

REVIEW

On dissertation for received of education and scientific degree “doctor” in field of higher education, in professional direction 5. Technical science in scientific specialty, 5.13. General Engineering, “Technology, Mechanization and automation of the woodworking and furniture industry’

Author of dissertation:

By correspondence doctorate mag. eng. Rostislav Bojidarov Bozhkov, faculty of “Forest Industry”, department of “Furniture production” in University of Forestry- Sofia

Theme of PhD Thesis:

“Influence of the properties of materials on the soft of the upholstered furniture”

Member of the Scientific jury:

Prof. D-r. eng. Panayot Angelov Panayotov - retired from of the University of Forestry –Sofia in field of higher education: 6. Agrarian science and veterinary medicine, professional direction:- 6.5: Forest economy in scientific specialty, “Technology, mechanization and automation of the woodworking and furniture industry”, appointed for member of the jury by order № РД-3ПС-132 от 12.03.2025 of the Rector of the University of Forestry.

1. Brief biographical data for the candidate

The candidate for obtaining the educational and scientific degree "Doctor" was born on November 20, 1972, in the city of Pernik. He was disenrolled with the right to defend his dissertation as of January 16, 2024, by order of the Rector of the University of Forestry – Sofia, Order No. ZAD-37 dated February 2, 2024.

He completed his higher education at the University of Forestry – Sofia in 1997, majoring in Mechanical Wood Technology, with an average grade of 3.95 (Good) during the course of study and a grade of 4.00 (Good) on the state examination.

In the period from October 1998 to January 1999, he worked as a design engineer at “Rapid Group” Ltd. From January 1999 to April 2001, he was a technologist at “Radomir LEKO KO”. JSC, responsible for preparing technical documentation for wooden models.

From May 2001 to June 2002, he was a design engineer at “Vizatel” Ltd.

From July 2002 to December 2007, he served as Manager and Chief Designer at the furniture studio “ROSTIMA.”

From January 2008 to August 2009, he was a design engineer at “Kohana” Ltd.

From September 2009 to December 2017, he was Manager and Chief Designer at “ROKOZO” Ltd.

From January 2018 to March 2021, he worked as a design engineer at “Dialog A” Ltd.

Since April 2021, he has been employed as a design engineer at “EUROMEBEL” Ltd.

He has passed three doctoral examinations (doctoral minimum) with an overall average grade of 5.00 (Very Good).

2. Actuality of the problem

The issue of designing upholstered furniture is relevant, as it directly concerns the quality of human life. Six types of upholstery structures are studied in terms of their softness and deformation behavior.

3. Level of Understanding of the Problem and Creative Interpretation of the Literature Review

Chapter One presents a literature review covering 29 pages. A total of 82 literary sources were analyzed, 25 of which are in Cyrillic (including 2 BDS standards) and 57 in Latin script (including 6 international standards). Based on the review, three summaries and conclusions were drawn, from which the aim and objectives of the dissertation were logically and convincingly formulated.

4. Aim, Objectives, Hypotheses, and Research Methods. Consistency of the Selected Research Methodology with the Aim and Objectives of the Dissertation.

The aim and objectives are correctly defined. The research methodology is presented in Chapter Two, spanning 13 pages. An appropriate methodology for determining the deformation behavior of the materials comprising the investigated upholstery structure is outlined. Five main objectives of the dissertation are correctly formulated. The constituent materials used to create the six upholstery structures are appropriately selected.

5. Illustration and Presentation of the Obtained Results

The dissertation is structured over 116 standard pages and is well illustrated with 41 figures, 16 tables, and 30 color Excel charts.

6. Discussion of the results and used literature (bibliography).

The five formulated objectives have been successfully accomplished. The cited literature sources were published predominantly after 2010—accounting for 52%—while 25% were published before the year 2000.

It was established that during use, the load is distributed unevenly among the individual elements of the upholstery. The seat bears the largest share of the load—approximately 80%. The backrest absorbs between 14% and 16%, while the armrests bear between 4% and 6%.

It was also found that different stresses occur in the various elements of the upholstery during operation. The surface of the upholstery experiences tensile stress, whereas the base is subjected to bending stress.

7. Contributions of the Dissertation

Scientific-Applied Contributions

Three (3) scientific-applied contributions are outlined:

1. The key indicators of the softness of upholstery structures were established: initial softness (Mn); total deformation of the backrest (Do.o); total deformation of the seat (Do.s.); backrest softness coefficient (Km.o.); and seat softness coefficient (Km.s.).
2. Based on the experimental results, graphical dependencies were derived between the applied force and the deformation behavior of the investigated upholstery structures.
3. The values and the degree of influence of the materials under study on the softness of the upholstery were determined.

Applied Contributions

One applied contribution is highlighted:

1. The investigated upholstery structures can be implemented in: individual production; series production; and mass production of modern upholstered furniture, meeting the standards of BDS 8962-90.

8. Assessment of the Degree of Personal Involvement of the Doctoral Candidate in the Contributions

The doctoral candidate's personal involvement is predominant in the development of the dissertation and the achievement of its contributions. The candidate has 3 (three) publications as single author and 1 (one) publication co-authored with the scientific advisor.

9. Critical remarks and questions

I have no major critical remarks. Figure 3.1 is missing, although a comment on it is made in the text (p. 48).

10. Published articles and citations

Three publications are presented: 2 in the conference proceedings in "Machines, Technologies, Materials, 2022 - Varna" (Deformation Behavior of the Materials Used in the Construction of the Springing Part of the Upholstery Structure); 2023 - Varna (Deformation Behavior of the Retardant Polyurethane Foams CME 3025 and CME 3530 and Their Application in Upholstery Structure); and 2023 - Borovets (Influence of Upholstery Base Type on the Deformation Behavior of the Seat of Upholstered Furniture). The proceedings are included in the National Reference List of NACID. No citations by other authors have been identified.

11. Evaluation of the Publications in the Dissertation: Number, Type of Publications, and Their Impact on Science – Use and Citation by Other Authors

The presented abstract objectively reflects the structure and content of the dissertation. The presented materials do not include citations of the published works.

CONCLUSION:

Based on the learned and applied by the doctoral candidate research methods, the correctly carried experiments, and the conclusions drawn, I believe that the presented dissertation meets the requirements of the Higher Education Act and the Regulations of the University of Forestry for its application, which gives me grounds to evaluate it positively.

I would like to propose to the esteemed Scientific Jury to vote positively and award Engineer MsC Rostislav Bozhidarov Bozhkov the educational and scientific degree of "Doctor of Philosophy (PhD)" in the scientific field of "Technology, Mechanization, and Automation of the Woodworking and Furniture Industry."

Date: 15.07.2025
Sofia

Referee:
Prof. Dr. Eng. Panayot Panayotov