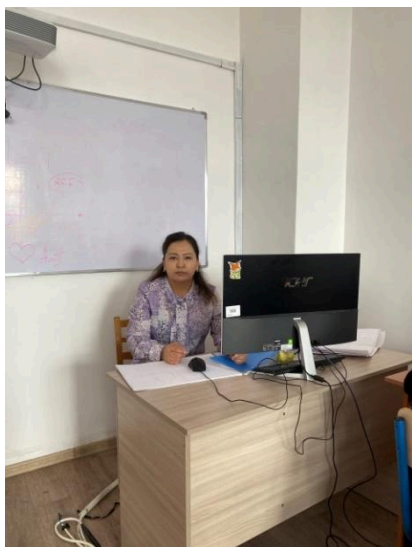


Information about the author



1. Surname, name:

Rahmatulina Ayaulym.

2. Position, academic degree, title:

doctor PhD, associate professor of ATU.

3. Education:

- KazNITU named after K.I. Satpaev, Bachelor's degree in "Mechanical Engineering", 2004-2008.
- in 2008, she entered the master's program at KazNTU named after K.I. Satpaev majored in "Mechanical Engineering" and in 2010 successfully graduated with the academic degree "Master of Engineering and Technology";
- PhD, 6D071200 - "Mechanical Engineering", February 24, 2014 (№ 0000225).

4 Areas and directions of research, including participation in scientific projects with a brief description of research results:

Fields and directions of research:

- mechanical engineering, robotics, lever mechanism, theory of mechanisms and machines.

Participation in scientific projects:

- scientific leader of the project AP08082125 "Development of a new construction of the drive of rod pump installations for the oil and gas industry". Institute of mechanical engineering named after Academician U.A. Zoldasbekov, 2020-2022.

Results: the received new design mechanism of the machine rolling mill. Developed PCD and experimental model.

The program of scientific activity of the applicant includes:

- development of algorithms and basic programs for the calculation of a new design of the rolling machine;

- development of a universal software product for calculation and optimal design of new drives;
 - development of PCD and experimental industrial model of rolling machine;
 - development of measures to minimize total costs of manufacturing new equipment;
 - design of an experimental model of a robot for disinfection and wet cleaning of premises.
- Senior Researcher in the programmatic and targeted financing project for 2021-2023. MOH PK №O.0971 "Development and implementation of medical robots and intelligent systems in Kazakhstan to improve the system of diagnosis and treatment of patients in the conditions of a pandemic", Institute of Mechanical Engineering named after Academician U.A. Zoldasbekov, 2021-2023.

Results: the design and PCD of a multifunctional robot-disinfector, which will work in three modes: ultraviolet radiation, disinfection with spraying of disinfecting liquid and air filtration (recirculation), has been developed. The synthesis of the four-link hinged mechanism for raising and lowering the robot-satellite and the resulting size mechanism was also performed. A complete study of the kinematics of the four-link hinged mechanism was conducted. A computer model of kinematic analysis of a four-link mechanism intended for raising and lowering a robotic satellite has been developed.

5. List of the most significant publications (monographs, patents, developed standards):

1. Tuleshov A., Jamalov N., Imanbayeva N., Rakhmatulina A. Design and Construction of a Multifunctional Disinfection Robot статья Eastern-European Journal of Enterprise Technologies, 2022, 1(1-115), pp. 16–28, <https://doi.org/10.15587/1729-4061.2022.252045> Scopus (CiteScore Industrial and Manufacturing Engineering. Percentile = 46);
2. Rakhmatulina A., Imanbayeva N., Ibrayev S., Uderbayeva A., Nurmaganbetova A. Analytical solution of the problem of dynamic synthesis of a six-link straight-line converting mechanism of the sucker-rod pumping drive. Eastern-European Journal of Enterprise Technologies, 2021, 6(7(114)), pp. 21–28 <https://doi.org/10.15587/1729-4061.2021.245591>. Scopus (CiteScore Mechanical Engineering. Percentile = 43);
3. Rakhmatulina A. Ibrayev, S., Imanbayeva, N., Arman, I., Tolebayev, N. Kinematic and kinetostatic analysis of the six-link straight-line generating converting mechanism of the unbalanced sucker rod pumper drive. Eastern-European Journal of Enterprise Technologies this link is disabled, 2020, 6(7-108), pp. 6–13. <https://doi.org/10.15587/1729-4061.2020.218551> Scopus (CiteScore Mechanical Engineering. Percentile = 43);
4. Kosbolov, S., Imanbaeva, N., Rakhmatulina A. Zhauyt A.. Optimal design of leading kinematical chain of eight linked planar load lifting linkage. Mediterranean Journal of Social Sciences, 2014, 5(23), p. 2656–2660, Scopus.
5. Rakhmatulina A.B. Optimizing the hydraulic chain of the lifting mechanism. monograph No. 11 "April 27" 0021 presented by the decision of the Scientific Council of Almaty Technological University. Almaty: ATU, 2021. – 111 p. ISBN 978-601-7661-59-5, 111 p.;
6. Rakhmatulina A.B., Uderbaeva A.E., Nauryzbaeva A.A., Nurakhmetova K.K., Ongar B. Effective design of the hydraulic cylinder chain of the forklift. "Vestnik KazATK", No. 2 (121), 2022, ISSN 1609-1817, ISSN Online 2790-5802, Pages 547-553, DOI 10.52167/1609-1817;

7. Nauryzbayeva A.A., Rakhmatulina A.B., Uderbayeva A.E., Zhunusova A.K., Ozgur K. Research on development of nanotechnology in the Republic of Kazakhstan. *Kompleksnoe Ispol'zovanie Mineral'nogo Syr'a = Complex Use of Mineral Resources*. 2022;320(1):60- 66. <https://doi.org/10.31643/2022/6445.07>;
8. Rakhmatulina A., Imanbaeva N., Nurmaganbetova A., Sakenova A., Smagulova N. Determination of the balancing moment of the six-link straight-line conversion mechanism of the beamless rod pump drive. *Вестник КазНУ. Серия математика, механика, информатика, [S.l.]*, v. 110, n. 2, p. 76-86. <https://doi.org/10.26577/JMMCS.2021.v110.i2.07.11>;
9. Bidakhmet Zh., Rakhmatulina A. Bidakhmetova A. Use in practice of big data in mobile system. *ҚазҰТЗУ хабаршысы №5 2019*, 389-393 p.;
10. Imanbaeva N.S., Nurmaganbetova A.T., Isametova M.E., Rakhmatulina A.B., Sakenova A.M.. Study of the balancing modes of the transforming mechanism of the rod-shaped pisket (SHPK), determining the position of the counterweight. *Bulletin KazNITU No. 1 (119) Almaty 2017 pp. 328-332* <https://official.satbayev.university/download/document/7180/БЕСТНИК-2017%20№1.pdf>;
- 1.1 Rakhmatulina A.B. Tursynbek M. S., Sabidolda A. Effective design of the hydraulic cylinder chain of the forklift. *Vestnik KazNITU No. 1 (119) Almaty 2017 page 346-351* <https://official.satbayev.university/download/document/7180/БЕСТНИК-2017%20№1.pdf>;
12. Imanbaeva N.S., Tultaev B., Nurmaganbetova A.T. Rakhmatulina A.B. Engineering method of making a model of a lifting mechanism // *Report of the NAS– 2014y. – №6. – 15-19 pp.*;
13. Rakhmatulina A.B. Ibraev S.M., Imanbaeva N.S. Optimal new design of the mechanism of the rolling machine. article "Innovative technologies in geospatial digital engineering" *Trudy International Scientific and Practical Conference dedicated to the 115th anniversary member-cor. A.J. Mashanova of the National Academy of Sciences of the Kazakh SSR and the 100th anniversary of Academician of the National Academy of Sciences of the Kazakh SSR J.S. Erzhanova March 18, 2022 p. 671-679*;
14. Uderbayeva A., Rakhmatulina A. Nurakhmetova G Selection of rational deformation pressing modes in a special device. *Solid State Phenomena*, 2021, 316 SSP, pp. 319–323 <https://doi.org/10.4028/www.scientific.net/SSP.316.319> Scopus (CiteScore Percentile = 21);
15. Toibayev, S., Uderbayeva, A., Bidakhmet, Rakhmatulina A., Z., Zhauyt A. Mathematical modeling of the solution to the problem of plate bending given various fastenings along the contour and various loads. *Vibroengineering Procedia*, 2020, 35, стр. 52–57 <https://www.jvejournals.com/article/21343> (Scopus, Web of Science). Scopus (CiteScore Percentile = 36);
16. Ibrayev, S., Bidakhmet, Z. Rakhmatulina A. Computer Simulation of Numerical Description of Closed Curve Using Fourier Coefficients. *Proceedings of the 5th International Conference on Industrial Engineering (ICIE 2019) Volume I, Lecture Notes in Mechanical Engineering*. 2020, стр. 575–583 DOI: 10.21595/vp.2020.21343 Scopus (CiteScore Percentile = 17);
17. Sakenova A.M., Rakhmatulina A. Imanbaeva N.S. Design of a lever lifting mechanism in the Autodesk inventor system and calculation of the stress-strain state *Article World science*:

problems and innovations XXXI International Scientific and Practical Conference Penza, April 30, 2019 94- 97;

18. Arap A.H., Rakhmatulina A.B. Increasing the productivity of the design of the technological process of mechanical processing of domestic parts//Satpaevskie chetenia Innovative technologies - the key to successful solution of fundamental and applied tasks in the mining and oil and gas sectors of the economy of the Republic of Kazakhstan April 11, 2019, p. 1191-1194, Almaty;

19. Kuralbaev E.S., Rakhmatulina A.B.. Investigation of the influence of noise on the environment of railway technology. Proceedings of international satpaev readings "Competitiveness of technical science and education" Volume I April 12, 2016, p.199-201;

20. Tussupova, A.E., Bidakhmet, Zh.,Rakhmatulina A.Dynamic synthesis of pulse action vibration exciter on foundation., A. International Conference on Industrial Engineering, Procedia Engineering, 2015, 129, стр. 471–479 Scopus (CiteScore Percentile General Engineering= 52);

21. Nurmaganbetova A. T. Imanbayeva N.S., Rakhmatulina A.B. Kinematic synthesis of an eight-link mechanism whose platform moves linearly. Materials of the international scientific conference "Actual problems of mechanics and mechanical engineering" Almaty June 19-20, 2014 363-371 p.;

22. Rocking machine. Patent for the invention of the Republic of Kazakhstan No. 35761 Rakhmatulina A.B., Ibraev S.M., Ibraeva A.S., Imanbayeva N.S., Angarbekov U.D. (21) 2021/0286.1(22) 06.05.2021(45), 07/15/2022;

23. Tuleshov A.K., Jamalov N.K., Ibraev S.M., Seidakhmet A.Zh., Rakhmatulina A.B., Multifunctional robot-disinfector. Eurasian invention patent No. 040808 Application No: 202192715 Application date: October 13, 2021 Patent issue date: July 29, 2022;

24. Rakhmatulina A.B., Ibraev S.M., Ibraeva A.S., Imanbaeva N.S., Angarbekov U.D. Rocking machine. Eurasian patent for invention No. 040803 Application No.: 202290635. Date of issue of the patent: July 29, 2022.

6. Scientific internships:

- passed a research internship at Ege University (Izmir, Turkey) from 10.10.2011 to 09.11.2011 and from 13.02.2012 to 12.08.2012/

7. Achievements in research, teaching activities (awards):

- winner of the competition "The best innovative idea among student youth of the city of Almaty" in 2008. Project theme: "Development of new import-substituting load-lifting devices".

8. E-mail address, contact details (tel. office (ext.), cell.):

E-mail: kazrah@mail.ru

Mobile: 8-707-558-13-73.