



# BULLETIN

SUKHOI STATE TECHNICAL UNIVERSITY OF GOMEL

SCIENTIFIC-PRACTICAL JOURNAL  
HAS BEEN PUBLISHED SINCE MARCH 2000 1(88)' 2022

Editor-in-chief

**A. V. PUTSIATA**

Vice-editor

**A. A. BOIKO**

Executive secretary

**A. S. RIABTSEVA**

**Editorial board:**

O. D. Asenchik, M. N. Vereshagin, V. A. Golub,

N. V. Gruntovich, A. G. Gurko, N. P. Dragun,

V. V. Kirienko, V. A. Kovtun, V. P. Kudin,

M. I. Mihailov, V. V. Muliak, I. A. Murashko,

N. K. Myshkin, A. A. Pankov, E. N. Poddenezhny,

V. D. Poroshin, A. V. Sychov, N. V. Sychova,

S. I. Timoshin, A. S. Titlov, P. A. Hilo, N. N. Himich,

O. N. Shablovsky, V. M. Shapovalov, A. P. Shevlyukov

**Address of editorial board:**

Pr. Octabria, 48, 246746, Gomel, the Republic of Belarus  
Tel./fax +375 232 214 373. E-mail: nich@gstu.by

## CONTENT

---

### **Mechanical Engineering**

---

*Shablovsky O. N., Krol D. G. Dynamic properties of perturbed dendrite growth line during crystallization from supercooled pure melt* 5

*Khatetovsky S. N., Gromyko P. N., Bondarev R. A., Yurkova V. L. Simulation modeling of heavy-duty gearboxes based on precession transmission type K-H-V* 16

*Savenko V. S., Galenko E. N., Zernitsa D. A. Calculation of ponderomotor factors in conditions of electroplastic deformation* 24

---

### **Materials Science**

---

*Karpets M. N., Panteleenko F. I. Influence of activator on intensity of chemical-thermal treatment of microobjects of various structural classes* 33

*Kovtun V. A., Korotkevich S. G. Research of the stress condition of tanks with a displacement of eight tons during the movement of fire trucks to the place of liquidation of emergency situations* 39

*Nikityuk Y. V., Baevich G. A., Myshkovets V. N., Maksimenko A. V., Aushev I. Y. Application of finite element method and artificial neural networks to determine parameters for laser treatment of 12X18H9T steel* 48

---

---

<i>Poddenezhny E. N., Drobyshchinskaya N. E., Boiko A. A., Davydova O. V. Thermochemical synthesis of ultra-dispersed powders of yttrium-aluminum garnet, co-activated with cerium and sulfur</i>	56
---	----

---

### **Power Engineering and Electrical Engineering**

---

<i>Menzhinsky A. B., Malashin A. N., Menzhinsky P. B., Sidyako O. V. Development of mathematical model of electric machine of reciprocating motion with transverse-longitudinal change of magnetic flux in motor mode of operation. Part 1</i>	63
<i>Kluchinsky V. P., Ovsyannik A. V. Thermodynamic and techno-economic analysis of trigeneration plants on the Rankine organic cycle</i>	80

---

### **Economics and National Economy Management**

---

<i>Volkova Y. A. Industrial growth potential of the Republic of Belarus in the context of the evaluation of production capacities and fixed assets of industrial organizations</i>	90
<i>Ermonina I. V. Methodological basis of socio-ecological and economic assessment of the tourism potential of the forest fund for the development of ecological tourism</i>	99

---

- The journal is included in the Register of scientific journals of the Republic of Belarus for publishing the dissertations results on technical sciences – Mechanical Engineering, Material Sciences, Power Engineering (HAC RB order № 101 of 04.06.2005); on economics sciences – Economics and National Economy Management (HAC RB order № 26 of 02.02.2011).
- Published materials are reviewed.
- Authors' opinion does not necessarily the same as of editorial board.
- The reprinting of materials published in the journal is permitted only with the consent of both the author and publisher.
- Indexes for subscribing: for individuals – 00063  
for legal parties – 000632