

**Сборник
научных трудов
Донбасского государственного технического
университета**

Сборник
Выходит 1–4 раза в год
Основан в июне 1999 г.
Выпуск 12 (55) 2018

**Збірник наукових праць
Донбаського державного технічного університету**

Збірник
Виходить 1–4 рази на рік
Заснований у червні 1999 р.
Випуск 12 (55) 2018

Collection of Scientific Papers of DonSTU

Collection
Publishing 1–4 times a year
Founded in June 1999
Issue 12 (55) 2018

Алчевск
2018

**UDK 622(06) + 669(06) + 69(06) + 65.011.56 +
+ 621.3 + 33 + 621.37 + 1**

**Collection of scientific papers
of Donbass State Technical
University**

Collection

Issue 12 (55) 2018

**Establisher: Donbass
State Technical
University**

*Certificate of Ministry of Information,
Press and Mass Communication of LPR
for mass media registration
MI-SGR PI 000003
dated 05.02.2016*

*By order of the Department of Education and Science
of Donetsk People Republic of 2 May 2017 № 464 the
Collection of scientific papers
is being offered in the list of peer-reviewed scientific
editions with required publications
of the main scientific PhD and Doctor's thesis results,
approved by an order of the Department of Education
and Science of Donetsk People Republic of 1
November 2016 № 1134,
according to annex 1.*

*By order of the Department of Education and Science
of the Lugansk People Republic No. 911-OD of
10.10.2018 the Collection of scientific papers of
DonSTU is being offered in the list of peer-reviewed
scientific editions with required publications of the
main scientific PhD and Doctor's thesis results,
approved by an order of the Department of Education
and Science of the Lugansk People Republic
of 15 May 2018 № 477-OD.*

*Recommended by academic council of DonSTU
(Record № 4 dated 30.11.2018)*

Added to scientometrical data base of RSCI

Format 60×84%.
Conventional printed sheet 7,9.
Order № 367.
Circulation 100 copies
Publishing office is not responsible for
material content giving by author
for publishing.

Address of editorial office, publishing and
establishing: Donbass State Technical University
Lenin avenue, 16, Alchevsk, LPR
94204

E-mail: info@dstu.education
Web-site: <http://www.dstu.education>

PUBLISHING AND PRINTING
CENTER,

Room 2113, tel/fax 2-58-59
Certificate of State registration for mass
media publisher, owner and distributor
MI-SGR ID 0000055 dated 05.02.2016

Editor-in-chief

Zinchenko A. M. — PhD in Engineering,
acting rector

Deputy chief editor

Novohatskyi A. M. — Doctor of tech. sc., prof.

Editorial board:

Litvinskyi G. G. — Doctor of tech. sc., prof.

Finkelstein Z. L. — Doctor of tech. sc., prof.

Korneiev S. V. — Doctor of tech. sc., prof.

Leonov A. A. — PhD in Engineering

Kharlamov Yu. A. — Doctor of tech. sc., prof.

Uliianitskyi V. N. — PhD in Engineering, prof.

Zelinskyi A. N. — PhD in Engineering, prof.

Kuberskyi S. V. — PhD in Engineering, prof.

Denisschenko P. N. — PhD in Engineering

Drozd G. Ya. — Doctor of tech. sc., prof.

Sholukh N. V. — Doctor of arch., prof.

Bondarchuk V. V. — PhD in Engineering

Psjuk V. V. — PhD in Engineering

Skomskaia S. A. — Secretary to the editorial board.

For research scientists, PhD seekers, students of
higher educational institutions.

Issue language:

Russian, Ukrainian, English

Computer layout and proofreading

Ismailova L. M.

© SEIHPE «DonSTU», 2018

© Chernyshova N.V., graphic, 2018