil products and their waste, as well as the release of minimal amounts of harmful emissions (CO₂), will preserve the environment. The topic of the monograph is relevant because it is related to the problems of reducing harmful emissions in the atmosphere during the production of petroleum products and preserving the environment. The main objective of the monograph is to present new trends in the production of modern liquid fuels, in the processing of solid fuels, synthetic oil and waste and waste fuels.

The main scientific and scientific-applied contributions of the monograph presented in the current competition are summarized in the concluding point of the latter, namely:

First compliance with European directives and search for new alternative sources of liquid fuels for transport or obtaining liquid components from low-calorie raw materials, their utilization, thus reducing harmful emissions,

Second obtaining electricity from waste or waste-derived fuels to be competitive on the free market.

Contributions are considered separately for the monographic work under indicator C and contributions for the presented scientific works under Indicators C.4., D.7 and D.8. They are formulated and can be summarized in two groups: as scientific and scientific-applied contributions.

A. Contributions of the monographic work

Scientific and scientific-applied contributions

The main scientific and scientific-applied contributions of the monograph presented in the current competition are summarized in the concluding point of the latter, namely:

1. On the one hand, the possibility of complying with the European directives and the precise application of the Circular Economy Directive is shown by presenting various alternative sources of liquid fuels for transport or obtaining liquid components from low-calorie raw materials, their utilization, thus harmful emissions also decreased.

2. Possibilities of obtaining electricity from waste or fuels obtained from waste, which would be competitive in the free market.

B. Contributions of publications under Indicators D.7 and D.8

The contributions of the scientific works of Assoc. Prof. Ph.D. Eng. Yordanka Tsankova Tasheva are presented in three groups: scientific, scientific-applied and applied based on scientific works according to Indicators C.4, D.7 and D.8. Of the presented 5 pcs. scientific contributions I accept No. 1, No. 2. No. 3 and No. 4. I do not accept contribution No. 5 as it is probably derived on the basis of implemented projects: internally - university, national and international. This contribution may be considered to be refined and included in the applied contributions. I accept the presented scientific and applied contributions, and I do not accept contribution #3 from the applied contributions.

Scientific contributions

*It has been proven that the processes of extraction, adsorption and oxidation of various models of mixtures, gasoline and middle distillate fractions are thermodynamically stable (laboratory processes of individual systems are irreversible and non-spontaneous, i.e. possible. (B.4.9., D.7.1., D.7.9., D.8.10., D.8.14., D.8.15, D.8.16, D.8.17, D.8.19, D.8.24.)

*The thermodynamic and kinetic parameters of various systems were obtained: gasoline, middle distillate fraction (diesel fuel, gas oil); polar solvent, or adsorbent or oxidizer. From the obtained results for free energy n Gibbs, enthalpy and entropy, it is proved that the dissolution process is irreversible and spontaneous. (D.7.3., D.7.4., D.7.8., D.8.10., D.8.18)

*Gasoline-ethanol blends containing bioethanol of two base petroleum gasolines having different component and carbon composition were investigated. It was found that the base petroleum gasoline meets all the requirements of BDS EN 228 and the Ordinance on the quality requirements of liquid fuels, the conditions, the procedure for their control. (D.7.2., D.7.10., D.8.1., D.8.2., D.8.4., D.8.7., D.8.8., D.8.10.)

*The addition of bioethanol to petroleum gasolines has been shown to alter the distillation characteristics of the base gasolines. This change is most pronounced up to 70°C and to a lesser extent up to 100°C (D.8.10).

Scientific and applied contributions

*A methodology for researching the influence of fuel on the consumption of Opel Movano and Ford Transit trucks has been compiled. The influence of the indicators cetane index, density, kinematic viscosity and content of polycyclic arenes on the combined consumption of fuel at a petrol station was investigated. The obtained results show that PG and CM 1 have the best combined consumption, CM3 and CM2 occupy an intermediate position, and PG1 shows a worse characteristic (D.7.6.).

*A methodology for researching the influence of fuel on the consumption of selected passenger cars, MAZDA model, was created and the influence of the indicators cetane index, density, kinematic viscosity and content of polycyclic arenes on the combined consumption of fuel at a petrol station was studied (D.7.7).

Applied Contributions

*Comparative tests were carried out in order to determine in bench conditions, the power values (effective torque - M_e , average effective pressure - p_e and effective power N_e), economic (hourly G_g and specific - g is consumption of diesel fuel) and toxic (content of: carbon monoxide - CO; carbon dioxide CO₂; hydrocarbons - CH; nitrogen oxides - NO_x; oxygen O₂ and smokiness - R_h of exhaust gases) performance of a diesel engine when operating with standard diesel fuel and treated diesel fuel through the extraction processes and adsorption. (C.4.2).

*Based on the experimental results obtained from the bench tests, it was established that the operation of a Volkswagen 1.9 diesel engine with treated diesel fuel does not lead to changes in its effective indicators (C.4.6).

6. Significance of contributions for science and practice.

The scientific publications of Assoc. Prof. Dr. Eng. Yordanka Tsankova Tasheva have become available to the scientific community working in PD 5.5 Transport, shipping and aviation in the field of higher education 5. Technical sciences. They have been reported at scientific Conferences with international participation, seminars and publications in refereed and indexed editions in world-renowned databases of scientific information (Scopus/Web of Science) or in non-refereed journals with scientific review or in edited collective works. In the scientific publications, citations according to Indicator D.12 - 25 numbers have been noticed so far.

7. Critical notes and recommendations.

The analysis of the submitted materials for participation in the competition for academic position "PROFESSOR" shows the absence of gaps, which is why I believe that it is not necessary to make critical comments and recommendations.

8. Personal impressions and opinion of the review.

My personal impressions after familiarizing myself with the materials provided to me and formulating the review are: that the candidate for the academic position "professor" is a built academic teacher, researcher-scientist with a very good theoretical and professional training in a wide range of the professional direction 5.5 Transport, shipping and aviation in the field of higher education 5. Technical sciences and scientific specialty 02.08.12 "Transport and storage of oil, gas and solid mineral products".

Assoc. Prof. eng. Yordanka Tsankova Tasheva, PhD was elected as a member and secretary of the Faculty Council and actively participates in the work of various faculties at the University: member of the Colloquium of the Faculty of Social Sciences at the University "Prof. Dr. Asen Zlatarov" - Burgas (2015-2019), and from (2019-2023) she was elected as a member and secretary: member and secretary of the Attestation Commission of the Faculty of Social Sciences for the period (2019-2023) year: member of the FS of the Faculty of Technical Sciences for the period (2019-2023) year: member of the FS of the Faculty of Social Sciences for the period (2023-2027) year, member of the FS of the Faculty of Social Sciences, member and secretary of the Attestation Commission of the Faculty of Social Sciences for the period (2023-2027) and member of the Colloquium of the Faculty of Social Sciences for the period (2023-2027).

CONCLUSION

My assessment of the overall teaching, research, publication and full fulfillment of the minimum national requirements for occupying the academic position of "**PROFESSOR**" of the candidate according to the ZARAS in the Republic of Bulgaria and the Regulations for the Application of the Law on the Development of the Academic Staff to it, as well as the Regulations for the Conditions and the procedure for occupying academic positions at the University "Prof. Dr. Asen Zlatarov" - Burgas is positive.

Based on the positive assessment, I consider it justified with full conviction to propose Associate Professor Yordanka Tsankova Tasheva to take the academic position "**PROFESSOR**" in the field of higher education 5. Technical sciences, professional direction 5.5. Transport, shipping and aviation, scientific specialty 02.08.12 "Transport and storage of oil, gas and solid mineral products" announced in the department "Engineering and technologies in transport and mechanical engineering" at the University "Prof. Dr. Asen Zlatarov" - Burgas.

27.09.2024

Sofia

REVIEWER:.....

/Prof. L. F