

III International Scientific and Technical Conference on Energy Systems (ICES-2018)

IOP Conference Series: Materials Science and Engineering
Volume 552

Belogod, Russia
29 – 31 November 2018

ISBN: 978-1-5108-9090-9
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details:
<http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Table of contents

Volume 552

III International Scientific and Technical Conference on Energy Systems (ICES-2018)

29–30 November 2018, Belogod, Russian Federation

Accepted papers received: 13 May 2019

Preface

[III International Scientific and Technical Conference "Energy Systems"](#)

[Peer review statement](#)

Papers

Heat and power engineering

[Experimental investigation of hydrodynamics and heat transfer of sphere cooling using air/water mist two phase flow](#)

A H Abed, S E Shcheklein and V M Pakhaluev.....1

[Jet-film contact devices for heat and mass transfer processes in heat power engineering](#)

A V Dmitriev, A I Khafizova and O S Dmitrieva.....10

[Mathematical model of fuel heat ignition considering space - time nonlocality](#)

A V Eremin, V A Kudinov, I V Kudinov, V V Zhukov and K V Trubitsyn.....17

[Construction and variants of the modernization of the condensing hot water boiler](#)

A V Gubarev and N M Lozovoj.....27

[Convective heat transfer in the near-wall turbulent gas stratum](#)

V A Kuznetsov and P A Trubaev.....35

[Parametric model for predicting the reliability of heat power equipment of TPP](#)

M M Sultanov, V M Truhanov and Yu A Gorban.....45

[Research of dynamic characteristics of signals for calculation of technical and economic indicators and increase in power efficiency of the equipment of thermal power plant](#)

M M Sultanov, I A Boldyrev and Yu A Gorban.....54

[Efficiency of application of various layout arrangements of oil-gas burners in thermal power plant boilers](#)

M A Taymarov, R V Akhmetova and E A Akhmetov.....63

[Approximate analytical solution to the stationary two-dimensional heat conduction problem on infinite bar with the source of heat](#)

V K Tkachev.....74

Electric power and electrical engineering

[Problems of energy supply of the main consumers of distributive networks of Iraq](#)

M A Averbukh, E V Zhilin and M W Abdulwahhab.....84

[The device for monitoring the LED display high-voltage insulators state](#)

R N Balobanov, D K Zaripov and A A Akhmadeev.....92

[Composite structural elements of overhead lines as a means of increasing technical efficiency](#)

F Byk, V Kityshin, L Myshkina and E Kaminskaya.....101

[On the forecasting of trends of specific mixed loads of electric consumers of microdistricts and cities change in the conditions of inadequate data](#)

E G Gasho, S V Guzhov and A A Krolin.....111

[Three-phase current sensor for motor protection against turn-to-turn and phase-to-phase short circuits](#)

I K Ishmukhamedov.....121

[Mathematical and visual models of asynchronous electric machines energy fields](#)

S P Kurillin, V N Denisov and M I Dli.....129

[Mathematical model of managing of the generating company on the criterion of the profit maximization](#)

B N Moshkin, T V Myatezh, Y A Sekretarev and M A Averbukh.....139

[Adaptive correction of current longitudinal differential protection of power equipment](#)

M G Popov.....156

Energy saving and energy efficiency, power ecology

[Methodology of GHG emissions assessment caused at the construction of energy facilities. Case study: Hydropower](#)

I P Avilova, A E Naumov and M O Krutilova.....164

[Evaluation of energy-saving effect during the installing process of automated heating stations in educational institutions](#)

S A Bychikhin, M V Svirin and P A Trubaev.....177

[Using DEA models to measure the efficiency of energy saving projects](#)

M Yu Derevyanov, Yu E Pleshivtseva, L S Kordyukova and A V Rapoport.....189

[Creation of a new energy-efficient design of the dustexhaust system](#)

V M Kireev, A B Goltsov, A S Seminenko and Y G Ovsyannikov.....200

[The increasing of the energy efficiency of nuclear power plants with fast neutron reactors by utilizing waste heat using heat pumps](#)

V S Kostarev, O L Tashlykov and V A Klimova.....208

[The thermal and physical aspects of designing facade heat insulation at capital repairs and reconstruction of civic buildings](#)

M M Kosukhin and A M Kosukhin.....216

[Improving the efficiency of flue gas desulphurization of TPS](#)

Yu O Rikker, M V Kobylkin and A G Batukhtin.....225

[Application of thermohydraulic dispatcher for existing and new district heating systems](#)

D O Romanov, Y V Yavorovsky and V V Smirnov.....234

[Coagulant on the base of industrial ferriferous waste for the preliminary treatment of multi-component sewage](#)

S V Sverguzova, Zh A Sapronova, A V Svyatchenko, E V Fomina and A A Malysheva.....244

[Parametric optimization of an architectural object's form as a method to improve its energy efficiency](#)

N A Vasilenko.....253

[The use of modern highly precise ultrasonic gas flowmeters and etalon stands to enlarge industrial resource efficiency](#)

M A Velichko, I B Kostina and Yu P Gladkikh.....263

Alternative and renewable energy sources

[Method development for the thermotechnical calculations utilizing reduced characteristics of the RDF fuels](#)

N V Kornilova and P A Trubaev.....271

[Thermotechnical tests of the low power solid fuel heating boilers while incinerating briquetted RDF](#)

N V Kornilova and P A Trubaev.....284

[Development and research of low pressure injection burner for biogas combustion](#)

D Y Suslov, R S Ramazanov, D O Temnikov and I V Lobanov.....295

[The study of energy performance of biogas from agricultural waste](#)

D Y Suslov and R S Ramazanov.....304

[Analysis of the environmental factors influence on the efficiency of photovoltaic systems](#)

J N Zatsarinnaya, D I Amirov and LV Zemskova.....312

[Optimization of power output for a wind turbine using methods of artificial intelligence](#)

N V Zubova and V D Rudykh.....320

Energy and resource saving in technologies

[In-service performance of hybrid geopolymer binders based class F fly ash](#)

N I Kozhukhova, A Yu Teslya, M I Kozhukhova, I V Zhernovsky, S N Yermak and Yu N Ogurtsova.....328

[Research of heat exchange and efficiency of the arcs in the arc steel-melting furnaces with usual conveyor and loaded](#)

A N Makarov, V V Okuneva and M Pavlova Yu.....336

[Theoretical study of the flow of cement raw material sludge through pipes](#)

D N Perelygin, I P Boichuk, A V Grinek and V K Kozlov.....345

[Effective ways of molding man-made materials](#)

M V Sevostyanov, T N Il'ina and I G Martakov.....355

[Process of charge prevention with low bulk density](#)

M V Sevostyanov, T N Il'ina and I G Martakov.....362

[Analysis of separator operating conditions in a technological module with vibration-centrifugal closed-cycle grinding unit for obtaining high-dispersity materials](#)

V S Sevostyanov, V I Uralsky, I P Boichuk, R A Ermilov and E A Lukyanova.....369

[Investigation of cavitation and vibration processes in the technology of treatment of the contaminated liquids](#)

V S Sevostyanov, M M Belykh and K I Sevostyanova.....377

[Resource and energy-saving technologies of complex processing and utilization of technogenic materials](#)

N T Shein, V S Sevostyanov, V V Obolonsky, M V Sevostyanov, P Yu Goryagin and V A Babukov.....386