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Record 1 of 134**Title:** Corrosion Resistance of Electrodeposited Layers using a Zn-Ni Electrolyte Impregnated with Tri-, Tetra-, and Pentavalent Elements**Author(s):** Chira, M (Chira, Mihail); Hegyi, A (Hegyi, Andreea); Vermesan, H (Vermesan, Horatiu); Szilagyi, H (Szilagyi, Henriette); Lazarescu, A (Lazarescu, Adrian)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 4-11 **DOI:** 10.1016/j.promfg.2020.03.002 **Published:** 2020**Abstract:** This paper describes the obtaining of an electrodeposited composite layer by enriching the Zn-Ni alkaline electrolyte with tri-, tetra- and pentavalent elements. The aim was to obtain a system of oxides of type n and p on the surface of a sample, after exposing to a corrosive environment would block the electric charge transport. Measurements of the open-circuit potential, potentiodynamic polarization and the electrochemical impedance spectrum, shown that for a certain proportion of the enriching elements, the corrosion current is much lowered. (C) 2020 The Authors. Published by B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.**Accession Number:** WOS:000582466200001**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 2 of 134**Title:** A Technical Version of Achieving a Brass Coated Surface on Steel Wires**Author(s):** Tintelecan, M (Tintelecan, Marius); Ilutiu-Varvara, DA (Ilutiu-Varvara, Dana-Adriana); Alabanda, OR (Rodriguez Alabanda, Oscar); Sas-Boca, Boca, Ioana Monica)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 12-18 **DOI:** 10.1016/j.promfg.2020.03.003 **Published:** 2020**Abstract:** The paper presents in detail the technological flow for achieving, nowadays, for a brass coating on steel wires, as well as a proposed technical procedure (and patented by the patent 0011467) to get the same type of surface on the steel wires. It is noted that steel wires which have been finally coated are the constituent elements of motor vehicle tires, so the "grip force" achieved by this coating and the rubber mass are particularly important. The current technological procedure for the construction of a brass coated surface on the steel wires involves a first phase of copper deposition (in fact in two steps: the first step consists in an electrodeposition followed by the second step: chemical deposition of copper). In the second phase the electrodeposition of Zn is achieved. Finally, the two previous depositions have been diffused (through a process called thermo-diffusion). The thermo-diffusion is achieved by direct electrical heating, but provides a product "with problems" for the subsequent wire drawing process. We propose replacing it with a simpler technological procedure involving the achieving of the brass coating layer on steel wires through a single electrodeposition technique followed, by a wire drawing process [1]. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.**Accession Number:** WOS:000582466200002**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 3 of 134**Title:** Mechanical Properties of Lime Based Composites**Author(s):** Denes, TO (Denes, Tunde-Orsolya); Tamas-Gavrea, DR (Tamas-Gavrea, Daniela-Roxana)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 19-26 **DOI:** 10.1016/j.promfg.2020.03.004 **Published:** 2020**Abstract:** The aim of this paper is to develop new composite materials based on natural components, which would have a reduced impact on the environment. Therefore, this paper analyses the mechanical properties of the obtained composites based on hydrated lime, organic admixture, and wool fibres. The assessed properties of the composites are the following: apparent density, flexural strength, and compressive strength. On the basis of the obtained results one can state that the mechanical properties are influenced by the type of the organic admixture and the wool fibre content. Increasing wool fibre content leads to an increase of flexural strength, but, in general, the compressive strength is influenced in a negative way. Considering the obtained values for the mechanical strength tests, the studied composites could be used in the construction industry as interior finishes, although a further analysis is needed to confirm the applicability of these materials. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.**Accession Number:** WOS:000582466200003

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Record 4 of 134

Title: Synthesis of Ti-Ni-O Modified Surfaces on Shape Memory Alloys for Biomedical Applications

Author(s): Strnad, G (Strnad, Gabriela); Ciurezu, L (Ciurezu, Leonard); Berbecaru, AC (Berbecaru, Andrei Constantin); Gingu, O (Gingu, Oana)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 27-33 **DOI:** 10.1016/j.promfg.2020.03.005 **Published:** 2020

Abstract: Present paper investigates the relationship between the processing parameters of electrochemical anodization (EA) and the oxide morpho developed on cylindrical surface of 0.4 mm diameter wires of NiTi alloy. The synthesis was done by EA in fluoride based electrolyte by using aqueous of 9.34 wt.% H₃PO₄ and 0.5 wt.% HF. Several experiments were carried out at anodization potential of U = 20, 10, 5, 4, 3, 2 V for a duration of 10 minu Longer experiments of 30 min were done at a fine-tuned value of anodization potential of U = 3.5 V. Scanning electron microscopy (SEM and HR-SEM) used to evaluate the morphology of the Ti-Ni-O oxide layers. The mass loss and the current evolution were analyzed in relation with the anodization By using anodization potential of 10 V and 20 V, current densities were of 15-62 mA/mm(2) and the process that occurred was an etching one, leading mass loss of 4- 12.5 %. Optimization of EA by fine-tuning the electrical parameters, i.e use of lower anodization potential of 3.5 V and 4 V, lead to curri densities of 1- 1.8 mA/mm(2), and to the synthesis of Ti-Ni-O oxide with a well structured nanoporous morphology with pores' diameter in the 20- 14 range. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conferen Interdisciplinarity in Engineering.

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Record 5 of 134

Title: Composition for Anticorrosive Cooling and Protection Emulsion

Author(s): Nutiu, E (Nutiu, Emil); Albu, S (Albu, Sorin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 34-37 **DOI:** 10.1016/j.promfg.2020.03.006 **Published:** 2020

Abstract: The paper refers to a new composition of Metalworking Fluids (MWF) for reduction of friction, friction and abrasion between cutter and ma metal, remove heat generated and prevent corrosion of machined parts. Metalworking fluids are used to assist machining operations. The products c used were based on mineral oils and which contained a large amount of aromatic oils subsequently proved to be carcinogenic and causing respirato diseases. The problem solved by this new composition of Metalworking Fluids (MWF)consists in providing qualitative and quantitative ratios between component elements that allow for a composition between the constituents of the composition for cooling and anticorrosive protection to obtain ve emulsions with optimal lubricating properties and at the same time protective corrosion. (C) 2020 The Authors. Published by Elsevier B.V. This is an c access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 6 of 134

Title: Technological Support of Abrasive Manufacturing of Products on a Flexible Basis by Evaluating Performance Indicators

Author(s): Syreyshchikova, NV (Syreyshchikova, Nelli V.); Pimenov, DY (Pimenov, Danil Yu.); Mikolajczyk, T (Mikolajczyk, Tadeusz); Moldovan, L (Mold Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 38-43 **DOI:** 10.1016/j.promfg.2020.03.007 **Published:** 2020

Abstract: In companies that perform fabrication supported by abrasive processes a challenge of the quality assurance system is development and cc tests for flexible abrasive tools. In this paper, are given the results of technological support of abrasive manufacturing of products on a flexible basis creating a method and means of its implementation for assessing the quality of a flexible abrasive tool based on performance indicators. A methodo testing the quality assessment of a flexible abrasive tool has been developed, which is supported by a test bench. An assessment of the stability and objectivity of the obtained indicators when testing a tool from sandpaper, grinding belts and flap wheels is given, and its compliance with the requir of the standards is shown. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conferen Interdisciplinarity in Engineering.

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Record 7 of 134

Title: Innovative Method to Reduce Process Costs in the Field of Electrostatic Powder Painting

Author(s): Jozsef, B (Jozsef, Boer); Blaga, P (Blaga, Petruta)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 44-48 **DOI:** 10.1016/j.promfg.2020.03.008 **Published:** 2020

Abstract: The main purpose of any business is to achieve profit, that is, to obtain income from the capital used in an enterprise, representing the difference between the investment and the work done. Increase in profits can also be achieved by reducing the costs of the technological process. Electrostatic painting is a superior paint coating technology, in powder form on metallic surfaces, which are treated thermally. It is used in almost all industries, such as architecture, aeronautics, machinery and equipment, household, sports or electronics, etc. In the powder painting activity in the electrostatic field, the consumption of raw materials, respectively the losses related thereto, have a significant weight in the total final balance at the time when the profit and losses are calculated. The paper aims to present an innovative method in the field of electrostatic painting for those who want to make innovative and efficient implementations in order to substantiate the decisions leading to the reduction of the production costs without affecting the quality of the product and the offered service. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference on Interdisciplinarity in Engineering.

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Record 8 of 134

Title: Experimental Analysis of the Vertical Vibration of the Railway Bogie During Braking

Author(s): Dumitriu, M (Dumitriu, Madalina); Gheti, MA (Gheti, Marius Alin); Cruceanu, IC (Cruceanu, Ioan Cristian)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 49-54 **DOI:** 10.1016/j.promfg.2020.03.009 **Published:** 2020

Abstract: The paper analyzes the vertical vibration of a bogie of a railway passenger vehicle, based on the accelerations of the axles and the bogie frame obtained within measurements done during braking. This end, the axle and bogie accelerations have been measured during three different braking sequences and compared with the accelerations measured at constant speed. The results featured highlight the fact that bogie accelerations increase greatly during braking and become comparable to axle accelerations. Also, based on the spectral analysis of the measured accelerations, a series of defects in the wheel and rolling surfaces of the rail and wheels are identified. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference on Interdisciplinarity in Engineering.

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Record 9 of 134

Title: Development of the Technological Indicator of the Grain Bonding Strength for Coated Abrasives

Author(s): Syreyshchikova, NV (Syreyshchikova, Nelli Vladimirovna); Guzeev, VI (Guzeev, Victor I.); Ardashev, DV (Ardashev, Dmitrii V.)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 55-63 **DOI:** 10.1016/j.promfg.2020.03.010 **Published:** 2020

Abstract: The paper reflects the results of developing a method for assessing the performance of a coated abrasive (CA) using the proposed technological indicator of the grain bonding strength of the grit paper. The authors created an analytical model of the grain bonding strength of the grit paper reflecting its performance (fracture/wear resistance) under the influence of corresponding loads on it. The essence of the method of determining the indicator of grain bonding strength consists in a quantitative assessment of the value of the permissible force per unit area of the tool's working layer, and in a quantitative assessment of the strength of grain retention by the bond from the condition of the grain stability in the bond under the influence of the permissible force. The values of the developed indicator were established experimentally when testing CAs of grit papers with various characteristics on a fabric basis with natural and synthetic bonds of produced grain sizes. The authors developed recommendations to be used by CA manufacturers to guide tools by specific operations of use, and to be used by CA consumers to reasonably choose the tool characteristics and application modes for a rational use of CAs at the highest efficiency of parts machining operations. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference on Interdisciplinarity in Engineering.

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Record 10 of 134

Title: Concept of Designing High-Speed Processing Operations based on Complex Process Simulation

Author(s): Shipulin, LV (Shipulin, Leonid V.); Ardashev, DV (Ardashev, Dmitrii V.)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 64-69 **DOI:** 10.1016/j.promfg.2020.03.011 **Published:** 2020

Abstract: We considered modern technologies of the development and optimization of control programs for edge cutting processing (for milling). The technology consists in carrying out cutting tests, use of mathematical models of process, development of the control program for the CNC machine; optimization on the basis of mathematical models. It is shown that there are no such tools for high-speed processing. We analyzed the procedures of designing high-speed processing cycles and showed that the mathematical models used in them are poorly interconnected. Based on the description of high-speed processing, we proposed a complex simulation model, which is a basis of a software suite of computer-aided processing cycle design. The concept of the automated design and optimization of a cycle and the control program for the CNC machine is offered. According to the concept, the user provides input basic data, and the system builds an optimal cycle and issues the control program. At the same time, the system consists of two interacting parts: design techniques of design and a complex simulation model. Internal interrelations in a complex simulation model are considered. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Title: Stresses in a Water Supply Network's Elbow in Case of Burial in Ground and Anchorage in Concrete

Author(s): Scarlatescu, DD (Scarlatescu, Dumitru Daniel); Itu, C (Itu, Calin); Modrea, A (Modrea, Arina); Hebert, H (Hebert, Hektor)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 70-77 **DOI:** 10.1016/j.promfg.2020.03.012 **Published:** 2020

Abstract: The paper aims to analyze, from the point of view of the strength of materials calculus, a basic element in the field of the transport of liquids, namely the tube. The solution when the tube is buried in the ground can lead to the damage of the tube by ductile or brittle fracture. In engineering, it is often used to anchor the tube or elbow in a concrete mass. A comparison between the two ways of installing a pipe of a water supply network is made. The paper makes this comparison, which can be followed by verified installation proposals. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 12 of 134

Title: Liaison Forces Eliminating and Assembling of the Motion Equation in the Study of Multibody System with Elastic Elements

Author(s): Scutaru, ML (Scutaru, Maria Luminita); Chircan, E (Chircan, Eliza); Marin, M (Marin, Marin); Grif, HS (Grif, Horatiu-Stefan)

Edited by: Moldovan L; Gligor A

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Abstract: The assembling procedure for the motion equations for the set of differential ordinary equations obtained in the finite element analysis is very difficult, implying both liaisons between finite elements belonging to one elastic body and too liaisons between finite elements belonging to two or more bodies. In this paper we mention the problems that can occur in such type of problems and the procedure necessary to use to obtain the final motion equations, for the whole multibody system with elastic elements. The paper continues previous researches of the authors in the field. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 13 of 134

Title: Determination of the Dynamic Young's Modulus and Poisson's Ratio Based on Higher Frequencies of Beam Transverse Vibration

Author(s): Chirikov, VA (Chirikov, Victor Alexeevich); Dimitrov, DM (Dimitrov, Diyan Minkov); Boyadjiev, YS (Boyadjiev, Yordan Simeonov)

Edited by: Moldovan L; Gligor A

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Abstract: In this paper we suggest an experimental technique for the simultaneous determination of elastic constants (i.e., Young's modulus and Poisson's ratio) based on measured higher natural frequencies of beam transverse vibration. The technique utilizes a universal relationship, derived in our previous research and proven valid for any boundary conditions imposed on a beam, as well as across all natural frequencies of beam transverse vibration. It provides an opportunity for the simultaneous calculation of Young's modulus and Poisson's ratio of a specimen by fitting the universal relationship to experimentally derived higher natural frequencies of beam transverse vibration. The determination of the elastic constants for free-free and cantilever beams made from various materials and cross-sections is presented. Study results are compared to other published research and differences are comprehensively discussed. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Title: Low Velocity Impact Response of Laminate Rectangular Plates Made of Carbon Fiber Reinforced Plastics

Author(s): Baba, MN (Baba, Marius Nicolae); Dogaru, F (Dogaru, Florin); Guiman, MV (Guiman, Maria Violeta)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 95-102 **DOI:** 10.1016/j.promfg.2020.03.015 **Published:** 2020

Abstract: The paper aims to present an experimental study on low velocity impact behavior of composite materials reinforced with carbon fibers. The objectives of investigations are to assess the main characteristics of impact response such as the energy absorbed by the laminate plate, the contact well as the indentation corresponding to different initial kinetic energies of the projectile. The experimental tests were conducted on rectangular plate specimens with dimensions of 150x100x2.5mm(3), cut off from a symmetric laminate made of 8 unidirectional carbon/epoxy vinyl ester laminate the stacked in a lay-up configuration of [0/4-5/45/90]_s. The energy that induced the specimen's complete perforation as well as the energy corresponding level of BVID were determined with regard to typical testing conditions, such as the time varying acceleration, displacement as well as the absorbed energy. Moreover, for comparison purposes, the analytical results obtained for the case of an elastic impact with a projectile velocity of 1m/s, by means of a complete model based on Kirchhoff plate theory, is presented. Within the range of elastic impact, the analytical results demonstrated their good agreement with the experimental testing data in terms of the absorbed impact energy, displacements and contact force time histories. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 15 of 134

Title: Cost Efficiency of a Two Layer Reinforced Concrete Beam

Author(s): Butean, C (Butean, Cristian); Heghes, B (Heghes, Bogdan)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 103-109 **DOI:** 10.1016/j.promfg.2020.03.016 **Published:** 2020

Abstract: This study is trying to provide an economic form of a reinforced high strength concrete beam used for a bending moment load, by replacing quantity of the high strength concrete with normal concrete. Normal concrete will be used in the tension zone and the high strength concrete in the compression zone of the beam, in order to optimize the behavior at bending moment and to highlight the economic benefits. The formwork was established following a parametric study to obtain a minimum amount of high strength concrete in the beam, compared with a reinforced concrete beam composed integrally of high strength concrete using the same loads. Different types of concrete delimitation was made after a flexure design to obtain a minimum between high strength concrete and normal concrete. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-

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Record 16 of 134

Title: Flexure Behavior of a Two Layer Reinforced Concrete Beam

Author(s): Butean, C (Butean, Cristian); Heghes, B (Heghes, Bogdan)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 110-115 **DOI:** 10.1016/j.promfg.2020.03.017 **Published:** 2020

Abstract: This paper presents an overview of the research on flexural behavior of a two layer high strength reinforced concrete beam compared with layer high strength reinforced concrete beam. The experimental program consisted in testing the reaction to a flexural load of a reinforced concrete beam with two different concrete classes and a reinforced concrete beam made of the highest concrete class was made to compare the flexural behavior of layer beam with the single layer beam. Design and properties of the two beams in study was considered according to a preliminary economic param study. The two beams in study were modeled also in a finite element analysis program using experimental data. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Title: The Influence of Infills Made of Different Clay Units on Structural Behavior of Framed Buildings Placed in Different Seismic Areas

Author(s): Dinet, A (Dinet, Andrei); Cobirzan, N (Cobirzan, Nicoleta); Maghiar, M (Maghiar, Marcel)

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Abstract: The paper highlights the influence of materials' type used for infill walls in overall behavior of framed structures placed in different seismic areas. It may be observed the reduction of materials quantity (reinforcement and concrete) from structural elements, in case of materials with lower density may influence the final cost of the buildings. Considering the structural ductility, three methods has been adopted for structural analysis of building designed with high ductility showing differences up to 29% in terms of quantity of materials. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 18 of 134

Title: Durability of Fly Ash Eco-friendly Cement Mortars in Severe Environment

Author(s): Malheiro, R (Malheiro, Raphaelae); Camoes, A (Camoos, Aires); Meira, G (Meira, Gibson); Pinto, J (Pinto, Joao)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 122-130 **DOI:** 10.1016/j.promfg.2020.03.019 **Published:** 2020

Abstract: The incorporation of waste and industrial by-products into concrete has been one of the alternatives to reduce the world consumption of cement and, consequently, to make it a more eco-friendly material. Therefore, and knowing that durability plays an important role in the life cycle of the construction materials, this work investigates the durability of cementitious materials with incorporation of fly ash (FA) when submitted to environments containing simultaneously the aggressive agents CT and CO₂. The increase in the amount of aluminates provided by cement substitution by FA is one of the factors that leads to a decrease in the free chlorides content since the aluminates react chemically with the chlorides binding them. On the other hand, Ca(OH)₂ present in the matrix from cement hydration is consumed due to the pozzolanic reactions, facilitating the advance of the carbonation front. In this context, it is important to know the behaviour of cementitious materials containing FA in environments subjected simultaneously to chlorides and carbonation.

Mortar specimens containing 0, 20, 40 and 60 %wt of Portland cement CEM I 42.5R replaced by FA were moulded. After 90 days of curing, half of the specimens were introduced into the carbonation chamber (20 degrees C, 55 % RH and 4 % CO₂) where they remained for 15, 60 and 90 days. The other half was protected with plastic film during the same period. After, the specimens were subjected to the chloride diffusion test by migration.

According to the obtained results, there was an increase in the chloride diffusion coefficient of the mortars submitted to the combined action for all

percentages of FA incorporation. However, this increase was most evident for the higher percentages of cement replaced by FA. This fact may be related to the increase in the large capillary pores caused by carbonation and to the fact that the carbonated concrete has its chlorides binding capacity reduced. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 19 of 134

Title: Assessment of Recycling Potential of the Steel Mill Scale in the Composition of Mortars for Sustainable Manufacturing

Author(s): Ilutiu-Varvara, DA (Ilutiu-Varvara, Dana-Adriana); Aciu, C (Aciu, Claudiu); Tintelecan, M (Tintelecan, Marius); Sas-Boca, IM (Sas-Boca, Ioana)

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Abstract: The purpose of our paper is to assess the recycling potential of the mill scale in the composition of mortars, in order to improve the management of industrial wastes from steelmaking in the electric arc furnaces, by identifying the possible solutions for natural resources conservation. For this purpose, sand from the mortar compositions was replaced, in different proportions, with the steel mills. We have presented the experimental procedures for the physical and mechanical characterizations of the mortars. The experimental results regarding the replacement of the sand with the mill scale, in order to obtain the mortars, show that both the compressive strength and the flexural strength are inferior to the standard sample. As the proportion of the mill scale (replaced by sand) increases, the mechanical strengths of the two samples decrease below the value of the mechanical strengths of the standard sample. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 20 of 134

Title: Lightweight Concrete with Waste - Review

Author(s): Bejan, G (Bejan, Gabriel); Barbuta, M (Barbuta, Marinela); Vizitiu, RS (Vizitiu, Robert Stefan); Burlacu, A (Burlacu, Andrei)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 136-143 **DOI:** 10.1016/j.promfg.2020.03.021 **Published:** 2020

Abstract: The environment protection related to wastes elimination and rational consumption of raw natural materials is an important target of built materials and construction industry. New materials such as eco-concrete, geopolymer concrete, eco-composites, etc. have been produced by using different types of wastes as components. Fly ash, ground granulated blast furnace slag, silica fume, tire waste, plastics, glass, agro-wastes, etc were used for replacement of cement or aggregates in non-traditional concretes. Lightweight concretes can also be prepared by using wastes. In the article are presented some research of authors that obtained lightweight concrete by using different types of wastes. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 21 of 134

Title: Microscopical and Macroscopical Analysis of Recovered Bricks for Assessing Their Reusability in Masonry Buildings

Author(s): Cobirzan, N (Cobirzan, Nicoleta); Balog, AA (Balog, Anca-Andreea); Thalmaier, G (Thalmaier, Gyorgy); Nasui, M (Nasui, Mircea); Munteanu, C (Munteanu, Constantin); Babota, F (Babota, Florin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 144-149 **DOI:** 10.1016/j.promfg.2020.03.022 **Published:** 2020

Abstract: The paper analyses from mineralogical, chemical and physical point of view, some samples of ceramic bricks resulted from rehabilitation of two existing buildings, designed and constructed in the late of XIX century. The purpose of the paper it was to determine the characteristics of recovered bricks at microscopic and macroscopic level in order to evaluate their possibility to be reused in construction fields. The results show that analysed bricks may be reused in new or existing buildings as unit for construction of structural and non-structural masonry elements, protected from weathering by rendering or cladding materials. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 22 of 134

Title: Opportunities Regarding the Use of Adobe-bricks within Contemporary Architecture

Author(s): Calatan, G (Calatan, Gabriela); Hegyi, A (Hegyi, Andreea); Dico, C (Dico, Carmen); Szilagyi, H (Szilagyi, Henriette)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 150-157 **DOI:** 10.1016/j.promfg.2020.03.023 **Published:** 2020

Abstract: The purpose of this experimental research was to establish optimal compositions for adobe-brick masonry, masonry mortar and plaster, si the identification of treatments applied to the clay surface to improve its water resistance. The maximum values of mechanical resistances are obtain mixture with clay, sand, and a solution of bones glue, flexural tensile strength is improved by adding hemp fibers. The thermal conductivity is improv adding straw. The optimal mixture for mortar is clay and sand with grains of a maximum size 0-2 mm, admixed with lime. The surface treatment iden by impregnation with linseed oil. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conferen Interdisciplinarity in Engineering.

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Record 23 of 134

Title: Influence of Natural Organic Polymers upon Plaster Mortar Workability

Author(s): Pintea, AO (Pintea, Alexandra Olga); Manea, DL (Manea, Daniela Lucia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 158-164 **DOI:** 10.1016/j.promfg.2020.03.024 **Published:** 2020

Abstract: This paper presents the study of workability length and correction time for our own formulas of plaster mortar including traditional natura polymers as additives, such as casein, egg and rice. In order to define the natural organic polymers (casein, rice, egg), various tests were carried out f electrical conductivity, turbidity, dissolved solids content, pH and others. The physical and chemical properties of the natural organic polymers were identified and their influence upon the plaster mortar workability was studied paying attention to the technology regarding their putting into work. (The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 24 of 134

Title: Influence of Natural Organic Polymers upon the Mechanical Properties of Plaster Mortars

Author(s): Pintea, AO (Pintea, Alexandra Olga); Manea, DL (Manea, Daniela Lucia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 165-172 **DOI:** 10.1016/j.promfg.2020.03.025 **Published:** 2020

Abstract: The present paper shows the influence of polymer additions (casein, rice, egg) to classical plaster mortars. For the experimental program, 1 our own formulas of plaster mortars to which natural organic polymers were introduced as additives; on these mortars the flexural tensile strength, resistance to compression and the adherence to the support layer, according to SR EN. The objective of the paper lies in identifying the natural orgar polymer which has the highest impact upon the mechanical characteristics by improving them. (C) 2020 The Authors. Published by Elsevier B.V. This open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scie committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 25 of 134

Title: Determination of the Harmonic Response of a Railway Wheelset using the Finite Element Analysis Method

Author(s): Cruceanu, IC (Cruceanu, Ioan Cristian); Soroan, S (Soroan, Stefan)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 173-179 **DOI:** 10.1016/j.promfg.2020.03.026 **Published:** 2020

Abstract: In this paper, the harmonic response of the railway vehicle wheelset is investigated by using the finite element analysis method. The study the vibrations of a Minden Deutz bogie of a passenger coach, having brake shoes and currently in operation on Romanian railway network. It is well known that by analysing the frequency response it can be identified how the parameters of the wheel-rail system is influencing the level of vibrations and the amount of rolling noise generated. Nonetheless, the approach of determining the harmonic response using the finite element analysis method is the approach to studying the behaviour of the wheelset at frequencies greater than 1500 Hz. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 26 of 134

Title: Potential of Fungi for Concrete Repair

Author(s): Martuscelli, C (Martuscelli, Carolina); Soares, C (Soares, Celia); Camoes, A (Camoses, Aires); Lima, N (Lima, Nelson)

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 180-185 **DOI:** 10.1016/j.promfg.2020.03.027 **Published:** 2020

Abstract: Concrete is the most widely used construction material in the world being cement one of its main components. Cement production accounts for 8% of anthropogenic CO₂ emissions into the atmosphere. Most of the world's infrastructures are produced from reinforced concrete and cracking is one of the major drawbacks for its durability. The cracks in concrete reduce their resistance capacity and allow the entry of harmful agents both for their microstructure and for the reinforcements located inside the structure. Sustainable solutions aimed at reducing costs and environmental impacts for this problem have been researched. The bioremediation of precipitation mechanisms with microbiologically induced calcium carbonate (MICCP) is an alternative to the traditionally used methods and a way to mitigate the environmental impact of using more cement and polymers. Most of the biocementation studies use bacteria as microorganisms responsible for the CaCO₃ induction process. Fungi are potentially better for the biocementation process because they form more biomass and are filaments, which may aid in the mechanical behaviour of the formed bioconcrete. Thus, the present work proposes the development of a methodology to analyse the potential use of fungi present in concrete structures as biorepair agents. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 27 of 134

Title: Mix Design Approach of Supplementary Cementitious Materials Portland Cement-based Mortars for Anchoring Post-installed Reinforcement Bars in Hardened Concrete

Author(s): Rosca, B (Rosca, Bogdan); Corobceanu, V (Corobceanu, Vladimir)

Edited by: Moldovan L; Gligor A

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Abstract: Post-installed anchorages are used extensively in civil and structural engineering worldwide in both structural and nonstructural concrete constructions. The most used anchoring material is the polymer-based chemical resin which have some undisputed advantages, but the long-term performance over the expected service life is under concern. The paper presents a mix design approach of an alternative anchoring material which consist in well suited mortars with advanced characteristics in fresh and hardened state. The anchoring material is a supplementary cementitious material Portland cement-based mortar used as structural bonding material for fixing reinforcing steel bars in hardened concrete.

A series of standardized tests were performed within the experimental setup with the objective of assessing the performance of the mortars in terms of consistency, cohesiveness, strength and adherence. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 28 of 134

Title: Influence of Blast Furnace Slag on the Durability Characteristic of Road Concrete Such as Freeze-Thaw Resistance

Author(s): Nicula, LM (Nicula, Liliana Maria); Corbu, O (Corbu, Ofelia); Iliescu, M (Iliescu, Mihai)

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Abstract: The present paper assesses the state of degradation from the action of the freeze-thaw phenomenon on the new cement mixes made with of granulated and ground blast furnace slag (GGBS) but also with partial replacement of the natural aggregates with different percentages of artificial aggregates from ungranulated and crushed blast furnace slag (ACBS). The purpose of this study is to evaluate the behavior of road concrete mixtures blends made with conventional materials for an extended period of repeated freeze-thaw cycles. Thus, from 100 freeze-thaw cycles, as is commonly practiced for road concrete, the test period was extended to up to 150 cycles and then up to 300 freeze-thaw cycles. Three blends were made with 15 addition of slag powder of less than 63 μ m and 20%, 40%, 60% of artificial aggregates of 0/4mm that replaced the natural sand. The variation of the dynamic elastic modulus at 150 cycles and, respectively, at 300 freeze-thaw cycles was tested by the non-destructive ultrasonic method on laborator samples. It was thus noticed that in the mixture in which 15% added slag powder and 60% artificial aggregates were incorporated the durability perf was affected, especially at 300 freeze-thaw cycles. However, in the mixture with 15% added slag powder and 40% artificial aggregates the durability characteristics improved compared to the previous blend and in the mixture with 15% addition of slag powder and 20% artificial aggregates the resu much better than those obtained in blends made with conventional materials. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of International Conference Interdisciplinarity in Engineering.

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Record 29 of 134

Title: Rubber as a Vital Component of Railway Tracks

Author(s): Kollo, SA (Kollo, Szabolcs Attila); Puskas, A (Puskas, Attila); Kollo, G (Kollo, Gavril)

Edited by: Moldovan L; Gligor A

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Abstract: This publication, following the recommendations of European Railway Standards aims to offer an overall picture about the variation of the of ballasted railway tracks, using different rail track components, with various mechanical properties. In this way also will change the load distributic capacity of the track superstructure, which has a huge influence on the design of the track, respectively on the life cycle of the track elements. (C) 20: Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 30 of 134

Title: Motion Equation of a Rectangular Finite Element with a Two-Dimension Motion in a Membrane State

Author(s): Eliza, C (Eliza, Chircan); Luminita, SM (Luminita, Scutaru Maria); Ana, T (Ana, Toderita); Arina, M (Arina, Modrea)

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Abstract: In this paper we develop a rectangular finite element use for the dynamic analysis of a multibody system with elastic elements. We consid membrane type rectangular element for this study. The motion equation for one single element is obtained and can be used in case of plate structur need to be discretized in finite elements in finite element analysis. The paper continues previous researches of the authors in the domain. (C) 2020 T Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 31 of 134

Title: Improving Safety and Traffic Conditions on National Roads Passing through Towns without Bypass

Author(s): Rosca, M (Rosca, Mircea); Oprea, C (Oprea, Cristina); Petrescu, R (Petrescu, Rely); Burciu, S (Burciu, Stefan); Stere, A (Stere, Armand)

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Abstract: Traffic congestion spread beyond major cities and expands on national roads that connect various sites of interest. Many of these roads pass through the towns whose inhabitants must endure the negative consequences of transit traffic: increased delays and pollution levels, decreasing pedestrian safety. Thus, it is necessary to find a balance between road users' wishes (drivers and pedestrians) in order to reduce vehicles transit time and increase pedestrian safety. The study of road traffic is a complex problem, difficult to analyze by analytical methods and therefore it is suitable for computer simulation. Using advanced simulation software, the paper investigates the influence of traffic intensity, pedestrian crossings, traffic signals timing and signals coordination parameters through microsimulation of traffic on an important national road that transits a Romanian town without bypass. The proposed solutions can lead to reduced vehicles transit time, of air pollution and an increase of pedestrian safety. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 32 of 134

Title: Solutions for Improving Transit through Intermodal Passenger Terminals

Author(s): Rosca, M (Rosca, Mircea); Oprea, C (Oprea, Cristina); Ilie, A (Ilie, Anamaria); Olteanu, S (Olteanu, Sergiu); Dinu, O (Dinu, Oana)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 225-232 **DOI:** 10.1016/j.promfg.2020.03.033 **Published:** 2020

Abstract: According to the transport White Paper "better modal choices will result from greater integration of the modal networks: airports, ports, rail, metro and bus stations, should increasingly be linked and transformed into multimodal connection platforms for passengers." Transport terminals are the junction points of local, regional or inter-regional transport. The main objective of a transport terminal is to serve the passengers' demand by maintaining their safety and comfort. Intermodal terminals have emerged as a response or solution to the demands of sustainable development (reducing congestion should be the main objective), Bucharest ranks 5th in the world at congestion (according to Tomtom Traffic Index) use of intermodality in passenger transport significantly reduces congestion in cities.

Intermodal passenger terminals lead to reduced congestion but impair passenger quality parameters such as time, comfort, convenience and even ticket cost because each mode of transport has its own pricing principles.

The problem of reducing the transit time through these intermodal terminals is the key in making the public transport more attractive; the way the terminals are designed and organized leads to their intensive use or not. The paper presents a model for designing intermodal passenger terminals that encourage modal transfer. The model's framework supposes the correlation of the transport modes timetables, placing the platforms so that the movements between them are as small as possible, tariff integration and the use of a unique ticket, etc.

The model presented within the paper has been tested on a hypothetical intermodal passenger terminal that has benefited by transport modes schedule correlation through a linear programming with integer numbers model. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 33 of 134

Title: Conceptual Model for Introducing Lean Management Instruments

Author(s): Veres, C (Veres, Cristina)

Edited by: Moldovan L; Gligor A

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Abstract: It's a challenge for a company to adapt Lean Management philosophy and start introducing the concept in its activity, because each economic entity has a quiddity. After studying 11 Lean companies, a conceptual model was developed with the aim to facilitate Lean implementation in other companies which are interested in starting a Lean journey. The developed model was tested in a yet unexplored area for Romania: in the public health sector, and in just 4 months showed improved results, significantly streamlining and organizing main aspects of the organizational activities. This work presents the essential steps of the developed conceptual model. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Title: Digitalization of the System of Data Analysis and Collection in an Automotive Company

Author(s): Pop, LD (Pop, Liviu Dorin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 238-243 **DOI:** 10.1016/j.promfg.2020.03.035 **Published:** 2020

Abstract: Digitalization within a company can turn a classic business into a digital one. Taking into account the processes required for the production and quality-related aspects according to the standards, it is possible to transform the classic production systems into intelligent data-based systems ensure an even higher quality of the products, increasing productivity and thus fulfilling the main purpose of all manufacturing companies, meeting customer requirements. From this perspective, this paper describes some points regarding the digitalized implementation presenting the current situation as well as estimations of percentage reduction of the costs obtained after the optimization of certain processes in a Romanian car company. (C) 2020 Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 35 of 134

Title: Case Study Regarding the Implementation of One-Piece Flow Line in Automotive Company

Author(s): Ioana, AD (Ioana, Apafaian Dumitrita); Maria, ED (Maria, Egri Diana); Cristina, V (Cristina, Veres)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 244-248 **DOI:** 10.1016/j.promfg.2020.03.036 **Published:** 2020

Abstract: In the automotive industry Lean principles are a must. The continuous-flow manufacturing, as a Lean approach, helps to improve production results. This article aims to describe the implementation of One-Piece Flow Line in a local company from Mures County, Romania. The company is part of an Austrian group and operates in automotive industry for more than 10 years. The implementation was done based on the company's experience in Kaizen tools with the goal to build capability, develop sustainability and confidence in the organization so as to implement Lean management into the work. The article highlights the importance of Lean approach and describes the One Piece-Flow positive impact to overall performance of production results as the employees are involved in the process. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 36 of 134

Title: Diagnosis on Improving the Quality of the Wiring Product Using the Technical Level Method

Author(s): Havadtoi, C (Havadtoi, Cristina); Moldovan, L (Moldovan, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 249-255 **DOI:** 10.1016/j.promfg.2020.03.037 **Published:** 2020

Abstract: The stakeholder's requirements and expectations for the quality in the wiring industry is a vital part that needs to be accomplished or to be exceeded in order to get towards continuous improvement. This paper aims to present a diagnosis made on several wire cables, same type but from different producers, from technical and economic point of view in order to get advantage on the market. It is employed the technical level method adapted to the wiring industry. The diagnosis shows the technical characteristics which need improvement towards the satisfaction of clients, but also a comparison of the technical level values of wires which in combination with the economic analysis allows the formulation of cost reduction strategies so that the manufacturing product to become more competitive on the market. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 37 of 134

Title: Development of a Risk Management Technique in Strategic Planning of Universities. Case study of a Polytechnical Institute

Author(s): Syreyshchikova, NV (Syreyshchikova, Nelli V.); Pimenov, DY (Pimenov, Danil Yu.); Mikolajczyk, T (Mikolajczyk, Tadeusz); Moldovan, L (Moldovan, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 256-262 **DOI:** 10.1016/j.promfg.2020.03.038 **Published:** 2020

Abstract: In this paper the results of developing risk management system in a higher education institution are presented. Specifics of developing a c and local risk registers are discussed. A methodology and step-by-step plan of implementing risk management into the strategic activity planning are presented using the example of a polytechnical institute which reveals also the need of education for sustainable manufacturing. (C) 2020 The Autho Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 38 of 134

Title: A Tool for Continuous Evaluation of Competences and Approaches to Employment Support

Author(s): Moldovan, L (Moldovan, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 263-270 **DOI:** 10.1016/j.promfg.2020.03.039 **Published:** 2020

Abstract: This paper presents the ASSESS tool for continuous evaluation of competences and approaches to employment support. It contributes to professionalization of the workers in training and professional insertion by raising awareness and by equipping a shared assessment tool and a met key skills for employment. Its employment consist in 1) selection of key elements which are based on the information available in the ASSESS frame profile, type of competence, category of competence and competence name; 2) evaluation of competences based on two criteria: importance of the competence for the job and ability of the candidate to perform the competence; 3) recommendations based on the results of evaluation. The tool wa in companies from 5 European countries. The tool is rather dynamic and it can be enriched with some work situations which demonstrate the contin improvement of employability skills. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conferen Interdisciplinarity in Engineering.

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Record 39 of 134

Title: A Reference Framework for Continuous Improvement of Employability Assessment

Author(s): Moldovan, L (Moldovan, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 271-278 **DOI:** 10.1016/j.promfg.2020.03.040 **Published:** 2020

Abstract: Studies dealing with informal or non-formal learning have shown in vocational situations a lack of evaluation tools adapted to different ty training situation particularly in a dynamic dimension over the duration of an integration path. The aim of this paper is to identify and describe key s competences with their related indicators for assessment based on specific working situation, which is the Reference framework of key skills for emp and assessment indicators. Research is done within the ASSESS project, in five European partner countries that referred to one sector of activity with importance in their country in which to identify specific and transversal competences: France building, Austria tourism, Spain retail, Romania indust Sweden healthcare. The reference framework is the core element of the ASSESS continuous evaluation tool for skills and approaches to employmen support. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conferen Interdisciplinarity in Engineering.

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Record 40 of 134

Title: The Sustainability and Durability of the Building Seen through the Education-Business Relationship

Author(s): Dumitran, M (Dumitran, Mihaela); Gavis, O (Gavis, Ovidiu); Istoan, R (Istoan, Raluca); Roman, N (Roman, Nicoleta); Aschilean, I (Aschilean

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Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 279-286 **DOI:** 10.1016/j.promfg.2020.03.041 **Published:** 2020

Abstract: The present article aims at proposing a new format of courses for the college graduates of Bachelor and Master of Science degree. It presents a questionnaire that shows the opinions and needs of employers on graduates and the connection of the subjects taught in university with the labour market. Today, the demand for engineers in the labour market is growing, but the employers want to select people with good theoretical knowledge and positive attitude towards work. The idea of the article started as a result of the trilateral meetings of teachers-students-business environment on the occasion of the presentation of new technologies and products, on the construction market (Construct, build together Info, etc.). Research starts with a set of questions addressed to the representatives of construction companies. The questions included in the questionnaire target three related aspects, which link educational plans with the labour market, the importance of practice in the selection of future employees and other skills of prospective employees in the construction sector. The relevant findings of the questionnaire will be transmitted to both companies, as well as the execution of design firms, name public institutions for the administration area. The first set of questions refers to the field of activity of the company (design, execution, administrative sales), the average number of job opportunities for young engineers over the last 5 years and what other properties are favoured in the graduates of engineering education. The second set of questions relates to the employment interview (transcript, theoretical knowledge and/or tests of brain training/intelligence). The third set of questions refers to the willingness to take a student into practice in their knowledge or whether the job seeker is preferred for employment solely on the basis of interviews or only after being surveyed over a period of time. The results are given in graphs, and aspects related to linking education with production, the importance of the practice during the years of study and other skills required by employers are highlighted. From the conclusions in the present research, proposals will be made towards universities regarding the content of the educational plans to raise the compatibility between business and academic education. Click here and insert your abstract text. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 41 of 134

Title: The Importance of Human Resources in the Continuous Improvement of the Production Quality

Author(s): Blaga, P (Blaga, Petruta)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 287-293 **DOI:** 10.1016/j.promfg.2020.03.042 **Published:** 2020

Abstract: In order to improve the production results, a number of techniques, methods or tools belonging to Quality Management and Human Resource Management can be applied to increase production capacity, the volume of manufactured products and the production quality. The paper aims to present the usage of quality tools and human resources management, in a company in the field of automotive production, to achieve positive results, in terms of increasing production capacity, the volume of products and therefore, their quality, through staff motivating as an effect of the usage and application of quality tools in the field of electrical and electronic equipment manufacturing for motor vehicles.

The paper highlights both the Quality Management tools applied within the company and a number of aspects that focused on the motivation and involvement of the human factor in the processes of continuous improvement in order to increase the production efficiency. Applying the tools of Quality Management and Human Resource Management in all the production departments of the company has led to the identification of the causes that affect employees' involvement in the process of continuous improvement in production. After analyzing the identified causes, the management of the company has established to develop programs and actions involving employees in the continuous improvement process. These continuous improvement programs carried out in order to increase the production efficiency, have led to cost reductions, in the period under review, causing significant gains for the company. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 42 of 134

Title: Eco-Innovation and the Contribution of Companies to the Sustainable Development

Author(s): Dogaru, L (Dogaru, Lucretia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 294-298 **DOI:** 10.1016/j.promfg.2020.03.043 **Published:** 2020

Abstract: By addressing the issue of eco-innovation, we will try to provide answers to some important questions, such as: what is and why the eco-innovation is important and which are the ways to achieve it.

Right from the beginning, we specify that the eco-innovation represents an essential component of innovation that is a factor of social and economic progress having the role in creating opportunities for sustainable economic activities.

Any society and any company that wants to be environmentally friendly and prosperous must promote a fair type of innovation that allows for new ways of addressing environmental issues, reducing the energy and resources consumption by promoting sustainable economic activities. That is why the eco-innovation appears to be an important factor in solving the issues regarding the natural resources, the energy security and climate change. With refer

the economy, the eco-innovation aims to reduce the energy and the materials costs as well as the realization of products and services, markets, cons and new business models.

The present paper investigates the role and importance of eco-innovation in developing a sustainable economy, taking into account: the companies' towards the eco-innovation process; the political and legislative framework that supports and promotes the eco-innovation; the services support for process; the financial resources and the access to funding.

The paper seeks to: describe the importance and the necessity of green industry and also the implication and participation of companies in the proc eco-innovation; establish the companies' attitudes towards the eco-innovation; establish the benefits of companies that have applied eco-innovation; their attitude to this process; identify business models that have applied the eco-innovation model and show, based on indicators, the advantages in regard. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 43 of 134

Title: Continuous Vocational Training for Sustainable Work Practices in Forestry

Author(s): Georgescu, MA (Georgescu, Maria-Ana); Gliga, C (Gliga, Crina)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 299-307 **DOI:** 10.1016/j.promfg.2020.03.044 **Published:** 2020

Abstract: Our work focuses on a theme related to the long-term strategic objectives of the EU in the field of education and training, as established by Council since 2009. In the theoretical part of the paper, we presented the regulations regarding the continuous professional training in Romania, but institutions with attributions in the field of vocational training. The practical part is based on a case study conducted in a field that attracts much attention from the point of view of the current sustainability issues, namely in the forestry field.

As methodology, we conducted an opinion poll by means of a questionnaire applied to a large part of the employees of the Gurghiu forestry zone in I County Forestry Department. Our goal was the identification of the training needs of the employees, as well as the identification of their perception of professional training at the organization level. The most important topics selected for analysis concern the types of courses followed by the employees, their opinions on their usefulness, on the importance of vocational training, on the correlation between the courses taken and their personal aspirations, as on the barriers involved in vocational training.

Because in Romania the education through vocational schools has been neglected for several decades, this has affected the sustainability of working practices in different organizations that need qualified staff. We emphasize that it is very important to have more trainers and more training courses at workplace specialization, including in the forestry field. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 44 of 134

Title: Designing Functional ESP (English for Specific Purposes) Courses

Author(s): Marcu, NA (Marcu, Nicoleta Aurelia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 308-312 **DOI:** 10.1016/j.promfg.2020.03.045 **Published:** 2020

Abstract: This article is a study of the methods and materials used in designing ESP (English for Specific Purposes) courses and its aim is to identify its functionality when applied to the specific case of English for manufacturing. The main purpose of the article is to offer a support to the English teacher in his/her endeavor to design an English course in this particular field of engineering. The English teacher has to produce teaching-learning experience: start from the learners' needs and which have to render future professionals in the field of manufacturing that are highly equipped with the functional language skills required by the job market. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 45 of 134

Title: Labour Productivity and Wages in the Romanian Manufacturing Sector

Author(s): Herman, E (Herman, Emilia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 313-321 **DOI:** 10.1016/j.promfg.2020.03.046 **Published:** 2020

Abstract: This study aims to empirically investigate the labour productivity-wages nexus in the Romanian manufacturing industry, in the 2008-2016 period and it is motivated by the need to improve labour productivity and its relationship with wages so as to ensure an increase in the living standards of workers. Our results highlight that the manufacturing sector in Romania has an important contribution to the value added and employment of the non-financial business economy. The results of the correlation and regression analysis show that the level of labour productivity positively influenced wages in the manufacturing sector, in the 2008-2016 period. Also, our findings suggest that the high level of wages in some manufacturing subsectors can be mainly explained by a high level of labour productivity. Moreover, results emphasize, on the one hand, persistent and increasing gaps between labour productivity and wages in the 2008-2016 period, in the whole manufacturing sector, and, on the other hand, high gaps between labour productivity and wages in some manufacturing subsectors, fact which can produce the declining labour shares and consequently can increase social inequality. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Title: Aspects of the Population Awareness Strategy for Improving the Quality of the Environment. Case Study in the Rural Area.

Author(s): Bucur, AD (Bucur, Andreea-Daniela)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 322-329 **DOI:** 10.1016/j.promfg.2020.03.047 **Published:** 2020

Abstract: The paper proposes the presentation of some aspects for the development of a mini-education campaign and especially for raising the awareness of the rural population about the initiative that needs to be taken from the lower level - of the individual households - to stop the degradation of the elements of life and the development of the activities human beings in the perspective of sustainable development.

The case study presents the results of a questionnaire applied in the rural area in order to establish a strategy for the management of rural waste. (C) The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 47 of 134

Title: The Importance of the Concept of Communication Among Future Engineers - A comparative Study

Author(s): Andreea, B (Andreea, Ban); Bucur, M (Bucur, Mihaela)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 330-336 **DOI:** 10.1016/j.promfg.2020.03.048 **Published:** 2020

Abstract: The present paper is a comparative study at a local level and the respondents are students studying engineering at the University of Medicine and Pharmacy, Science and Technology of Targu Mures and who would like to have a career in the technical field. Soft skills are increasingly important for a recruiter. In addition to technical subjects, there is a need for other subjects as well which could develop the students' communication skills, teamwork, leadership and empathy. During the communication courses of the 2018-2019 academic year, the authors attempted to introduce new teaching methods that students could develop different abilities within the instrumental, interpersonal or systemic competences.

The purpose of this study is to identify how the situation improved as compared to previous year's results. An important element of this study is that the applied questionnaires also represented a way to make young people aware that communication can be taught, that it is a basic element in any interview, but also in later promotions in a company. (C) 2020 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) Peer-review under responsibility of the scientific committee of the 13th International Conference Interdisciplinarity in Engineering.

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Record 48 of 134

Title: Creative Methodologies in Teaching English for Engineering Students

Author(s): Rus, D (Rus, Dana)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 337-343 **DOI:** 10.1016/j.promfg.2020.03.049 **Published:** 2020

Abstract: The present paper is an argument in favor of a consistent application of creative educational methods in the process of teaching English for Specific Purposes (ESP). The theoretical part explores the role and function of creativity in the context of the changing paradigm regarding the overall of the educational system in general and of the specialized language learning in particular, highlighting a series of factors pertaining to creative methodologies in ESP. This changing paradigm is triggered by the application of Industry 4.0 principles not only in the industrial sector, but also in the educational domains which form the professionals who will be acting in the Industry 4.0 context. The study addresses problems faced by language instructors in achieving success in the acquisition of foreign language skills and competences by ESP students given the specifics of the language teaching process. It aims to demonstrate the advantages of applying creative and innovative methods in teaching ESP and to illustrate the conditions and factors which determine the best choice of methodologies, materials and activities involved in teaching English in technical academic environments. The study highlights the importance of the language instructor's choice of teaching strategies, materials and techniques in achieving overall language success. The application of creative methods in teaching ESP is one of the factors contributing to increased student motivation, which is one of the essential preconditions of the successful practice of language skills in a professional language context. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 49 of 134

Title: The Influence of ICT Sector on the Romanian Labour Market in the European Context

Author(s): Herman, E (Herman, Emilia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 344-351 **DOI:** 10.1016/j.promfg.2020.03.050 **Published:** 2020

Abstract: The ICT sector, as the backbone of the fourth industrial revolution, has major implications for labour markets. Assessing its effect is crucial for the development of policies that support the labour markets, bringing many benefits for workers, organizations, the economy, and society as a whole. The purpose of this paper is to analyse the level of digitalization of the Romanian economy in the EU context, as well as the impact of the ICT sector on employment and skills. The results of the comparative analysis at the EU level show that there are significant negative gaps between Romania and the EU average, as well as between Romania and Visegrad countries, in terms of Digital Economy and Society Index (DESI), the contribution of the ICT sector to employment and GDP, employed ICT specialists (as % of total employment) and the impact of ICT on tasks and skills. A strong positive correlation was identified between the level of digitalization of economy and society (expressed by DESI) and the labour productivity in the EU countries. Therefore, to reduce these negative gaps and to create an inclusive digital economy and society, a higher level of digitalization of work is required, especially in countries (like Romania) where there is a low level of digital economy, as well as low labour productivity. At the same time, it is essential that the EU force develops the necessary digital skills so that workers win the race of digitalization of jobs. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 50 of 134

Title: Lean Six Sigma in the Energy Service Sector: A Case Study

Author(s): Bloj, MD (Bloj, Mihnea-Dorin); Moica, S (Moica, Sorina); Veres, C (Veres, Cristina)

Edited by: Moldovan L; Gligor A

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46 Pages: 352-358 **DOI:** 10.1016/j.promfg.2020.03.051 **Published:** 2020

Abstract: Nowadays, the pressure of competition in the energy sector is high. A company that wants to make a difference should continuously run optimization projects. The purpose of this paper is to illustrate the application of Lean Six Sigma in the service sector of one big energy company. Following the specific Lean Six Sigma steps, the company exceeded the established target, significantly improving the actualization rate from 2.6% to 20% in just 3 months. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 51 of 134**Title:** The Influence of Condensing Temperature on the Efficiency of Solar Power Systems with ORC**Author(s):** Dragomir-Stanciu, D (Dragomir-Stanciu, Daniel); Saghebian, SM (Saghebian, Seyed Mahdi); Kurchania, A (Kurchania, Anil)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 359-363 **DOI:** 10.1016/j.promfg.2020.03.052 **Published:** 2020**Abstract:** Organic Rankine cycle technology is suitable for electricity production from low-grade heat sources: solar, geothermal, waste heat. The efficiency of the organic Rankine cycle is influenced the value of the minimum temperature of the cycle, which is the temperature of condensation. T analyzes the influence of the condensing temperature on the efficiency of the solar power systems using organic Rankine cycles. Is performed the ca thermal efficiency of ORC for condensing temperature in the range 25-10 degrees C. The analyze was done for two different working fluids: R600a an The results show that the thermal efficiency and amount of electricity produced by a solar ORC system can be increased by lowering the condensing temperature. (C) 2020 The Authors. Published by Elsevier B.V.**Accession Number:** WOS:000582466200051**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 52 of 134**Title:** The Efficient Use of Natural Gas in Cogeneration Applications for Small Consumers**Author(s):** Atanasoae, P (Atanasoae, Pavel)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 364-369 **DOI:** 10.1016/j.promfg.2020.03.053 **Published:** 2020**Abstract:** Currently, the natural gas still has a very high use in small households not only for cooking but also for heating and hot water. The most cor solution to provide utilities for small consumers is the gas boiler and electricity from public network. The paper presents an analysis of the use of mi cogeneration in small households for increasing the energy efficiency in the use of natural gas. Two micro cogeneration systems were considered for analysis: the first with Stirling engine and the second with fuel cells. The case of reference is a small household with gas boiler and electricity from pu network. The reduction of carbon dioxide (CO2) emissions and the payback period of investment are highlighted in the case of the two micro cogene systems compared to the existing situation. (C) 2020 The Authors. Published by Elsevier B.V.**Accession Number:** WOS:000582466200052**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 53 of 134**Title:** Effects of Electric Vehicles on Power Networks**Author(s):** Dulau, LI (Dulau, Lucian Ioan); Bica, D (Bica, Dorin)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 370-377 **DOI:** 10.1016/j.promfg.2020.03.054 **Published:** 2020**Abstract:** In this paper are presented the main effects of the connection of electric vehicles to the power grid. These effects include increase of the sf circuit currents, the voltage level could no longer be between the standard limits, the power demand is higher and the lifespan of the equipment is a The case study is performed on the 13 bus system. In the case study it is analyzed the impact regarding the voltage level, power demand and active p losses for different penetration levels and power demand scenarios of the electric vehicles. (C) 2020 The Authors. Published by Elsevier B.V.**Accession Number:** WOS:000582466200053**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 54 of 134**Title:** On / Off Optimization of Public Lighting Systems Depending on the Road Class**Author(s):** Galatanu, CD (Galatanu, Catalin Daniel)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 378-383 **DOI:** 10.1016/j.promfg.2020.03.055 **Published:** 2020**Abstract:** The technological change generated by LED technology in lighting implies nowadays the existence of an intense program to streamline /

modernize street lighting. In addition to the introduction of new lighting devices, tele-management systems are a first step towards the intelligent city. However, the problem of connecting and disconnecting the public lighting system is not optimized yet. This paper proposes a solution to this problem according to the optimization principle according to the road class and visibility level. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 55 of 134

Title: Power Demand Forecast for Optimization of the Distribution Costs

Author(s): Gligor, A (Gligor, Adrian); Vlasa, I (Vlasa, Ilie); Dumitru, CD (Dumitru, Cristian-Dragos); Moldovan, CE (Moldovan, Catalin Eugen); Damian, C Claudiu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 384-390 **DOI:** 10.1016/j.promfg.2020.03.056 **Published:** 2020

Abstract: The aim of the paper is to investigate and develop of a method for reducing the own technological consumption in distribution networks in the power demand forecast. In order to solve the mentioned main objective it is proposed an optimization model that is built on the main characteristics of medium and low voltage power distribution network. In order to validate the developed solution a study, discussion, recommendations and conclusions formulated based on real experimental data. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 56 of 134

Title: Studying and Measuring System for Motor Base Unbalance

Author(s): Agoston, K (Agoston, Katalin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 391-396 **DOI:** 10.1016/j.promfg.2020.03.057 **Published:** 2020

Abstract: This paper presents the importance of motor base vibration measurements; different faults which can appear during motor running and how motor base unbalance and vibration influence the whole system vibration. The electrical and mechanical faults influence the normal functioning of the motor, increase the power consumption, the current, more heat is generated and vibrations are growing too. Balancing is an important requirement for all rotating components. An electrical and/or mechanical unbalance affects other parts of the motor or system. A weak motor base is one of the sources which can be detected with vibration transducers. A 3-axis accelerometer was used to detect motor vibration for a small DC motor fixed on different types of base in different manner. A virtual instrument was developed to acquire and analyze the vibration. Analyzing the frequency spectra of the vibration the weak motor base and improper fixing of the motor was highlighted which appear in horizontal direction. Knowing the rotating frequency the measured and analyzed data was compared with the reference data. It is shown that sideband frequencies appear around the fundamental frequency which is an anomaly due to improper motor base. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 57 of 134

Title: The Main Goals of the Fourth Industrial Revolution. Renewable Energy Perspectives

Author(s): Dogaru, L (Dogaru, Lucretia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 397-401 **DOI:** 10.1016/j.promfg.2020.03.058 **Published:** 2020

Abstract: The Fourth Industrial Revolution, as well as the previous industrial revolutions, has the potential on the one hand, to raise the global income and on the other hand, to improve the quality of human life. It will affect and it will have a major impact on business, on government and on people. From an evolutionary point of view, the Fourth Industrial Revolution is grounded and built on the previous revolution, and because it supports the digital technologies is often called, the Digital Revolution. It can be said that its objective assumed the fusion of technologies that bring the physical world closer to the biological and digital world.

In the present paper, starting from a brief presentation of previous Industrial Revolutions, we analyze the challenges and opportunities of technological innovations, of technological progress represented by the artificial intelligence. Although the Fourth Industrial Revolution has the potential to increase revenue and to raise the living standard of humanity, a great challenge for new information technologies is the preservation of privacy life.

Starting from such an aspect, we will try to present not only the benefits of this new revolution but also its possible disadvantages. For example, how work and private life will be affected.

An important attention is given by the Fourth Industrial Revolution to the field of energy, which involves clean and renewable energy. In this context, discuss the issues that outline the so-called Energy Revolution, that has begun at the planetary level and which involves a global energy production from zero-emission technologies as well as the integration of renewable energy sources into a smart overall network. (C) 2020 The Authors. Published Elsevier B.V.

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Record 58 of 134

Title: Mechanical, Thermal and Acoustical Properties of an Innovative Lime-Wool Composite

Author(s): Tamas-Gavrea, DR (Tamas-Gavrea, Daniela-Roxana); Denes, TO (Denes, Tunde-Orsolya)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 402-409 **DOI:** 10.1016/j.promfg.2020.03.059 **Published:** 2020

Abstract: The purpose of this paper is to characterize a novel composite material based on natural components. The studied composite is a lime bas mortar, formulated with hydrated lime, rice paste and sheep wool fibres. The assessed properties of the mortar are the following: adherence to the s layer, thermal conductivity, thermal resistance, and acoustic absorption. Based on the obtained results, it can be stated that the proposed composite material has an acceptable adhesive strength (0.125 N/mm²), low thermal conductivity (0.157 W/mK) and high acoustic absorption at high frequency (2360 Hz). Considering the obtained values for the mechanical, thermal, and acoustical properties the studied composite could be used in the field constructions as interior finishing. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 59 of 134

Title: Sheep Wool Thermal Insulating Mattresses Behaviour in the Water Vapours Presence

Author(s): Hegyi, A (Hegy, Andreea); Dico, C (Dico, Carmen); Szilagyi, H (Szilagyi, Henriette)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 410-417 **DOI:** 10.1016/j.promfg.2020.03.060 **Published:** 2020

Abstract: The purpose of this paper is to analyse the sheep wool mattresses performances. The research looked the behaviour of 9 sheep wool mattress types for the water vapour permeability assessment and for water sorption-desorption capacity in extreme humidity conditions, from very dry to very humid. The experimental results indicated a good water vapour permeability, a similar pattern of sorption-desorption phenomena, but with different rates and different ways of water adsorption on the samples surface, depending on ambient humidity. There are identified equations to model phenomena and experimentally demonstrated the contribution of these materials to maintain an optimal environment. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 60 of 134

Title: Embedded Sensors Positioning in Thermal Insulation for Buildings

Author(s): Galatanu, CD (Galatanu, Catalin D.); Haba, CG (Haba, Cristian G.); Breniuc, L (Breniuc, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 418-423 **DOI:** 10.1016/j.promfg.2020.03.061 **Published:** 2020

Abstract: New insulating materials, for which measurements of thermal parameters are required in the laboratory, often use reused or renewable resources. The effects of the aging of these materials are unknown but can only be estimated. In order to obtain information on the evolution of thermal properties over time, the authors propose the incorporation of a set of temperature sensors in the structure of the insulating panels. The large number of sensors do not have to complicate the process on the site, so it has been chosen for a sensor type that allows multiple sensors to be connected and communicate over a single wire. Specific problems with programming, identifying sensors with positioning in the profile of the insulation are presented, following issues that might be important for widespread deployment. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 61 of 134

Title: An Interesting Approach for Icing Prevention of Walkways for Romania's Climatic Conditions

Author(s): Vizitiu, RS (Vizitiu, Robert Stefan); Burlacu, A (Burlacu, Andrei); Seghedin, NE (Seghedin, Neculai Eugen)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 424-431 **DOI:** 10.1016/j.promfg.2020.03.062 **Published:** 2020

Abstract: This research is presenting a theoretical approach to an innovative icing prevention method. The system is using heat pipes to extract the energy stored in the ground in the hot season, and use it for preventing walkways to freeze during cold seasons, for Romania's climatic conditions. This method may prove to be very efficient and less expensive than the classic solutions since the heat transfer from the ground to the pavement is passive. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 62 of 134

Title: Numerical Simulation of the Squatting of Floating Bodies Moving in Shallow Water

Author(s): Lungu, A (Lungu, Adrian)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 432-439 **DOI:** 10.1016/j.promfg.2020.03.063 **Published:** 2020

Abstract: In restricted waterways, ship operation is affected by the proximity of the boundaries such as the bottom, horizontal restrictions due to quay walls. Numerical simulations of the ship behavior when moving in restricted water are proposed in the present paper based on a computational dynamics (CFD hereafter) investigation technique. Comparisons with the corresponding numerical solutions for the unlimited water are provided to emphasize the effects of the water depths not only on the pressure distributions on the hull, but also on the sinkage, trim and overall hydrodynamic resistance. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 63 of 134

Title: Locomotive Diesel Engine Operation with Optimal Specific Fuel Consumption

Author(s): Popa, G (Popa, Gabriel); Gheti, MA (Gheti, Marius Alin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 440-444 **DOI:** 10.1016/j.promfg.2020.03.064 **Published:** 2020

Abstract: The operation of the diesel engine in the railway operational conditions is determined by the traction vehicle requirements and the economic conditions that must remain valid for partial loads. This article presents an analysis of optimal fuel consumption for different modes of operation of a traction vehicle. For this analysis, the BSFC (brake specific fuel consumption) parameter method is used, which consists in determining specific consumption maps based on the experimental determinations and the engine characteristics. The analysed diesel engine is the one that equips the LDE 2100 HP electric locomotive series, manufactured in Romania under the Sulzer license. From this analysis, specific fuel consumption can be determined for different speed and power ranges. The ultimate goal of making the specific consumption map is to optimize the diesel engine adjustments according to operating conditions. It also follows that adjusting engine power with optimal fuel consumption is achieved if the engine can run at any speed. This condition is achieved using the transmission. If the transmission does not allow this, the partial power will only be provided at a speed required by the transmission. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 64 of 134

Title: Non-linear Phenomena Specific to Cyclic Dispersion in Laser-built Spark Plug Engines

Author(s): Done, BG (Done, Bogdan George); Copae, I (Copae, Ion)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 445-453 **DOI:** 10.1016/j.promfg.2020.03.065 **Published:** 2020

Abstract: This work presents procedures like correlation analysis and bi-spectral frequency analysis applied in order to highlight non-linear phenomena accompanying cyclic dispersion. The Liapounov exponent is highlighted as a non-linear phenomenon and its values are based on experimental data time-frequency analysis and cyclic spectral analysis of experimental data are used because these phenomena also have, in addition, a non-static character. Fractal-based mathematical models are established in the paper to ensure maximum modeling accuracy, since cyclic dispersion has a pronounced non-linear character. (C) 2020 The Authors. Published by Elsevier B.V.

as well as a non-static character. These models establish the equation between the indicated pressure and the amount of heat released during a thermodynamic cycle. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 65 of 134

Title: New Research and Design to Obtain a Compressed Air Driven Prototype Vehicle

Author(s): Simon, M (Simon, Mihai); Simon, MI (Simon, Maria Ioana)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 Pages: 454-460 **DOI:** 10.1016/j.promfg.2020.03.066 **Published:** 2020

Abstract: This paper goal is to present the research and design of a compressed air (Nitrogen) driven experimental vehicle. The results are used to be and streamline it for dynamic, ergonomic and economy performances. The characteristics and methods obtained can raise questions in automotive for a clean, viable way of transportation. The renewable principle is based on obtaining high pressure liquid Nitrogen from the atmosphere. This can with electric solar panels [1], specialized compressors, and storage for fueling the air driven vehicle. In the next will be presented the vehicle, how it is made and the results and conclusions acquired in the activity inside this project. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 66 of 134

Title: Simulation of the Hydraulic Turbine Control as a System Affected by Parameter Uncertainties

Author(s): Dulau, M (Dulau, Mircea); Oltean, SE (Oltean, Stelian-Emilian)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 Pages: 461-466 **DOI:** 10.1016/j.promfg.2020.03.067 **Published:** 2020

Abstract: The paper presents a study of a hydraulic turbine control, considering that the gate opening depends on the velocity of the water. The behavior of the mechanical power of the turbine and speed control of the generator affected by parameter uncertainties have been simulated using the Matlab/Simulink environment. The time domain step responses and frequency analysis of two designed control algorithms emphasize the performances of the system. The hydraulic turbine and load affected by uncertainties. The paper can be used also by electrical engineering students as a guideline in order to model, simulate, study and tune the controllers for a hydraulic turbine unit. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 67 of 134

Title: Collaborative Robotics Research: Subiko Project

Author(s): Tokody, D (Tokody, Daniel); Ady, L (Ady, Laszlo); Hudasi, LF (Hudasi, Luca F.); Varga, PJ (Varga, Peter Janos); Hell, P (Hell, Peter)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 Pages: 467-474 **DOI:** 10.1016/j.promfg.2020.03.068 **Published:** 2020

Abstract: Aim of the research is to present the possibilities of applying cooperative robots during the process of automotive metalworking. The study is focusing at the Hungarian medium enterprise sector. Artificial Intelligence and special cobot safety systems modified by human behavior - are used to demonstrate how production techniques are used at a Hungarian medium enterprise to optimize their processes. The main problem is with flexibility in automotive metalworking manufacturing industry, such as production line switchover and the processing period. The product price is therefore determined by the competition, and the only way to increase profit is to reduce production and distribution costs. This means that managing and operating the organization and manufacturing in an efficient manner is necessary. One of the success factors is the flexibility of manufacturing by robotization. The proposal solution by this study is a low-load universal cobot system with innovative security solutions for improve the flexibility of manufacturing in automotive metalworking manufacturing company. This instance is based on a real case study problem in an automotive metalworking manufacturing company. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 68 of 134

Title: A Numerical Study of the Roll Damping for Double-Symmetric Bodies

Author(s): Lungu, A (Lungu, Adrian)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 475-483 **DOI:** 10.1016/j.promfg.2020.03.069 **Published:** 2020

Abstract: Roll damping is essential for describing properly the motions of a ship, particularly when operating in rough sea conditions, being determined parametric or synchronous roll phenomena. Roll damping is a complex process of energy transfer from the hull to the water, which affects the amplitude of motion. Roll damping is dominated by viscous effects as well as by the interaction of the ship with the free surface. Numerical simulations of the free decay are carried out in this paper for a double-symmetric floating hull with one or two bilge keels based on an unsteady viscous flow solver. The numerical solutions reported in here are computed with the ISIS-CFD viscous flow solver, part of the Numeca FineTM/Marine suite. Turbulent flow is simulated solving the unsteady equations of flow. Closure to the turbulence is achieved through the Shear Stress Transport (SST hereafter) based Detached Eddy Simulation (DES), which provides the accuracy of LES for highly separated flow regions and a computational efficiency of RANS in the near-wall region. The roll decay is studied for various initial roll angles at a given advancing speed of the main hull. The influences of the bilge keel surface and initial roll on the roll damping coefficient are discussed. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 69 of 134

Title: Torque Control during Bone Insertion of Cortical Screws

Author(s): Moldovan, F (Moldovan, Flaviu); Bataga, T (Bataga, Tiberiu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 484-490 **DOI:** 10.1016/j.promfg.2020.03.070 **Published:** 2020

Abstract: A critical factor in the biomechanical stability of orthopaedic surgery is tightening of cortical screws which currently are surgeon's skills based. This paper provides recommendation for better control and optimal insertion of cortical screws. Experiments on animal bones allowed determination of clamping torque limits for an efficient tight. Employment of digital torque screwdrivers allows direct determination of threshold torque. Then for any density and any type of screw the peak clamping torque is 1.75 threshold torque. The clamping torque limits are between 1.5 ... 2 threshold torque. They were calculated analytically and validated by experimental measurements. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 70 of 134

Title: Grasp and Micromanipulation with Human Hand a New Experimentation and Systematization

Author(s): Staretu, I (Staretu, Ionel)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 491-498 **DOI:** 10.1016/j.promfg.2020.03.071 **Published:** 2020

Abstract: This paper presents first the structural and functional characteristics of the human hand, a necessary stage even if these data exist in other papers too. Next, we experiment grasp of a rod-type object using one to five fingers, identifying nine possible situations, each case being exemplified by a corresponding picture. Below are the situations of grasping a small part with one and two fingers, in which case there are only two possible situations. Then there is the experimentation of grasping an object of any shape using from one to five fingers, in which case there are seven possible situations. We then experiment micromanipulation of a rod type part. We also show the adaptation of Cutkosky's taxonomy through experiments for all the situations considered, plus the situation of grasping between two adjacent fingers and grasping with two opposing fingers of an object of relatively large size. Sensory force grasp is being explored. The paper highlights the approach of specific aspects of grasping and micromanipulation for which suggestions were performed, and the unitary presentation of multiple cases of grasping using human hand for substantiation and extension of taxonomy, the best known now, namely Cutkosky's taxonomy. The paper is useful for improving the constructive and functional design of anthropomorphic grippers for robots.

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Record 71 of 134

Title: Image Correlation to Predict the Gait Recovery of Patients in the Post-Surgery Period

Author(s): Munteanu, MV (Munteanu, Mihaela Violeta); Stanciu, MD (Stanciu, Mariana Domnica); Vlase, S (Vlase, Sorin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 499-508 **DOI:** 10.1016/j.promfg.2020.03.072 **Published:** 2020

Abstract: In the post-surgery period, patients with locomotion disorders are recovering different: from the point of view of its duration and of the independence recovery of the motion capacity. In medical recovery various investigation methods of the degree of recovery are used, such as image methods (MRI, CT etc.) or visually, based on the experience of the physician. The study aim is to apply capture analysis of the patients motion in post period, in different stages of recovery of motor functions, with the possibility of achieving these gait analyses also in the diagnosis and treatment set stages. We conducted a series of experiments on human gait cycle, using a capturing system. This method consisted in monitoring and measuring kin parameters of gait using AOS X-PRI the capture system, and digitization and processing of the experimental data was achieved with Adobe After Effect study was performed on subjects whom have attached markers which were positioned to the joints, namely: ankle joint, knee joint and the hip joint. subjects were monitored for two months, at an interval of two weeks between each record. It has been found that the use of this method provide accurate and conclusive information regarding the subject's recovery evolution (program). During the two months of monitoring has been found that the motor functions were improved, by gaining some control curve, of the markers used, with the same amplitude and homogeneous in terms of the mathematical function. The study emphasized the non-invasive method applied on diagnosis of recovery medicine. Also, on the basis of in-depth and extensive study gait patterns can be developed that can be used to diagnose various locomotion disorders. (C) 2020 The Authors. Published by Elsevier B.V.

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Conference Title: 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)

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Record 72 of 134

Title: Unconventional Drive System of a 3D Printed Wheeled Mobile Robot

Author(s): Mrozik, D (Mrozik, Dariusz); Mikolajczyk, T (Mikolajczyk, Tadeusz); Moldovan, L (Moldovan, Liviu); Pimenov, DY (Pimenov, Danil Yu.)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 509-516 **DOI:** 10.1016/j.promfg.2020.03.073 **Published:** 2020

Abstract: The scientific literature reveals that recent trends in the construction of mobile robots investigate design and manufacturing directions at low costs, including the printed 3D ones. This article presents the design of an autonomous four wheeled mobile robot with unconventional drive system design of the robot was performed in Inventor CAD system and it was manufactured by employment of the 3D print method from ABS. It is used a servo control system based on Arduino 32. The drive of the four wheeled mobile robot is servo without potentiometer. The robot is equipped with two sensors distance measurement. The control system of the mobile robot is programmed in C++ language. The tests showed correct operation of the control system and drive system at a robot speed around 350 mm/s. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 73 of 134

Title: A New Compliant Microgripper and Study for Flexure Hinges Shapes

Author(s): Noveanu, S (Noveanu, Simona); Lates, D (Lates, Daniel); Fusaru, L (Fusaru, Lacramioara); Rusu, C (Rusu, Calin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 517-524 **DOI:** 10.1016/j.promfg.2020.03.074 **Published:** 2020

Abstract: This paper presents a new model for planar compliant microgripper with piezoelectric actuator. The microgripper body has two jaws and was designed with ten flexure hinges and was analyzed with Finite Element Analyses for three different shapes for flexure hinges: right circular, elliptic and filleted. Also, for each model the Finite Elements Method analyses were realized using three materials: brass, plastic, stainless steel and aluminum. A prototype made by brass with higher displacement flexure hinge shape was realized and characterized after comparison between Finite Elements Method analysis results. The microgripper used a stack type piezo actuator with 18 μ m maximum stroke which closed the jaws simultaneously. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 74 of 134

Title: Automation of Production Activities of an Industrial Enterprise based on the ERP System

Author(s): Syreishchikova, NV (Syreishchikova, Nelli V.); Pimenov, DY (Pimenov, Danil Yu.); Mikolajczyk, T (Mikolajczyk, Tadeusz); Moldovan, L (Moldovan, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 525-532 **DOI:** 10.1016/j.promfg.2020.03.075 **Published:** 2020

Abstract: The article reflects the results of the research on the improvement of the production activities of a machine-building enterprise by automa

production planning process. It analyzes the enterprise's state of affairs in the planning process, reveals the main problems of the enterprise; gives an analysis and comparison of the existing automated systems, selects an ERP-system for the enterprise's conditions; develops an automated production planning process and a methodology for automating the production planning process in the SAPERP system for the enterprise's conditions. The authors experimentally verify the efficiency of the developed methodology. The research results include: establishment of effective control and planning of processes; reducing the labor intensity of process management; increasing their stability; increasing the maneuverability of the enterprise's actions quick response to the changing market conditions; reducing the costs for external and internal failures. (C) 2020 The Authors. Published by Elsevier E

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Record 75 of 134

Title: An Algorithm to Calculate The Inverse Matrix of a Symmetric and Positive Definite Infinite Matrix

Author(s): Finta, B (Finta, Bela)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume** 46 **Pages:** 533-538 **DOI:** 10.1016/j.promfg.2020.03.076 **Published:** 2020

Abstract: The purpose of this paper is to give an algorithm to calculate the left inverse matrix of a symmetric and positive definite infinite matrix using extension to infinite matrices of the LLT matrix factorization. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 76 of 134

Title: Algebraic Time-Rate Condition for Logistic Growth Models

Author(s): Bogdan, M (Bogdan, Marcel)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume** 46 **Pages:** 539-542 **DOI:** 10.1016/j.promfg.2020.03.077 **Published:** 2020

Abstract: The solution of the Cauchy problem given by the logistic growth models is subject to an algebraic rate related to a scale time condition. In this paper we deduce about a growth model whether or not the rate can be expressed explicitly by the parameters involved in the algebraic condition. (C) 2020 Authors. Published by Elsevier B.V.

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Record 77 of 134

Title: Probabilistic Methods to Assess the Fire Risk of an Industrial Building

Author(s): Darmon, R (Darmon, Ruxandra)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume** 46 **Pages:** 543-548 **DOI:** 10.1016/j.promfg.2020.03.078 **Published:** 2020

Abstract: Fire safety is one of the major issues that affects the whole life cycle of a building from the early design stages until the dismantling. A risk management plan gives a better overview of the whole activity process, revealing the relations between all the factors involved during the building's life. The use of engineering principles in designing the fire safety strategy can improve the design flexibility and it can often reduce the costs related to protection materials and equipment. Due to the complexity of the building system, a probabilistic approach is considered in order to assess the risk and consequences associated with a fire event in an industrial building. The event trees method has been used to assess the frequency of a fire event in an industrial building and the associated consequences. The probability risk assessment criteria are set considering the property protection and business continuity objectives in addition to life safety requirements. The article covers a study case of fire risk assessment regarded as an optimization technique for sustainable manufacturing and a better management of the fire protection systems in the industrial buildings. A probabilistic approach for an engineering problem provides a numerical value of risk, which can also be useful to quantify the probability of unlikely events associated with severe consequences. Moreover, the probabilistic risk analysis provides data for cost-benefit analysis, which is the starting point for any cost optimisation strategy. (C) 2020 Authors. Published by Elsevier B.V.

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Record 78 of 134**Title:** Entropy Indices Based Fault Detection**Author(s):** German-Sallo, Z (German-Sallo, Zoltan)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 549-554 **DOI:** 10.1016/j.promfg.2020.03.079 **Published:** 2020

Abstract: Signal processing-based fault diagnosis is a growing domain in control engineering. As a statistical measure, entropy can measure the com of signals, this could be strongly related to the functional status of a system which provides these signals. Therefore, entropy can be a promising non parametric tool to extract different characteristics of manufacturing system provided signals. Recently, many studies have applied entropy indices in diagnosis, detection and prediction of faults. This paper proposes a theoretical approach to investigate the applicability of entropy indices for the fai characteristics extraction from discrete signals. The study uses synthetic test signals of various structures and properties. At first probability density functions are estimated and entropy indices as the Renyi entropy and sample entropy for different lengths are computed. These are compared and p relation with fault occurrence. The results show that these indices can be a promising non-parametric tool in fault detection. (C) 2020 The Authors. P by Elsevier B.V.

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Record 79 of 134**Title:** Measuring the Complexity of Discrete Signals**Author(s):** German-Sallo, Z (German-Sallo, Zoltan)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 555-561 **DOI:** 10.1016/j.promfg.2020.03.080 **Published:** 2020

Abstract: This paper presents an overview of three different methods to quantify signal complexity. These are the Kolmogorov complexity, the Samp Entropy and Detrended Fluctuation Analysis based fractal behavior measure. Synthesized discrete time signals of different characteristics are analyz mentioned parameters are computed and compared. The methodology contains the estimation of these three parameters for different signals lengtl noise levels. Measuring the complexity, usually means to find randomness, hidden dynamics or deterministic trends. The experimental results prove practical applicability of this methodology in analyzing the complexity of signals (C) 2020 The Authors. Published by Elsevier B.V.

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Record 80 of 134**Title:** RandAdminSuite: A New Privacy-Enhancing Solution for Private Blockchains**Author(s):** Gergely, AM (Gergely, Adam Mihai); Crainicu, B (Crainicu, Bogdan)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 562-569 **DOI:** 10.1016/j.promfg.2020.03.081 **Published:** 2020

Abstract: Blockchain is an innovative technology which is used by cryptocurrencies as a public, immutable ledger for recording transactions, while n recent versions of Blockchain can also record smart contracts and other assets. Blockchain can be viewed as a distributed platform that holds transa records without the involvement of a central authority, and where ensuring decentralization, transparency and security is of paramount importance. transparency requirement, absolutely necessary for improving trust among the blockchain's users, came with a price: lack of privacy. In most of the blockchains which are based on Bitcoin's Blockchain, anyone can query the blockchain and see all the transactions. This introduces a privacy issue v needs to be addressed. Although there are a few solutions for mitigating the privacy concern, we consider that true anonymity must be built-in, not a trough extensions to the base protocol. We propose a novel solution, called RandAdminSuite, that addresses the blockchain privacy problem throug comprehensive approach that covers the blockchain architecture itself, transaction mechanism and cryptocurrency as well. RandAdminSuite offers : improvements over the concept of currency rewards for transaction processing nodes. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 81 of 134**Title:** An Important Lebesgue Non-Measurable Function**Author(s):** Petrovai, DM (Petrovai, Diana Marginean)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 570-572 **DOI:** 10.1016/j.promfg.2020.03.082 **Published:** 2020

Abstract: Since if we have a function $f: R \rightarrow R$ continuous and a function $g: R \rightarrow R$ Lebesgue measurable does not necessarily result that the function is Lebesgue measurable, with the help of Cantor's set we will construct a Lebesgue measurable function $h: R \rightarrow R$ and a continuous function $u: R \rightarrow R$ that the function $h \circ u: R \rightarrow R$ is not Lebesgue measurable. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 82 of 134

Title: A Formal Model Based Automated Decision Making

Author(s): Avram, C (Avram, Calin); Gligor, A (Gligor, Adrian); Avram, L (Avram, Laura)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 573-579 **DOI:** 10.1016/j.promfg.2020.03.083 **Published:** 2020

Abstract: Given the challenges related to implementing and operating efficiently the today's manufacturing systems, methodologies for controlling technical processes that governs these systems are of a real interest for engineers, business owners or managers. This tends to be even more relevant in the context of widespread Industry 4.0 adoption where instrumentation through communications systems leverages the adoption of automation and intelligence technologies. One of the keys of optimal production in manufacturing systems is the proper maintenance of continuous and longer operating the involved equipment and devices. In the context of large and complex systems, the automation of maintenance could employ real benefits through the quality of the production and the reduction of the related costs. The current paper explores and proposes an approach based on formal models employing the automation of maintenance decisions processes for Industry 4.0 integrated manufacturing applications. The description and the design of the proposed methodology are presented, followed by discussions, a case study and conclusions. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 83 of 134

Title: Overview of Information Security Standards in the Field of Special Protected Industry 4.0 Areas & Industrial Security

Author(s): Breda, G (Breda, Gabor); Kiss, M (Kiss, Miklos)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 580-590 **DOI:** 10.1016/j.promfg.2020.03.084 **Published:** 2020

Abstract: Nowadays, not many areas exist where no IT device is available, moreover, these tools are mostly interconnected via internet. In many cases private life and work are not separated, but they are integrated into each other. Industry 4.0 represents a new step in the value chain, pushing production also towards the utilization of cyber-physical systems. It is necessary that the control of these IT eco-systems is established. The regulation is very important in case of protected / controlled areas both in terms of technology and human behavior. Regulation forms are trying to keep up with this challenge. In fact, there are existing uniform methodologies (e.g. COBIT, ITIL) and globally established procedures as well (e.g. ISO27000 and NIST800). In the course of research of controlled areas, it is necessary to investigate the currently available standards from the aspect of information security. The study demonstrates how those organizations and regulations are shaped which define today's IT security recommendations and norms. Moreover, it describes those standards on a personal approach, the parallel application of which can accomplish the complex security of controlled areas. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 84 of 134

Title: From Industry 4.0 to Robotics 4.0-A Conceptual Framework for Collaborative and Intelligent Robotic Systems

Author(s): Gao, Z (Gao, Zhen); Wanyama, T (Wanyama, Tom); Singh, I (Singh, Ishwar); Gadhri, A (Gadhri, Anoop); Schmidt, R (Schmidt, Reiner)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 591-599 **DOI:** 10.1016/j.promfg.2020.03.085 **Published:** 2020

Abstract: This work would like to re-visit the roles of collaborative and intelligent robotic system and its enabling technologies including ROS and RC integrated drive system, robotic sensors, horizontal integration of a robotic network, human-robot friendly and natural interaction, and deep learning. It is expected that in Robotics 4.0, intelligences including motion, computing, perception and cognition will be seamlessly integrated to meet the diverse industrial and societal needs. Roadmap and case studies will be given to demonstrate the current endeavour to achieve the idea of Robotics 4.0. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 85 of 134

Title: Using a Support Vector Machine for building a Quality Prediction Model for Center-less Honing process

Author(s): Gejji, A (Gejji, Abha); Shukla, S (Shukla, Shruti); Pimparkar, S (Pimparkar, Siddhee); Pattharwala, T (Pattharwala, Tamanna); Bewoor, A (Bewoor, Anand)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 600-607 **DOI:** 10.1016/j.promfg.2020.03.086 **Published:** 2020

Abstract: Optimization of any manufacturing process is a prerequisite for procuring high-quality products. To develop the methods to satisfy the increasing demand for improved quality standards for industrial applications thus has been of significant interest. In this paper, the center-less honing process is analyzed. This study aims to optimize the process parameters to make the process robust to any variations. Using feature engineering and dimensionality reduction compression in the amount of data required. Building a quality prediction model using soft-computing techniques such as Deep Neural Networks, decision trees, Support Vector Machine, logical regression and ensemble method has been explored in this research work. A comparison of these methods is presented along with an attempt made towards selecting the best method for the given problem. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 86 of 134

Title: Use of Taguchi DOE for CFD Simulation to maximize the Reusability of Working Fluids of Centrifugal Filter

Author(s): Tambolkar, P (Tambolkar, Pooja); Ponskhe, A (Ponskhe, Aishwarya); Mulay, V (Mulay, Vrushali); Bewoor, A (Bewoor, Anand)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 608-614 **DOI:** 10.1016/j.promfg.2020.03.087 **Published:** 2020

Abstract: Centrifugal filtration is a mechanical method of separation which uses centrifugal force and density difference for separation of particles. This study aims to optimize the filter design in order to maximize the filtration efficiency and increase the reusability of the fluid by varying the input parameter achieved by analyzing the particle behavior using Discrete Phase Modelling and Taguchi approach. The filtration efficiency is found to be significantly enhanced by changes in design and process parameters in the system. Increased efficiency could assure higher quality of fluid, which enhances its reusability. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 87 of 134

Title: Computational Thinking in Secondary and Higher Education

Author(s): Harangus, K (Harangus, Katalin); Katai, Z (Katai, Zoltan)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 615-622 **DOI:** 10.1016/j.promfg.2020.03.088 **Published:** 2020

Abstract: One of the most important challenges of education is the formation of proper computational thinking (CT). In line with K-12 Computer Science Framework (k12cs.org) the term of CT refers to the "thought processes involved in expressing solutions as computational steps or algorithms that can be carried out by a computer". CT is a problem solving process essential to the development of computer applications, but it is also used in supporting learning across many other disciplines. It has gained some grounds in secondary education in the last few years and there are ongoing efforts to introduce elementary education as well. Taking into consideration that algorithms play a central role in computational thinking, the aim of our research was to assess the skills of secondary school students and university students in this area, CT, that they faced an apparently computer science free task but without obvious algorithmic background. According to the aims of our research there were two target populations: secondary school students and university students. In order to measure the level of computational thinking we elaborated a worksheet (test with problems to be solved). The tasks contained algorithms that can be applied on computer, and they did not need any IT knowledge, only structured and logical thinking. The results provide a reliable guide regarding those cognitive skills, among secondary school-children and university students, which need improvement, so transfer of knowledge work in practical, life-like situations. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 88 of 134

Title: Evaluation of the Effect of Contact and Friction on Deep Drawing Formability Analysis for Lightweight Aluminum Lithium Alloy Using Cylindrical

Author(s): Bouchaala, K (Bouchaala, Kenza); Ghanameh, MF (Ghanameh, Mohamad Fathi); Faqir, M (Faqir, Mustapha); Mada, M (Mada, Mohamad); Es (Essadiqi, Elhachmi)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 623-629 **DOI:** 10.1016/j.promfg.2020.03.089 **Published:** 2020

Abstract: Deep drawing is one of the most important forming process manufacture, in which a conversion of flat sheet metal formed into desired size by subjecting the sample to a plastic deformation. The control of physical and geometric parameters is mandatory to reduce defects and achieve height quality of drawn product. Aluminum alloys sheet forming have become key factor for product cost reduction and a quick technological development in many manufacturing areas like aerospace, automobile and electronic industries. Friction is one of the geometrical parameters which effect deep drawing process. It is important to control friction between tools and blank. Therefore, a focus on highlighting its influence on the formability was studied. In this work, friction between work piece and tools was studied, in predicting cylindrical cup deep drawing manufacture of AA2198 Al-Li alloy sheets, in order to investigate the influence of friction on the quality of the final product. Finite element analysis is used for this research. A 3D model was simulated using FE-package ABAQUS software with a combination of Taguchi method. Relying to the results and discussion, it can be concluded the best combination of parameters. © 2020 The Authors. Published by Elsevier B.V.

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Record 89 of 134

Title: Artificial Intelligence Solutions for Digital Marketing

Author(s): Dumitriu, D (Dumitriu, Dan); Popescu, MAM (Popescu, Mirona Ana-Maria)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 630-636 **DOI:** 10.1016/j.promfg.2020.03.090 **Published:** 2020

Abstract: The technological evolution of recent years has put the industries on the move. Marketing has reached a point in its evolution where adapting digital trends is an imperative. Although it seems to be a push for marketers, in fact, all automated applications and systems that are based on artificial intelligence only diminishes the complexity of classic targeting and customization processes. In many situations, the platforms used for online promotion contain algorithms for identifying the best combinations, in other situations the companies take initiative to develop and implement in-house custom systems. The authors aim to describe the current state of artificial intelligence in marketing processes and to provide a four step sequential model than an intelligent marketing solution that can improve the visibility of a website through keywords. © 2020 The Authors. Published by Elsevier B.V.

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Record 90 of 134

Title: Considerations on Traffic Efficiency in Large Urban Areas

Author(s): Surugiu, MC (Surugiu, Maria Claudia); Gheorghiu, RA (Gheorghiu, Razvan Andrei); Iordache, V (Iordache, Valentin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 637-643 **DOI:** 10.1016/j.promfg.2020.03.091 **Published:** 2020

Abstract: Autonomous vehicles represent the future of transports, with many benefits, especially regarding safety. Communication is part of this concept and the possibility to communicate with other vehicles and/or infrastructure equipment to obtain safety-related information is essential. Also, knowing about traffic, estimation of arrival and departure times in certain points of the road network is really helpful to all the participants. In this paper is presented a method to predict times for public transport system. The implemented application can provide essential information for any of the above systems, so if input data are more accurate and entered as quickly as possible, the lower the default Kalman filter error of the application. © 2020 The Authors. Published by Elsevier B.V.

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Record 91 of 134

Title: Phytosynthesis, Kinetics and Antioxidant Activity of Waltham Butternut Squash Aqueous Extracts and Metallic Nanoparticles Thereof

Author(s): Sorescu, AA (Sorescu, Ana-Alexandra); Nuta, A (Nuta, Alexandrina); Ion, RM (Ion, Rodica-Mariana); Radu, GI (Radu, George Ionut); Nistor, CI (Cristina Lavinia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 644-651 **DOI:** 10.1016/j.promfg.2020.03.092 **Published:** 2020

Abstract: Phytosynthesis can certainly be considered next generation's technology that enables the development of novel nanoparticles and nanom with various applications in multidisciplinary scientific areas. Squash (*Cucurbita maxima*) is a fruit rich in betacarotene, calcium, potassium and has numerous health benefits. This paper describes recent researches in the field of metallic nanoparticles, namely silver and gold, prepared via phytos from aqueous extracts of Waltham butternut squash. Silver and gold nanoparticles can be prepared using conventional routes that have numerous drawbacks. Phytosynthesis has multiple advantages: is cost effective, environmentally friendly, doesn't require high pressure and no hazardous chemicals are used. Aqueous extracts were prepared from different parts of Waltham butternut squash (e.g.: shell, core and seeds) and their phytochemical content was evaluated using standard qualitative and quantitative analyses. The metallic nanoparticles were phytosynthesized from the aqueous extracts and corresponding metallic salts using two different conditions: room temperature, no stirring, overnight and 50 degrees C, under continuous stirring for minutes. The phytosynthesized metallic nanoparticles were characterized by recording UV-Vis spectra at different time intervals in order to determine stability in time. The characteristic absorption maxima were recorded at 435 - 450 nm for silver nanoparticles and at 535 - 550 nm for gold nanoparticles. The antioxidant activity was recorded using DPPH (2,2 - diphenyl - 1 - picryl - hydrazyl - hydrate) assay and the calculated values were clearly higher for phytosynthesized metallic nanoparticles compared to the aqueous extracts. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 92 of 134

Title: Chitosan: Properties, Modifications and Food Nanobiotechnology

Author(s): Cheba, B (Cheba, Ben Amar)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 652-658 **DOI:** 10.1016/j.promfg.2020.03.093 **Published:** 2020

Abstract: Chitin and chitosan are natural biopolymers produced mainly from crustacean shells of shrimp, crab and lobsters discarded by sea food-processing industries. Chitosan, the deacetylated form of chitin, it is a copolymer of beta-(1-4)-2-acetamido-D-glucose and beta-(1-4)-2-amino-D-glucose units, it has unique functional properties and distinctive biological activities, chitosan has received great attention and found a wide spectrum of biotechnological applications ranging from the environmental, industrial, to agricultural, and medical fields. In the food sector, these biopolymers are best suited, both their native and chemically modified forms and offer a distinctive application including water purification, juices clarification and deacidification, for life extension and preservation from microbial deterioration, food quality improvement, food additive, and biodegradable packaging films formation. This review reports chitosan properties and modifications and explores the role of nanotechnology in creating and developing chitosan nanomaterials for food processing, packaging, storage and safety. Furthermore, summarizes their related applications in the food sector. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 93 of 134

Title: Development of Technological Processes of Cold Bending with Pipe Rolling from Corrosion-resistant Steels

Author(s): Evgeny, K (Evgeny, Khaliulin); Alexander, K (Alexander, Kozlov)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 659-666 **DOI:** 10.1016/j.promfg.2020.03.094 **Published:** 2020

Abstract: The article discusses the technological recommendations for choosing the necessary modes of bending pipes made of corrosion-resistant steels. The article discusses in detail the engineering methodology for the construction of technological processes, a technique that includes the following: preparation of initial data for design; definition of the sizes of preparations and the scheme are flexible; selection of machine model; definition of bending modes; evaluation of wall thinning; adjustment of the pipe bender; bending products; control of product parameters; adjustment of the modes and sub adjustment of the machine. General conclusions were made on the work done. A feature of this technique is to determine the amount of thinning depending on the bend radius and thinning of the outer walls of the pipe and the magnitude of the pipe ovality in cross section. An important step is to control the parameters of the bending and re-adjustment of the machine in the presence of such defects as corrugation and flattening of the cross-section of the pipe. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 94 of 134

Title: Eco-Mechanical Index of Lightweight Concrete Mixtures with Recycled Materials

Author(s): Hanuseac, L (Hanuseac, Ligia); Dumitrescu, L (Dumitrescu, Laura); Barbuta, M (Barbuta, Marinela); Baran, I (Baran, Irina); Bejan, G (Bejan,

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 667-674 **DOI:** 10.1016/j.promfg.2020.03.095 **Published:** 2020

Abstract: Today, more than ever, the consuming society produces enormous quantities of wastes that have to be collected, stored and treated. But a activities consume energy and pollute the environment. Using these wastes into the concrete industry has good consequences: eliminating the wast producing another type of material the green concrete. Since this industry expands, it is necessary to evaluate both characteristics: mechanical and environmental. Waste could be used as substitute for cement and for aggregates.

The paper presents the results of a study on the mechanical properties and environmental performances of lightweight concrete prepared by substi sand in different percentages with chopped PET or wood waste. The new composite materials were experimentally tested by determining the mecha characteristics and the embodied energy and global warming potential were evaluated. The eco-mechanical index for the experimented mixtures we estimated. The study results introduce new types of building materials that use recycled materials, contributing to circular economy. (C) 2020 The At Published by Elsevier B.V.

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Record 95 of 134

Title: Digital Signal Processing Flexed-Point Representation

Author(s): Gheorghe, BS (Gheorghe, Bogdan-Stefan); Visan, CB (Visan, Catalin-Bogdan)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 675-682 **DOI:** 10.1016/j.promfg.2020.03.096 **Published:** 2020

Abstract: This paper defines a representation of real numbers as an approximation that is a trade-off between two well-known representations: the f fixed-point and the more accurate floating-point. This new representation, called flexed-point and abbreviated asflxp, is generally more suited to lov / low-size CPU-s that are usually present in embedded applications. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 96 of 134

Title: A Review of the Evolution of Deep Learning Architectures and Comparison of their Performances for Histopathologic Cancer Detection

Author(s): Zhai, JP (Zhai, Jingpeng); Shen, WR (Shen, Weiran); Singh, I (Singh, Ishwar); Wanyama, T (Wanyama, Tom); Gao, Z (Gao, Zhen)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 683-689 **DOI:** 10.1016/j.promfg.2020.03.097 **Published:** 2020

Abstract: Artificial intelligence in the form of deep neural networks have taken off in the last few years and AI-based applications have become a part everyday life. However, the start of modern AI revolution can be traced back to a program that won a computer vision competition in 2012: AlexNet. : then, the field has made dramatic progress, with many programs significantly beating the results from AlexNet. This report addresses the evolution c of the representative models, and discusses the advances, the challenges, and major points of research in the field today. (C) 2020 The Authors. Publ Elsevier B.V.

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Record 97 of 134

Title: Thermal Performance and Characterization of a Sawdust-Clay Composite Material

Author(s): Charai, M (Charai, Mouatassim); Sghiouri, H (Sghiouri, Haitham); Mezrhab, A (Mezrhab, Ahmed); Karkri, M (Karkri, Mustapha); Elhammouti (Elhammouti, Kamal); Nasri, H (Nasri, Hicham)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 690-697 **DOI:** 10.1016/j.promfg.2020.03.098 **Published:** 2020

Abstract: In most research, scientists have been interested in the mechanical impact of sawdust on adobe bricks, mainly compressive strength. This paper is devoted to the characterization of the thermal transport properties of clay-sawdust materials. To evaluate the thermal impact of sawdust or building envelopes, clayey composites with different sawdust percentage additions were developed. The results show that sawdust positively affect thermal properties of earthen blocks. Indeed, adding 10% of sawdust decreases the thermal conductivity of composites of 30% and improves the th resistance of earthen building envelopes of 31%, while reducing their density. Sawdust can therefore be used in smart lightweight brick manufacturi experimental results were used to analyze the thermodynamic behaviors of a residential building using Energy-Plus software. Findings results demo

that clay-sawdust composites can reduce the energy consumption of conventional and traditional residential buildings by 21% and 5.3%, respective
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Record 98 of 134

Title: Comparative study of five different methods of adjustment by the Weibull model to determine the most accurate method of analyzing annual variations of wind energy in Tetouan - Morocco.

Author(s): Ouahabi, MH (Ouahabi, Mohamed Hatim); Elkhachine, H (Elkhachine, Houda); Benabdelouahab, F (Benabdelouahab, Farid); Khamlichi, A (Khamlichi, Abdellatif)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 698-707 **DOI:** 10.1016/j.promfg.2020.03.099 **Published:** 2020

Abstract: In this work, wind energy potential in Tetouan site located in Northern Morocco was evaluated through using Weibull probability distribution data that were collected at 10 min rate of sampling during three years at the measurement height of 60m above the ground level were used for fitting parameters. Five known identification methods that were introduced previously in the literature were considered in this process. From the obtained all the methods were found to be appropriate for evaluating the parameters of Weibull distribution in Tetouan area. However, the graphical method shown weak capability, whereas the moment method was found to provide the best assessment of wind potential. Prediction of Weibull parameters speed at height 80m was performed after that by applying the Justus and Mikhail method. Then, the expected electricity energy output from three d types of wind turbines was estimated. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 99 of 134

Title: Design and Optimization of Wind Turbine with Axial Induction Factor and Tip Loss Corrections

Author(s): Echjijem, I (Echjijem, Imane); Djebli, A (Djebli, Abdelouahed)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 708-714 **DOI:** 10.1016/j.promfg.2020.03.100 **Published:** 2020

Abstract: The aerodynamic modeling of an HAWT (horizontal axis wind turbine) is an essential step in the design of this machine. Generally, the Blade Element Momentum theory (BEM) theory is used. It consists of combining Momentum theory and Blade Element Momentum theory, which makes it to solve the equations of aerodynamic forces by an iterative method. This method does not lead to a concordance with the experience. Several studies tried to introduce corrections to improve the model. The purpose of this study is the design of wind turbine blade by taking into account the correct axial and tangential induction factors. To that end, an iterative method based on Blade Element Momentum theory (BEM) is used and simulation conducted for NACA airfoil with 5-digit. The study examined blade constructed with only one profile, and blade constructed with two different profile aerodynamic forces were compared and were shown to increase with the use of the blade built with two different profiles (NACA63421+NACA63215) 2020 The Authors. Published by Elsevier B.V.

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Record 100 of 134

Title: Control of an Off-Grid PV System based on the Backstepping MPPT Controller

Author(s): Yatimi, H (Yatimi, Hanane); Ouberrri, Y (Ouberrri, Youness); Chahid, S (Chahid, Sara); Aroudam, E (Aroudam, Elhassan)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 715-723 **DOI:** 10.1016/j.promfg.2020.03.101 **Published:** 2020

Abstract: This work presents the modeling and the control of an Off-grid Photovoltaic (PV) system which consisted of a monocrystalline PV module, a DC-DC boost converter and a maximum power point tracking (MPPT) bloc. The output characteristic of the PV module is nonlinear and changes with irradiance and temperature. So, for given climatic conditions, the PV module output power is maximal when its voltage equals to a certain value. When temperature and solar irradiance change, the duty cycle of the converter considered as the control law is continuously adjusted to track the maximum point (MPP) of the module. This paper highlights the non-linear Backstepping controller to extract the maximum power from the PV system. Asymptotic stability of the system is verified through Lyapunov stability analysis. The simulation results show that the proposed controller offers fast and accurate tracking of the MPP whatever is the change of the climatic conditions. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 101 of 134**Title:** Comparison of Power Production for Different Photovoltaic Technologies in Nile Delta, Egypt**Author(s):** Louzazni, M (Louzazni, Mohamed); Khouya, A (Khouya, Ahmed); Mosalam, H (Mosalam, Heba)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 724-729 **DOI:** 10.1016/j.promfg.2020.03.102 **Published:** 2020**Abstract:** This paper deal about the comparison of power production of different technologies under desert solar irradiation and temperature effect. investigation and analysis of the monocrystalline, polycrystalline and thin film connected to the inverter and located on the eastern edge of the sout Delta and considered a hot desert as the rest of Egypt. Therefore, the study is carrying out of three different months from the year 2015, in which sole radiation and ambient temperature were measured. Besides, we analyses the influence of the ambient temperature, module temperature and solar irradiation associated to Nile Delta. It became out that the difference of voltage of inverter and power output of PVP of polycrystalline module is larg April, August and December compared to monocrystalline and Thin Film modules. (C) 2020 The Authors. Published by Elsevier B.V.**Accession Number:** WOS:000582466200101**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 102 of 134**Title:** Two-Stage Design of High Power UWB Monocycle Generator for Radar Sensor Applied in The Fourth Industry Revolution**Author(s):** Ahajjam, Y (Ahajjam, Younes); Aghzout, O (Aghzout, Otman); Catala-Civera, JM (Catala-Civera, Jose M.); Penaranda-Foix, F (Penaranda-Foi-Felipe); Driouach, A (Driouach, Abdellah)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 730-737 **DOI:** 10.1016/j.promfg.2020.03.103 **Published:** 2020**Abstract:** This paper presents a high power monocycle generator for Radar Sensor detection in IoT application. The generator was made up of three parts-circuits, an avalanche transistor, an Step Recovery Diode (SRD) pulse sharpening and an Monocycle Forming Network (MEN). The main idea in thi to generate a high power monocycle pulse with a minimum of ringing in the output waveform. To overcome this challenge, a useful technique consis introducing a twice stage of the transistor after the triggering with an overvoltage. The measurement results give an output waveform of 2.3 volts in amplitude with a minimum ringing around 3.6% in overshoot at 1 MHz, which is nearly fourfold of the peak power produced by a single transistor. TF generator circuit is completely fabricated using microstrip structure technology characteristics. Good agreements between the measured and theore results are achieved which can consider very attractive in many application fields. (C) 2020 The Authors. Published by Elsevier B.V.**Accession Number:** WOS:000582466200102**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 103 of 134**Title:** Solar Potential Assessment using PVsyst Software in the Northern Zone of Morocco**Author(s):** Belmahdi, B (Belmahdi, Brahim); El Bouardi, A (El Bouardi, Abdelmajid)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 738-745 **DOI:** 10.1016/j.promfg.2020.03.104 **Published:** 2020**Abstract:** The growing demand for solar photovoltaic (PV) installation systems as a renewable energy source is required in terms of accuracy to predi system efficiency. We have adopted in this paper a complete demonstration of the modelling and simulation of a 1 MW photovoltaic plant in one zon located in the north of Morocco, as a study; we will therefore use the PVsyst software for this purpose and evaluate its performance. The performanc and power losses such as temperature and electric power are calculated. As a result, the possibility of installing a 1 MW solar plant is examined by co the solar energy produced at certain sites in the northern zone of Morocco. (C) 2020 The Authors. Published by Elsevier B.V.**Accession Number:** WOS:000582466200103**Conference Title:** 13th International Conference on Interdisciplinarity in Engineering (INTER-ENG)**Conference Date:** OCT 03-04, 2019**Conference Location:** Targu Mures, ROMANIA**ISSN:** 2351-9789

Record 104 of 134**Title:** Simulation and Optimization of Microgrid Distributed Generation: a Case Study of University Abdelmalek Essaddi in Morocco**Author(s):** Belmahdi, B (Belmahdi, Brahim); El Bouardi, A (El Bouardi, Abdelmajid)**Edited by:** Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 746-753 **DOI:** 10.1016/j.promfg.2020.03.105 **Published:** 2020

Abstract: Renewable energy based Distributed Generation (DG) in form of PV power system can tackle the growing demand of depletion of electrical resources and the increasing prices of oil. Smart grid is the innovation of recent infrastructure grid and DG is an essential part of it. The Moroccan government has also made significant changes to its renewable energy policy to promote clean energy. The aim of this paper is to show the way to implement the concept of simulating and optimizing the real time of dynamic data in university Abdelmalek Essaddi with HOMIER as platform softw. According to the simulation result, it is seen that microgrid implementation in Morocco is beneficial with regards to both optimum solution and sens analysis. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 105 of 134

Title: Analysis of Signal Propagation in Vehicular Communications

Author(s): Surugiu, MC (Surugiu, Maria Claudia); Petrescu, I (Petrescu, Ionel); Gheorghiu, RA (Gheorghiu, Razvan Andrei)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 754-759 **DOI:** 10.1016/j.promfg.2020.03.106 **Published:** 2020

Abstract: Vehicular communications are the backbone for future transport applications. This is true for all the domains where dedicated communica already a central component (rail, naval, aerial transports), but becomes increasingly important for road transport, as cooperative systems and auto driving are in constant focus for road planners and vehicle producers. However, for road vehicles there are more challenges to be met, considering th variety of environments a vehicle may travel: inside cities, on highways, tunnels and so on, each of them having different signal propagation influenc may alter, or even break down communications all together. Therefore, specific analysis of signal propagation issues must be performed, to be able t evaluate the possibility of data transmission in different conditions and for different speeds. In this paper, the authors have performed simulations u Matlab environment to detect the behaviour of the signal in different scenarios and to evaluate the communications issues that may occur. (C) 2020 Authors. Published by Elsevier B.V.

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Record 106 of 134

Title: Circular Planar Antenna with Reconfigurable Radiation Pattern using PIN Diodes

Author(s): Rahmani, F (Rahmani, F.); Touhami, NA (Touhami, N. Amar); Kchairi, AB (Kchairi, A. Belbachir); Taher, N (Taher, N.)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 760-765 **DOI:** 10.1016/j.promfg.2020.04.001 **Published:** 2020

Abstract: This work presents a circular planar antenna with reconfigurable radiation pattern using parasitic patches. The radiation pattern of the pro antenna may take different radiation modes. The mode change is made using the PIN diodes connected in the gap between the central circular patcl parasitic patches. A short circuit or an open circuit can be provided by this gap. The proposed antenna works at 5 GHz, such as 802.11a/d/n applicati goal is to provide wider coverage by redirecting the main lobe and controlling the main beam directions to avoid interference with surrounding sign 2020 The Authors. Published by Elsevier B.V.

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Record 107 of 134

Title: Substrate Integrated Waveguide Bandpass Filter for mm-Wave Applications

Author(s): Achraou, S (Achraou, Soufiane); Elftouh, H (Elftouh, Hanae); Farkhsi, A (Farkhsi, Abdelkarim); Zakriti, A (Zakriti, Alia); Ben Haddi, S (Ben Ha Souhaila)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 766-770 **DOI:** 10.1016/j.promfg.2020.04.002 **Published:** 2020

Abstract: This article presents band-pass filter design using Substrate Integrated Waveguide (SIW) technology for Millimeter (mm) wave applications radar. The filter is designed for the pass band from 65 GHz to 75 GHz. The bandwidth of the filter is about 14%. Indeed, this result is most suitable for millimeter wave applications. The filter design was made by using the electromagnetic Simulator CST MWS. (C) 2020 The Authors. Published by Elsev

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Record 108 of 134

Title: Conversion Efficiency Study of the Bridge Rectifier at 2.4GHz

Author(s): Hamzi, I (Hamzi, Intissar); El Bakkali, M (El Bakkali, Moustapha); Aghoutane, M (Aghoutane, Mohamed); Touhami, NA (Touhami, Naima Am

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 771-776 **DOI:** 10.1016/j.promfg.2020.04.003 **Published:** 2020

Abstract: This paper introduces the conception and the analysis of RF-DC conversion circuits at 2.4 GHz for applications involving microwave power transmission. In this analysis, the conversion efficiency consists of bridge rectifier Schottky diode circuit. This topology is dedicated to low input power conversion. The simulated results of rectifier circuit are obtained using Advanced Design System- ADS Software. It can be seen that the maximum efficiency of roughly 80% is reached at -10dBm input power. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 109 of 134

Title: The Unequal Wilkinson Power Divider 2:1 for WLAN Application

Author(s): Elftouh, H (Elftouh, Hanae); El Bakkali, M (El Bakkali, Moustapha); Amar, NT (Amar, Naima Touhami); Zakriti, A (Zakriti, Alia); Mchbal, A (Mchbal, A (Mc Aicha); Dkiouak, A (Dkiouak, Aziz)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 777-781 **DOI:** 10.1016/j.promfg.2020.04.004 **Published:** 2020

Abstract: A power divider is a three-port microwave device that is used for power division or power combining. They are reciprocal devices, i.e. they be used to combine the power from output ports into the input port. The power dividers are widely used in microwave circuit designs. Indeed, this paper describes the design and simulation of 2:1 power divider at 3.6 GHz (802.11y) frequency for Wireless Local Area Network (WLAN) applications using A Design System software (ADS). This device provides maximum isolation among three ports. It is highly advantageous for limited bandwidth applications. Wilkinson Power Divider can also be manufactured with distribution of unequal powers. Therefore, in this article a conception of a Wilkinson unequal Power Divider is presented and our interest is a ratio of 2:1 at central frequency of about 3.6 GHz. (C) 2020 The Authors. Published by Elsevier B.V.

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Title: Design of CPW-fed MIMO Antenna for Ultra-Wideband Communications

Author(s): Dkiouak, A (Dkiouak, Aziz); Zakriti, A (Zakriti, Alia); El Ouahabi, M (El Ouahabi, Mohssine); Elftouh, H (Elftouh, Hanae); Mchbal, A (Mchbal, A (Mc Aicha); Dkiouak, A (Dkiouak, Aziz)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 782-787 **DOI:** 10.1016/j.promfg.2020.04.005 **Published:** 2020

Abstract: This paper presents a compact multiple input multiple output (MIMO) antenna design with good isolation for ultra-wideband (UWB) applications. The proposed antenna contains two identical monopoles that are placed parallel to each other and which are fed by a 50-ohm coplanar waveguide (CPW). The MIMO antenna is fabricated on a low-cost flame resistant 4 (FR4) substrate with an overall size of 36 x 36 x 1.6 mm(3). The designed antenna has a wideband impedance matching of vertical bar S-11 vertical bar <-10 in the UWB frequency range from 3.1 to 14.9 GHz and a good isolation about 13 dB over the whole UWB band. The prototype of the design is fabricated and measurement is carried out in order to validate the simulated results. The proposed antenna exhibits an envelope correlation coefficient (ECC) less than 0.01 and a diversity gain (DG) more than 9.9 dB, which means that the antenna has good performance and good candidates for UWB applications. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 111 of 134

Title: Design of a Band-Stop Planar Filter for Telecommunications Applications

Author(s): Ben Haddi, S (Ben Haddi, Souhaila); Zugar, A (Zugar, Asmaa); Zakriti, A (Zakriti, Alia); Achraou, S (Achraou, Soufiane)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**

46 **Pages:** 788-792 **DOI:** 10.1016/j.promfg.2020.04.006 **Published:** 2020

Abstract: This paper presents the design and the comparison of an Open circuit Microstrip Band Stop Filter using two simulators: CST microwave studio Advanced design system (ADS). This filter is designed on central frequencies $f(1)=2\text{GHz}$ and $f(2)=4.5\text{GHz}$. The simulation shows a coincidence between parameter results for the proposed band-stop filter. The rejection band of the band-stop filter is about 76%, else the filter has 25 dB return loss, which is characterized by good selectivity. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 112 of 134

Title: Reconfigurable Antenna for Wi-Fi and 5G Applications

Author(s): El Hadri, D (El Hadri, Doae); Zakriti, A (Zakriti, Alia); Zugari, A (Zugari, Asmaa)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 793-799 **DOI:** 10.1016/j.promfg.2020.04.007 **Published:** 2020

Abstract: The purpose of this paper is to design a reconfigurable antenna that operates in two frequencies bands: 2.4 GHz the frequency allocated to Wi-Fi application and the 28 GHz frequency Band for 5G applications. The total size of the antenna is $30 \times 26.5 \text{ mm}^2$, it is printed on a FR-4 substrate with dielectric constant of 4.4 and thickness of 1.6 mm. We used the commercially available software CST MICROWAVE STUDIO (electromagnetic simulator is based on the FDTD method, to simulate the reconfigurable antenna and to determine the electromagnetic characteristics of this antenna (S11, VSWR, directivity) (C) 2020 The Authors. Published by Elsevier B.V.

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Record 113 of 134

Title: The Wave Concept Iterative Process Method in Spherical Coordinates

Author(s): El Haddad, Z (El Haddad, Zaid); Zugari, A (Zugari, Asmaa); Khalladi, M (Khalladi, Mohsine)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 800-807 **DOI:** 10.1016/j.promfg.2020.04.008 **Published:** 2020

Abstract: In this paper, we present a global development of the iterative method WCIP in spherical coordinates, also some special parameters that were interpreted. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 114 of 134

Title: Broadband Antenna SIW for X-Band Application

Author(s): El Khamlihi, D (El Khamlihi, Dahbi); Touhami, NA (Touhami, Naima Amar); Elhamadi, T (Elhamadi, Tajeddin); Badaoui, I (Badaoui, Imane)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 **Pages:** 808-813 **DOI:** 10.1016/j.promfg.2020.04.009 **Published:** 2020

Abstract: Technological advances in telecommunications and microwave technology have led for many years to the miniaturization of circuits, the reduction of costs, the masses and the losses of these devices. SIW (Substrate Integrated Waveguide) Circuits They are perfectly in line with this trend and are currently the subject of many research topics with direct applications in the industry. In this paper, a new slotted antenna structure based on a SIW cavity for X-Band (8GHz-12GHz) applications has been designed. moreover, this antenna is conceived by four pairs of uniform resonator slots ($\lambda_g / 2$) placed on the lower wall of the cavity, in order to widen the bandwidth, the uniform size of the 4 slots for the purpose to widen the bandwidth also the separation between the slots used to enhance the value of the gain. In conclusion the bandwidth of this Cavity Backed slot antenna at 10 GHz is 9.8 GHz-11.3GHz. percentage bandwidth is 15% and the second operation band at 11.45GHz is 11.3GHz-11.6GHz and the percentage bandwidth is 2.62%. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 115 of 134

Title: Microwave Frequency Tripler using InGaAs HEMT Transistor

Author(s): El Bakkali, M (El Bakkali, Moustapha); Touhami, NA (Touhami, Naima Amar); Elhamadi, TE (Elhamadi, Taj-eddin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 814-821 **DOI:** 10.1016/j.promfg.2020.04.010 **Published:** 2020

Abstract: In this work, a 3x frequency multiplier in microstrip technology is presented. The frequency multiplier is used to generate 17.4GHz signal by multiplying 5.8GHz input and by using Indium gallium arsenide (InGaAs) High Electron Mobility Transistor (MGF4918D). The input and output reflect coefficients (S-11 and S-22) are less than -30 dB. The Rollet factor is greater than unity at the fundamental frequency 5.8GHz and in the 3rd harmonic places at the frequency of 17.4GHz. The maximum conversion of the fundamental signal to the 3rd harmonic is given by an input power of 3.6dBm, g source voltage of -0.6V and drain-source voltage of 3V. The dissipated power Pdc is 45 mW and the surface of the chip occupied on a FR-4 substrate is cm(2). (C) 2020 The Authors. Published by Elsevier B.V.

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Record 116 of 134

Title: A Tri-Band-Notched Antenna for UWB Communication Systems

Author(s): Taher, N (Taher, N.); Zakriti, A (Zakriti, A.); Touhami, NA (Touhami, N. Ammar); Rahmani, F (Rahmani, F.)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 822-827 **DOI:** 10.1016/j.promfg.2020.04.011 **Published:** 2020

Abstract: An Ultra-wideband (UWB) patch coplanar waveguide (CPW) antenna with tri band notched has been presented. The proposed antenna con insert two different forms of slots in order to obtain triple-band-notch characteristics. By using two C-slots on the radiating patch two notched bands achieved at 3.5 GHz for Worldwide Interoperability for Microwave Access (WIMAX), and C-band satellite communication systems at 7.5 GHz. A spiral sl slot is etched on the feed line to obtain another notched band for Wireless Local Area Network (WLAN) at 5.8 GHz. The design uses FR-4 substrate with dielectric constant of 4.3 and thickness of 1.6 mm. The proposed antenna provides an operating frequency range from 3.5 GHz to over 18.9 GHz with standing wave ratio (VSWR) <2, except the notched bands VSWR > 2. The antenna is simulated by CST Microwave Studio. Current distribution and radiation pattern characteristics of the antenna are also reviewed. showing tri-band notched characteristic can be provided by using two different slots to avoid interference of UWB band with the existing systems. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 117 of 134

Title: Multidisciplinary investigations on the use of TiNb alloy orthopedic device equipped with low profile antenna as smart sensor

Author(s): Peter, I (Peter, Ildiko); Matekovits, L (Matekovits, Ladislau)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 828-837 **DOI:** 10.1016/j.promfg.2020.04.012 **Published:** 2020

Abstract: In this paper, a new complex medical device is proposed using TiNb based metallic alloy, acting also as a ground plane for a low profile planar antenna sited on a Polydimethylsiloxane (PDMS) substrate. The first step of the research is oriented on the experimental study of the properties of Ti based alloy and on the development of the orthopedic device. The second step is focalized on the electromagnetic characterization of the implanted antennas. The resulting smart orthopedic device incorporating the antenna and when embedded in a body environment is numerically analyzed from communication point of view. In particular, the radiation characteristics, necessary for the calculation of the link budget when the device is used for communication with the external to the body receiver is considered. Such scenario finds its applications in monitoring some vital human functions for example in post surgical rehabilitation or other long-term surveys. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 118 of 134

Title: Practical Aspects Regarding Obtaining a Green Energy Source Using the Pyrolysis Method of Biodegradable Waste

Author(s): Bucur, AD (Bucur, Andreea-Daniela); Bucur, B (Bucur, Bogdan)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 838-843 **DOI:** 10.1016/j.promfg.2020.04.013 **Published:** 2020

Abstract: The chemical energy of traditional fuels (solid fuels - coal, liquids - derivatives of petroleum products such as fuel, diesel, gasoline, natural

shale, etc.) is converted to electricity within several phases depending on the technology used in the power electric plants. Energy from traditional fi released based on combustion chemical reactions. Particular attention is paid to covering the company's energy needs, electricity, defined as one of most flexible forms of energy currently used and can be considered as a key component of modern energy-based technologies and one of the most important sources.

In other news, the problem of biodegradable waste in recent years is of increasing importance. It is well known that from this waste can be obtained renewable energy.

The paper proposes a physical experiment aimed at reaching a green power energy source using the pyrolysis method of biodegradable waste [2], [3] 2020 The Authors. Published by Elsevier B.V.

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Record 119 of 134

Title: Different Types of Exoskeletons can Improve the Life of Spinal Cord Injury's Patients - a Meta-Analysis

Author(s): Chis, LC (Chis, Liviu Cristian); Copotoiu, M (Copotoiu, Monica); Moldovan, L (Moldovan, Liviu)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 844-849 **DOI:** 10.1016/j.promfg.2020.04.014 **Published:** 2020

Abstract: The main aim of our study is to outline the role of different exoskeletons in the improvement of quality of life of patients with spinal cord in an active part of their process of rehabilitation as well as part of their future autonomy. Thus, projecting in the future what kind of exoskeleton can be different steps of the process of social reinsertion of those with spinal cord injury. The robotic exoskeletons are emerging not as only as an option in rehabilitation of patients with spinal cord injuries and the affection consequences of long terms but as future "suit" to be wear by those with lost aut The main problem, despite the large number of the studies published is the heterogeneity of their design, different targets studied and as well differ exoskeletons used. No recommendations are published aiming when, what kind and for how long can the patients use the robotic exoskeletons. In o have a background to be used as a future prospective research, a meta-analysis of aiming for the use of different exoskeletons (ReWalk, Indego and E tools for rehabilitation or personal used was performed. A number of 456 studies targeting patients with spinal cord injury using exoskeletons in their rehabilitation and regaining autonomy was found after an electronic search of the PubMed, PlosOne and clinicaltrials.gov research data bases. After the inclusion and exclusion criteria a number of 11 studies were selected. The statistical analysis was performed using MedCalc software. Success in exoskeletons rehabilitation or social reinsertion was obtained at an RR/OR <1. Success was defined, in clinical terms, as an improvement of 6 time m walking test. Overall, the exoskeletons were an accepted and successful method in the rehabilitation of patients with spinal cord injuries (p: 0.0021, I 63.81). An unexpected surprise came as results showed the less adherence of the patients for the type Ekso exoskeleton (less autonomy) versus Rew: Indego that provided more autonomy (p: 0.0145, I-2: 76,39%). (C) 2020 The Authors. Published by Elsevier B.V.

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Record 120 of 134

Title: Analysis of Behaviour and Movement of the Upper Limb in the Weights Handling Activities

Author(s): Baritz, MI (Baritz, Mihaela Ioana)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 850-856 **DOI:** 10.1016/j.promfg.2020.04.015 **Published:** 2020

Abstract: The main idea of this research is to analyse the movements of the upper limb in order to evaluate the anatomical and physiological limits c flexion-extension movements in subjects with and without motor dysfunctions and to handle weights in the process of lucrative activity. The comple movement that the upper limb can develop is defined by a coordinate system attached to the entire human body and also by the main shoulder joint Denavit-Hartenberg convention (DH) respectively. The research methodology is based on an experimental system consisting of a device for analysis flexion-extension movements of the upper limb, calibrated by dedicated software, based on goniometric sensors, but also by a component of myoar attached to the subject's arm, in same time with the ArmTutor system. Subjects participating in this experiment were selected on the principle of no health, gender difference and different anthropometric dimensions, but practicing the same mode of activity. The results of the investigations have materialized in a set of data about the range of motion (ROM) and the analysis of the type of flexion / extension (frequency, motion cycles). Upper limb movements have been established in this procedure to flexion/extension manoeuvres in the elbow, without support, with and without different weig determinations highlighted a number of important aspects regarding the configuration required for this type of investigation and allowed to identify mechanisms for rapid assessment of how to handle the weights in order to find the best ways to improve the ergonomics of the activity. Also, as a fin of these determinations, we have established coefficients of mono-handling of weights by applying the REBA and RULA standards for flexion/extensi upper limb. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 121 of 134**Title:** Video System Correlated with Force Plate Recordings for Vertical Jump Biomechanics Analysis**Author(s):** Baritz, MI (Baritz, Mihaela Ioana)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 857-862 **DOI:** 10.1016/j.promfg.2020.04.016 **Published:** 2020

Abstract: The main idea is the biomechanical analysis of human body movements vertical on the spot, or free-fall jumps in order to assess the move anatomical and physiological limits in subjects with and without sustained motor activity. The complex movement in vertical jump is defined by a fix coordinate system of the recording system and also a mobile system attached to the entire human body. The assessment of the jump biomechanics determined in relation to the measurement of the contact force between the plantar surface of both legs and the surface of a Kistler type plate. The r methodology is based on experimental system consisting of a calibrated motion video analyser, with dedicated software, based on a high-speed vide cameras set synchronized and targeted on three main axes. Subjects participating in this experiment were selected on the principle of normal health same gender and similar anthropometric dimensions, but practicing sports or not. The results of the investigations have materialized in knee joint p. set during the vertical jump but also the variation of the angles measured between the lower limb segments during jumping. Lower limb movements recorded and determined for leg plantar base of support (BOS) on a large basis and using equipment and shoes specific to sports activities. The determinations highlighted a number of important aspects of the configuration required for this type of investigation and allowed identification of mechanisms for rapid assessment of how the human body was positioned during vertical jump in the goal of finding the best ways to improve perfor Also the coefficients of flexion/extension of the lower limbs, as well as those of impact on the contact with the force plate type Kistler, were used in re the human subjects' anthropometric dimensions. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 122 of 134**Title:** Defect Indicators in a Rail Based on Ultrasound Generated by Laser Radiation**Author(s):** Teidj, S (Teidj, Sara)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 863-870 **DOI:** 10.1016/j.promfg.2020.05.001 **Published:** 2020

Abstract: The cause of train derailment is associated with a transverse flaw that appears in the railhead. These contain typically opened or internal d that develops generally in a plane which is orthogonal to the rail direction. Most of the actual analysis of rails relay on ultrasounds, electromagnetic induction, and eddy currents. The first and second methods are however very affected by rail perturbations and by the ambient electromagnetic noi The objective of this work is to investigate theoretically the detection of a defect in the railhead which is based on guided waves and by using a conte system. On the opposite of the existing inspection technique, we have proposed a rotational laser vibrometer to achieve the reception of the echoes. the rail can be detected by considering the variation of special indicators that have been proposed. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 123 of 134**Title:** Study of Self-Healing Engineered Cementitious Composites for Durable and Sustainable Infrastructure**Author(s):** Mircea, AC (Mircea, Anamaria Catalina); Szilagyi, H (Szilagyi, Henriette); Hegyi, A (Hegyi, Andreea); Baera, C (Baera, Cornelia)**Edited by:** Moldovan L; Gligor A**Source:** 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 871-878 **DOI:** 10.1016/j.promfg.2020.05.002 **Published:** 2020

Abstract: This research is focused on a characterization of Engineered Cementitious Composites (ECC) with self- healing properties used in infrastruc Because the demand for concrete increase, developing a material that can regain loss of performance due to cracking in highly desirable. Many chall could be solved by developing a concrete that is capable of self-healing. The purpose of this paper is to present the advantages of using new local m; and could represent, sustainable solutions for the infrastructure industry, also as repair solutions, where ECCs could be competitive for their perform and costs for a long term. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 124 of 134**Title:** Bacillus Sp. R2 Chitinase: Substrate Specificity, Shelf-Life Stability, and Antifungal Activity

Author(s): Cheba, B (Cheba, Ben Amar); Zaghoul, TI (Zaghoul, Taha Ibrahim)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 879-884 **DOI:** 10.1016/j.promfg.2020.05.003 **Published:** 2020

Abstract: The suitability of different substrates for Bacillus sp. R2 chitinase activity was tested on various crude and purified chitinous substrates, as chitinase storage stability was studied weekly for 2 months at three different temperatures (25, 4 and 20 C). The results revealed that chitinase enzyme Bacillus sp. R2 catalyzed the hydrolysis of various chitinous substrates, and exhibited greater activity towards the chitins 13 of Calmar and squid. The temperature -20 degrees C was the most appropriate temperature for chitinase storage where the enzyme exhibited a relative resistance to freezing and thawing conditions, where its live 4 cycles (4 weeks) with missing 30% from the initial activity. On the other hand, at the temperatures 4 and 25 degrees C the enzyme retained 43.6% and 44.9% of its initial activity after the first month and 12% and 27.6% after the second month. Concerning the antifungal activity, the chitinase enzyme displayed a mild effect against many saprophytic and plant pathogenic fungi according to the descending order: Aspergillus niger > Penicillium digitatum > Aspergillus flavus > Fusarium calmorum > Penicillium sp. > Macrophomira sp. > Rhizoctonia solani. This type of studies characterizes the enzyme for potential pharmaceutically important chitoooligosaccharides preparation or promising antifungals production. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 125 of 134

Title: Reliability Study on PUR Injection Machine

Author(s): Toderita, A (Toderita, Ana); Vlase, S (Vlase, Sorin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 885-890 **DOI:** 10.1016/j.promfg.2020.05.004 **Published:** 2020

Abstract: The paper aims to determine the reliability of an injection station through calculus after analysis of most common defects. Reliability analysis of production systems is determined taking into account various factors and requirements. The reliability theory appeared the moment when the cyclical method (design-produce-test-redesign) did not correspond anymore due to the accelerated rate of scientific and technical development. Now there is interest in industrial product trials in a reduced time and more restrictive testing rates. In the same time the PUR lacquer technology means an elegant familiar look to the vehicle. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 126 of 134

Title: Influence of Temperature and Strain Rate on Microstructure and Fracture Mechanism of Mild Steel

Author(s): Sas-Boca, IM (Sas-Boca, Ioana Monica); Frunza, D (Frunza, Dan); Popa, F (Popa, Florin); Ilutiu-Varvara, DA (Ilutiu-Varvara, Dana Adriana); Tintelecan, MC (Tintelecan, Marius Constantin)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 891-898 **DOI:** 10.1016/j.promfg.2020.05.005 **Published:** 2020

Abstract: This paper presents the results of experimental research about the influence of temperature and strain rate on microstructure and fracture mechanism of C25 mild commercial steel. This type of material has applicability in the construction of machines domain (for example: shafts and gears). In the paper, there were done the following experimental determinations: hot tensile stress tests were investigated over wide ranges of forming temperature and strain rate; hardness tests and fractographic examination were carried out by scanning electron microscopy. According to the results obtained, tensile stress increases with the strain rates at constant temperature, because of the dynamic recovery and dynamic recrystallization have enough time to occur at low strain rate. The appearance of necking and its location induce the ductile fracture behavior, the voids were generated by the intercrystalline fracture, highlighted by images made with scanning electron microscope (SEM). (C) 2020 The Authors. Published by Elsevier B.V.

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Record 127 of 134

Title: Behavior of Laminated Wooden Beam with Variable Section Subjected to Bending

Author(s): Munteanu, MV (Munteanu, Mihaela Violeta); Stanciu, MD (Stanciu, Mariana Domnica); Modrea, A (Modrea, Arina)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun** 46 **Pages:** 899-905 **DOI:** 10.1016/j.promfg.2020.05.006 **Published:** 2020

Abstract: The paper presents the theoretical and experimental study on the bending behavior of cantilever wood laminates beam with variable section the classical guitar structure. During bending, normal stress and tangential stresses develop. As a viscous elastic material, in time the wood deforms plastic domain, causing permanent deformations. The theoretical study aimed the rheologic behavior of bending bars, and from the experimental point of view, five types of guitar neck probes were tested at bending on the ZWICK-Roell universal machine. The five categories of samples were differentiated by geometry of the inserts and the material used for them. As the test samples showed a variable section with respect to both the longitudinal axis and height, the displacements along the bars were measured in 7 points. The experimental results revealed the non-linear behavior of the structures and influence of the reinforcement type used in the structure of the wooden beams. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 128 of 134

Title: Using the Symmetries in the Civil Engineering. An overview

Author(s): Modrea, A (Modrea, Arina); Munteanu, VM (Munteanu, Violeta Mihaela); Pruncu, I (Pruncu, Iulian)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 906-913 **DOI:** 10.1016/j.promfg.2020.05.007 **Published:** 2020

Abstract: Structural symmetries existing in real engineering systems can be used in a dynamic analysis to the calculus of vibrations of these systems. In this paper will be presented two types of mechanical systems, some with concentrated masses, others continuous. For these types of structure with specific properties that could be used to facilitate analysis of such a system will be presented. Properties of eigenvalues and eigenmodes have been demonstrated to facilitate and simplify the design of a real structure. In the field of engineering, both in civil engineering and in other fields such as machine or machinery industry, automotive industry, aerospace industry there are machines, and machine components with identical, repetitive elements which have their composition with symmetries of different types. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 129 of 134

Title: The Development of a New Interface for Intelligent Control of Energy Supply in Dynamic Environment with Process Digitization

Author(s): Borzan, AI (Borzan, Adela-Ioana); Baldean, DL (Baldean, Doru-Laurean)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 914-921 **DOI:** 10.1016/j.promfg.2020.05.008 **Published:** 2020

Abstract: In the last 20 years, the port fuel injection systems have been designed and optimized for various types of applications in thermal engines : industrial sectors, but in order to keep up their performances and to boost the power output when decreasing masses and inertia it has to be analyzed and digitally controlled. Potential of fuel supply systems is yet to be uncovered and implemented due to the multitude of recent discoveries in electronic injection control and digitalization of fluid dynamics. The challenge for researchers and industrial specialists is to design an optimal structured and operational digital map. The first objective of the present research is to point out the correlation in the fluid control and the electronic or digital map order to track the trendline for features of the electronic control module. Specific targets of the research are as follows: analyze of fuel spray load, in-cylinder mixture pressure before the engine, electronic control module auxiliary load and ignition spark timing in relation to the engine speed. Research on digitalized powertrain was conducted after installment of a sensor hub and actuator hub, which constituted the hardware assembly. Results were shown a slight improvement in some regimes of engine's operation with 5% ethanol mixt with standard gasoline in a volume blending. Practical results highlight that optimal eco-performance working regime of the engine was in proximity of 1600-1800 revolutions per minute at the crankshaft, providing a small amount of gasoline fuel. Manifold pressure of the air intake has resulted in proximity of the 90 kPa. Correlating all the parameters was mapped the efficiency performance pole for the tests analyzed in the current research. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 130 of 134

Title: A Compact UWB Bandpass Filter with WLAN Band Rejection Using Hybrid Technique

Author(s): El Bakali, HE (El Bakali, Hamza El Omari); Elftouh, H (Elftouh, Hanae); Farkhsi, A (Farkhsi, Abdelkrim); Zakriti, A (Zakriti, Alia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 922-926 **DOI:** 10.1016/j.promfg.2020.05.009 **Published:** 2020

Abstract: A compact Ultra-wideband (UWB) band-pass filter (BPF) based on a hybrid technique using a CPW-Microstrip-CPW transition is designed with band rejection. The proposed bandpass filter is mounted on a Rogers R04350 substrate with a thickness of 0.508 mm. The presented UWB bandpass

good bandpass quality with 20 dB return-loss bandwidth from 2.9 to 12.2 GHz and insertion loss better than 0.5 dB with group delay UWB BPF about We can note that this latter is flat in the entire bandpass which indicates that the filter is efficient.. In addition, by implementing the closed-ring resonators (CRRs) on the bottom plane, we observe an appearance of the notched band. The center and bandwidth of the notched band can be controllable by adjusting the length and width of the CRRs. Thus, the presented filter can be beneficial for low profile future wireless communication systems. Simulations of this proposed filter is carried out on CST MWS software. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 131 of 134

Title: High Gain SIW-based Cavity-Backed Antenna for X-band Applications

Author(s): El Gharbi, M (El Gharbi, Mariam); Sekkal, S (Sekkal, Soukaina); Aknin, N (Aknin, Noura); Ahyoud, S (Ahyoud, Saida)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 927-931 **DOI:** 10.1016/j.promfg.2020.05.010 **Published:** 2020

Abstract: This paper presents a design of a high gain cavity-backed circular patch antenna for X-band applications. By using substrate integrated waveguide (SIW) based cavity and feeding mechanism of a microstrip-SIW-transition based on a taper. The proposed antenna is investigated in terms of antenna performances including reflection coefficient, gain, and radiation pattern. Instead, using a conventional circular patch, a modified circular patch is used to achieve a good matching and high gain. Moreover, the proposed antenna has been simulated by using CST Microwave Studio. Simulation results indicate that the circular patch antenna achieves a good gain of 7.2dB at X-band of 10 GHz center frequency, which shows that this antenna retains good radiation performance of conventional cavity backed antennas. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 132 of 134

Title: Enterprise Architecture Framework Design in IT Management

Author(s): Dumitriu, D (Dumitriu, Dan); Popescu, MAM (Popescu, Mirona Ana-Maria)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 932-940 **DOI:** 10.1016/j.promfg.2020.05.011 **Published:** 2020

Abstract: Since the inceptions of Information Technology (IT), organizations have experienced a permanent increase in size and complexity of enterprise information systems. To manage and organize these systems, logical constructions and representations in the form of models were needed, and an architecture approach was developed in response to these challenges. Architectures are used commonly in IT domain to construct blueprints of an enterprise for organizing and optimizing system components, interfaces, processes, and business capabilities, among others.

The paper contains a perspective on some of the most important technical issues regarding the designing and selection of an architecture framework organization. An Enterprise Architecture Framework (EAF) sets a practical guidance for analyzing, understanding and applying technical descriptions of an architecture in a certain business area. Designing and/or adapting an adequate EAF has been one of the challenging issues of the past years for many companies. Thus, the paper contains a research accomplished by using a comparative analysis of the main Enterprise Architecture Frameworks, and the stronger and weaker points of each one. The findings relate mostly to what and how things should unfold in designing the Enterprise Architecture Framework in order to optimize the workflow and thus maximize the business benefits. The paper underlines the most important issues that must be taken into account in designing an Enterprise Architecture Framework or adapting the already existing ones in order to better fit the organization's objectives and optimize the ongoing processes. (C) 2020 The Authors. Published by Elsevier B.V.

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Record 133 of 134

Title: Selection Features and Support Vector Machine for Credit Card Risk Identification

Author(s): Rtayli, N (Rtayli, Naoufal); Enneya, N (Enneya, Nourddine)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volume:** 46 **Pages:** 941-948 **DOI:** 10.1016/j.promfg.2020.05.012 **Published:** 2020

Abstract: For identifying credit card risk in massive and high dimensionality data, feature selection is considered very important to improve classification performance and fraud identification process. One of the commonly used feature selection methods is Random Forest Classifier (RFC), which is very effective for large dataset. RFC has a good performance; it tends to identify the most predictive features, which may provide a significant improvement in classification performance of credit card risk identification model. In this paper, we propose an enhanced Credit Card Risk Identification (CCRI) method.

based on the features selection algorithm as Random Forest Classifier and Support Vector Machine to detecting fraud risk. Our experimental results : that the proposed algorithm outperforms the Local Outlier Factor, Isolation Forest and Decision Tree in term of classification performance on a large dataset. (C) 2020 The Authors. Published by Elsevier B.V.

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Title: How does the Internet Influences the Readers' Behavior

Author(s): Varga, El (Varga, Elena-Iulia)

Edited by: Moldovan L; Gligor A

Source: 13TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING (INTER-ENG 2019) **Book Series:** Procedia Manufacturing **Volun**
46 Pages: 949-956 **DOI:** 10.1016/j.promfg.2020.05.013 **Published:** 2020

Abstract: When under progressive technological impulses, society changes unpredictably and with incredible speed: we don't know how the world v in three years, not to mention 10, 15 or 20 years from now. In many areas, knowledge is multiplying, but with incredible speed, it is also becoming ob In addition to their contribution to vocabulary development and refining the speaking eloquence, books can broaden perspectives, helping the read better understand others, to develop their social skills, as well as to learn to think abstractly. However, research indicates that the amount of reading declining significantly and reading skills are decreasing [1].

The appearance of the Internet and modern technologies (smartphones, tablets, etc.) has led to a change in our behavior, a decrease of our attentior also to the emergence of new mental disorders.

This paper helps us understand the population reactions to long term Internet usage and their behavior regarding reading a book in the digital era. (The Authors. Published by Elsevier B.V.

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