# CONTENT

## Underground mining

**Demin V.F., Sudarikov A.E., Demina T.V., Steflyuk Yu.Yu., Demin V.V.** Influence of stresses on excavation stability depending on mining technology parameters .......................................... 5

**Klishin V.I., Fokin Yu.S., Kokoulin D.I., Kubanzychbek uulu Bakyt** Model of coal fracturing for intensified methane recovery under vibrational impact .........................................................11

**Norvatov Y.A., Saveliev D.I., Yashina A.V.** Hydrogeological ensuring of mining operations during the underground mining of coal deposits .......................................................... 23

**Oganesyan A.S., Agafonov V.V.** Conceptual model of coal mine process chart performance monitoring and control ......................................................... 29

## Open-cast

**Akishev A.N., Bokiy I.B.** To the issue about possibility of increasing an open pit slope angle in conditions of a cryolithozone ................................................................................ 35

**Grigoryan A.A.** Features of application Highwall complexes at formed limiting pit at the Kuznetsk coal basin .............................................................................................................. 40

**Zhirov D.V., Sokharev V.A., Rybin V.V., Klimov S.A., Melikhova G.S.** Key principles and technical approaches to engineering-geological and geomechanical zoning for the purpose of optimizing strengthening/stabilization of benches in terms of Zhelezny open pit mine of the Kovdorsky Mining and Processing Integrated Works ......................................................... 45

**Sekisov G.V., Rasskazov I.Yu.** Statement of need of a science-and-geotechnology center for development of high-technologies in mineral mining ......................................................... 58

**Selivanov A.V., Vashlaev I.I.** Development concept for current setup of production in medium-capacity open pit ore mines ........................................................................................... 63

**Simonenko V.I., Mostyka A.V., Gricenko L.S.** Organization of mining operations in the quarries for the use of mobile equipment .................................................................................. 68

**Umanets V.N., Bugaeva G.G., Kogut A.V.** Eco-risk evaluation methods in ecological safety control in opencast mining ........................................................................................................ 73

**Shemetov P.A., Nasirov U.F., Ochilov Sh.A.** Simplification of mining expansion management plan in muruntau open pit mine .................................................................................................. 82

## Enrichment of minerals

**Versilov S.O., Frolov A.V., Versilova E.S., Dremov V.I.** Ecological safety improvement in pitching ore shoot extraction ........................................................................................................ 88

**Kozlov V.A., Chernyshova E.N.** Design of a new spiral separator for low separation density slurry coal beneficiation. Part I ..................................................................................................... 91

**Popov S.M.** Methodical fundamentals of justification of the choice of ways of development of coaly mines .................................................................................................................. 99

**Khalezov B.D.** Problems of Udokansky Field ores processing ................................................................................................................................. 103

## Markshadering

**Sabyanin G.V.** Geoenvironmental aspects of underground mining of vein deposits ........................................................................................................ 109

## Geology

**Vorobjova S.V.** Sample geological situation of localisation industrial massive sulfide deposits (on an example of Ural Mountains and Ore Altai) ........................................................................ 116

**Kutepov Yu.I., Kutepova N.A.** Methodology of engineering geological study of geotechnical processes within technogenically disturbed rockmass at exploitation of mineral deposits ........................................................................................................ 123

Mining cars, the equipment and transport
Galiev S.Zh., Boyandinova A.A., Bagirov K.Sh. Software-and-technique system to control reproduction of mining-and-haulage equipment capacities ........................................... 139
Gnitienko V.V., Golosov A.M. Friction coefficient influence on strain-deformation condition of sample .............................................................................................................. 146
Zakharov I.V. Evaluation of transport service scenarios for production in complicated geographic and social conditions .................................................................................................. 150
Muluhov K.K., Beslekoeva Z.N. Development of the blade feeder for unstressed loading of belt conveyors by run-of-mine loads .......................................................................................... 154
Nabatnikov J.F. Selective Assembly of Machine Parts in Mining Machinery Manufacturing ............................................................................................................................. 159
Najmudinov Sh.Z. Comparative analysis of efficiency of single-thread and combined transmission power plants .............................................................................................................. 165
Okhapkin A.Yu. Evaluation of explosive mixture inflammability from heated elements of electronics. Problem statement ........................................................................................................ 169
Trifanov G.D., Knyazev A.A. Introduction to the hoist cable overlap protection in the shaft ....................................................................................................................................... 172

The Physicotechnical control of processes mountain manufacture
Denisova E.V., Konurin A.I. The investigation of the effect of soil massif properties on spreading parameters of pulsed signal .................................................................................. 176
Nigmetov G.M. Wave diagnostics of soil–building system and some patterns of seismic signal propagation in vertical planes of structures and continua ......................................................... 182
Shkuratnik V.L., Nikolenko P.V., Zagorskii D.L. Use of micro seismic noise for speed profile research during engineering-geological surveys ................................................................................... 187
Shkuratnik V.L., Novikov E.A. About numerical estimation of the long-term strength of statically loaded rock salt by using method of thermally stimulated acoustic emission ...... 192
Shkuratnik V.L., Novikov E.A. About numerical estimation of the long-term strength of statically loaded rock salt by using method of thermally stimulated acoustic emission........ 198

Aerology, methane, safety
Kozyrev S.A., Amosov P.V. CFD-modelling for Mining Aerology Tasks Solution ............................................................................................................................. 204
Pavlenko M.V., Batdyev A.A. Model of coal bed fracturing for intensified methane recovery under vibration treatment ........................................................................................................ 212

Explosive works
Senchenko D.S., Dokutovich M.I. Geo-ecological aspects of blasting on the limestone deposits ............................................................................................................................. 215

Economics and management
Kornilkov S.V., Laptev Yu.V., Sakantsev M.G., Smirnov A.A., Titov R.S., Yakovlev A.M., Kovalev M.N., Spiridonova E.L. Substantiation methodology for mineral and raw material resources base strategy at Magnezit integrated works .... 221
Prilukov A.N. Strategies and business trends of accession to the WTO for a mineral mining region ........................................................................................................................................ 228
Sapitskaya I.K. Alternatives of modernization of coal mines in the Donetsk coal basin ............................................................................................................................. 237
Serpuhovitina T.Yu., Zhilikova A.P. Economic encouragement of environmental activity as an indication of a region’s strength .......................................................................................... 243
Tkacheva T.A. Competitive strategies and methodology for mining equipment reliability maintenance........................................................................................................250

Yastrebinsky M.A., Guseva N.M. Marginal approach to management of cost price of gold in jewellery manufacture and in mining ........................................................................................................257

Mathematical and computer modeling


Komissarova M.A., Leonova S.A. Enhancing results coal companies based process simulation ........................................................................................................................................................................277

Petrov A.E. Mining industry systems network models tensorial analogies ........................................................................................................285

Rozhkov A.A., Karpenko M.S. Economic and mathematical modeling and logical design for the formation of optimal energy-economy investments plan in mining and industry ........................................................................................................292

Khazanovitch G.S., Otrokov A.V. Mathematical modeling of processes of formation performance and loads of the loading body with grasping claws ........................................................................................................300

Ecology

Varekha Zh.P., Tobagabulova Zh.B. Underground combustion of bacteriological poisonous substances and toxic industrial waste ........................................................................................................309

Luk’yanova N.V. Bases of environmental assessment actions for biodiversity conservation in mining regions ........................................................................................................314

Pashkevich M.A., Golubev I.A. Development technology for cleaning fishing water from oil ........................................................................................................................................................................319

Praktika S.V. Specificity of geotechnical and hydrogeological study rocks of ash-disposal dumps of heating and power plant ........................................................................................................322

Automation and information systems

Tatarinovich B.A., Tarin A.A. Information technologies. Accuracy characteristics of location for local and wide area augmentation amendments ........................................................................................................327

Oil and gas

Antoniadi D.G., Savenok O.V., Bukov N.N., Ganotskaya E.D., Panyushkin V.T. The possibility of using low-salinity water for increasing oil fields in Krasnodar region ........................................................................................................331

Antoniadi D.G., Savenok O.V., Bukov N.N., Ganotskaya E.D., Panyushkin V.T. The possibility of using electrocoagulation for demineralization-return formation water oil fields Krasnodar region ........................................................................................................340

Electrification mining enterprise

Bogdanova I.N., Terehov S.A. Analysis of Energy JSC "Altai Koks" ........................................................................................................346

Erygin A.T., Shatilo A.N., Spasov M.S. Development of computational evaluation procedure for intrinsic safety of security barriers of the Zener diodes ........................................................................................................349

Works of young scientists

Baranov S.S. Creation of an investment portfolio ........................................................................................................354

Zolotov A.V. Design of the intelligent control algorithm object of type inverted pendulum ........................................................................................................356

Kaharov S.K. Statistical estimation of parameters of reliability of slush pumps NB-125 ........................................................................................................366

Klimova A.S. Mortgage loan standards' optimization ........................................................................................................369

Lycheva M.A. Geotechnical providing stability of phosphogypsum dumps in town Voskresensk ........................................................................................................371
Agafonov V.V., Miheev V.O., Ageykin A.V. Model of synthesizing process charts in coal mines based on fuzzy inference algorithms ................................................................. 376

Proskurnikova I.A. Methodological bases of the ekologo-economic approach to recycling of firmly household waste with rubbish incinerator plant use .................................................. 383

Rejmgen Yu.E. Automated control systems of technological processes. SCADA system. Part I ...................................................................................................................................................... 386

Sergeenko A.A. The need for accounting information systems, laboratory data analysis of patients of medical institutions of mining and processing plant ........................................................ 394

Filatov A.V. Engineering-geological conditions in phosphogypsum dumps of Balkovo mineral fertilizers LLC ........................................................................................................ 398

Cherkashin A.A. Assessment of technological and natural factors on water inflow in the coal mines .......................................................................................................................... 403

Shukurov V.V. Automated control system of the coagulant preparation on CSP «Pechorkays» with adaptation of programmable logical controllers .................................................. 408

Yakovleva T.P. The application of stability of criteria of natural systems at carrying out of exploration works (on an example Baikitskaya antyclise) .............................................................. 417

Preprints

Shebarshov A.A. Justification parameters splitting machines for plane parallel split to produce small-sized pavers ........................................................................................................ 397

Zagrivniy E.A., Dubovik D.V. The control electric drive inertial vibration exciter vibration jaw crusher when in resonance mode .................................................................................. 402

The deposited manuscripts

Starodumov A.V. Preparatory and clearing works when storey-chamber system development sublevel breaking and bottom ore ........................................................................................ 57

Anisimov V.N., Logatchev I.I., Smolyakov A.R. Evaluation of parameters of high-gradient magnetic fields for the destruction compound structure of ferruginous quartzite .............................................................................................................................. 186

Starodumov A.V. Doing filling operations when mining uranium deposits streltsovsky group storey-chamber mining ........................................................................................................ 423