Multidisciplinary Aspects of Production Engineering

MAPE 2022

13-16. SEPTEMBER 2022

PUŁAWY, POLAND

2022

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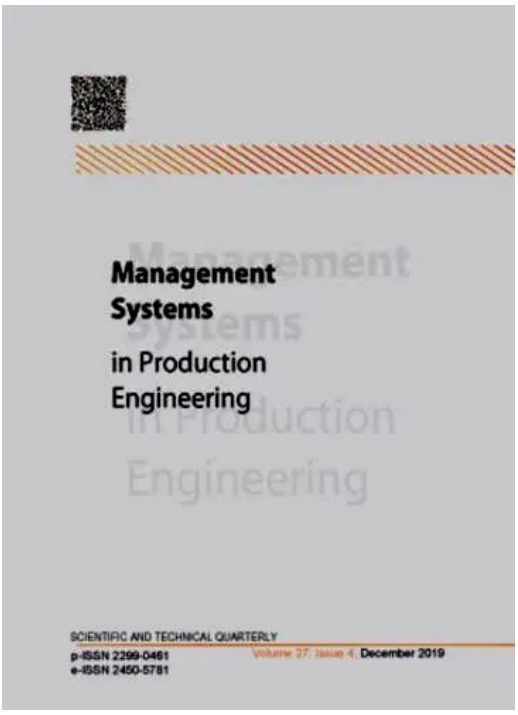

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XIX Międzynarodowa Konferencja
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CONFERENCE PROGRAMME

13-16. SEPTEMBER 2022
PUŁAWY, POLAND

September 13, 2022

10:00 am – 03:00 pm	Arrival, Registration
02:00 pm – 03:15 pm	Lunch
03:30 pm – 04:00 pm	Welcome
04:00 pm – 04:30 pm	Coffee break
04:30 pm – 06:30 pm	Plenary Session, I
07:00 pm	Gala Dinner

September 14, 2022

08:00 am – 09:00 am	Breakfast
09:30 am – 12:30 pm	Field trip to Puławy, The Czartoryski Palace
01:00 pm – 01:45 pm	Lunch
02:00 pm – 02:30 pm	EUROTRONIC
02:30 pm – 04:00 pm	Scientific Session, II
04.00 pm – 04.30 pm	Coffee break
04:30 pm – 06:00 pm	Scientific Session, III
06:30 pm	Grill

September 15, 2022

08:00 am – 09:15 am	Breakfast
09:30 am – 07:00 pm	Field trip to Kazimierz Dolny
07:15 pm	Dinner

September 16, 2022

08:00 am – 09:15 am	Breakfast
09.30 pm – 10.45 pm	Scientific Session IV, “SMART CITY”
10:45 pm – 11:00 pm	Coffee break
11:00 am – 12:00 am	Poster Session V, Summary
12:00 am	Lunch, Departure from the hotel

PROGRAM SZCZEGÓŁOWY KONFERENCJI

13.09.2022

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1. KUZIOR Aleksandra, GREBSKI Wes
Mining Industry in Canada. Opportunities and Threats

2. GREBSKI Wes, ULEWICZ Robert
Heat and Power System as an Independent Source of Electric Power. Case Study

3. HASHIMOV Saddam, ZAWADZKI Jarosław
Observations of the Oil-Polluted Soil of Absheron Peninsula Using Landsat 8 OLI and Sentinel 2A Imagery

4. KĘDZIERSKI Przemysław, HILDEBRANDT Robert
Mechanical Spark Electrostatic Property Testing Method

5. MATIRINGE Ronald Kwadzayi, PŁAZA Grażyna
Ergonomics vs Economics in the Construction Logistics: a Case Study From the "Hexagon Construction" Company in Poland

6. KUKIELA Kaz
The Horizon: A User Experience Assessment of Automotive User Interfaces

7. RIZAOĞLU Ayşe Merve, ŞENYİĞİT Özlem
Analysis of the Effect and Relationship of Expo Organizations on the City: Expo 1998 Lisbon Case

8. RIZAOĞLU Tamer, KARATAŞ Muhammed Ziya, ÇOŞKUN Canberk
The Effect of the Main Component Ratios in the Joint Filling on the Product Quality

9. RIZAOĞLU Tamer, ÇOŞKUN Canberk, CAMUZCUOĞLU Murat
Determination of Physical and Mechanical Properties of Limestones Used as Marble in Tut-Adiyaman Region in Turkey

10. RIZAOĞLU Tamer, CAMUZCUOĞLU Murat
Usability of Obsidian With Special Refraction as an Ornamental Stone by Bonding With Epoxy Resin

14.09.2022
SESJA II, 14.00-16.00

14.00-14.30

1. BUJWID Krzysztof, EUROTRONIC
Wyzwania wdrożenia systemu CMMS/EAM w realiach polskiego przemysłu

2. MALEC Małgorzata, STAŃCZAK Lilianna
Impact of Managerial Skills on Innovative Projects' Management Processes in the Domain of Mining Machines

3. KAŹMIERCZAK-PIWKO L., KUŁYK P., DYBIKOWSKA A., DUBICKI P., BINEK Z.
Sustainable Consumption Among Children and Adolescents

4. SULIK-GÓRECKA Aleksandra, STROJEK-FILUS Marzena
CO_2 Emission Reporting of Maritime and Air Transportation in the Context of Sustainable Development

5. PALKA Dorota, BRODNY Jarosław, TUTAK Magdalena, NITOI Dan
The Role, Importance and Impact of the Methane Hazard on the Safety and Efficiency of Mining Production

6. KMIECIK Mariusz
Supporting of Manufacturer's Demand Plans as an Element of Logistics Coordination in the Distribution Network

7. KUCZYŃSKA-CHAŁADA Marzena
Implementation of Lean Manufacturing Concept Methods in an Industrial Enterprise to Increase Process Efficiency

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SESJA III, 16.30-18.00

1. OLEKSIAK Beata, CIECIŃSKA Barbara, OŁÓW Piotr, HORDYŃSKA Małgorzata
Analysis of the Possibility of Introducing the Reduction of Changeover Time of Selected CNC Machines Using the SMED Method

2. FURMAN Joanna, MAŁYSA Tomasz
The Role of Visual Management in the Organization of Safe Work in Production Companies

3. CIECIŃSKA Barbara, OLEKSIAK Beata, FURTAK Julia
Hazard, Risk Assessment and Safety Management in Work Stations With Lasers – Theoretical and Practical Studies

4. KAŹMIERCZAK-PIWKO Leszek, ZAGAJEWSKI Arkadiusz, ŁAGUTKO Tomasz, SIKORA Marcin
The Development of the E-Commerce Market as a Challenge for Maritime Transport and Shipping

5. PODLOCH Iwo, NOWACKI Krzysztof
Zakres badań dotyczących świadomości zagadnień nt. systemów zarządzania i gotowości na ich wdrażanie

6. MAŁYSA Tomasz, FURMAN Joanna
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16.09.2022

SESJA IV, SMART CITY, 09.30-10.45

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Wdrażanie projektów ze sfery inteligentnego miasta na przykładzie działań przygotowywanych przez samorząd terytorialny i jednostki podległe

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Życie w Smart City. Tarnowskie Góry a nowe wyzwania

3. JANKOWSKI Dariusz
Teoria i praktyka koncepcji Smart City – przykład Katowic

4. GIELA Małgorzata
Znaczenie procesu wdrożenia (onboarding) pracownika samorządowego w doskonaleniu organizacji pracy urzędu

5. MIDOR Katarzyna
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16.09.2022
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2. KRYNKE Marek, KNOP Krzysztof, MAZUR Magdalena
Maintenance Management of Large-Size Rolling Bearings in Heavy-Duty Machinery

3. BOŁOZ Łukasz
Dynamic Model of a Longwall Shearer With a Chain Haulage System

4. TUTAK Magdalena, BRODNY Jarosław GALECKI Greg
Applying CFD Model Studies to Determine Zones at Risk of Methane Explosion and Spontaneous Combustion of Coal in Goaves

5. PRYSYAZHNYUK P., MOLENDA M., ROMANYSHYN T., ROPYAK L., ROMANYSHYN L., VYTVYTSKYI V.
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6. LIS Teresa, NOWACKI Krzysztof
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Mining Industry in Canada. Opportunities and Threats

Acta Montanasicta Slovaca
Volume 27 (2022)

Aleksandra Kuzior
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Abstract: The article contains a case study focusing on the safety procedures related to the mining industry in Canada. The purpose of the study was to identify the best mining practices in Canada. The paper contains an overview of the laws and procedures regulating the mining industry in Canada as well as the procedures for enforcing environmental and safety regulations. The procedures for changing and constantly updating the safety regulations are also being discussed. This was also done for the purpose of identifying the best practices. The article also addresses the procedure for investigating mining accidents in Canada. The article emphasizes the importance of a three-way partnership (management of the mining company, labor union and the Ministry of Labor). That three-way partnership is important from the perspective of revising and modifying the mining safety regulations as well as enforcing those regulations. Participation of the labor union as well as the management of the mining company in updating safety regulations make them more practical and reflective of real safety issues. Unpractical and obsolete mine safety regulations are being eliminated. The labor union and mine management feel the ownership of the mining safety regulations. This fact makes it easier to enforce new regulations. The article also focuses on environmental protection procedures. Environmental risk evaluation is conducted before a mining permit is issued. This is being done by the provincial government. During the mining operation, the Ministry of Labor is handling the environmental protection issues. The Ministry of Labor is constantly checking the compliance with the safety as well as the environmental and sustainability guidelines. Using artificial intelligence and Industry 4.0 technology is also being mentioned.

Keywords: mining industry, safety procedure, environmental protection, mining sustainability, AI in mining

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Mining Industry 4.0 – Opportunities and Barriers

Acta Montanasicta Slovaca
Volume 27 (2022)

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Abstract: Safety, development and efficiency are the main slogans that guide modern mines. At the beginning of the fourth industrial revolution, they are familiar with innovations and modern technologies that allow them to create innovative solutions and build an environmentally friendly mining sector. The aim of the paper was to assess the feasibility of implementing the assumptions of the industrial revolution 4.0 in the mining industry. Based on the author's own research and literature research, a set of scenarios for the transformation process was developed. After the verification, three alternative scenarios related to the transformation process 4.0 in mines were used for the research. The transformation scenarios were assessed from the perspective of individual stakeholder groups. The NAIADE (Novel Approach to Imprecise Assessment and Decision Environments), which so far has not been used in the mining industry to assess development scenarios, method was used to assess the transformation scenarios. The research identified and characterized nine groups of stakeholders. Based on the conducted structured interviews, a set of technical criteria for the assessment of scenarios was defined. The result of the analyzes is the impact matrix and social impact matrix, developed for the first time for the mining industry transformation scenarios. Based on the analysis of the impacts of individual factors, it was shown which scenario is the most acceptable for stakeholders and the best from a technical point of view. The research focuses on the deficit of digital competences and the generational change, as well as the change in the competency requirements of the new type of worker-miner-operator 4.0.

Keywords: Mining 4.0, Industry 4.0, mining engineering, predictive maintenance, digital transformation, multicriteria analysis, smart mining, NAIADE, operator 4.0

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Maintenance Management of Large-Size Rolling Bearings in Heavy-Duty Machinery

Acta Montanasicta Slovaca
Volume 27 (2022)

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Abstract: Slewing bearings are one of the most important elements in the vast majority of large-size machines. They are widely used in the mining industry: tunnel cutters, bucket excavators and many other devices. In a Bucket-wheel excavator, continuous rotation of the body is most advantageous due to the technique of digging the input or coal. The rotational movement of the machine is then the basic cutting movement, and the delivery movement, carried out by driving the machine, is only an auxiliary movement. A similar kinematics occurs in tunnel cutters. Therefore, these bearings have played such a significant role and have been the subject of extensive research and continuous improvement over the years. High demands are placed on them in terms of load capacity, friction, accuracy, durability and reliability. It happens, however, that despite careful design and manufacture, the bearings do not achieve the required durability. Failures usually result in economic losses due to loss of production, damage to adjacent parts and repair costs. Premature bearing failure can occur for a variety of reasons. Each failure leaves its own special mark on the bearing. Consequently, by examining the damaged bearing, it is in most cases possible to find the root cause and define corrective actions, thus preventing further failures. This publication aims to provide basic knowledge about the factors determining the load capacity and durability of large-size slewing ring bearings and the analysis of their damage. The result of the considerations is finding the sources of errors in determining the load-bearing capacity characteristics of roller slewing bearings. For this purpose, the ISHIKAWA and FMEA methods were used and the risk level for errors was determined. Moreover, the article presents some forms of damage to raceways of slewing bearings and indicates their causes. Changes in the so-called angle of action of the rolling elements in the ball bearing due to the transferred loads. The influence of changes in this angle on the geometry of the contact zone of the rolling elements and raceways was investigated. It has been shown that the contact angles of some rolling elements increase significantly. This can damage the raceway by chipping or rolling the edge of the bearing ring. With the knowledge presented in this article, it is possible to evaluate various emergency situations and start their proper analysis.

Keywords: maintenance management, FMEA, slewing bearing, bearing damage

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Analysis of the Readiness of Silesian City Inhabitants for Decarbonisation

Acta Montanasicta Slovaca
Volume 27 (2022)

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Abstract: Rapidly advancing climate change and environmental degradation are nowadays the key challenges of the modern world and therefore a threat to Europe. According to the European Green Deal, by 2050 European Union countries will achieve zero net greenhouse gas emissions, which is directly connected with significantly reducing or completely stopping the use of fossil fuels for energy purposes. Poland, and especially the inhabitants of Silesia, must face a change concerning their cultural heritage and their way of life. The aim of this article is to answer the question whether the inhabitants of the Silesian agglomeration are ready to resign from coal-based energy. Are they aware of the changes in their closest environment related to decarbonisation. This article presents results of a survey carried out in order to identify the attitude of Silesian cities' inhabitants towards decarbonisation. The study was carried out by means of an online survey, using Google Forms, and was addressed to the inhabitants of cities in the central part of the Silesian Voivodeship.

Keywords: decarbonisation, European Green Deal, environmental degradation, energy, society

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Impact of Managerial Skills on Innovative Projects' Management Processes in the Domain of Mining Machines

Acta Montanasicta Slovaca
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Abstract: The article presents the role and significance of managerial skills in a management of innovative projects oriented onto mining machines and equipment for underground exploitation of minerals. Based on the Authors' multi-year experience, gained at the KOMAG Institute of Mining Technology, shaping of managerial skills and impact techniques are described. Different aspects of impact techniques such as an auto presentation, a presentation, arts of negotiations and business etiquette are highlighted. Group dynamics, a process of a team creation, sources of leader's knowledge, settlements of conflicts, "brain-storming" as well as methods of taking decisions are analyzed from the perspective of successful management of innovative projects. The article is ended with some guidelines enabling to avoid errors in project management processes.

Keywords: Managerial skills, management, innovative projects, mining machines

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Applying CFD Model Studies to Determine Zones at Risk of Methane Explosion and Spontaneous Combustion of Coal in Goaves

Acta Montanasicta Slovaca
Volume 27 (2022)

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Abstract: Underground mining operations are subject to a number of natural hazards. Events resulting from these hazards are difficult to predict, and if they occur, they disrupt the entire mining process and pose a great danger to the crew. Some of the most dangerous include ventilation hazards involving methane explosions and fires caused by the spontaneous combustion of coal. The complex state of the underground environment means that these hazards oftentimes occur simultaneously, making mining conditions even worse. The following paper addresses this issue by developing methodology for determining areas endangered by methane explosions and coal spontaneous combustion in goaves. The reference to goaves results from the fact that this particular area is most frequently affected by coal spontaneous combustion and accumulation of dangerous amounts of methane. The developed methodology was based on model tests with the use of the CFD method and data necessary to develop a numerical model. The research encompassed a real longwall in one of the hard coal mines, ventilated with the Y system during its exploitation, which is beneficial in the case of the methane hazard but worsens the safety in terms of the self-ignition of coal. As a result of the conducted research, for the exploitation conditions, dangerous zones were specified due to a potential possibility of methane explosion and self-heating of coal. The basis for determining dangerous zones were the criteria of occurrence of the examined phenomena. In this study, the zones were identified for each of the investigated hazards separately and for their simultaneous occurrence. Thus, the aim of the study, which involved the determination of potentially hazardous zones by applying modern methods of modelling in the mining area, was achieved. The results are an immensely important source of information for activities aimed at improving safety in the studied area, in relation to the studied threats.

Keywords: methane hazard, spontaneous combustion of coal, CFD, prognosis, goaves

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Dynamic Model of a Longwall Shearer With a Chain Haulage System

Acta Montanasicta Slovaca
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Abstract: Despite the pro-ecological policy, hard coal still is and for a long time will remain a valuable major source of energy in the world. It is usually found in the form of seams in underground mines. For many years, thin coal seams have been exploited on an increasingly large scale, therefore mines and machine manufacturers are looking for new, effective and safe methods of extraction. One of such methods is the use of a longwall system with a single-head shearer. This solution has been briefly described in the article, with special focus placed on the proprietary dynamic model of a longwall shearer with a chain haulage system. The model concerns a chain-hauled single-head shearer, but can be used to simulate coal ploughs, and to a certain extent, scraper and belt conveyors. There are models in the literature in which the chain is replaced by point masses. In the discussed model, the chain segments have been described as a continuously distributed mass, the value of which changes as the shearer travels along the wall. The shearer has been modelled as a rigid body with six degrees of freedom, placed on elastic skids. The load from cutting, loading and movement resistance has been taken into account in the model. The mathematical model has been saved in the form of scripts in Matlab. The set of scripts allows obtaining information about the behaviour of the shearer and the load on important structural nodes such as skids, chain and loaders fasteners or the driving shaft of the cutting head. The results also enable determining the power demand of the motors as well as calculating the required initial tension of the chain. The fully parametric model makes it possible to analyse the influence of a change in the values of significant parameters of the longwall working, drive units and shearer. This information is crucial at the stage of design construction and verification, which allows avoiding many errors in the prototype.

Keywords: machine dynamics, model tests, simulation tests, single-head shearer, chain haulage system, dynamic model, longwall shearer

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Observations of the Oil-Polluted Soil of Absheron Peninsula Using Landsat 8 OLI and Sentinel 2A Imagery

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Abstract: The Absheron Peninsula is the biggest urbanized area in Azerbaijan. Along with the growth of the massive oil production, the role of the Peninsula has increased and big ecological problems have arisen. In this research, the investigation of the possibility of detecting hydrocarbons in sandy soil through Landsat 8 OLI and Sentinel 2 A satellite and drone images and chemical analysis was conducted. The main study was based on the satellite imagery of Landsat 8 OLI and Sentinel 2A, employing NDVI calculations and analyses. In order to calculate NDVI, ESRI ArcGIS 10.3 software has been used. The multispectral images with 30m spatial resolution of Landsat 8 and 10 m resolution multispectral images of Sentinel 2 were used. Additionally, drone observations lead to obtaining high-resolution data about soil pollution in the study area. Also, field samples were taken to the laboratory and necessary chemical analysis was performed for validation purposes. This study showed that multispectral remote sensing can be used to detect hydrocarbons in the soil in oil production areas. Hydrocarbon-bearing substances' absorption into the soil results in a low value of NDVI in the study area. The observations in the winter and summer seasons show that the seasonal changes in weather conditions affect both the amount of oil contamination in the soil and the detection process of soil pollution by oil using remote sensing.

Keywords: Remote Sensing, NDVI, Landsat 8, Sentinel 2, Oil spill, Hydrocarbon detection, Absheron Peninsula, Azerbaijan

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Accident Rate in Polish Mining. Current Status and Forecast

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Abstract: The article presents the analysis of accidents at work in the Polish mining industry in the period from 2010 to 2020 with forecasts for the next three years. The study consists of two parts. The first part deals with methods of analysing working conditions in the mining industry. A key element of the literature review is the econometric methods that have been used by researchers to analyse accidents at work in mining. In the empirical part (the second part of the paper), the authors present the results of their own econometric analysis. The authors use econometric models in predicting the indicator (W*) – total number of people injured in accidents per thousand employees. Testing classical econometric models, the authors obtained the best forecasts (based on the obtained forecast errors) in the Winters' model and the Brown's model. The accident at work in mining is an important topic for research because the branch of industry belongs to the branch with hard work. Health and safety in mines has a great importance for the sake of specific conditions in that kind of industry. Continuous analysis of accidents at work is necessary in evaluation of system effectiveness of health and safety system in all mines. Forecasting of accident at work can help miners to build safety in mines.

Keywords: accident at work, ratio analysis, mining and quarrying, health and safety

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Development of a Hardbanding Material for Drill Pipes Based on High-Manganese Steel Reinforced With Complex Carbides

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Abstract: In the present study the new "casing-friendly" hardbanding alloy based on high-manganese steel reinforced with complex carbide particles was developed by combining thermodynamic modelling within the CALPHAD approach and first-principles calculations. The alloy, deposited by flux cored arc welding on a steel substrate, has a composite structure consisting of manganese-austenite with the ability to work hardening, fine (up to 5 μm) inclusions of the multicomponent carbide (Nb, Ti, Mo, V) and C the thin layers of (Mo,V)C at the austenite grain boundaries. The comparative wear tests carried out with commercially available hardfacing materials of the Fe-W-C and Fe-Cr-C systems showed that the proposed alloy has the best combination of properties preventing the wear of the drill casing, while its abrasion resistance as well as wear resistance in sliding friction conditions by steel counterbody is close to hypereutectic high chromium alloys. The microhardness tests performed on deformed specimen areas after the friction tests show the presence of a significant hardness gradient in the range of 800-450 HV at a distance of about 300 μm when moving perpendicularly away from the zone of friction contact. During the microscopic observation of the layer deposited with the developed alloy and the interfaces between the deposit and the base steel no cracks, pores delamination were detected indicating a strong metallurgical bonding. The hardbanding process was performed for drill pipe joints with the worn Fe-based high chromium alloy hardbanding after exploitation, which allows the drill pipe to be reused with the same durability.

Keywords: Thermodynamic modelling, hardbanding, drilling pipes, high-manganese steel, high-chromium coating, complex carbides

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Mechanical Spark Electrostatic Property Testing Method

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Abstract: The article describes an attempt to assess the electrostatic properties of mechanical friction-induced sparking. Such sparks are the cause of numerous accidents in hard coal mines. In the article summarizes accidents in hard coal mining in Poland in recent years. In most cases, the initials were mechanical sparks. Mechanical sparks contain energy, a part of which is related to their excess electrostatic charge, whereas the other part is of a different origin (kinetic or thermal energy, for example). The article tries to estimate how much of this energy is generated by electrostatics impact. There is hard to measure the dynamic electrostatic parameters like electric charge. Authors select four measuring methods. This test methods are prepared based on authors knowledge electrostatic parameters and european standards dedicated to measure the electrostatics parameters. This circuits were prepared for four different spark parameters. Measurements methods of electrostatic field of sparks stream are not able to measure field generated by electrostatic charge on sparks. The measuring instruments do not have such a fast response time, adequate to the speed of the sparks. Spark generation and parameter measurement experiments were performed. The only method to determine the amount of electrostatic charge on sparks is to measure the entire charge by collecting sparks at the measuring electrode. The measuring system requires that the entire stream of sparks falls on the electrode. Certain methods were rejected as inadequate following result analysis. A claim for one of the methods was submitted to the Patent Office of the Republic of Poland.

Keywords: electrostatics, sparking, mechanical friction, electrostatic charge

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Pro-Ecological Possibilities of Using Metallurgical Waste in the Production of Aggregates

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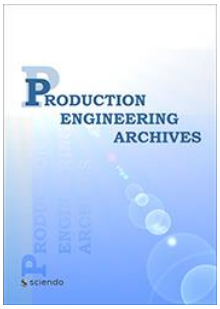

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Abstract: Waste management is a very important issue for the sustainable development of the modern world. The metallurgical industry is an industry that has been generating and still generates large amounts of waste that may have a negative impact on the natural environment and human health. Metallurgical waste comes from current production and is collected in landfills/heaps. Any research enabling the manage-ment of waste, including metallurgical waste, is justified. This study presents the results of research on waste that can be used in the production of aggregates – research related to natural radioactivity and the introduction of hazardous substances into water or soil. The study highlights the diversified chemical composition of metallurgical waste, which requires detailed research of the waste before it is directed to the production of aggregates. Aggregate, as a building material, is subject to specific legal (normative) regulations. Metallurgical waste that meets the requirements for the protection of the natural environment and human health should be used for the production of building materials – it is an environmentally friendly activity that implements the principles of sustainable development.

Keywords: Metallurgical waste, Environmental, Hazardous substances, chemical elements, Aggregates

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Sustainable Consumption Among Children and Adolescents

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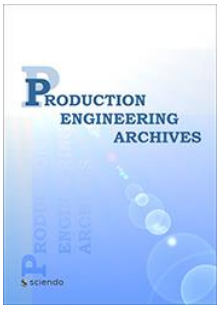

Abstract: Young consumers (children and adolescents) play an increasingly important role in the functioning of the modern consumer market. Accordingly, it is becoming more important to promote sustainable, ecological consumption patterns among this group. The authors of the article analysed the results of a survey conducted on a group of 1326 children aged 9 to 15. The purpose was to diagnose the aware-ness and functioning patterns of consumption among the studied group of young consumers from the Polish market and to formulate a set of recommendations for the process of their ecological, economic and social education aimed at building sustainable consumption patterns. During the research process, an attempt was made to diagnose the ability to identify eleven selected, popular, pro-ecological graphic symbols placed on consumer products, aimed at assessing the skills of young consumers to identify products with better environmental parameters. The collected empirical data was analysed with the R-project program using the following methods: descriptive statistics, nonparametric Kruskal-Wallis test and Pearson Chi-square test of independence. As a result of the use of the comparative analysis meth-od, the results of research in individual age groups of young consumers were compared and interpret-ed. After the research, the authors concluded that the education system lacks actions to consolidate the acquired knowledge in the field of ecolabeling, which results in large disproportions in the recognition of eco-labels both in individual age groups and in relation to selected symbols. It is disturbing that only 12.2% of the interviewed learners indicated the eco-label as a decisive factor in purchasing a food product. The authors of the article believe that among the group of young consumers, actions should be taken to raise awareness of sustainable consumption, and this requires consistent and differentiated steps at all levels of their education.

Keywords: sustainable consumption, patterns, child as a consumer, young consumers, sustainable development, education, for sustainable development, sustainable socialization, ecolabelling, consumer, decisions

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How Car Producers Are Driving Toward Sustainable Supplier Development

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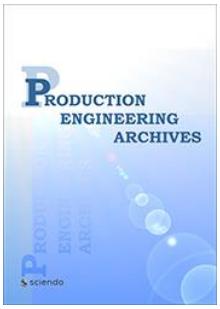

Abstract: Sustainable supplier development helps to improve mutually the supplier's as well as the buying com-pany sustainability performance. The producer could choose guidance, compliance or capacity building activities to develop its supplier or implement them all. This paper aims to present how the car produc-ers practice sustainable supplier development taking into account different types of approaches and implementation tools. The authors applied content analysis to investigate approaches of six car produc-ers from EU member states. The data was collected from the sustainability reports and complemented with the available information of the supplier sustainability requirements and the code of conduct of each car producer. The findings revealed that analysed car producers use similar approaches to develop their suppliers in the context of sustainability. All of them use mix of activities from all identified cate-gories and collaborate within industry initiatives devoted to spread sustainability in supply chain.

Keywords: sustainability, supplier development, automotive, CSR report

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CO_2 Emission Reporting of Maritime and Air Transport in the Context of Sustainable Development

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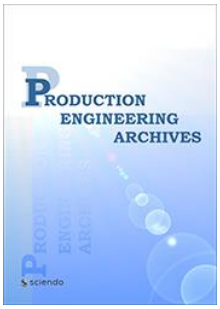

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Abstract: The transport industry, and especially aviation and maritime transport, emits significant amounts of CO_2, adversely affecting the environment. The Sustainable Development Goals not only indicate the need to reduce CO_2 emissions, but also to provide access to information on the amount of emissions, on top of their environmental and financial impacts. The main source of this type of information is found in financial and non-financial statements prepared by entities of the transport sector. CO_2 reporting disclosures should be subject to the principle of true and fair view ensuring adequate materiality, transparency and comparability of information. The aim of the article is to assess the scope and method of reporting information on CO_2 emissions in the financial and non-financial statements of selected groups of the air and maritime transport sector. By means of content analysis, disclosures on this subject were reviewed and compared against the applicable legal regulations in the field of CO_2 emissions reporting for the industry. The results of the research indicate a significant differentiation in the methods of reporting, in particular relating to the valuation and presentation of CO_2 emission allowances in reports on the financial position in air transport and the manner and scope of reporting non-financial information in maritime transport. The obtained results indicate insufficient comparability of the reported information and a need for harmonisation of the provisions of law regarding the scope and forms of reporting. The findings also indicate a need to combine financial and non-financial information in single reports in order to properly interpret the effects of emissions.

Keywords: sustainability, transport, CO_2 emissions, financial reporting

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The Role, Importance and Impact of the Methane Hazardon the Safety and Efficiency of Mining Production

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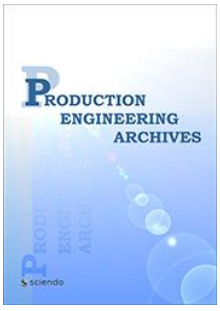

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Abstract: Underground mining production is an extremely important process for the economy and carried out in very difficult and complex environmental conditions. The disturbance of the balance of this environment makes it also a very dangerous process. Due to the importance of coal, mainly as an energy raw material, the process of its exploitation is carried out all over the world. The specificity of its production is mainly determined by mining and geological conditions, which determine the method of operation and the selection of machines and devices for this process. One of the most dangerous natural hazards associated with this process are ventilation hazards, including methane hazard. The reason for this threat is methane, an odorless and colorless gas, which becomes a flammable and explosive gas under certain criteria. These features make this gas a huge threat to mining operations. Its huge amounts, contained in coal seams, are released into the mine atmosphere during the exploitation process, causing a very high threat to work safety. Events related to the occurrence of methane are most often the cause of mining disasters, in which people die and the technical and mining infrastructure is destroyed. The reason for the growing methane hazard is the increasingly difficult mining conditions, and mainly the increasing depth of mining, and thus also the increase in methane-bearing capacity of the seams. Taking into account the huge impact of methane hazard on the mining process, the article discusses its impact on the safety and efficiency of this process. The results of the literature review with regard to this risk are presented and the accident statistics are presented. On the basis of actual data, an analysis of interruptions in the exploitation process related to exceeding the permissible me-thane concentrations was carried out in one of the mines. The problem of limiting the production process due to these exceedances is an important factor reducing the efficiency of this process. The obtained results clearly indicate that the losses resulting from these breaks deteriorate the profitability of the entire process and affect the economic efficiency of the industry. In order to effectively counteract the dangerous phenomena related to the methane hazard and to improve the efficiency of the mining production process, solutions were proposed to improve this state and the directions for further re-search were proposed.

Keywords: mining production process, process efficiency, hard coal mining, methane hazard, numerical modelling, and simulations

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Ergonomics vs Economics in the Construction Logistics: a Case Study From the "Hexagon Construction" Company in Poland

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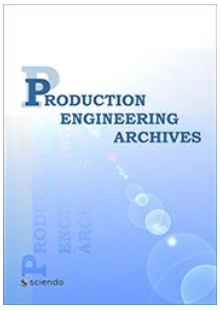

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Abstract: The purpose of this study was to analyse the relationship between the aspects of ergonomics and eco-nomics in the construction industry. Ergonomic cost calculation mainly by as a result of down time due to accidents and incidents was evaluated. The impact of ergonomics intervention on construction eco-nomic in the logistics network was also determined. This impact was simulated using an annual total of accidents for the year 2021. Organizations, particularly businesses, must implement ergonomics diagnosis measures in order to reduce occupational hazards and accidents in their supply chain. Ergonomics measures are implemented to reduce and eliminate workplace accidents, but most manufacturing companies and employers overlook this aspect because it is seen as an expense. The case study was performed in Hexagon Steel Construction company. This is due to the fact that such a business opera-tive is responsible for a wide range of activities in the logistical network, from manufacturing to ware-housing and distribution, and finally to final structure installation on the construction site.

Keywords: Ergonomics, economics, Construction accidents, Safety work

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Supporting of manufacturer's demand plans as an element of logistics coordination in the distribution network

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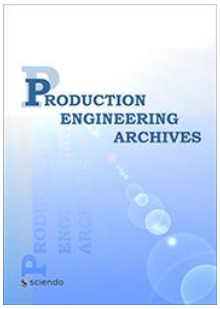

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Abstract: The paper deals with the concept of centralized demand forecasting and logistical coordination in distribution networks. The aim of the paper is to relate the results provided by the forecasting tools to the basic aspects of logistical coordination. The case of 29 distribution networks in which a logistics operator (3PL) operates and provides contract logistics services to a manufacturing company is analysed. The paper partially confirms the hypothesis of better testability of forecasts based on machine learning algorithms and artificial neural networks for demand planning by the logistics operator to the manufacturer in the framework of logistics coordination in the distribution network. These algorithms perform better for networks with high specificity of flows and food networks. Traditional algorithms, on the other hand, have their better share in creating forecasts for more standard distribution networks. Additionally, the second hypothesis regarding the positive influence of modern technological solutions (such as the use of cloud technologies, EDI and flow tracking standards) was confirmed. Additionally, a number of factors that did not have a direct impact on forecasting errors were detailed.

Keywords: Logistics service provider, 3PL – Third Party Logistics, Logistics, coordination, Distribution network, Demand forecasting

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Analysis of the Possibility of Introducing the Reduction of Changeover Time of Selected CNC Machines Using the SMED Method

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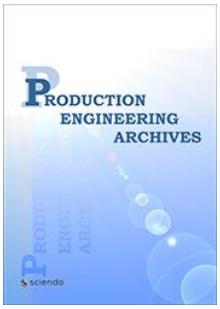

Abstract: The paper presents the results of improving the production process using the SMED method. The process improvement was carried out in a company in the construction industry, using a machine park consisting of CNC machines. The study evaluated the current state of changeover times for selected CNC machines and proposed a reduction in changeover times for the machine park analysed. By intro-ducing changes to the changeover process on selected CNC machines, it was possible to minimise the changeover time by more than 20% on all the machines analysed. The proposed reorganisation of the CNC operators' workstations resulted in a time reduction of approximately 61% for machine 1.52% for machine 2 and 12% for machine 3. The installation of barcode readers on the profiles, on the other hand, made it possible to load the machining programmes into the CNC machines more quickly and resulted in a reduction in loading time of approximately 88% on average for each of the machines analysed.

Keywords: Lean manufacturing tools, Improving the manufacturing process, SMED, Machine retooling

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Mathematical Modelling of the Stress-Strain State of the Annular Preventer Seal Using the Theory of Reinforced Shells

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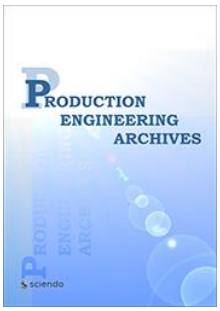

Abstract: Management of wells in the process of their construction is one of the important factors in ensuring the safety of the technological process. Blowout equipment, which includes annular preventers, is used to control the wells. This applies to the construction of oil and gas wells, or wells that provide degassing of coal seams to reduce their gas-dynamic activity. For the purpose of safe and long-term operation of annular preventers on the basis of the theory of thick-walled combined reinforced shells and the carried-out analytical research, the mathematical model for research of a stress-strain condition of a seal of an annular preventer has been offered. Taking into consideration the real design, the seal of the annular preventer is modeled by a rubber shell, reinforced in the circular direction by rubber frames, and in the longitudinal direction by metal stringers. The mathematical model provides for determining the stiffness, internal force factors and stresses in the longitudinal and transverse sections of the combined rubber-metal seal, considering the peculiarities of its operation. At the same time, the model includes the conditions of interaction of the rubber base of the seal with a pipe, as well as the action of sealing pressure under operating conditions. The use of the proposed mathematical model reduces the costs of experimental research and will contribute to ensuring the reliability of simulation modeling results. The advantage of the method is the determination of calculated loads at different points of the combined seal under the existing state of dangerous zones and the influence of operating conditions. In the meantime, prerequisites have been created for expanding the possibilities of simulation modeling and designing structural elements of annular preventers with increased operational characteristics. The practical value of the obtained results is determined by the possibility of using them to ensure the performance of the rubber-metal seal both at the stage of its design and during the operation.

Keywords: annular preventer, reinforced shell, combined rubber-metal seal, stress-strain condition

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Use of the Digital Twin Concept to Optimize the Production Process of Engine Blocks Manufacturing

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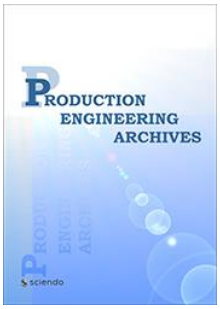

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Abstract: The aim of the paper is to present the concept of a digital twin as part of the Industry 4.0 strategy. In the form of a case study, a digital twin of a production line for the processing of engine blocks is presented, which will serve as a starting point for further research in the field of digitization of production processes. The research part describes the simulation model of the production line with the representation of the material flow as a basis for the creation of a digital twin. The simulation model was used to optimize the production processes of the engine block and to verify the increase in its productivity. A case study implemented through a digital twin enables testing and analysis of changes before they are introduced into real production.

Keywords: digital twin (DT), Industry 4.0 strategy, simulation model, production line, production processes optimalization

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Implementation of Lean Manufacturing Concept Methods in an Industrial Enterprise to Increase Process Efficiency

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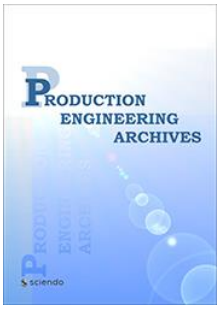

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Abstract: Constant changes affect the business environment, forcing managers to look for modern ways of managing production companies. By implementing the Lean Manufacturing concept, the management process, including production, is improved. Improvements can lead to very large profits and turn out to be the key to success. Lean implementation activities should focus on increasing work efficiency, effective management, higher quality products and services, shortening the cycle time and acquiring more and more new customers. The philosophy of this concept is to eliminate unnecessary time and work both at the production and administrative levels. Methods supporting the Lean concept include 5WHY, 5S, value stream mapping, Kanban, Kaizen and Gemba Walks. The aim of the study is to iden-tify four wastes occurring in the DP process (searching for information, expectation, errors and exces-sive aesthetics) with the use of Lean Value Stream mapping tools, Gemba Walks, 5WHY. A detailed analysis of losses was performed using the 5WHY method. The Gemba List was used to examine the current status in terms of process, work organization, time and quality.

Keywords: Lean Manufacturing, Value Stream mapping, Gemba Walks, 5WHY, industrial enterprise, Product Discontin-uation (DP) process

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The Role of Visual Management in the Organization of Safe Work in Production Companies

Production Engineering Archives
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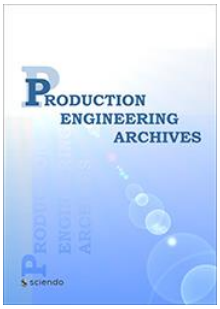

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Abstract: Human plays a prominent role in every process, because he is responsible for its proper functioning and safety. The aspect of work safety is an important element of process improvement. The introduced improvements should cover both safe working conditions and reduce the number of potential accidents, therefore employers should implement solutions aimed at improving work safety. One of the tools that can significantly affect the organization of work, including its safety, is visual management. The use of various forms of visual management enables immediate reaction to emerging problems, which translates not only into an increase in employee awareness, but also allows to improve the safety of the work performed.

Keywords: Lean Manufacturing, visual management, work safety, organization of work

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Evaluation Static Load for Manual Warehouse Work Using Computer Simulation – Case Study

Scientific Journals of the Maritime University of Szczecin
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Abstract: This article presents an analysis of the static loads of the human body during selected manual unloading works at the warehouse worker in a logistics company. The aim of the analyzes presented in the article is to minimize static loads in the work process and thus increase the comfort of work for employees. A tool in the form of 3D SSPP software for ergonomic workload assessment was used to carry out static load analyzes. For the two selected activities, the values of the developed forces of statically working muscles and the forces acting on the vertebrae of the spine were determined. For the values of static loads identified, based on the simulation of the 3D SSPP program, modifications of posture at work and a change in the manner of performing the tested activities were determined. Moreover, the proposed reorganization of the way of performing work was verified by the reassessment of the static loads on the muscles using the 3D SSPP tool. The analyzes carried out after the reorganization of work confirmed the reduction of static loads and improvement of work comfort for the analyzed manual works.

Keywords: static loads of the employee, ergonomic assessment of loads, load simulation methods, static loads on the spine, forced working postures, manual work

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Hazard, Risk Assessment and Safety Management in Work Stations With Lasers – Theoretical and Practical Studies

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Abstract: Hazard identification and occupational risk assessment, defined as the probability of occurrence of unfavourable work-related events, is one of the areas of activity for employers in relation to current legislation and standards. Thanks to occupational risk assessment it is possible to design and use workstations properly, respecting workers' health. The article presents an issue related to the use of workstations with laser equipment, describes the nature of work of lasers and the specific impact of the laser beam on the material. The subject of analysis were the workstations with a CO2 laser for cutting polymers and a workstation with a fibre laser for marking and engraving. For the above-mentioned workstations, using a designed check-list, the features of lasers were verified, hazards were identified and occupational risk was estimated using the risk graph method. The estimated risk at selected workplaces with lasers clearly indicated that special attention should be paid not only to the device and the negative impact of their laser beam on the human body but also on the treated materials. The article also draws attention to protective measures which should be applied at laser workstations in order to ensure the safety of employees.

Keywords: laser effect, dust and fumes, human hazard, risk assessment, safety

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The Development of the E-Commerce Market as a Challenge for Maritime Transport and Shipping

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Abstract: The article deals with the development of the e-commerce market as a challenge for international maritime transport and shipping. The aim of the study is to analyze the current, post -andemic factors in the development of the e-commerce market and its impact on the functioning of the maritime transport and shipping market, with an indication of the synthetic implications for changes that should be introduced to improve the functioning of maritime transport, goods responding to the demand expressed on the global e-commerce market.

Keywords: market development, e-commerce market, maritime logistics, maritime shipping, maritime transport, post-pandemic inflation, post-pandemic market, post-pandemic problems of international exchange, market problems, market development factors

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The Nature of the Intercontinental Supply Chain and Building Its Resilience in a Company Carrying Out Quality Analyzes of Engine Oils

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Volume 70 (2022)

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Abstract: The aim of the study is to identify a model of building a resilient supply chain in a company testing engine oil samples. Unstructured face-to-face interviews and structured remote interview were used as research methods. The proposed contextual research method allows for the elucidation of the content of the components of the final resilient supply chain model and may facilitate theory building on the basis of future multiple case studies. As a result of the research, it was found that at the level of the described chain, its strength and continuity of flow is based on the durability of relationships with suppliers, speed, trust, and information sharing, the role of which has been explained in relation to the nature of the supply chain. Due to the nature of the chain, building its resistance on the basis of agility, which is most often indicated in model approaches, has no justification in this case. It was also established that in this process, 4.0 technologies such as IoT, machine learning, artificial intelligence, and cloud technologies are more important for management at the level of the entire corporation than at the level of the tested chain. The analysis covered the supply chain embedded in the industry, which, according to the author's knowledge, was not discussed in the context of logistics processes in world literature. Therefore, the results of the work undertaken are of great cognitive value.

Keywords: resilient, supply chian, mitigation, logistics, oil, case study

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E-Service Quality Assessment According to Hierarchical Service Quality Models

Management Systems in Production Engineering
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Abstract: E-commerce is becoming more and more popular. The COVID-19 pandemic made its development even faster. Currently, an enterprise that does not provide its services via the Internet is suffering heavy losses. Online shopping is largely different from traditional purchases, so their assessment should be made on the basis of different criteria. The aim of the paper was to assess the quality of services provided by the selected e-shop, in terms of its commercial services. The first stage of the research was the analysis of the literature in terms of hierarchical models of e-service quality, which in their structure indicate the areas of assessment. This allowed for the construction of the author's hierarchical model of e-services and for making a list of attributes that were used in further research. On the example of the clothing e-shop, an analysis of the provided services was made, taking into account the opinions of its customers. The Importance Performance Analysis (IPA) was selected as the basis for conducting the survey research and analyzing its results, which facilitates the commenting of the obtained results. The research allowed to indicate the strengths and weaknesses of the examined e-shop, but also to identify areas requiring improvement in order to increase the quality of the offered services, as well as the customers satisfaction.

Keywords: e-commerce, e-service quality, service quality models, IPA

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Logistics Aspect of Organizational Culture and Normative Commitmentin Electric Energy Supply Chain

Management Systems in Production Engineering
Volume 30 (2022)

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Abstract: Companies are increasingly aware that employees are an important factor in success, so they pay more and more attention to them. Because of that, organizational culture and normative commitment are also included as extremely important factors. The research includes a systematic and comprehensive review of the literature and at the same time obtaining and analysing data from practice through a survey. The research focuses on employees from the logistics departments in the supply chain of electronic component production and supply. Group of companies across Europe were included in the survey (Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Latvia, Lithuania, North Macedonia, Poland, Romania, Russia, Serbia, Slovenia and Ukraine). The research demonstrates the realization that the types of classification of organizational culture have different effects on direct and indirect normative commitment. Gender differences were also found. The research-based on the calculated average mean values shows the classifications of organizational culture and normative commitment. The latter follows the organizational culture with minor deviations. The order of classification of organizational culture follows the current economic situation, where according to the studied criteria, the first is a culture of the market. The research shows that men's rate of normative commitment is better than women's, while in organizational culture the situation is exactly the opposite. One of the most significant findings is based on the Pearson correlation coefficient with the SPSS program was found that, according to the classification, Hierarchy culture has a positive effect on indirect normative commitment.

Keywords: organizational culture, commitment, normative commitment, logistics, supply chain, environmental management, ISO 14001

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Visual Management as a Form of Improving Work Safety During Usage Machines

Management Systems in Production Engineering
Volume 31 (2023)

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Abstract: The issue of ensuring work safety during usage machines plays an important role due to the recorded accident events, the source of which are the machines in use. In terms of reducing the risk associated with machines, particular attention should be paid to threats, as well as solutions allowing to limit their negative impact on the operator. The study the possibility of using visual management as a form of solutions allowing to meet the requirements of legal regulations, was presented. The essence of the problem related to the safety of work with the use of machines based on accident analyzes as well as the prediction of quantitative data was also presented. The directions of activities in the field of improving the work safety of technological machines operators with the use of various forms of visual management were also indicated.

Keywords: visual management, usage machinery, accident at work, forecasting, risk assessment

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The Rural Development Program as an Instrument to Support the Technological Modernization of Agriculture. Lubuskie Case Study

Management Systems in Production Engineering
Volume 30 (2022)

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Abstract: The article deals with the issue of supporting the technological modernization of agriculture by investing in infrastructure surrounding the farms with the use of a financial instrument in the form of the Rural Development Program (RDP) based on the Lubuskie Voivodeship. The article describes, among other things, the importance of infrastructure and support for its development in rural areas in the process of functioning and modernization of the agricultural sector. For the purposes of the article, the data obtained from the Department of Rural Development Programs of the Lubuskie Marshal's Office on expenditure and effects of RDP use in 2007-2020, in infrastructure investments in rural areas of the Lubuskie Voivodeship was analysed.

Keywords: agricultural economy, modernization of agricultural technologies, agricultural production, agriculture in the EU, sustainable agriculture

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Analysis of Forecasted Methane Concentration at the Top Gate of a Wall Ventilated by Means of the "U" System. Case Study

Management Systems in Production Engineering
Volume 30 (2022)

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Abstract: The release of methane into the mine atmosphere poses a threat to the miners. Methane is an explosive gas at concentrations of 5-15% in air by volume and throughout the history of coal mining has been the cause of devastating explosions in mines around the world. For these reasons, in methane coal mines, the concentration of methane emitted from the coal face and the entire mine is controlled by means of a well-designed ventilation system, a system controlling the concentration of methane in the mine atmosphere and a system for methane drainage of the rock mass and goafs. The presented article concerns the forecast of the average concentration of methane on a given day, in the places of sensors located in the longwall roadways of discharge air exhausted from the longwall: up to 10 m in front of the wall and at the outlet of the roadway. Both forecasts were made using the prognostic equations on the basis of measurement data concerning the ventilation roadways of one of the longwalls at JSW Joint-stock company.

Keywords: methane, average concentration of methane, forecast, methane concentration sensors, PROGMET program

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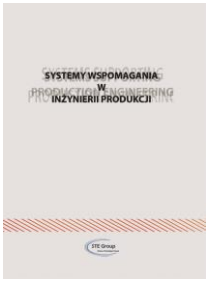
Zakres badań dotyczących świadomości zagadnień nt. systemów zarządzania i gotowości na ich wdrażanie

Systemy Wspomagania w Inżynierii Produkcji
Volume 11, issue 2 (2022)



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Streszczenie: W artykule przeprowadzony został przegląd okoliczności i sposobów wdrażania systemów zarządzania oraz problemów przy wdrażaniu Lean Manufacturing. Analiza stanowisk badaczy zagadnienia trudności przy wdrażaniu LM skupiając się na problemie różnic kulturowych. Celem podjętych badań jest omówienie zagadnienia problemów przy wdrażaniu Lean Manufacturing i systemów Zarządzania w odniesieniu do różnic kulturowych, kultury narodowej, etnicznej i organizacyjnej kultury pracy oraz proponowanej metodyki badawczej danych ankietowych zebranych w wielu zakładach na świecie tej samej korporacji międzynarodowej.

Słowa kluczowe: systemy zarządzania, Lean Manufacturing, różnice kulturowe

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Casting Machines and Properties of Al-Si Castings Alloys

Systemy Wspomagania w Inżynierii Produkcji
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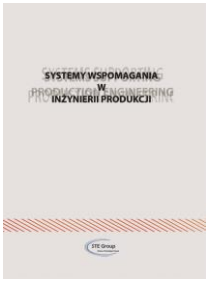

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Abstract: The paper focuses on the research of holding pressure inside the mould cavity and pressing speed as technological parameters of die casting. The experiments conducted within the frame of the practical part examined the plunger and the pressure or the holding pressure in the mould cavity influencing the mechanical properties of a casting which were represented by ultimate tensile strength and percentage share of porosity of Al-Si castings. The results of experiments and analysis of the measured values proved the relation between pressure, or holding pressure, in the mould cavity and the ultimate tensile strength and porosity of castings. Plunger pressing speed is closely related to mould cavity filling mode which affected the final porosity of casting. It can be assumed that die casting is positively influenced by the increase of ultimate tensile strength and reduction of porosity during the increase of pressure or of holding pressure in the mould cavity. Higher values of holding pressure caused the elimination of pores which resulted in a decrease in the percentage share of pores in the casting and an increase in values of ultimate tensile strength.

Keywords: die casting, technological parameters, machines, die casting pressure, pressing speed

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Technical Diagnostics of Industrial Double Twist Twinner Machine for Data Cables

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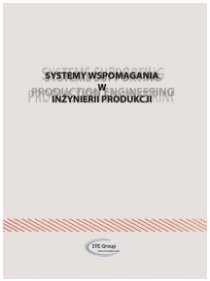

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Abstract: The presented article focuses on the diagnostic measurement and evaluation of vibrations of equipment used for data-cable twisted pairing manufacture. A short description of the process of the data cables manufacturing process to which the diagnosed device belongs is provided and the qualitative parameters of the data cables are mentioned. The experimental part is devoted to the experimental diagnostics of the given system in order to locate and identify the possible reason for the occurrence of the parameter´s critical value of the loss of the data cable. When deterioration of electric properties was detected, monitoring the basic oscillation characteristics has been deployed as the key tool to detecting damaged machine parts, and avoiding quality deterioration of the products in the manufacturing process. Finally, the quality of the paired cables after the repair has been confirmed by measurements verifying the efficiency of the measures performed

Keywords: vibrodiagnostics, maintenance, twisted pair cables, return loss, cable fault

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New Concept of Software for Calculation of Chain Gears

Systemy Wspomagania w Inżynierii Produkcji
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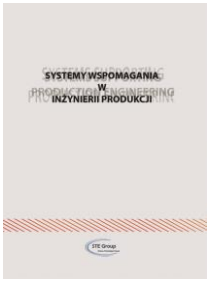

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Abstract: At present, practically all areas of design activities are supported by computer technology, which can be effectively used in the design of gears, belts and chain transmissions, especially in the field of calculations, as well as graphics solutions. However, their use requires mastering the basic principles of computational procedures contained in the programs in question and, on that basis, critically evaluating computer-generated solutions. The presented paper deals with the design proposal and application of program for calculation and check of chain gears. Although there are currently various programs on the market that can design chain transmissions and perform strength analysis, there is still space for improvement and the creation of these programs. The computing program has been created as a spreadsheet in the working environment of the Microsoft Office program by the Excel application through defined sequences of the individual commands. The program serves for design proposal of a chain drive by means of inserted databases, graphs and tables. In the process of designing and checking the input values are entered such as performance, rotations, and number of wheels. Through calculation the software generates speed of a chain, circumferential speed, tensile force, number of chain links, axial distance, etc. At the same time the paper compares generated parameters with manual calculation of the chain gear.

Keywords: software, design, chain gears, calculation, strength

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Prototyp przecinarki z frezem tarczowo-piłkowym mocowanym od spodu przedmiotu obrabianego

Systemy Wspomagania w Inżynierii Produkcji
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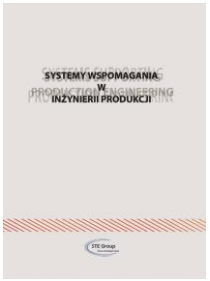

Streszczenie: W artykule przedstawiono prototyp przecinarki tarczowej z narzędziem mocowanym od spodu przedmiotu obrabianego. Układ przeznaczony jest do obróbki długich profili liniowych stosowanych w stalowych konstrukcjach inżynierskich. Umożliwia cięcie profili o zamkniętych lub otwartych przekrojach poprzecznych na zadany wymiar. Układ jest częścią innowacyjnej linii technologicznej do automatycznego cięcia plazmowego, cięcia frezem tarczowo-piłkowym oraz spawania z wykorzystaniem robotów spawalniczych.

Słowa kluczowe: przecinarka tarczowa, frez tarczowo-piłkowy, długie profile liniowe, stal szybkotnąca, powłoka TiN

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Measurement of Dynamic Characteristics of Screw Conveyor

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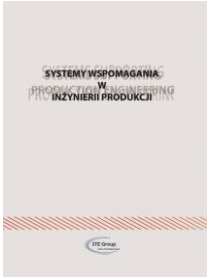

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Abstract: A machine has always been, is and will be the technical progress. The basis of every economy is the progressiveness of manufacturing engineering since it manufactures components for all industries. Technical requirements in manufacturing engineering are constantly leading to an increase of the technical level of manufacturing equipment. Profound knowledge of scientific fields precedes a successful fulfilment of the technical requirements. Structural units of manufacturing machines are complex mechanisms that must work reliably and safely with an emphasis on their important function. These units create new objectives for their research and optimization.

Keywords: software, modal analysis, screw conveyor, vibration

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The Horizon: A User Experience Assessment of Automotive User Interfaces

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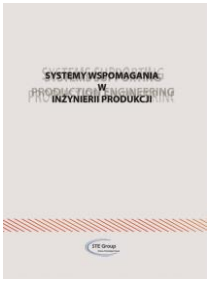

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Abstract: Innovations for new display technologies equipped in vehicles set forth a need for assessing the impact of their user-adoption and emergence. This paper offers a phenomenological approach for investigating the user interaction and user experience of driving when augmented reality, heads-up displays, and digital screens are present. In doing so, this paper aims to show how the phenomenological concept of the horizon helps us to understand the ways in which screen technologies may affect the quality of the user experience for drivers. Implications of the horizon allow us to consider how, while driving, we recognize objects categorically in sense perception, observe the present and foresee its future consequences, and make decision-procedures according to levels of priority and attention to detail. As a result, these considerations help strengthen our approach to understanding driving activity while screens are in the periphery. Thus, these findings are suggested to be adopted for further user experience quality assessments in the field of intelligent transport systems.

Keywords: Horizon, automotive user interface, user experience, phenomenology, UX design, safety

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Znaczenie procesu wdrożenia pracownika samorządowego w doskonaleniu organizacji pracy urzędu

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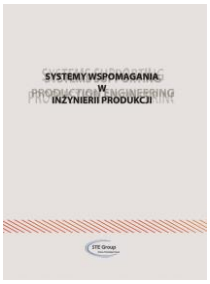

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Streszczenie: Celem artykułu jest przedstawienie znaczenia procesu wdrożenia (onboarding) pracownika samorządowego dla organizacji, jaką jest urząd administracji publicznej. Onboarding jako usystematyzowany zbiór praktyk, które pomagają pracownikowi rozpocząć pracę w danej organizacji ma kluczowe znaczenie z punktu widzenia urzędu realizującego zadania publiczne. Szczególnie będzie to widoczne w organizacjach zatrudniających wielu pracowników. Zaprojektowany i funkcjonujący proces wdrożenia nowego pracownika w strukturę urzędu, stanowi narzędzie zarówno doskonalące prace samego pracownika, ale także organizację pracy urzędu. Z perspektywy administracji publicznej proces ten przygotowuje osoby do pracy zarówno wewnątrz organizacji, jak i do pracy z klientem zewnętrznym w ściśle określonych ramach prawnych. W artykule przedstawiona przykład praktyczny całego procesu wdrożenia, który obejmuje zarówno zagadnienia z organizacji pracy urzędu, jak i zagadnienia merytoryczne, wprowadzając urzędnika do pracy na konkretnym stanowisku. Artykuł omawia zagadnienie oboardingu w urzędzie w odniesieniu do przepisów ustawy o pracownikach samorządowych, przedstawiając jednak proces wdrożenia w kontekście szerszym niż przypadki odbycia obligatoryjnej służby przygotowawczej.

Słowa kluczowe: proces wdrożenia pracownika, wizerunek pracodawcy, administracja publiczna, zarządzanie zasobami ludzkimi, doskonalenie umiejętności pracowników

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Wdrażanie projektów ze sfery inteligentnego miasta na przykładzie działań przygotowywanych przez samorząd terytorialny i jednostki podległe

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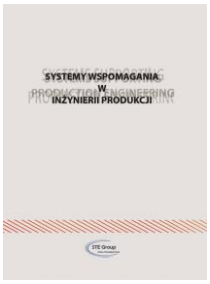

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Streszczenie: Wyzwaniem dla nowoczesnych miast jest podejmowanie innowacyjnych działań rozwojowych. To również wyzwanie dla jednostek samorządu terytorialnego. Aby zbadać stan faktyczny przeprowadzono inwentaryzację rozwiązań odnoszących się do koncepcji smart city realizowanych w 2022 roku lub przygotowywanych do wdrożenia w Zabrzu. Pozyskano dane w Urzędzie Miejskim, jednostkach kultury, sportu i rekreacji, a także spółkach komunalnych. W wyniku kwerendy przeprowadzonej zgodnie ze stanem na 1 lipca 2022 roku ustalono 78 takich usług, rozwiązań, aplikacji lub urządzeń. Przeważająca większość, ponieważ 75 proc. z poddanych analizie projektów została zrealizowana. 9 proc. znajdowało się na etapie wdrażania, a następnych 9 proc. było w fazie planistycznej. Kolejne 4 proc. zadań obejmowało zarówno fazę funkcjonowania wdrożenia jak też planów dalszej rozbudowy lub aktualizacji, a 3 proc. częściowego funkcjonowania i wdrażania kolejnych etapów. Istotną kwestią jest aplikowanie przez samorząd terytorialny o fundusze ze źródeł zewnętrznych na sfinansowanie działań ze sfery Smart City. Na podstawie przeanalizowanych danych można stwierdzić, że część takich projektów została sfinansowana w całości ze środków, które nie obciążały budżetu miasta, a większość w znacznej części z funduszy pozabudżetowych.

Słowa kluczowe: Smart City, samorząd terytorialny, inteligentne miasto, finansowanie rozwoju miast

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Analysis of the Effect and Relationship of Expo Organizations on the City: Expo 1998 Lisbon Case

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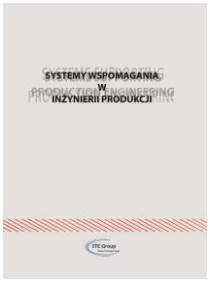

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Abstract: Expo organizations are global events dedicated to finding solutions to the fundamental challenges faced by humanity through engaging and immersive events organized within the framework of a determined theme. It plays an important role in raising awareness of the host city and international participants, as well as helping to shape a nation's image and reputation. The idea of introducing the changes and developments taking place around the world to the whole world and bringing people with different cultures and views together on a common platform is an important factor in the formation of Expo organizations. Hosting Expo events is an opportunity that every city can get perhaps once in its history. For this reason, it is very important that the time frame, which starts with the candidacy application and covers the organization process and beyond, is carried out successfully. In this direction, the effect and relationship of Expo organizations on the city were analyzed in this study. The impact of Expo 1998 Lisbon, chosen as the sample, on the city and the relationship established with the city were analyzed, and the importance of Expo organizations in branding and promotion of cities was tried to be determined. The example of Expo 1998 Lisbon was analyzed by examining the studies in the literature, and it was aimed to determine the evaluation criteria for the relationship of the Expo organizations planned to be organized in the future with the city.

Keywords: Expo, Expo 1998 Lisbon, City, Urban Rehabilitation

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Usability of Obsidian With Special Refraction as an Ornamental Stone by Bonding With Epoxy Resin

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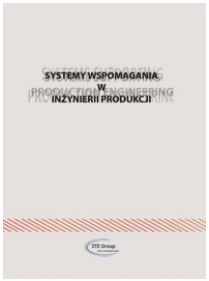

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Abstract: Ornamental stones have been used quite a lot from past to present, and they are produced both naturally and synthetically in terms of visuality, durability and rarity. Naturally used ornamental stones are divided into two different classes as precious and semi-precious, and obsidian with two different colors belonging to the Nemrut volcanics used in the study is classified as semi-precious stones. Obsidian is a volcanic glass, showing a special fracture (conchoidal) and fracture surfaces give the rock a distinctive shine. In this study, obsidian was classified by breaking in different sizes (8-4.75 mm, 4.75-2 mm and 2-0.6 mm) in order to achieve this brightness. While black obsidian shards were obtained from 4.75-2 mm in size, brown obsidian shards were obtained from 2-0.6 mm shards and chose with the help of tweezers. Obsidian fragments with both colors were bonded with epoxy resin mixed at a ratio of 2:1 (epoxy and hardener) and placed in jewelry apparatus. The known durability properties and gloss of epoxy and the gloss on the broken surfaces of obsidian have been highlighted, and it has been observed that obsidian which has been used with different cutting and polishing techniques until now, can be obtained as a new product by using binder material. It is suitable to be used as an ornamental stone in jewelry making as a result of binding the obsidian fragments with epoxy by making use of the shines that occur on the fractured surfaces of the obsidian. In addition, it has been revealed that new products can be obtained as a result of bonding many natural rocks and minerals by using different binding materials.

Keywords: Ornamental Stone, Obsidian, Conchoidal Fracture, Epoxy, Jewelry

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The Effect of the Main Component Ratios in the Joint Filling on the Product Quality

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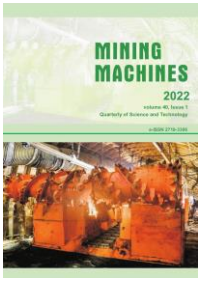

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Abstract: When building materials are exposed to environmental and natural factors such as temperature differences, humidity, strong wind and earthquake in the areas where they are applied, irreversible damages such as separation, cracking and level difference occur in structures and building materials. In order to prevent these damages, the joints are left between the building materials and the gaps are filled with filling materials. The composition of the materials filling the joint gaps is also very important. The most important problems encountered in joint fillings are rupture, cracking and therefore permeability. In this study, it is aimed to compare the joint filling materials produced from different proportions of aggregate and white cement against rupture and cracking, and to determine the mixture ratio that exhibits the best performance. 5 different recipes were prepared by using calcite powder as aggregate, white Portland cement as binder and water-repellent, volumizing and thickening chemical additives as auxiliary. On the prepared test samples; Capillary water absorption, water absorption by weight and volume, unit volume weight, saturated unit volume weight, porosity, compressive strength, bending strength, surface hardness and abrasion resistance tests were carried out. Considering the cost and environmental damage of cement, which is one of the main components in joint filler material, DD2 (Calcite (71.50%) + White Cement (26.50%) + [Polymer + Cellulose + Plasticizer + Silicone] 2% has been detected as the most appropriate recipe.

Keywords: cement, joint filling, calcite, building materials

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Determination of Physical and Mechanical Properties of Limestones Used as Marble in Tut-Adiyaman Region in Turkey

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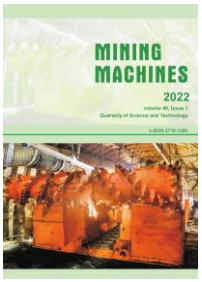

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Abstract: This study aimed to reveal the petrography and physical-mechanical properties of limestones, which have an important reserve and are used as marble, in Tut district of Adıyaman province, which is one of the important cities of southeast Anatolia. As a result of petrographic analysis of the rock known commercially as Emprador, it was determined that it is bioclastic limestone with abundant nummulite fossils. Density, dry and saturated unit weight, water absorption, surface roughness, abrasion resistance and uniaxial compressive strength tests were applied to determine the physical and mechanical properties of the limestones. According to the test results obtained, the density of the limestones, dry unit weight, saturated unit weight, water absorption by weight, water absorption by volume, average surface roughness, ten points roughness average, maximum roughness value, Böhme abrasion resistance and uniaxial compressive strength values were determined as 2.486 gr/cm^3, 2.478 gr/cm^3, 2.52 gr/cm^3, 1.482%, 3.644%, 3.31 µm, 16.24 µm, 20.03 µm, 8.958 cm^3/50 cm^2 and 1004.03 kg/cm^2 respectively. The results show that the limestones in and around Tut (Adıyaman) county can be used in large areas for decorative purposes, with their physical and mechanical properties, as well as their color tone and the texture formed as a result of the calcite veins being shaped like a natural pattern.

Keywords: Natural stone, marble, limestone, physico-mechanical tests

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