



REVIEW

on the materials submitted for participation in a competition for „Professor“ in the field of higher education 6. Agricultural sciences and veterinary medicine, Professional field 6.5 Forestry, scientific specialty „Technology, mechanization and automation of the woodworking and furniture industry“ in the discipline „Woodcutting and cutting tools“

In the competition for professor, published in the State Gazette, 37/07.05.2019 and on the site of the University of Forestry with the code WWW - P - 0419 - 06 for the needs of the Department of „Woodworking machines“ at the Faculty of Forest Industry, as a candidate participate Assoc. Prof. Zhivko Bonev Gochev Ph.D., Faculty of Forestry, Department of „Woodworking machines“.

Reviewer: Veselin Stamenov Brezin, Ph.D., Professor in a Professional Field 6.5 Forestry, from University of Forestry

1. Brief biographical data for the candidate

Assoc. Prof. Zhivko Bonev Gochev Ph.D was born on 25.03.1960. He graduated from University of Forestry in 1985 as a master's engineer in Mechanical Wood Technology. From 1987 to 1990 he is a full-time postgraduate student, at the Department of Mechanization and Automation of DMP. He holds a degree in Candidate of Technical Sciences (Doctorate). Since 1991 - until now he has been a lecturer at the Technical University of Sofia - Sofia. Assistant Professor and conducts lectures and exercises in the following disciplines: Wood cutting and cutting tools for EQD-Bachelor, Business evaluation of machines and equipment, Organization and planning of DMP and lectures in the discipline "Application of DMP lasers" for ACS-Master. In 2005 he was habilitated as an associate professor. He has a total work experience of 35 years and his main scientific interests are in the field of laser technologies in the wood and furniture industry, cutting of wood and cutting tools, CNC machines and technologies, evaluation of machines and equipment, efficient utilization of wood. His scientific publications are in full accordance with scientific interests. He was elected Head of the Department of Woodworking Machines. From 2013 to 2016 he is the Deputy Dean of the Faculty of Forest Industry, and from 2016 until now he has been the Dean of the same Faculty. Fluent in English, German, Russian and Serbian.

2. Correspondence of the submitted documents and materials of the applicant according to the Rules of the Development of academic staff at the University of Forestry.

The submitted documents and materials of the candidate Assoc. Prof. Zhivko Bonev Gochev Ph.D are in accordance with the requirements of Art. 65, paragraph 1 of the Rules for development of academic staff at University of Forestry, as well as with the National Requirements according to Art.26, paragraphs 2, 3 and 6.

3. Assessment of the candidate's educational and pedagogical activities (work with students and PhD students)

The participant in the competition has been a lecturer at University of Forestry since 1991,

initially as a part-time assistant in the discipline "Wood cutting and cutting tools" (Bachelor's Degree Program). Since 1996 he has been Assistant Professor and holds lectures and lectures on the subjects "Wood Cutting and Cutting Tools" and "Business Evaluation of Machines and Equipment" (Bachelor's Degree Program), "Application of Lasers in DMP" and lectures in "CNC Machines, Tools and Technologies "(Master's Degree Program). He is the author of two textbooks, two study aids, and one co-authored book.

He has been a research supervisor and consultant to more than 28 successfully defended graduates, a supervisor is a PhD candidate. He is the author of 4 issues. study programs, 2 for Bachelor Degree and 2 for Master Degree.

For his teaching and scientific work Assoc. Prof. Zhivko Bonev Gochev Ph.D, he is highly praised by both students and his colleagues. Competent, straightforward with positive broadcasting combined with excellent mastery of the subject matter taught, he is a prime example of an excellent teacher and teacher.

I am convinced that the outstanding creative achievements and the presented materials in the field of "Wood cutting and cutting tools" are entirely personal to the applicant.

My own assessment of Assoc. Prof. Zhivko Bonev Gochev Ph.D, as a teacher, researcher and professional, is extremely high. He possesses enviable hard work, modesty, tact and patience, competence and knowledge, which are highly valued at and beyond the university.

4. Assessment of candidate's scientific, scientific-applied and publishing activities

General description of the presented materials

Candidate Assoc. Prof. Zhivko Bonev Gochev Ph.D. participated in the competition with:

- Monographs - 1 number (s);
- Textbooks- 1 number (s);
- Learning materials- 2 number (s);
- Books- 1 number (s);
- Publications- 100 number (s).
- Projects - 21 numbers (s).

4.1 Participation in scientific, scientific-applied and educational projects

Assoc. Prof. Zhivko Bonev Gochev Ph.D participated in the total realization of 21 project, allotted as follows:

- Scientific research projects funded by UF under Ordinance № 9 - 4 (№№ 101-104)
- National scientific research projects – 1 (№ 105);
- International scientific and applied projects – 3 (№№ 106-108);
- National educational projects – 5 (№№ 109-113);
- Infrastructure projects financed by UF under Ordinance –1 (№ 114);
- Projects funded by the Scientific Research Fund to support international scientific forums – 1 (№ 115);
- Projects funded by the Training and Experimental Forest Range (TEFR) of UF–6 (№№ 116-121).

4.2 Characterization of published scientific results

The publications can be classified as follows:

By type:

- Publications in scientific journals- 49 number (s);

- Publications in proceedings of scientific - 46 number (s);

By significance

- Articles in magazines with Impact Factor- none presented;
- Articles in journals referenced and indexed in Web of Science and SCOPUS- 4 number (s);
[№№ 14,15,16,17]
- Articles in journals without Impact Factor- 8 number (s);
[№№ 6,7,8,9,10,11,12,13]
- Papers in proceedings of scientific forums- 37 number (s);
[№№ 64-100]
- Plenary reports- none presented.

Place of publication:

- Articles in Bulgarian and foreign journals referenced in Web of Science and SCOPUS- 4 number (s);
[№№ 14,15,16,17]
- Articles in reference Bulgarian and foreign journals referenced outside the Web of Science and SCOPUS- 18 number (s);
[from №19-№26 and from №27 to №35]
- Articles in non-referenced Bulgarian and foreign journals- 27 number (s);
[from №37 to №63]
- Publications in proceedings of international scientific forums- 26 number (s);
[from №76 to №100]
- Publications in proceedings of national scientific conferences, sessions and seminars- 11 number (s);
[от №64 до №74]

Publishing language:

- In Bulgarian- 16 number (s);
[№№ 27,28,30,33,37,38,39,40,41,42,64,65,66,67,68,69]
- In a foreign language- 78 number (s);

Number of co-authors:

- Standalone - 15 number (s);
[№№ 6,7,8,27,37,38,41,42,46,48,49,66,75,78,92]
- With one co-author- 16 number (s);
[№№ 11,15,16,18,19,47,52,53,56,64,65,73,76,79,82,85]
- With two co-authors- 12 number (s);
[№№ 35,47,52,53,56,64,65,73,76,79,82,86]
- With three or more co-authors- 63 number (s).
- [№№ 9, 10, 12, 13, 14, 17, 20, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 36, 39, 40, 43, 44, 45, 50, 51, 54, 55, 57, 58, 59, 60, 61, 62, 63, 67, 68, 69, 70, 71, 72, 74, 77, 80, 81, 83, 84, 85, 87, 88, 89, 90, 91, 93, 94, 95, 96, 97, 98, 99, 100]

4.3 Reflection of Candidate's Scientific Publications in Literature (known citations)

- Total - 60 citations.

By type of citations:

- In reference journals and proceedings of scientific forums- 21 citations;
- In teaching aids, monographs, dissertations, etc.- 8 citations.

4.4 Contributions to the candidate's work(scientific, scientific-applied, applied)

Scientific, scientific-applied and applied contributions are related to the clarification of theoretical issues, analysis of the results obtained, conclusions and practical recommendations related to the two components - sections of the discipline "Wood cutting and cutting tools": "Cutting wood and materials wood-based "and" Cutting tools ". In addition, the direction "CNC machines, tools and technologies" is indirectly related to them. They can be grouped in the following 4 directions:

- Wood cutting and wood based materials - 34 publications and 3 projects;
- Cutting tools - 32 publications and 3 projects;
- CNC machines, tools and technologies - 8 publications and 1 project;
- Integrated use of wood biomass for energy - 12 publications and 1 project;

The main contributions to the applicant's overall scientific and teaching activity are as follows:

Scientific contributions:

- A detailed methodology has been developed to investigate the operability of wide and narrow band saws with chiseled, flattened and constricted teeth, including both the quantitative and qualitative side of the process;
- A methodology has been developed and experimental studies have been conducted on the power and energy parameters of the process of longitudinally flat and profile milling of massive wood on a woodworking milling machine with a lower spindle arrangement, using different types of milling tools. The influence of the feed rate and the milling area on the power and cutting force, the specific cutting force and the specific energy consumption are determined;
- The specific energy of laser cutting of various coniferous and deciduous tree species was determined experimentally and theoretically;
- The influence of the wear and change of the parameters of the elements of the cutting mechanism of a woodworking milling machine on the accuracy and quality of production is studied on the basis of a developed mechanical mathematical model and a mechanical mathematical model is developed and the free non-attenuating spatial vibrations of a woodworking mill are investigated and its spindle;
- Technological and control operations in preparation have been systematized of band saws. Particular attention is paid to the welding methods of the ends of the band saws and their physical nature. The results of experimental studies on arc welding of melt belts with melting electrode are presented;
- The performance of abrasive tools has been investigated (grinding performance; relative grinding performance; abrasion tool wear and durability; surface roughness; presence of micro-cracks and burns) with ceramic and bakelite joints in sharpening conditions in circular saw blades and steel teeth;
- The vibrational behavior of the cutting mechanism of circular saws is investigated

machines using a mechanical and mathematical model. They are based on the model simulation studies were conducted to study the natural frequencies of the circular saw;

Scientific-applied contributions:

- The studies carried out contribute to a fuller clarification of the problems affecting the working capacity and durability of the teeth of the wide and narrow band saws for cutting logs, prepared by chipping, flattening and stellarization, the developed mechanical-mathematical model and its variations, allows for a numerical study of the natural frequencies and natural shapes for a specific type of machine and its cutting mechanism, as well as the natural frequencies required to define resonance modes;
- Determination of the power and energy parameters of the process of cutting of round wood and longitudinal milling of solid wood contribute to a more complete clarification of the technological process and the place of the block bandsaws, MHS and milling machines in it, their effective use and overcoming of critical points and current problems;
- The main factors that influence the welding process of band saws have been identified;
- The geometric characteristics and quality of welding at LAG / MAG welding of band saws;
- The influence of the degree of wear, the change of the radius of the sharpening of the teeth, in narrow and wide band saws, on the quality and accuracy of the shaped materials and the productivity of the process of cutting of round wood were investigated;
- The technological capabilities and the place of CNC machines in it, their effective use and overcoming of critical moments and current problems are determined;
- A method for more accurate assessment of the complex impact of CNC is proposed milling and drilling centers on the main technological and economic factors that are important for any furniture manufacturer;
- The main characteristics of biomass have been studied according to: its energy performance; its origin; the sources and methods of its use. The term dendromass is defined. The structures and forms of the dendromass for energy production are investigated. Dendromass can be used for energy in the non-industrial and domestic sectors or go through various stages of processing and subsequent use;
- Studies on the energy performance of several Euro-American hybrid poplar varieties have been carried out in Bulgaria;
- An experimental evaluation was made and the most important ones were compared quality parameters of wood pellets and briquettes produced in Bulgaria and Slovakia;

Applied contributions:

- Technological modes and instructions for effective use have been developed of wide band saws with chapras, flattened and crushed teeth, according to the specific production conditions;
- Optimal feed rates have been determined from the point of view of the power and energy load of the milling machine, respectively, its spatial vibrations and resonance modes;
- An in-depth analysis of the physical, metallurgical nature has been made processes, apparatus and technology for arc welding of band saws in a shielding gas medium with a melting electrode (LAG / MAG methods);
- Recommended regimes for welding of band saws for the needs of TEFYR-Yundola have been developed;

- The basic errors and defects, which occur in the teeth stellarisation of wide band saws in the woodworking base of the TEFR-Yundola are analyzed, and some results of experimental studies with this type of teeth are presented;
- An on-line BlackBoard training course at UF has been developed, according to the syllabus for the discipline "CNC Machines, Tools and technologies";
- It has been established that the main energy component of biomass in Bulgaria is of the categories 'wood' and 'top' and amounts to an average of about 3.2 million m³ of lying wood. This is an average of 57% of the total amount of timber harvested in Bulgaria;
- It has been established that in our country there are favorable conditions for the creation of energy poplar plantations, and under suitable plant conditions, sufficient groundwater level and adequate measures to stimulate growth, they can realize annual production of dry dendromass;
- To make more efficient use of renewable energy from biomass national, municipal and local levels need to be up-to-date installations with higher efficiency, power supply and control;

5. Assessment of the applicant's personal candidate

The materials submitted by the applicant for participation in the competition for occupying an academic position "Professor" to the Department of Woodworking Machines are undoubtedly the work of Assoc. Prof. Zhivko Bonev Gochev Ph.D. He is the author of one monograph, one textbook on wood cutting and cutting tools, one guide and one teaching tool. Actively participates in the period from 2006 to the present in 3 international projects, 5 national projects, 6 applied projects. He is a member of prestigious scientific and organizational committees at scientific forums, as well as a member of Technical Committee 52 "Safety of Machines and Equipment" at the Bulgarian Institute for Standardization.

Assoc. Prof. Zhivko Bonev Gochev Ph.D is a well-established lecturer and scientist who has a significant contribution and potential in the development of scientific tasks related to the cutting of wood and wood materials, wood-cutting tools CNC machines and technologies, as well as methods for efficient utilization of the wood. His steadfastness and knowledge of the forestry industry make him a sought-after consultant and expert.

6. Critical remarks

I do not have significant critical notes to the candidate Assoc. Prof. Zhivko Bonev Gochev Ph.D, since the presented materials have been prepared with a lot of skill and knowledge in accordance with the Rules for the Development of Academic Staff (RDAS) of UF. While appreciating the overall activity of the applicant, I allow myself to make three recommendations:

1. The area in which he conducts his scientific activity and fluency in foreign languages enable the applicant to participate in scientific articles and in IMPACT journals, which I hope will be done in the future.
2. The applicant shall have sufficient knowledge, skills and habits to enable him to participate in plenary reports in national and international scientific fora in the future.

3. Make efforts to improve cooperation between scientists and engineers in the field of MTD for the exchange of information and participation in national and international research projects and programs.

7. Personal impressions

I have known Assoc. Prof. Zhivko Bonev Gochev Ph.D since his student years. I was impressed by his hard work, his pursuit of scientific work, and his ability to interpret all scientific data and facts.

His proverbial diligence and modesty enable him to successfully complete all his endeavors from the student bench and, subsequently, as a full-time doctoral student. Particular recognition of the reputation and competencies of Assoc. Prof. Zhivko Bonev Gochev Ph.D is his inclusion in the organizational, program and scientific committees at several national and international forums. He has participated in the editorial boards of two foreign journals, published by the Technical University of Zvolen, Slovakia, as well as the editorial board of Innovation in Woodworking Industry and Engineering Design, UF - FWI, indexed on the basis of CABI.

Highly appreciated for the personal qualities of Assoc. Prof. Zhivko Bonev Gochev Ph.D is the fact that he was elected consecutively as Head of Department, as Deputy. Dean of the Faculty of Forestry and now the Dean of the Faculty of Forestry at the Faculty of Forestry. High international recognition is his involvement in the leadership of the JICA Alumni Association in Bulgaria, where he takes an active part in the organization and holding of several seminars.

Assoc. Prof. Zhivko Bonev Gochev Ph.D works very actively not only with students and PhD students, but also with practicing engineers. His open character, deep knowledge and hard work enabled him to be identified as a highly competent practitioner.

8. Conclusion

In connection with the above, I propose that Assoc. Prof. Dr. Zhivko Bonev Gochev be elected as a „Professor“ in the discipline „Wood cutting and cutting tools“ in the Professional field 6.5 Forestry, scientific specialty „Technology, mechanization and automation of the woodworking and furniture industry“.

Signature of the reviewer:



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