BORYS PRYDALNYI
Ph.D. in Technical Sciences
Associate Professor (Docent)

LUTSK NATIONAL TECHNICAL UNIVERSITY (LUTSK NTU)

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EXPERT

The creation of the structures of clamping mechanisms for spindle units of turning lathes and milling machines. Scientific research related to issues of improving the productivity and quality of machining on turning lathes and milling machines.

EDUCATION EXPERIENCE

2014 Lutsk National Technical University –Associate Professor's certificate (Docent)
2011 Ternopil I.Puluj National Technical University (diss. defense) – Ph.D. Tech.Sc.
2004 Lutsk State Technical University – Master's degree.
2003 Lutsk State Technical University – Bachelor's degree.

WORK EXPERIENCE

Teaching experience – 15 years.
Professional positions held:
2021-up to now: An Associate Professor of the Applied Mechanics and Mechatronics department of Lutsk NTU.
2017-2021 – An Associate Professor of the Applied Mechanics department of Lutsk NTU (partly part-time).
2015-2018 – A doctoral student of the Machine Tools and Machines Design department of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute".
2014-2017 –An Associate Professor of the Computer-Aided Design of Machine Tools and Mechanical Engineering Technologies department of LutskNTU (partly part-time)
2012-2014–The positions of an Associate Professor of the Computer-Aided Design of Machine Tools and Mechanical Engineering Technologies department of Lutsk NTU
2011-2012 – An Assistant Professor of the Computer-Aided Design of Machine Tools and Mechanical Engineering Technologies department of Lutsk National Technical University.
2009-2011 – An Assistant Teacher of the Computer-Aided Design of Machine Tools and Mechanical Engineering Technologies department of Lutsk NTU.
2007-2009 – An Engineer of scientific and technical Information at the R&D department of the private enterprise «Волвест М».
2006-2009 – An Assistant Teacher of the Computer-Aided Design of Machine Tools and Mechanical Engineering Technologies department of Lutsk NTU (part-time).
2004-2007 – A postgraduate student of the Computer-Aided Design of Machine Tools and Mechanical Engineering Technologies department of Lutsk NTU.
2004-2005 – The Head of laboratories of Machine Tools department of Lutsk State Technical University (part-time).

DISSERTATION RESEARCH

The topic of the dissertation research for the Doctor's degree of Technical Sciences "Synthesis of electro-mechanical clamping devices for machine tools" of the specialty 05.03.01 – Machining processes, machine tools and tools (in progress).
The topic of the dissertation research for the degree of Ph.D. in Technical Sciences "Creation of actuators of clamping mechanisms for the high-speeding lathes" of the specialty 05.03.01 – Machining processes, machine tools and tools (2011).

PROFESSIONAL HONORS, AWARDS AND FELLOWSHIPS

2021 – Awarded with the medal "Scientist of the Year" and the Honorary diploma of the International program "Scientific Elite of Ukraine".
2021 – Awarded with the gratitude of the Chairperson of the Lutsk District Council, the diplomas of Lutsk National Technical University (2021, 2020, 2019), and the gratitude of the university rector (2021).
2020 – The diploma of the winner of the first prize of the National Academy of Sciences of Higher Education of Ukraine in the competition "Best edition of the year" for the work "Series of patents for inventions №№116050, 120169, 120959".
2019 – Participation in the "International Scholarship Exchange of doctoral students and academics staff" in the frame of National Agency for Academic Exchange, Poland at Bialystok University of Technology.
2019 – Honorary credential of category "C" (third-degree) for the report at "Shaoxing Overseas Talents Program Competition" in People's Republic of China.
2015 – The diploma of the first prize award of the jury of Higher Education Academy of Science of Ukraine for scientific publication "Designing of Purpose Mechanisms for Manipulation in Machine Tools" (*Проектування цільових механізмів маніпулювання верстатів*) in the category "Series of Scientific Works".
2011 – The diploma of the winner of the national competition "Invention 2011" in category "The best invention-2011 in Volyn region" with the patent of Ukraine №95323 for invention "Device for clamping bar material" (*Пристрій для затиску пруткового матеріалу*).

Displayed in Appendix A in "Current documented scientific achievements"

MEMBERSHIP AND OTHER PROFESSIONAL ACTIVITIES

The guarantor of educational program "Metalworking machinery and robotic production systems" (ID – 48799) of bachelor's degree at Lutsk NTU.
A member of the Academic Council of the Faculty of Transport and Mechanical Engineering (2021).
A member of the Council of the education quality of the Faculty of Transport and Mechanical Engineering.
Took part in the responsible projects on my own initiative as a researcher, namely:
"Creation and researching of high-speed spindle assemblies with clamping mechanisms on a modular principle for multi-axis machine tools of a new generation" (*Створення і дослідження високошвидкісних шпиндельних вузлів із затискними механізмами на модульному принципі для багатокоординатних верстатів нового покоління*), state registration number 0115U002422;
"Creation knots and mechanisms for high-speed and precision machining on new-generation machine tools with parallel kinematics", (*Створення вузлів і механізмів для надшвидкісної і прецизійної обробки на верстатах нового покоління з паралельною кінематикою*), state registration number 0106U007223.
Ukrainian Materials Science Society named after Frantsevich (2014).
Courses recently provided to students: Theory of technical systems; Research of technical systems; Fundamentals of reliability of technical systems; Mechatronics.

Displayed in Appendix B in "Current documented scientific achievements"

MAIN AND MOST RECENT SCIENTIFIC PUBLICATIONS

The co-author of more than 70 printed scientific works, including 2 training manuals and one of them from the Ministry of Education and Science of Ukraine, 1 Monograph and 19 patents for inventions and an author's certificate of Ukraine.

Most recent patents for inventions and an author's certificate of Ukraine
(2021), №147749, Device for clamping cylindrical objects in the spindle unit of a machine tool (*Пристрій для затиску циліндричних об'єктів у шпинделі*).
(2021), №147147, Device for clamping cylindrical objects (*Пристрій для затиску циліндричних об'єктів*).
(2020), №120959, Clamping chuck (*Затискний патрон*).

(2019), №120169, Spindle assembly of machine tool (*Шпиндельний вузол верстата*).
(2018), №116050, Spindle assembly of machine tool (*Шпиндельний вузол верстата*).
(2017), №70668, Certificate of copyright to the work in Ukraine. Creation and research of high-speed spindle assembly with clamping mechanisms on the modular principle for multi-coordinate machine tools of the new generation, (*Створення і дослідження високошвидкісних шпиндельних вузлів із затискними механізмами на модульному принципі для багатокоординатних верстатів нового покоління*).

Displayed in Appendix C in "Current documented scientific achievements"

Most recent scientific papers

(2022) Prydalnyi B. Mathematical Model of a Backlash Elimination in the New Clamping Mechanism. Advanced Manufacturing Processes III. InterPartner 2021. Lecture Notes in Mechanical Engineering. Springer, Cham. pp. 109-118 https://doi.org/10.1007/978-3-030-91327-4_11
(2021) Prydalnyi B. The Dynamic Model of the Automatic Clamping Mechanism with a Rotating Input Link. Advances in Design, Simulation and Manufacturing IV. DSMIE 2021. Lecture Notes in Mechanical Engineering. Springer, Cham. https://doi.org/10.1007/978-3-030-77719-7_10
(2021) Prydalnyi B. and Sulym H. Identification of Analytical Dependencies of the Operational Characteristics of the Workpiece Clamping Mechanisms with the Rotary Movement of the Input Link. Acta Mechanica et Automatica, Vol.15 (Issue 1), pp. 47-52. https://doi.org/10.2478/ama-2021-0007
(2021) Prydalnyi B., Kuznetsov Y., Lyshuk V. Methodology and Tools for Computer-Aided Calculation of Characteristics of Electromechanical Clamping Drive Actuated by Induction Motor. ICIE 2021. Lecture Notes in Mechanical Engineering. Springer, Cham. pp. 256-266. https://doi.org/10.1007/978-3-030-54817-9_30
(2021) Prydalnyi B. I., Sulym H. T., Mathematical model of the tensioning in the collet clamping mechanism with the rotary movable input link on spindle units. Journal of Engineering Sciences, Vol. 8(1), pp. E23–E28, doi: 10.21272/jes.2021.8(1).e4
(2021) B. Prydalnyi, "Mechatronic device for two-stage clamping of cylindrical objects in machine tool spindles", Journal of Mechanical Engineering and Transport, vol. 13, no. 1, pp. 118–123, Jul. 2021. https://doi.org/10.31649/2413-4503-2021-13-1-118-123
(2021) Prydalnyi B.I. Mechatronic clamping mechanism with electro-hydraulic actuator for machine spindle units "Perspective technologies and devices" Lutsk NTU, 2021. №18. P.124-128.
(2020) Prydalnyi B. "Characteristics of Electromechanical Clamping Mechanism with Asynchronous Electric Motor," 2020 International Conference Mechatronic Systems and Materials (MSM), pp. 1-5, doi: 10.1109/MSM49833.2020.9202186
(2020) Prydalnyi B., Kuznetsov Y. Synthesis of structures of spindle units with electromechanical actuators of clamping mechanisms as complex combined axisymmetric system. Journal of the Technical University of Gabrovo, Vol.60, pp. 66-69.

Books (Displayed in Appendix B in "Current documented scientific achievements")

(2016) Kuznetsov Y.M., Prydalnyi B.I. Actuators of clamping mechanisms of metalworking machines (*Приводи затискних механізмів металообробних верстатів*): monograph. Lutsk:«ВежаДрук». 352 p.
(2014) Kuznetsov Y.M., Prydalnyi B.I. Design of target mechanisms for manipulation in new generation machine tools (*Проектування цільових механізмів маніпулювання верстатів нового покоління*): textbook-tutorial. Edition 2nd changed. Lutsk: "Вежа-Друк", 428 p.