# Table of contents

**Evgen Byelozorov:** Revealing of digital images assembling on the basis of maximum coefficients analysis of wavelet transform ................................................................. 3

**Nataliya Chernetskaya-Beletskaya, Aleksandr Kushchenko, Evgeniy Varakuta, Anna Shvornikova, Denis Kapustin:** Define the operational hydro-solid waste handling system ................. 10

**Anatoliy Falendysh, Artem Zinkivskyi, Nikita Bragin:** Research of improved mathematical models at operational tests of diesel locomotives ......................... 18

**Inna Deyneka, Elena Kireeva, Dmitry Kramarenko:** Equipment selection and modernization for producing flour products of whole-grain wheat with molluse hydrolyzate additive ........................................... 28

**Rostislav Domin, Anatolii Mostovych, Aleksandr Kolomiets:** Improving the means of experimental determination of dynamic loading of the rolling stock ................................................................. 37

**Oleg Druz, Svetlana Gitnaya:** Features of welding using integrated protection environment .................................................. 50

**Nicholay Gorbunov, Maksim Kovalnets, Rostislav Demin:** Simulation model of abrasive material motion ....... 60

**Nickolay Gorbunov, Olga Prosivirova, Ekaterina Kravchenko:** Analysis of railway vehicle braking and assessment of technical solutions efficiency using risk-based methods for technical systems ............ 73

**Rostislav Domin, Anatolii Mostovych, Aleksandr Kolomiets:** Improving the means of experimental determination of dynamic loading of the rolling stock ................................................................. 37

**Oleg Druz, Svetlana Gitnaya:** Features of welding using integrated protection environment .................................................. 50

**Nicholay Gorbunov, Maksim Kovalnets, Rostislav Demin:** Simulation model of abrasive material motion ....... 60

**Nickolay Gorbunov, Olga Prosivirova, Ekaterina Kravchenko:** Analysis of railway vehicle braking and assessment of technical solutions efficiency using risk-based methods for technical systems ............ 73

**Larisa Gubacheva, Alexander Andreev, Svetlana Leonova:** New hopper-cars with one-sided self-unloading .................................................. 96

**Yuriy Kharlamov, Ali Adnan Mansoor Al-Jawaheri:** Dimensioning and tolerancing of coated parts ........... 105

**Alexander Kravchenko, Olga Sakno:** Computer-integrated system of decision-making support of control of tires operation of trucks ........................................................................................................ 115

**Oleg Krol, Svyatoslav Shechenko, Ivan Sukhorutchenko, Andrii Lysenko:** 3D-modeling of the rotary table for tool SVM1F4 with non - clearance worm gearing ................................................................. 126

**Valerie Lahno:** Information security of critical application data processing systems ........................................ 134

**Vitaliy Levanichev:** Study of multi-layer flow in coextrusion processes ................................................................. 144

**Igor Maronchuk, Serhii Bykovsky, Stepan Bondarec, Anna Velchenko:** An obtaining of nanoheteroepitaxial structures with quantum dots for high effective photovoltaic devices, investigation of their properties ........................................................................... 154

**Genadiy Mogilny, Vitaly Semenkov, Uriy Tihonov:** The integration of ontologically oriented technologies in model of knowledge processing ........................................................................... 164

**Anna Nikolaenko, Alsayyad Taha Hussein:** Modelling of vibrating machine-tool with improved construction ........................................................................................................ 174

**Pavel Nosko, Valentin Shyshov, Denis Ratov, Pavel Fil, Andrii Lysenko:** Helical gear train load capacity criterion ........................................................................................................ 182

**Andrey Pankov, Taras Zamota, Andrey Shcheglov:** The research of application and working process of fluid-jet elements and devices in planting techniques ........................................................................... 191

**Vladimir Pilipenko:** Investigation of the process of vibrorheology of cement concrete solutions with the external source of dynamic effect ........................................................................... 200
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denis Rach</td>
<td>NPV simulation as a way to reduce uncertainty in the project</td>
<td>211</td>
</tr>
<tr>
<td>Nataliia Rudenko</td>
<td>Technology of shotcreting based on activated binder</td>
<td>222</td>
</tr>
<tr>
<td>Michael Samozdra, Eduard Zharikov, Oksana Samozdra</td>
<td>Implementation of automated informational interactions as a part of integrated information-processing system</td>
<td>229</td>
</tr>
<tr>
<td>Svitlana Sapronova</td>
<td>Theoretical studies of horizontal dynamics parameters of the «wheel-rail» kinematic pair</td>
<td>238</td>
</tr>
<tr>
<td>Maxim Slobodyanyuk, Grigory Nechayev, Alexandr Kislitsin</td>
<td>Methodics and algorithms for creation of intermodal logistics park</td>
<td>248</td>
</tr>
<tr>
<td>Valery Starchenko, Vyacheslav Buryak</td>
<td>Spatial contact problems for elastic layer in case of flat areas of contact</td>
<td>266</td>
</tr>
<tr>
<td>Yuriy Starcheous, Alexander Danileychenko, Konstantin Lupikov</td>
<td>Development of transport heating systems with cascade transformers of energy</td>
<td>275</td>
</tr>
<tr>
<td>Victor Strelnikov, Maksim Sukov, Jurii Strelnikov</td>
<td>Research of interaction of disc wave generator with flexible gear of heavy loaded wave gearing</td>
<td>286</td>
</tr>
<tr>
<td>Yuriy Syomin, Tatyana Bondar</td>
<td>Theoretical study of the regularities of wet coal grinding in ball mills at the preparation of water-coal fuel</td>
<td>296</td>
</tr>
<tr>
<td>Uriy Tihonov, Vitaly Semenkov</td>
<td>Implementation of an information subsystem of a reference library information modern e-learning</td>
<td>305</td>
</tr>
<tr>
<td>Ilya Tsyganovskiy</td>
<td>A theoretical evaluation of locomotive wheelsets tires wear rate</td>
<td>312</td>
</tr>
<tr>
<td>Vitaliy Ulshin, Sergey Klyuyev</td>
<td>The reduction in force interaction of wheel with the rail in the curves by means of the automatic control over the locomotive wheel pair position</td>
<td>320</td>
</tr>
<tr>
<td>Nikolay Ututov, Nataliya Plyasulya</td>
<td>Speeds of movement of the point of gearing along contact lines in screw gear globoid cylindrical tooth gearing</td>
<td>331</td>
</tr>
<tr>
<td>Igor Zakharchuk, Olexsander Zakharchuk, Igor Bukhtiyarov</td>
<td>Rational design of rotor of the asynchronous motor fan for cooling units of diesel locomotives</td>
<td>339</td>
</tr>
</tbody>
</table>
List of the Reviewers

1. Ahromkin Evgeniy  
2. Belodedov Viktor  
3. Bolshakov Vladimir  
4. Budikov Leonid  
5. Chernetskaya-Beletskaya Nataliia  
6. Chesnokov Aleksey  
7. Gorbunov Nickolay  
8. Gubacheva Larisa  
9. Gutyko Yuriy  
10. Kasyanov Nickolay  
11. Kirichenko Irina  
12. Korobetskiy Yuriy  
13. Kostyukevich Alexandr  
14. Kravchenko Alexandr  
15. Kulikov Yuriy  
16. Levi Leonid  
17. Marchenko Dmitriy  
18. Mogilny Gennadiy  
19. Nechaev Grigoiy  
20. Osenin Yuriy  
21. Pavel Nosko  
22. Petelguzov Nickolay  
23. Pogidaev Vitaliy  
24. Pogorelov Oleg  
25. Ramazanov Sultan  
26. Sapronova Svetlana  
27. Savin Lev  
28. Shishkin Alexandr  
29. Shvedchikova Irina  
30. Skvirskiy Viktor  
31. Sokolov Vladimir  
32. Starchenko Valeriy  
33. Svoevolina Galina  
34. Tkach Pavel  
35. Tkachenko Victor  
36. Ulshin Vitaliy  
37. Ulyanitsky Vasily  
38. Vitrenko Vladimir  
39. Yakovenko Valeriy

Editors of the „TEKA” quarterly journal of the Commission of Motorization and Energetics in Agriculture would like to inform both the authors and readers that an agreement was signed with the Interdisciplinary Centre for Mathematical and Computational Modelling at the Warsaw University referred to as “ICM”. Therefore, ICM is the owner and operator of the IT system needed to conduct and support a digital scientific library accessible to users via the Internet called the “ICM Internet Platform”, which ensures the safety of development, storage and retrieval of published materials provided to users. ICM is obliged to put all the articles printed in the "Motrol" on the ICM Internet Platform. ICM develops metadata, which are then indexed in the “Agro” database.

Impact factor of the TEKA quarterly journal according to the Commission of Motorization and Energetics in Agriculture is 1,88 (February 2014).
GUIDELINES FOR AUTHORS (2014)

The journal publishes the original research papers. The papers (min. 8 pages) should not exceed 12 pages including tables and figures. Acceptance of papers for publication is based on two independent reviews commissioned by the Editor.

Authors are asked to transfer to the Publisher the copyright of their articles as well as written permissions for reproduction of figures and tables from unpublished or copyrighted materials.

Articles should be submitted electronically to the Editor and fulfill the following formal requirements:
- Clear and grammatically correct script in English,
- Format of popular Windows text editors (A4 size, 12 points Times New Roman font, single interline, left and right margin of 2,5 cm),
- Every page of the paper including the title page, text, references, tables and figures should be numbered
- SI units should be used

Please organize the script in the following order (without subtitles):
Title, Author(s) name(s), Affiliations, Full postal addresses, Corresponding author’s e-mail
Abstract (up to 200 words), Keywords (up to 5 words), Introduction, Materials and Methods, Results, Discussion (a combined Results and Discussion section can also be appropriate), Conclusions (numbered), References, Tables, Figures and their captions

Note that the following should be observed:
An informative and concise title; Abstract without any undefined abbreviations or unspecified references; No nomenclature (all explanations placed in the text); References cited by the numbered system (max 5 items in one place); Tables and figures (without frames) placed out of the text (after References) and figures additionally prepared in the graphical file format jpg or cdr.

Make sure that the tables do not exceed the printed area of the page. Number them according to their sequence in the text. References to all the tables must be in the text. Do not use vertical lines to separate columns. Capitalize the word ‘table’ when used with a number, e.g. (Table1).

Number the figures according to their sequence in the text. Identify them at the bottom of line drawings by their number and the name of the author. Special attention should be paid to the lettering of figures – the size of lettering must be big enough to allow reduction (even 10 times). Begin the description of figures with a capital letter and observe the following order, e.g. Time(s), Moisture (%, vol), (%, m\(^3\)) or (%, g\(^g\)), Thermal conductivity (W m\(^{-1}\)K\(^{-1}\)).

Type the captions to all figures on a separate sheet at the end of the manuscript. Give all the explanations in the figure caption. Drawn text in the figures should be kept to a minimum. Capitalize and abbreviate ‘figure’ when it is used with a number, e.g. (Fig. 1).

Colour figures will not be printed.

Make sure that the reference list contains about 30 items. It should be numbered serially and arranged alphabetically by the name of the first author and then others, e.g.
References cited in the text should be given in parentheses and include a number e.g. [7].
Any item in the References list that is not in English, French or German should be marked, e.g. (in Italian), (in Polish).

Leave ample space around equations. Subscripts and superscripts have to be clear. Equations should be numbered serially on the right-hand side in parentheses. Capitalize and abbreviate ‘equation’ when it is used with a number, e.g. Eq. (1). Spell out when it begins a sentence. Symbols for physical quantities in formulae and in the text must be in italics. Algebraic symbols are printed in upright type.

Acknowledgements will be printed after a written permission is sent (by the regular post, on paper) from persons or heads of institutions mentioned by name.