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On behalf of the organizing committee, we are pleased to announce that the 2nd International Conference on Agriculture, Technology, Engineering and Sciences (ICATES 2019) will be held from September 18 to 20, 2019 in Lviv, Ukraine.

ICATES 2019 provides an ideal academic platform for researchers to present the latest research findings and describe emerging technologies, and directions in Engineering and Natural Sciences issues. The conference seeks to contribute to presenting novel research results in all aspects of Engineering, Technology and Natural Sciences. The conference aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Engineering and Natural Sciences. It also provides the premier interdisciplinary forum for scientists, engineers, and practitioners to present their latest research results, ideas, developments, and applications in all areas of Engineering and Natural Sciences. The conference will bring together leading academic scientists, researchers and scholars in the domain of interest from around the world.

The scientific program will focus on current advances in the research, production and use of Engineering and Natural Sciences with particular focus on their role in maintaining academic level in Engineering and Applied Sciences and elevating the science level. The conference's goal will to provide a scientific forum for all international prestige scholars around the world and enable the interactive exchange of state-of-the-art knowledge. The conference will focus on evidence-based benefits proven in clinical trials and scientific experiments.

Best regards,

Prof. Dr. Mükrimin Ş. Güney
Chairman of the Conference

CONFERENCE STATISTICS

Statistics by Country and Author Numbers

Number	Country	Authors
1	United States	1
2	Indonesia	3
3	Morocco	1
4	Algeria	1
5	Poland	10
6	Serbia	5
7	Turkey	168
8	Ukraine	40
9	Sri Lanka	3
10	Lithuania	2

General Statistics

Submissions	205	Acceptance rate	0,80
Accepted	164	Reject rate	0,20

Selected Speakers List from Different Countries

Authors Name	Affiliation	Country	Page N.
Osman Zenk	NYC Bike Rental Corp., New York City, USA		135
Stephan Kovalyshyn	Lviv National Agrarian University, Faculty of Mechanics and Power Engineering, Lviv, Ukraine		138
Ljiljana Radovanović	University of Novi Sad, Technical Faculty "Mihajlo Pupin", Đure Đakovica bb, Zrenjanin, Serbia		65
Jolanta Matikiene	Vytautas Magnus University, Faculty of Engineering, Department of Production, Kaunas, Lithuania		180
Andrzej Chochowski	Warsaw University of Life Sciences, Faculty of Production and Power Engineering, Warsaw, Poland		179
Yasemin Sisman	Ondokuz Mayıs University, Engineering Faculty, Geomatics Engineering Department, Samsun, Türkiye		78
Kabira Ezzaeri	Thermodynamics and Energetic Laboratory, Faculty of Sciences, Agadir, Morocco		120
Jebaratnam Joy Mathavan	University of Jaffna, Faculty of Technology, Department of Engineering Technology, Jaffna, Sri Lanka		66
Issam Boudraa	20 aout 1955 University, Department of chemistry, Skikda, Algeria		24
Elfahra Casanza Amalda	University of Brawijaya, Indonesia		22

Researchers from nine different countries which are the USA, Poland, Indonesia, Algeria, Sri Lanka, Morocco, Lithuania, Serbia, Ukraine and Turkey, **made oral presentation** in the International Conference on Agriculture, Technology, Engineering and Sciences (ICATES 2019) held between 18-20 September 2019 in Lviv, Ukraine.

Prof. Dr. Mükrimin Ş. Güney
Chairman of the Conference

CONTENTS

Topic	Page
ID-12: Biophilic Design Approach For Children Spaces	21
ID-13: SHOWER (Slaughtering House Waste Water): Innovation Design in the Utilization of Bacteria in Slaughterhouse Water Waste Based on Microbial Fuel Cell Concept as an Renewable Energy Electricity	22
ID-14: An overview of marine microplastic pollution in Turkish Waters of Black Sea Coasts	23
ID-15: Integrating Technology in a Statistics Course	24
ID-16: Hazelnut Harvesting for Sloping Plantage	25
ID-17: Nutritional Value and Oil Content of Hazelnut	26
ID-19: Evaluation of Renewable Energy in Mixed Used Buildings in Giresun	27
ID-20: 10 Ton H Type Hydraulic Press Design	28
ID-21: Fluidization and Fluidized Bed	29
ID-22: The Response of Safflower Cultivars to Various Abiotic Stresses during Germination and Early Seedling Growth	30
ID-23: Allelopathic Effects of Safflower Stem and Root on Germination and Seedling Growth of Wheat, Barley and Safflower	31
ID-24: Germination and Seedling Growth Performance of Safflower (Carthamus tinctorius L.) Cultivars under Low Temperatures	32
ID-25: The Seed Vigor Changes of Seed Samples from Primary, Secondary and Tertiary Heads of Safflower	33

ID-26: The Effects of Salt Stress on the Germination of Seed and Seedling Growth of Lolium multiflorum	34
ID-27: The Resistance of Some Barley Cultivars to Salt Stress	35
ID-28: Energy Efficiency and Renewable Energy Application in Buildings	36
ID-29: The Response of Sunflower Hybrids to Low Temperature during Germination and Early Seedling Growth	37
ID-30: Absorption Cooling Systems	38
ID-31: Smart Growth and Sustainable Development in Buildings	39
ID-32: Seasonal Measurement Of Concentrations of Carcinogen PAH Compounds in the Internal Environment of the House in Giresun	40
ID-33: Forecasting Call Volume of a Call Center Using Multiple Linear Regression Analysis and NARX Network Model	41
ID-34: Assessment of Metal Levels in Biotic and Abiotic Materials from Giresun Forests	42
ID-35: Evaluation of Textile Wastewater Treatment by Electro-Fenton Method Using Different Electrode Pairs and Its Effect on Energy Consumption	43
ID-36: Determination Of Characterization Of Solid Wastes In Rize Province And Evaluation Of Alternative Solid Waste Disposal Methods	44
ID-37: Aromatic Characterization of Moldy Civil Cheese, a Traditional Turkish Cheese	45
ID-38: Electromagnetic Radiation Used For Mobile Phones Increases The Serum Iron Concentration	46
ID-39: Linezolid Resistance in Vancomycin-Resistant Enterococci	47
ID-40: Effect of Surface Texturing on Tribological Behaviour	48

ID-41: Surface Texture Application on UHMWE for Medical Applications	49
ID-42: Investigation on Formability of Varied Aluminum Alloys Through Warm Closed-die Hydroforming	50
ID-43: Creating a Real Estate Appraisal Model by Fuzzy Logic	51
ID-44: Turkey and Iran Cadastral Sytems: A Comparison	52
ID-45: Investigation of The Effects of Momordica Charantia on Foot Preparation and Behavior	53
ID-46: Developing Web-Based Software For Scheduling And Order Acceptance Problem Of A Boiler Production Company	54
ID-47: Enterprise Resource Planing (Erp) Software Selection By Using Ahp And Promethee Technique	55
ID-48: A New Alternative Crane to Improve Productivity Industrial Woodworking with Technological Support	56
ID-49: Natural Vinegar Production from Medlar (Mespilus Germanica L.) Fruit	57
ID-50: Investigation of Performance of Static Loaded Radial Journal Bearings	58
ID-51: The Investigation at Gearmotor Which Bolted Flange Connection Used in Chip Conveyors	59
ID-52: Investigating Electric Transport Vehicle Alternatives of Hazelnut Harvesting in Mountainous Fields	60
ID-54: A Comparative 3-D Model Of A PEM Fuel Cell and Its Experimental Validation	61
ID-55: Experimental Characterization Of PEM Fuel Cell Stack at Different Operating Conditions	62
ID-56: Heavy Metals And Trace Elements in Breast Milk of Turkish Nursing Mothers in Turkey	63

ID-57: Fatty Acid Composition of Native Turkish Roasted Hazelnut (<i>Corylus avellana</i> L.	64
ID-58: A Research on Determination of Feed and Feed Quality Properties of Some Oat Advanced Lines	65
ID-59: Develop and Investigate an Appropriate Al Based Alloy by Enhancing the Thermo Mechanical Properties to Mitigate the Issues in Existing Applications	66
ID-60: Evaluation the Organizational Readiness for Firms in Agricultural Industry to Adopt ERP Sytems via Intuitionistic Fuzzy Sets	67
ID-61: A Review on Marketing and Distribution Problems of Beekeeping Enterprises	68
ID-62: A Review on Industry 4.0 and its Effects on Agricultural Sector	69
ID-63: A Study on Value Creating Green Approach Applications in Logistics Companies: Case of TR A1 Region	70
ID-64: A Study on Determination of Green Supplier Firm Selection Criteria in Textile Business: Case of Giresun Province	71
ID-67: A Research on the Using of Fennel Hay as Animal Feed Additive	72
ID-68: Determination of Fixed Fat Ratios and Components of Two Different Hypericum Species	73
ID-69: Determination of Mitotic Effects of Lead on Germination and Root Tip Cells of Hungarian Vetch Seeds	74
ID-71: Topographical Effects of Fishing Coastal Structures	75
ID-72: Investigation Air Firefighter Teams in Forest Fires Using GIS	76
ID-74: Factors Affecting Biogas Production and Current Study Results	77
ID-75: The Robust Estimation Approaches in Georeferencing of 3D Point Clouds	78

ID-76: Sequential Treatment of Industrial Wastewater by Electro-Fenton and Electrocoagulation Processes	79
ID-77: Investigation of the Treatability of Industrial Wastewaters Treatment with High Organic Content by Supercritical Water Oxidation	80
ID-79: Traffic Signal Controller Based on Flower Pollination Algorithm	81
ID-80: New Method for Evaluation of the Medicinal Plants Anti Angiogenesis and Anticancer Effects	82
ID-81: A RAS Inhibitor: Farnesylthiosalicylic Acid	83
ID-83: Investigation of the Current Situation and the Amount of Food Wastes in Turkey	84
ID-86: Structural Characterization Studies with the Calculated Comparisons of Some Biological Active NHC Complexes	85
ID-87: Single Crystal X-Ray Structural Investigations Of Three New Phthalimide Derivatives	86
ID-88: Adsorption Capacity of Lead on Natural Bentonite Modified with Magnetite	87
ID-89: Investigation of Ibuprofen and Paracetamol Removal by Membrane Process	88
ID-90: Aromatization Variation Due to Ground and Excited States: Studied On Two Oxazolone Derivatives	89
ID-92: Detecting and Recognition of Normal and Premature Births by Bispectrum-Based Signal Processing Strategy	90
ID-95: Investigation of Wear Properties and Characterization of Borided AISI D3 Steel	91
ID-96: Investigation of Perlite Brick Production Method	92
ID-97: Corrosion Behaviors of Borided AISI 420 Steel	93

ID-98: Calculations of Reaction Rate of ^{232}Th Target Nuclei Induced Fast Neutron	94
ID-99: Calculation of Diffusion Coefficients for Certain Moderators at Thermal Energy using Modified UN Approximation	95
ID-100: Electrical and Structural Properties of Zinc-Indium-Titanium Oxide	96
ID-101: Elastic and Inelastic Neutron Reaction of ^{52}Cr (n,el) and ^{52}Cr (n,inl)	97
ID-102: Elastic Scattering of Neutron from ^{27}Al and ^{28}Si Targets	98
ID-103: Investigation of the Field Size Dependence of Primary Barrier Transmission Coefficients in Shielding of Megavoltage Linear Accelerators	99
ID-104: Characterization of Boronized Stainless Steel	100
ID-105: Tribological Behavior Borided AISI 410 Steel	101
ID-106: Surface Characterization of Pure Nickel Coated with Sol Gel Method	102
ID-107: Surface Characterization of Plasma Paste Boronizing of Titanium	103
ID-108: Plasma Paste Boriding of Ti6Al4V Alloy with B ₂ O ₃ paste	104
ID-109: Locating Electric Vehicle Charging Stations	105
ID-110: Prospects of The Market and Models of Innovative Development of Steel Production	106
ID-111: Use of Neural Networks in Prognosis of Marketing Environment Indicators of Enterprise	107
ID-112: Improving Simulating Efficiency of Statistic Characteristics of Linear Voltages Within Workshop Grids of Industrial Enterprises to Implement Power and Economic Model of Asynchronous Motor	108
ID-113: Spatial Suitability Analysis of School Sizes in Giresun Province	109

ID-114: Green Building Concept for Sustainable Energy Development	110
ID-115: Heat and power from renewable woody biomass	111
ID-116: Performance of Solar Assisted Dual Source Heat Pump for Residential Heating	112
ID-118: Researches and Academic Studies Analysis on Solar Energy in Some Leading Countries	113
ID-119: Association of Scientific Studies with Existing Wind Energy Potential in Turkey	114
ID-120: The Relationship between the Activities and the Scientific Studies on Solar Energy in Turkey	115
ID-124: The Role of Lactic Acid Bacteria in Formation of ACE-I Inhibitory-Bioactive Peptide	116
ID-125: Definition of the Total Antioxidant Capacity and Vitamin D Levels in Professional Athletes Who Play Football in Giresunspor	117
ID-126: Investigation of Corrosion, Contact Angles, Tribological Properties of Different Coatings by Sol Gel Method	118
ID-129: Schools for a Global World: Village Institutes and Bauhaus	119
ID-130: Effect of Photovoltaic Panels Shade on Growth and Yield of Tomato Inside a Canary Type Greenhouse	120
ID-131: Investigation of Mechanical Properties of a Polymeric Light Weapon	121
ID-132: The Effect of Nutrition on Infertility	122
ID-133: Using Kinetic Typography on Screen Credits of Television Series , Design Challenges and Solution Offers	123
ID-134: The Effects of Cutting Parameters on Cutting Tool Performance and Surface Roughness in Hard Turning of Bearing Steel	124

ID-135: The Effects of Cutting Conditions on Surface Roughness in Turning of 1.4462 Duplex Stainless Steel	125
ID-136: The Effect of Nutrition on Infertility	126
ID-137: New Modeling of Plant Density on Sugar Beet (<i>Beta vulgaris saccharifera</i> L.) Production	127
ID-138: Are Graphic Designers Modern-Day Don Quixotes	128
ID-139: Post-Digital as a term, Technology and Effects on Design	129
ID-140: Relationship Between Profit and Corporate Governance Scores: An Application on Borsa Istanbul Corporate Governance Index (XKURY)	130
ID-141: Digital Art as a Graphical Language in Contemporary Art and Related Light Art	131
ID-145: Determination of Offshore Wind Power Plant Site Selection Criteria for installation in Turkey	132
ID-146: Comparison of Output Voltage Stability of Buck-Boost Converters with Fuzzy Logic Controller and Fuzzy-Tuned PI Controller	133
ID-147: Comparison of Speed Control of DC Motor with DC Buck Converter with 2-DOF PI and Fractional PID control	134
ID-148: An Effective Boost Converter Design for Electrolysis in Hydrogen Production	135
ID-149: A New Ball on Plate Application with PID Control	136
ID-150: Biogas Production and Current Purification Methods	137
ID-161: Development of the Pneumoelectric Separator of Small Seed Cultures	138
ID-162: Process Flow Scheme and Equipment for Oil Recovery	139

ID-163: Influence of Production Technology on Qualitative Parameters of Vegetable Oil	140
ID-164: The cost planning of natural resources for the integrated agro-industrial projects implementation taking into account the risk	141
ID-165: System approach to management by industrial and technical resources in projects of agricultural enterprise	142
ID-166: Time Management of Combine Work in the Projects of Early Grain Cultures Harvesting	143
ID-167: Justification of the Configuration of the Logistic System for Time Sensitive Agricultural Products	144
ID-168: Influence of the technological system components consistency on the efficiency of crop harvesting processes	145
ID-169: Optimization of Action Radius of the Service and Repair Center of School Buses in the Stryi District of Lviv Region	146
ID-170: Model of the Impact Bar of Small-Size Crusher of Grain Materials	147
ID-171: Optimal Design of Gearboxes of Mechanical Drives	148
ID-172: The Use of Automated Design Systems for Modelling of Manufacturing Processes in Maintenance of Automotive	149
ID-173: The Scientifically-Applied Aspects of Design and Calculation of Machines for the Shock-Oscillation Crushing of Materials	150
ID-174: Tensiometric Measurer of Mass of Friable Materials in Tank	151
ID-175: Enhancement of Manual Fruit Shakers	152
ID-176: Study of Static Resistance to Cracks of 30 XTC Steel with Cover	153

ID-177: The Impact of Preplant Treatment of Seeds on Germinating Power	154
ID-178: The Impact of Preplant Treatment of Seeds on Germinating Power	155
ID-179: Experimental Study of Ecological Evolution of Soil Fertility by Controlled Electromagnetism for the Purpose of Cultivated Crop Production	156
ID-180: Study of Contact Temperature on Mutual Surfaces of Friction Elements	157
ID-181: Restoration of Technical Objects (Towers Clocks) of the Historical Heritage	158
ID-182: Study of Stress Concentration in a Plate with Two Circular Openings Connected by a Crack	159
ID-183: Analytical Conditions of Illumination of Multilayer Weakly Absorbing Interference Structures	160
ID-184: Study of Peculiarities of Work Safety on Lathes	161
ID-185: The calculation and evaluation of the risk of tractors long-term operation on the basis of defectoscopic control data	162
ID-186: Forecasting of Accident Consequences on Chemically Dangerous Objects	163
ID-187: Using of Consequence Analysis Method for Road Accident Prevention	164
ID-188: Informational System of Study of Life and Activity Safety	165
ID-189: Modern Agriculture and Typical Translation Difficulties	166
ID-190: Translation Peculiarities of Scientific Terms	167
ID-191: Protection from Corrosion-Mechanical Destruction of Titanium Blades of Steam Turbines by Plasma Coatings	168
ID-192: Application of Variational Approaches to the Analysis of Processes in Complex Electromechanical Systems	169

ID-193: Modernization of Lighting as a Way of Energy Efficiency Increasing	170
ID-194: Simulation of the Process of Frequency Start of an Asynchronous Motor under Different Control Laws and the Moment of Loading Depending on Speed	171
ID-195: Study of Qualitative Characteristics of LED Lamps at the Reducing of the Voltage of the Nominal Value	172
ID-196: Mathematical Modeling of the Electrotechnical System of Rectification of the Alternating Three-Phase Current on the Hamilton-Ostrogradsky principle	173
ID-197: Substantiation of Parameters and Working Conditions of Solar Dry Kiln of Fruits	174
ID-198: Alternative Energy and Its Effects on Environment	175
ID-199: Technological Parameters for Installation of Temperature Expansions of Pipelines of the Thermal Network	176
ID-200: Determination of Equivalent Gaps in the Hydraulic Drive of Shovel Type	177
ID-201: The Application of Fuzzy Logic Algorithms for Controlling of Renewable Energy Sources	178
ID-202: Study of Dynamic of Different Types of Solar Panels	179
ID-203: Study of Approach for Reducing of Nitrate Loads on Drainage Water	180
ID-204: Research of the Fuel Supply System of the Opel Petrol Engine Depending on the Temperature Mode	181
ID-205: The Regularity of Speed Mode Change of the Variator on Different Kinematics	182
ID-128: LHC Experiments and FCC Project	183
ID-94: Hydrokinetic Energy Conversion Systems in Turkey;an Experimental Analysis	184

Biophilic Design Approach for Children Spaces

Nihan Ünal¹

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Abstract

Stress factors are increasing in our lives due to personal awareness, economic insufficiencies and decreasing natural resources. Even though sustainable solutions provide solutions to these problems in the physical context, they have not been able to solve the psychological problems that people have had due to this situation. This psychological situation is not only limited to adults, but also reflected to the children who are the future of the countries. The way to solve these problems is through strengthening the nature relationship that people need. To be able to provide this kind of a solution in an artificial space, Biophilic Design is suggested in this paper. Biophilic design is not only the greening of buildings, the use of trees and shrubs in landscaping and the aesthetic appeal of buildings. Biophilic design, rather, reflects the place of people in nature and the place of nature in human society. This design approach fulfills the need of nature communication that every human being has in their subconscious from the beginning of the time.

Keywords: Biophilic Design, Design, Nature, Children

SHOWER (Slaughtering House Waste Water): Innovation Design in the Utilization of Bacteria in Slaughterhouse Water Waste Based on Microbial Fuel Cell Concept as Renewable Energy Electricity

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Abstract

The availability of energy is a crucial requirement for human life. In 2017, the demand for electricity in the industrial and household sectors was 37% with a total reaching 2,584 TWh. One technology that can be a new alternative energy source, namely Microbial Fuel Cell. Microbial Fuel Cell, or better known as the abbreviation MFCs, is a system of generating electricity by utilizing bacterial interactions found in nature. Slaughterhouse Waste (RPH) in the form of urine stool, rumen contents or gastric contents, blood from meat or fat, and washing water, can act as a medium for microbial growth and development so that the waste is easily decayed. Bacteria in the organic medium convert organic matter into electrical energy. The nature of bacteria that can degrade organic medium (enrichment media) in MFCs produces electron and proton ions. These ions produce differences in electrical potential so that energy can be produced. The working principle of this method is the occurrence of a multi-enzyme reaction from microbes with a substrate that occurs in the bioreactor to produce fuel that will flow to the anode (fuel cell). The design of the SHOWER is generally divided into MFC, Boost converter, and DC to AC inverting. MFC consists of 2 chambers which include storage, anode and cathode chambers, connectors, 2 zinc and copper rods, and salt bridge media. Boost converter consists of a circuit that functions as a DC to AC voltage amplifier. The voltage generated from these MFCs is a DC voltage, which can be used to supply electrical energy to an electronic device requiring sufficient AC voltage to flow every electronic component in a device. The output voltage generated by MFCs can reach a value of 12 V where the value of such a voltage is sufficient to then be turned into an AC voltage using a DC to AC inverter with input power of 500 W.

Keywords: Shower, microbial fuel cell, electricity, slaughterhouse

An overview of marine microplastic pollution in Turkish Waters of Black Sea Coasts

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Abstract

Marine pollution is a universal problem and microplastic pollution is one of the main causes of this pollution. Microplastics (<5mm) are man-made wastes, which are caused by the disintegration or degradation of larger sized plastics, which negatively affect the natural life. The production of non-biodegradable plastics and the resulting wastes pose a threat to marine creatures and public health for sure. Various studies at different seas and their microplastic contamination are available. However, there is a lack in data to the situation of the Black Sea. Since the Black Sea is semi-enclosed and surrounded by a large number of cities the danger for it to accumulate unusually high amounts of MP pollution is an important issue. In this study, some studies on microplastic contamination in the Black Sea region were brought together. The relatively high microplastic concentrations found in the studies show that the Black Sea is a hot spot for microplastic pollution and that there is urgency in understanding the origins, transport and effects of MP on marine life and public health.

Keywords: marine pollution, black sea, microplastic, public health, marine life

Integrating Technology in a Statistics Course

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Abstract

This study is an experimental study conducted to investigate the effect of SPSS (Statistical Package for the Social Sciences) Course to student attitudes and achievement about Statistics. Participants in this study were 60 students of the second year of the Faculty for Entrepreneurial business and management of non-real estate (University Union Nikola Tesla in Serbia). The students studied Statistics material with the help of software SPSS with the same content as in classical teaching, but with the accentuated power of visualization, with plenty illustrations, etc. in software SPSS. A survey conducted at the end of the research showed that students are very interested in this kind of teaching. They think that statistics software can help understood attitude and how it impacts the learning process.

Keywords: IT, Statistics, education, lecturing, software, SPSS.

Hazelnut Harvesting for Sloping Plantage

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Abstract

The total amount of world production of hazelnut is mainly around 800.000 tons/year. About 65% of world's hazelnut production is harvesting in Turkey. Hazelnut is a crucial and nonequivalent material for praline production, which is semi-finished product of chocolate industry. Moreover, hazelnut has an annual export revenue of approximately \$ 2 billion as an important product for Turkey. Due to the appropriate climatic conditions and availability of harvesting in the extreme sloppy and less qualified agricultural land of Ordu, Giresun and Trabzon, the protection and development of hazelnut-planted areas becomes among the priority issues. The slope fragmentation of cultivated areas and cultivar characteristics do not allow for mechanization, except for lowlands. This leads to increases in hazelnut production costs and also in laborintensive requirements during the harvest period. In Turkey, most hazelnuts remain multistemmed and are planted in brush. All of the hazelnut harvesting is still done entirely by hand in this region of Turkey. Due to the fact that machine farming has not been passed or not widespread in this region, production costs have increased such that they remain at very high levels when compared with other countries or other cities in Turkey. In this study, it has focused on the mechanized harvesting, and sustainability of the hazelnut cultivation in less qualified sloppy mountainous agricultural lands.

Keywords: Hazelnut, harvesting, plantage, sloping land

Nutritional Value and Oil Content of Hazelnut

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Abstract

Scientific name of Hazelnut is *Corylus avellana*. The total amount of world production of hazelnut is mainly around 800.000 tons/year. About 65% of world's hazelnut production is harvesting in Turkey. Besides its economic importance, the high nutritional value of hazelnut makes it a special food. Hazelnut is a crucial and non-equivalent material for praline production, which is semi-finished product of chocolate industry. The hazelnut is a small deciduous tree originated in southern Europe and Turkey. It is now being cultivated in many regions of the world, as a major commercial crop. Hazelnuts are rich in unsaturated fats (mostly oleic acid), protein, complex carbohydrates, dietary fiber high in magnesium, calcium, zinc and vitamins B and E. Hazelnuts are good for your heart, help reduce the risk of cancer, and aid in muscle, skin, bone, joint and digestive health. This study has focused on Fatty acids content and nutritional effect of hazelnut.

Keywords: Hazelnut, content, nutritional effect, fatty acids

Evaluation of Renewable Energy in Mixed Used Buildings in Giresun

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Abstract

In this study, APAYDIN Shopping Center (AVM) which is a mixed-use building located in the central district of Giresun province was examined the energy usage potential of the building was revised and the energy saving potentials were determined. The devices and systems that make electricity consumption at the shopping mall were examined by observations and calculations. The condition of the building was analyzed by analyzing the air conditioners, air control devices (air curtains), refrigerated product display cabinets, cold stores and lighting fixtures and all the vehicles that cause electricity consumption. In addition, if the energy source used in the structure is provided from solar energy which is renewable energy, annual energy saving, investment cost analysis etc. account.

Keywords: Renewable Energy, Mixed Use Structure, Solar Energy

10 Ton H Type Hydraulic Press Design

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Abstract

In this study; A hydraulic press design with an H-type table with a capacity of 10 tons has been constructed in accordance with the engineering principles and safety conditions. The three-dimensional model of the hydraulic press was created using Solidworks and Creo programs. Essential calculations of hydraulic press elements have been made. Computer-aided programs are used for safe design under the required load. In order to ensure that the elastic deformation limit and the load of the frame are not exceeded in the frame design of the press, analytical calculations of the press frame are optimized with the help of the finite element method. The most important element in engineering services is customer desire. Therefore, the manufacturing conditions of the designed press are designed according to important conditions such as the environment and the place to be used. In this design, one of the most important parts is motor and pump. Production plan and cost analysis were made and manufacturing technical drawings were prepared for each part.

Keywords: Hydraulic press, H-type press, Press design

Fluidization and Fluidized Bed

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Abstract

Fluidized bed can be used in various industrial areas Their applications are increasing generally, and preferable where is necessary precise processing technology and specific processing. Fluidization and fluid bed is a form and concept. Fluidization is the operation by which solid particles are transformed into a fluidlike state through suspension in a gas or liquid. This method of contacting has some complex characteristics, and only fluidization engineering puts them to good use. This study focuses on the understanding of this concept and importance of fluidization, flow regimes, fluid bed forms and the use of fluidized beds.

Keywords: Fluidization, Fluidized bed, Flow regime, Application

The Response of Safflower Cultivars to Various Abiotic Stresses during Germination and Early Seedling Growth

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Abstract

A laboratory experiment was performed to determine the reaction of three native newly registered safflower cultivars (Linas, Asol and Olas) to salinity (10 and 20 dS/m), chilling (10 and 15 °C) and drought (-2 and -4 bar) stresses during germination and initial seedling growth. Drought stress was constituted by polyethylene glycol (PEG 6000) and different salinity levels were induced by sodium chloride (NaCl). Distilled water was used as control treatment. The results showed that final germination percentage was not changed by these stresses but time to germination was clearly extended when stress levels increased. Seedling growth was inhibited by increasing drought and salinity stresses and lower temperature caused a significant inhibition in seedling height and seedling fresh weight. Contrarily, seedling dry weight was promoted by increasing stress levels. The safflower cultivars showed different responses to abiotic stresses. It was concluded that Olas showed better performance under drought and salinity, and Linas gave faster germination and greater seedling growth at low temperatures.

Keywords: Carthamus tinctorius L., Drought, Salinity, Low temperature, Germination.

Allelopathic Effects of Safflower Stem and Root on Germination and Seedling Growth of Wheat, Barley and Safflower

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Abstract

The allelopathy of safflower extracts prepared by stems and roots on germination and seedling growth of wheat (*Triticum aestivum* L.), barley (*Hordeum vulgare* L.), and safflower (*Carthamus tinctorius* L.) was examined. Stem and root extracts of safflower cultivars Asol, Balcı, Linas and Olas at 2.5, 5 and 10% concentrations were prepared from safflower residuals after harvest. Germination percentage, mean germination time, root and shoot length, seedling fresh and dry weight were investigated. Results showed that germination and seedling growth of the species were significantly influenced by safflower extracts and doses. Higher doses of extract inhibited germination and seedling growth of the investigated plants. There were apparently differences between stem and root extracts of safflower in terms of toxicity, and stem extract had more inhibitory effect on germination and seedling growth of target plants than root. It was concluded that the inhibitory effect of safflower stem was banned by removing the residual stems from the field should be beneficial for alleviating the avoiding allelopathic effect.

Keywords: *Carthamus tinctorius* L., Stem extract, Phytotoxicity, Germination

Germination and Seedling Growth Performance of Safflower (*Carthamus tinctorius* L.) Cultivars under Low Temperatures

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Abstract

This study was carried out to determine the effects of low temperatures on germination, emergence and seedling development of safflower cultivars. The laboratory experiment was performed at the seed science and technology laboratory of Field Crops Department in Eskişehir Osmangazi University. In this study, the germination percentage, mean germination time, seedling length and seedling fresh weight of 6 safflower cultivars (Balçı, Dinçer, Remzibey, Olas, Asol and Linas) and one safflower line (Ayaz) were investigated at various low temperature stresses (5, 10, 15, 20 and 25°C). The results showed that Linas was the least affected cultivar by decreasing low temperatures in terms of germination percentage. The longest time to germination was observed in Dinçer with 8,88 day at 5°C, while the shortest value was calculated in Olas with 7,90 day. Increasing temperature resulted in an increase in the seedling length and seedling fresh weight. The highest seedling length was determined in Asol with 14,18 cm at 25°C. In terms of seedling fresh weight, Dinçer gave greater values at 25°C. It was concluded that Dinçer and Asol were the best safflower cultivars at low temperatures, while Olas and Linas gave better performance with respect to germination and mean germination time than the others did.

Keywords: *Carthamus tinctorius* L., Low temperature, Germination.

The Seed Vigor Changes of Seed Samples from Primary, Secondary and Tertiary Heads of Safflower

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Abstract

This study aimed to search the differences among the vigor of seeds produced from different heads on a safflower plant. The laboratory experiment was performed by using the seeds collected from primary, secondary and tertiary heads of cultivar Balci. The seed vigor was tested by germination, emergence, electrical conductivity (EC), accelerated ageing (AA) at 43°C for 48h and cold tests at 10°C for 10 days) at the seed science and technology laboratory of Field Crops Department in Eskişehir Osmangazi University. The seed weight was measured as 50.9 g in primary, 44.8 g in secondary and 37.1 g in tertiary heads while oil content was 20.5%, 23.3% and 23.1%, respectively. Germination percentage was the minimum value 89.0% with the seeds from tertiary heads while the maximum germination (94.0%) was observed in seeds of primary heads. The shortest mean germination time was obtained from seeds produced by primary and tertiary seeds. The EC test showed that higher electrical conductivity was measured in seeds of tertiary heads. AA and cold test did not give a significant separation for vigor among the seeds from different positions of heads. It was concluded that any valuable differences for seed vigor among head positions on a plant was detected while seed weight and oil content were clearly changed.

Keywords: Carthamus tinctorius L., Germination, Head Position, Morphogenetic Variability

The Effects of Salt Stress on the Germination of Seed and Seedling Growth of *Lolium multiflorum*

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Abstract

In this study, the effects of different salt concentrations on germination and seedling development of Italian ryegrass were investigated and seeds of *Lolium multiflorum* were sown. Different concentrations of NaCl (0, 250, 750, 2250, 5000, 10000 ppm) were used. The study was carried out in Kahramanmaraş Sütçü İmam University, Faculty of Agriculture, Department of Field Crops in Medicinal and Aromatic Plants Laboratory at a temperature of 15°C. The experiment was laid out in completely randomized design (CRD) with three replications. Observations were made at the same time each day. Root length exceeding 1 mm were considered to be germinated. Seeds were monitored in the air conditioning cabinet for 14 days and then different properties such as germination percentage, seedling length, radicle length, plumule length, seedling fresh and dry weight were investigated. The differences between the averages of all the properties examined were significantly affected by the salt concentrations applied. The differences between salt concentrations were statistically significant. In terms of properties examined, salt concentrations of 250, 750 and 2250 ppm promoted germination and seedling development. At doses above 2250 ppm, lower values were obtained. While the lowest germination rate (7%) was obtained in 10000 ppm application, seedling development stopped completely.

Keywords: Germination, *Lolium*, Salt stress, Vigour index.

The Resistance of Some Barley Cultivars to Salt Stress

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Abstract

In this study, the effects of different salt concentrations on germination and seedling development of barley were investigated. Seeds of three varieties of barley (Akhisar, Sancak and Şahinbey) were used in the experiment. Different concentrations of NaCl₂ (0, 250, 750, 2250, 5000, 10000 ppm) were used. The study was carried out in Kahramanmaraş Sütçü İmam University, Faculty of Agriculture, Department of Field Crops in Medicinal and Aromatic Plants Laboratory at a temperature of 20°C. The experiment was laid out in completely randomized design (CRD) with three replications. Observations were made at the same time each day. Root length exceeding 1 mm were considered to be germinated. Seeds were monitored in the air conditioning cabinet for 14 days and then different properties such as germination percentage, seedling length, radicle length, plumule length, seedling fresh and dry weight were investigated. The differences between the averages of some properties examined were significantly affected by the salt concentrations applied. The response of the varieties to the salt varied. It was observed that all barley varieties provide germination and seedling development at all salt concentrations applied. In all varieties, the lowest values were obtained at dose of 10000 ppm.

Keywords: Germination, Barley, Salt stress, Vigour index.

Energy Efficiency and Renewable Energy Application in Buildings

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Abstract

In this study, the Faculty of Engineering building used in Giresun University Güre Campus was investigated. The aim was to reduce the energy costs of the building by measuring the energy use of the building and integrating the renewable energy resources. Electrical consumption devices and systems are examined technically. Air conditioning units, air curtains, elevators, heat system pumps, lighting fixtures, stage projectors, laboratory devices and all the elements that cause electricity consumption have been analysed in the building. In addition, systems that cause energy losses in the whole building have been examined and studies have been carried out to increase energy efficiency. In order to make the existing systems of the building work more efficiently, the integration of renewable energy systems into existing systems, the energy expenditure of the building is reduced and the current situation and the new situation are compared.

Keywords: Energy Efficiency, renewable energy, solar energy, energy

The Response of Sunflower Hybrids to Low Temperature during Germination and Early Seedling Growth

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Abstract

This study was performed to investigate the differences between sunflower hybrids under low temperature stresses during germination and seedling growth. The experiment was established at the seed science and technology laboratory of Field Crops Department in Eskişehir Osmangazi University. In this study, the germination percentage, mean germination time, seedling length and seedling fresh weight of ten sunflower hybrids (P63LE113, SY Santos, Bosfora, SY Gibraltar, SY Roseta, Sanbro MR, SY Barbatı, P63MM54, P64LE121 and P64LL62) were evaluated under optimum (25°C) and chilling stress conditions constituted by cool (18°C) and cold (15°C) tests. The results showed that germination percentage of sunflower hybrids was significantly different under low temperature and optimum conditions. Depending on decreasing temperature, mean germination time was extended, but shoot and root length shortened. Shoot growth was more affected by decreasing temperature than root growth. P64LE121, P63MM54 and P63LE113 produced longer root at cold test and P63MM54 germinated rapidly at cool test. It was concluded that sunflower hybrids showed different responses to germination temperature and P64LE121, P63MM54 and P63LE113 gave better performance with respect to germination and mean germination time under low temperature than the others did.

Keywords: Helianthus annuus L., Hybrid, Low temperature, Germination.

Absorption Cooling Systems

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Abstract

Today, countries have sought solutions for energy use with various ideas and theories. As a result of these solutions, the efficient use of energy has led to the design of combined working systems together with such cases as re-use. Recently, interest in absorption cooling systems has increased due to the damage of the ozone layer. The advantage of using both absorbent and refrigerant as a fluid pair in absorption cooling systems and the fact that the waste heat and renewable energy resources encountered in the industry can be easily used in absorption cooling systems have further increased the importance. Along with technological developments, energy recovery will profit from production-consumption relations. Together with these elements, it has made useful processes that are more efficient with human and economic and solution oriented machines. Within the scope of the study, general concepts related to absorption refrigeration systems, fluid pairs and applications of these systems have been tried to be given effective condition characteristics according to the conditions.

Keywords: Absorption refrigeration cycles 1, Hybrid systems 2, Fluid Pairs 3.

Smart Growth and Sustainable Development in Buildings

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Abstract

On the basis of the concept of smart growth reflects the idea of restructuring settlements to provide maximum efficiency for nature and human. This study aims to provide a comprehensive explanation of the concept of intelligent growth, the current planning approach developed within this scope and the principles of sustainable development within the framework of various initiatives. The aim of the study is to evaluate the factors that will bring solutions to the whole society in order to meet the conditions of regional harmonization in order to develop technical, design and effective ideas in order to reveal all the effects of the concepts of resource and material and applicability processes.

Keywords: Smart growth 1, Sustainable development 2, Applicability 3.

Seasonal Measurement Of Concentrations of Carcinogen PAH Compounds in the Internal Environment of the House in Giresun

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Abstract

It is known that the source of air pollution in Giresun Province is due to domestic fuels which are mostly used for heating purposes. The pollutants, especially caused after burning coal and fuel oil, are discharged into the atmosphere without any treatment from the chimneys. This situation causes the deterioration of air quality. This study was conducted to obtain information about the concentrations of these carcinogenic compounds that we have been exposed to in the home environment. Five stations, where both coal and natural gas are used, from east to west coast of Giresun were determined. The samples were placed in the kitchens of three different houses from the coastline and upper sections of the determined stations for a month (October-November, February-March) and seasonal comparisons were made. Wood based activated charcoal is used. Extraction processes were carried out and analysis were obtained in GC-MS. 17 PAH compounds were examined for each station. There was no statistically significant difference among seasons as it can be seen in the result of statistical analysis ($p > 0.05$).

Keywords: air pollution, activated carbon, GC-MS, PAH, home

Forecasting Call Volume of a Call Center Using Multiple Linear Regression Analysis and NARX Network Model

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Abstract

In today's economic environment, call center managers face the constant challenge of balancing the service levels and agent costs. Before any customer agent planning can be done, a call center needs to forecast call volume based on past data. Inaccurate forecasts on call volume can lead to poor scheduling decisions and can have negative impact on profitability. In this study Multiple Linear Regression (MLR) Analysis and Non-Linear Auto Regressive Exogenous (NARX) Network Model were used to forecast incoming call volume of a hospital call center based on the days of week which is one of the main factors affecting the incoming call volume of a call center. According to results, NARX Network Model is more effective than MLR Analysis in determining the effect of days on incoming call volume based on coefficient of determination (R²). The results can help to determine the optimum number of agents to reduce waiting time for customers, provide profit maximization and reduce unnecessary costs.

Keywords: Call center, Multiple linear regression analysis, NARX network model

Assessment of Metal Levels in Biotic and Abiotic Materials from Giresun Forests

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Abstract

The study investigated the metal levels in biotic and abiotic materials from Giresun forests. While soil and water samples were selected as abiotic materials, leaves and moss were selected as biotic materials in forest. These selected materials were sampled from six stations. All samples were analyzed three times for arsenic, iron, chromium, copper, manganese, nickel, lead and zinc by ICP-OES. A logarithmic transformation was done on the data to improve normality. One way ANOVA and Duncan's multiple range tests were performed to test the differences among metal levels of stations. The differences among metal levels in stations were statistically significant ($p < 0.05$). Metal levels from forests were assessed for environmental health.

Keywords: Metal biotic and a biotic materials, Giresun forests, Environmental health

Evaluation of Textile Wastewater Treatment by Electro-Fenton Method Using Different Electrode Pairs and Its Effect on Energy Consumption

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Abstract

Advanced Oxidation Processes are applied effectively in the treatment of textile industry wastewater as well as in the treatment of many industrial wastewaters. In this study, the operational performance of the electro-Fenton (EF) process in the laboratory scale batch system for the real textile wastewater was investigated. For 13 different electrode pairs, the effect of EF process on Colour, TOC and COD removal efficiency was determined in experimental conditions. As anode material; steel, graphite felt, carbon fiber, titanium, carbon felt and graphite plate were used. The electrode types that give the best result among the different electrode pairs are Steel(A)-graphite felt(K), graphite felt(A)-graphite felt(K), graphite plate(A)-graphite plate(K). Colour, COD and TOC removal efficiencies for steel(A)graphite felt(K) were found to be 89%, 49% and 41% respectively, while graphite felt(A)-graphite felt(K) these values were 86%, 50% and 37%. Colour, COD and TOC removal efficiencies for graphite plate(A)-graphite plate(K) were 95%, 70% and 44% respectively. For the 13 different electrode pairs, electrical energy efficiency, energy consumption and current efficiency were calculated. For Steel(A)-graphite felt(K), graphite felt(A)-graphite felt(K), graphite plate(A)-graphite plate(K) electrical energy efficiency was 33.11, 36.58, 16.32 kWhm⁻³, energy consumption was 80.33, 89.67 and 41.63 kWhm³ and current efficiency was calculated as 0.603, 0.617 and 0.847.

Keywords: Textile wastewater, electro-Fenton proses, energy consumption.

Determination of Characterization of Solid Wastes in Rize Province and Evaluation of Alternative Solid Waste Disposal Methods

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Abstract

Disposal, storage and collection of urban solid wastes without damaging to nature is one of the most important requirements today. In order to plan waste management, it is necessary to know waste characterization. In this study, firstly the actual waste management in Rize province has been discussed and the system has been explained in general terms. The most suitable waste management alternatives have been investigated within the scope of integrated waste management in terms of being light for decision makers. In this context, Rize waste characterization was determined and seasonal change of waste characterization was investigated. According to the research conducted for this purpose, approximately 65-75% of the Rize wastes are organic waste and 35-25% are recyclable waste. Moisture content was found as 68-70% on average. Lower calorific value was found between 3500 and 5000 kcal / kg on dry basis. In addition, the most appropriate methods for the reuse, recycling, recovery and final storage systems of urban wastes within the scope of zero waste management were determined and evaluations were made by taking into consideration the characterization values obtained for the reduction and disposal of the waste amount.

Keywords: solid waste management, characterization of solid waste, disposal.

Aromatic Characterization of Moldy Civil Cheese, a Traditional Turkish Cheese

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Abstract

Civil cheese is a traditional cheese in Turkey. It is produced especially in Eastern Anatolia. The civil cheese is produced by both rennet and acid coagulation and also a combination of heat treatments. Then, it is ripened into goat skins for more than three months and mould deliberately. In this study, some properties of the moldy civil cheeses collected from different domestic and commercial locations in Eastern Anatolia Region of Turkey were investigated. Especially, the civil cheeses were evaluated to reveal the aromatic composition of the variety. According to the results, the LAB, TAMB and mould counts of the cheeses were determined in the ranges of 7.12-5.40 log CFU/g, 7.26-5.74 log CFU/g, and 8.56-5.45 log CFU/g, respectively. Volatile compounds generated by lipid and protein metabolism predominated among the aroma compounds identified in moldy cheese. The methyl ketones, 2-nonanone, 2-heptanone and 8-nonen-2-one were three of the most important aroma compounds in this cheese. 2-pentanone and 2-undecanone also contributed to the aroma of this cheese. In particular, it was determined that 2-heptanone, 2-nonanone, and 2-pentanone volatile aroma compounds in the B and D cheese samples, respectively had higher than other cheese samples. The results showed that 2-heptanone, 2-nonanone, 2-pentanone, 8-nonen-2-one and L-limonene compounds were important to aromatic characterization of this cheese.

Keywords: Moldy cheese, Aroma, 2-heptanone, L-limonene, Nonanone, 2-pentanone, 8-nonen-2-one

Electromagnetic Radiation Used for Mobile Phones Increases the Serum Iron Concentration

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Abstract

Purpose:

We aimed to study of some minerals (Zn, Pb, Mn, Mg, Cu, Fe) concentration changes in rat serum induced by electromagnetic radiation (EMR) emitted by mobile phones and the effect of garlic extract.

Materials and methods:

A total of 72 albino Wistar rats were divided into five groups: G1 is a group exposed to 900 MHz EMR at a 0.4 W/kg specific absorption rate (SAR) value; G2 is a group exposed to 1800 MHz EMR at a 1.08 W/kg SAR value; G3 is a group exposed to 900 MHz EMR and administered 500mg/kg garlic extract; G4 is a group exposed to 1800 MHz EMR and administered 500mg/kg garlic extract and G5 is the control group. At the end of the three weeks, rats were sacrificed and blood samples were collected for measurement of mineral concentration by atomic absorption spectrometer.

Results:

End of the study we found that, changed iron (Fe²⁺) concentrations, significantly ($p < 0.05$). Iron concentrations were measured as significantly different (high concentration) in G1 according to G3, G4 and G5. Furthermore, iron concentrations did not differ between G1 and G2, while G2 iron concentrations were also higher than G3, G4 and G5, but were not significantly.

Conclusions:

The exposure of EMR especially 900 MHz Global system for mobile communication (GSM) leads to changed iron concentration in rat serum. Increased iron concentrations may be one of the sources of oxidative stress due to EMR, which has been suggested in the literature. On the other hand, we found that garlic which has antioxidant and metal chelator feature, application reduces the levels of iron concentration increased by EMR in G1 and G2 to the control group (G5) level.

Keywords: Electromagnetic radiation, garlic, minerals

Linezolid Resistance in Vancomycin-Resistant Enterococci

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Abstract

Enterococci are homofermentative lactic acid bacteria that are found naturally in the human and animal intestinal flora and are also frequently isolated from raw foodstuffs and various traditional fermented foods. Some member of Enterococcus genus, especially *E. faecium* and *E. faecalis* play an essential role in the development of flavor of traditional fermented products such as cheeses and sausages produced in different European countries. On the other hand, some species of enterococci cause serious infections such as urinary and soft tissue infections, bacteremia, endocarditis and meningitis. Antibiotic resistance is one of the primary factors contributing to the pathogenicity of enterococci. Linezolid is an oxazolidinone antibiotic, has been used exclusively in humans for the treatment of infections by Gram-positive bacteria, including vancomycin-resistant enterococci (VRE). Linezolid is often used as a last resort for VRE infections. Linezolid resistance in enterococci is associated with mutations in 23S rRNA, the presence of the plasmid encoded *cfr*, *cfr(B)* and *optrA* genes, and alterations in ribosomal proteins L3 and/or L4. The risk of spreading of linezolid resistance genes to nosocomial pathogens such as VRE and methicillin-resistant *Staphylococcus* is a concern. In this review, the emergence of linezolid resistance and linezolid resistance mechanisms in VRE was discussed.

Keywords: Antibiotic resistance, Linezolid, Enterococci.

Effect of Surface Texturing on Tribological Behaviour

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Abstract

In this study, tribological behaviour of SAE 660 bronze, a conventional bearing material, with lubricant pockets was investigated. Firstly, forty lubricant pockets were machined on specimens' surfaces. Lubricant pocket size of 0.2 and 0.6 mm in diameter and a non-textured specimen were employed. Tribological tests were performed using an inhouse-developed block on disk type test system. The effect of lubricant pockets (surface texturing), pressure and sliding velocity on friction coefficient, temperature and wear amount was investigated. Specimens were subjected to three different normal pressure (2, 4 and 6 MPa) and sliding velocity (1 and 2 and 3 m/s). Results showed that application of lubricant pockets decreases both friction coefficient and temperature. Furthermore, decrease in mass loss was also observed.

Keywords: Surface texture, Lubricant pocket, SAE 650 bronze, Bearing, Friction behavior

Surface Texture Application on UHMWE for Medical Applications

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Abstract

Ultra-High-Molecular-Weight-Polyethylene (UHMWPE) has been exploited by several industries including machinery, equipment, food, pharmaceuticals, medical, etc. due to its high wear and impact resistance, selflubrication and hence low coefficient friction properties. It has been also found applications in hip, knee, femur and backbone orthopaedic implant bearing components as it reduces the wear rate of contacting surfaces. This study aimed to further improve the frictional properties of UHMWPE by means of producing micro-features (e.g. lubricant pockets) on contact surface. The micro-pockets were realized through micromachining. First, test specimens were machined to the dimensions of 10x15x26 mm. Then, 40 lubricant pockets with different diameters (0.3 and 0.5 mm) were formed on specimen surfaces. The samples were then tested against AISI 4140 rotating disk using a block-on-disk type of test system. Effect of lubricant-pocket size, normal load value, lubrication conditions on the coefficient of friction and wear performance were investigated. It was observed that coefficient of friction is reduced and stabilized after certain test duration.

Keywords: Surface texture, lubricant pocket, UHMWPE.

Investigation on Formability of Varied Aluminum Alloys through Warm Closed-die Hydroforming

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Abstract

In this study, effect of closed-die warm hydroforming process conditions and formability of several aluminum alloys (e.g., AA 5754, AA 5182 and AA 6111) were investigated through numerical analyses. Finite element analyses (FEA) were compared with the experimental data available in literature. Thickness reduction (% TR), radius sharpness (RS) and cavity filling ratio (CFR) of closed-die hydroforming were considered as control parameters to examine the influence of material models (Johnson-Cook and Zerilli-Armstrong). and strain rate effect. Numerical simulations were performed with LS-DYNA, an explicit dynamic FEA package. Optimum process parameters and material modeling parameters were obtained based on the highest formability criterion.

Keywords: Hydroforming, Aluminum Alloys, FEA, Formability, Material Model.

Creating a Real Estate Appraisal Model by Fuzzy Logic

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Abstract

As the time passed, the importance of real estate appraisal has been understood and its popularity has increased significantly in Turkey. Some models have been established for taxation, expropriation, credit etc. processes. But the real estate appraisal needs to more accurate and comprehensive new models. The valuation function is always a big problem in free market economies. Fuzzy logic is an artificial intelligent method used in real estate appraisal and it gives more accurate results than the other methods because it takes into account the verbal data thanks to its ability to simulate human thought. In this study, fuzzy logic modeling in the field of real estate appraisal will be described. Membership functions and rules are defined by using fuzzy logic toolbox in Matlab software. The model that emerged according to these criteria will help us to show the real value of the property. There are two systems for fuzzy logic, Sugeno and Mamdani. Both systems have been tried in this study, but more accurate results have been obtained than Mamdani system. So Mamdani system will be used for modeling.

Keywords: Real estate, Fuzzy logic, Artificial intelligence, Mamdani.

Turkey and Iran Cadastral Sytems: A Comparison

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Abstract

The process of registering the borders and surface area of the land seen from the antiquity to the present day as wealth, commercial goods or scarce sources is determined as the cadastre. Today, the cadastre is a base that provides information to areas such as urbanism, economy, agricultural activities, law, engineering, and statistics, as well as determining the boundary and surface area. For such a cadastre, states have created systems according to their own structures and have made arrangements through laws. In this research, Turkey and Iran cadastral systems will be examined and compared by various aspects according to specified criteria such as historical development, legal, institutional and technical structures, completion status and parcel numbers and problems. It is expected that this research will guide the relevant people or institutions in the process of evaluating and improving the cadastral systems of countries and will shed light on new studies.

Keywords: cadaster, Turkey, Iran, comparison

Investigation of the Effects of Momordica Charantia on Foot Preparation and Behavior

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Abstract

Today, pain causes psychological distress. Formaldehyde causes cell death when it comes into contact with tissues. Momordica charantia is a plant with antioxidant, analgesic and anti-inflammatory effect. The aim of our study was to investigate how low and high doses of Momordica charantia may affect foot inflammation and how to investigate animal behavior.

One group had only saline injected into the right foot and the other 3 had formaldehyde injected. Formaldehyde injected group group was treated in our positive control group. Momordica charantia material was gavaged in 50 mg and 200 mg of the other 2 groups. Throughout your 7-day trial, we can monitor the pain thresholds, motorkortex measurements for behavioral changes, the use of the foot in the foot, and the degree of gravity between foot temperature measurements and experiences.

In our control group, the foot volume, pain threshold, the region of the motor cortex were closed and there was no general difference in recent days, whereas in our positive control group, we believe in the heart of the feet on the 7th day. When we looked at our treatment groups, 200 mg Momordica group showed a significant decrease in foot volume, but increased pain threshold and increased motor activity.

Our high dose Momordica group achieved a great refinement by decreasing the foot volume as of the 4th day. The motor cortex is waiting for our value and is reduced by driving. In addition, when compared to the control group, weight gain was also observed in animals.

Keywords: Momordica charantia, pain, motor cortex, inflammation, foot volume.

Developing Web-Based Software For Scheduling and Order Acceptance Problem of a Boiler Production Company

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Abstract

In today's industry, many manufacturing companies use Make-To-Order (MTO) production systems to take advantage of these systems. The main advantage of these systems is that they lead to decrease the amount of finished goods inventories. However, these systems have a significant disadvantage. The manufacturer might deal with the set of orders which are greater than the available capacities. Accepting a large number of orders without considering the available resources' capacity may cause delay in delivery of other orders. Consequently, this manufacturing company may experience dissatisfaction of customers and/or even losing some customers. Therefore, manufacturing companies need to show more sensitivity in the acceptance or rejection of new orders. In this paper, a web-based software is developed to eliminate the mentioned issue in a boiler production company. First, the processes of the enterprise are analyzed and the standard time of the processes is determined. Second, with an Android-based program, real-time inventory information is integrated into the software. Then, by establishing the flexible flow scheduling mathematical model, the production schedule and due date of the new orders are determined according to the current inventory status. As a result, a more realistic decision-making mechanism has been formed to acceptance or rejection of the new orders and the customer dissatisfaction has been greatly reduced.

Keywords: scheduling, order acceptance, flexible flow shop production, software

Enterprise Resource Planing (Erp) Software Selection by Using Ahp and Promethee Technique

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Abstract

There are lots of type of ERP's software. These software's are changeable according to needs of companies. This situation is complicating to choosing a ERP program. This study will explain that truest choosing of ERP application in a different sectors and different process of business life. Criteria and alternatives are evaluated according to needs. criteria were researched in literature then these criteria were separated four main ways. These pioneer criteria and subcriteria were prepared in survey shape. Then, this survey was directed to alternative software users. Weightings of criteria were calculated with AHP as a decision's method. AHP could harbor lots of criteria. Also, six alternatives of these criteria were determined with Promethee as a decisions method and these alternatives were arrayed. These methods were created for service sectors and construction sectors. So, this study is showing that discrepancy of sectors is affecting to end of evaluating.

Keywords: ERP, Multiple Criteria Decision Making (MCDM), PROMETHEE

A New Alternative Crane to Improve Productivity Industrial Woodworking with Technological Support

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Abstract

As a raw material wood production activities have three main stages; cutting, subtraction and abroad transport. Substraction can be defined as removal of logs of 4-6 meters length from the cutting zone. This process includes the sub process those are held to transport log from cutting zone to transport trucks. Although it is a process requiring hazardous power for occupational health and safety, the use of advanced technology in forest land is limited. As a result of the fact that forest areas in our country are generally located in mountainous areas, removal activities are carried out with 90% manpower as a result of factors such as working conditions in difficult land conditions, state forestry and lack of technology. From this poin of view, a combined loading system should be developed in order to load heavy logs brought to the edge of forest roads by the log loader crane to the truck body or to a specific location easily. A log loading crane which receives its drive from the truck to which it is connected, and can catch and grabb the logs that has been cut and pulled to the road with its attachment will increase the overall productivity in the wood industry. In order to reach the dead points around the vehicle, the crane-vehicle connection mechanism should be designed in a structure that can move back and forth. In this study, an functionally increased log loader crane is designed to meet these needs.

Keywords: Logging, Log Traction Crane, Log, Terrain, Truck.

Natural Vinegar Production from Medlar (*Mespilus Germanica* L.) Fruit

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Abstract

Vinegar is a product obtained by fermentation of ethyl alcohol and then acetic acid by applying various processes of fresh fruits and dried fruits with sugar in their present structure. It is believed that some of the vinegar enterprises add synthetic acetic acid into the vinegar. Therefore, natural fermentation vinegar is thought to be healthier and its production should be expanded. Medlar, *Mespilus germanica* L., is member of Rosaceae (Rosaceae) family, Magnoliophyta (dicotyledons) class Maloideae and *Mespilus* subfamily. In this study, vinegar production was made from medlar fruit collected from Black Sea region, Turkey by natural fermentation method. The chemical, physical and sensory properties of the vinegar obtained were evaluated. Vinegar samples were evaluated by colorist, aroma, taste and general evaluation by panelists. Scoring was made out of 5 point. Accordingly, 1: very bad, 2: bad, 3: moderate, 4: good, 5: very good. The most acclaimed quality criterion of the questionnaire was color and odor, followed by taste, aroma and consistency, respectively. Chemically density, alcohol, total dry matter, ash, total acid, pH values were examined. The results were found as pH 3.07, total acidity (acetic acid) 1.245%, density 1.0057 g / cm³, alcohol content 0%, Brix° 1.93, ash 0.88%, dry matter 2%.

Keywords: *Mespilus germanica*, natural vinegar, chemical content.

Investigation of Performance of Static Loaded Radial Journal Bearings

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Abstract

In this study, the effect of friction and lubrication terms, which is one of the basic concepts of engineering, on machine elements is investigated on static loaded radial journal bearings. In the test device, the electric motor is driven to the shaft and a special bearing body is produced on which the radial journal bearing is connected. The static load is applied to the bearing body from the upper point by means of a hydraulic piston. In addition, the lubrication channels in the bearing body are pressed with oil pump and the oil sent to the bearing is deposited in the oil collection chamber located at the bottom of the assembly and the return to the oil tank is provided. The speed, the radial journal bearing material and the lubricating oil test device to be used for lubrication are variable parameters. Especially 5W / 30 engine oil used in most diesel vehicles is examined. It was investigated how long the 5W / 30 engine oil started to damage the main bearing in the test mechanism and how it decreased the performance of the bearing. The performance of radial journal bearings was demonstrated in this study by comparing the experimental data obtained from the experimental setup with the theoretically obtained data.

Keywords: Radial journal bearing, friction, lubrication, bearing performance

The Investigation at Gearmotor Which Bolted Flange Connection Used in Chip Conveyors

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Abstract

In this study, the gearbox and bolted flange connection of hinged steel belt chip conveyor with a chain pitch of 31.75 is examined. The system consist of two pieces bolts, one gearmotor, a flange part that a sheet metal to which the gearmotor is connected. Flange part made of 10 mm ST37 material and this part is referred to as gearmotor stand in this study. Two pieces M12 * 45 hex head bolts are used for connection between the flange part and gearmotor. The tightening of the bolts was provided by a torque wrench. The changes in the system by means of KISSsoft program was examined based on the max and min tensile load in the standard table of the tensile load and tightening torque values of the metric bolts. So, after the theoretical experiment, changes in the system at max and min loading were checked in the program. Beside, the bolts were tightened with a torque wrench (manpower) in the experimental environment and the fracture value of the bolt was investigated. The following conclusion was drawn from this study; the results obtained in real environment and computer program were examined and compared.

Keywords: Chip conveyor, gearmotor, bolted flange connection

Investigating Electric Transport Vehicle Alternatives of Hazelnut Harvesting in Mountainous Fields

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Abstract

Turkey meets a portion of approximately 60% of world hazelnut production. Nearly half of this production is carried out in the Eastern Black Sea Region of Turkey. This region has a mountainous terrain structure. One of the main reasons for the spread of hazelnut production in the region is this mountainous terrain structure. In this hazelnut fields on which the tractors cannot work, machine farming is of great importance in terms of reducing costs and sustainability. Although there is a need for mechanization in many steps of hazelnut harvesting, it is entirely up to manpower to transport crops from the fields and transport fertilizers to the fields. For this reason, machine farming has to be focus on this subject. The use of electric transport platforms for transporting loads on slopes will be an alternative. In this study, usability, needs and production details of carrier platforms have been examined. Since it is a product that is not available on the market, modifications of different systems or design of a new system are emphasized.

Keywords: Hazelnut transportation, brushless DC motor, motion in mountainous fields, pallet vehicle, renewable battery system.

A Comparative 3-D Model of A PEM Fuel Cell and Its Experimental Validation

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Abstract

In this study, a 3-D computational fluid dynamics model of a PEM fuel cell with single serpentine flow channels having 50 cm² active layer was developed to investigate polarization curve with different operating conditions. In the numerical study, verification was performed under the highest operating conditions obtained from the experiments. The model was created in Gambit 2.4.6 which is a pre-processing software. Ansys-Fluent 16.2 PEMFC module was used to compile the appropriate user-defined functions for a PEMFC. Effects of different parameters were studied by determining the current density, oxygen, hydrogen and water molar concentration distributions took into account the mass, momentum, energy, species, charge conservation equation as well as combines electrochemistry reaction inside the fuel cell and showing at polarization curves. The PEM model was compared with 7.26% error.

Keywords: PEM fuel cell, Modeling, Flow rates, Computational Fluid Dynamics

Experimental Characterization of PEM Fuel Cell Stack at Different Operating Conditions

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Abstract

In this study, the effects of operating parameters on power and current density of a 3-cell PEMFC stack with serpentine flow channels having 150 cm² total active layer have been examined experimentally. Hydrogen flow rate, oxygen flow rate and cell temperature were the main parameters to have been respectively 1.07-1.29-1.6 L/min., 0.825-1.1-1.4 L/min. and 50°C, 55°C ve 60°C. Open circuit voltage was measured before each test. The average value of 2.826 V was noted. Up to approximately 2 V cell voltage, 1.07-1.1 L/min H₂-O₂ flow rate is the best performance, at high current densities at these flow values performance is lower than 1.29-1.1 L/min. While the maximum current density up to 1.5 V was obtained at a temperature of 60°C, as the result of increased reactions with increasing temperature at high current values after 1.5 V, excess water cannot be removed from the channels, thus reducing the fuel cell stack performance.

Keywords: PEM fuel cell, Operating conditions, Stack effect

Heavy Metals and Trace Elements in Breast Milk of Turkish Nursing Mothers in Turkey

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Abstract

Breast milk is an essential nutrient for newborns and infants. Breast milk contains proteins, lipids, vitamins and minerals. The aim of the study is to evaluate heavy metals and trace elements content of breast milks in Giresun, East of Black Sea region, Turkey. Approximately 50 mg of milk samples were taken from fifty nursing mothers. Heavy metals and trace elements (Cr, Mn, Co, Ni, Cu, Mo, Cd Pb, Fe, Zn and As) were measured in breast milk using an ICP-MS. The measurements were repeated three times. The mean amounts of elements were 3.36 µg kg⁻¹ of Cr, 9.26 µg kg⁻¹ of Mn, 797 µg kg⁻¹ of Fe, 1.99 µg kg⁻¹ of Ni, 5.92 µg kg⁻¹ of Cu, 379 µg kg⁻¹ of Zn and 2.23 µg kg⁻¹ of Pb. Co, As, Mo and Cd levels were measured below the limit of detection (LOD). Our results showed that the levels of heavy metals and trace elements in breast milk from Giresun were similar to that of the World Health Organization (WHO).

Keywords: Breast milk, heavy metals, trace elements

Fatty Acid Composition of Native Turkish Roasted Hazelnut (*Corylus avellana* L.)

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Abstract

Hazelnut (*Corylus avellana* L.), which belongs to Betulaceae family, is a cultivated plant especially in the eastern Black Sea region. Hazelnuts are consumed as nuts and are included in some foods such as chocolate and hazelnut paste. Also consuming as hazelnut oil is common. The purpose of the study to analyze the fatty acid composition of roasted native Turkish hazelnut. The cold pressed method was used to get hazelnut oil. Fatty acid composition was analyzed by Gas chromatography (GC). The percentages of fatty acids in roasted hazelnut oil was found as 0.1 of capric acid, 0.7 of lauric acid, 1.5 of myristic acid, 0.7 of pentadecyclic acid, 5.6 of palmitic acid, 0.4 of palmitoleic acid, 3.1 of stearic acid, 70.8 of oleic acid, 14.7 of linoleic acid, 2.1 of linolenic acid, 0.2 of arachidic acid and 0.1 of 8eicosenoic acid. In a conclusion, oleic acid is the most abundant fatty acid in roasted hazelnut.

Keywords: *Corylus avellana*, fatty acid, Turkish roasted hazelnut

A Research on Determination of Feed and Feed Quality Properties of Some Oat Advanced Lines

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Abstract

This research was carried out on seed plots in a farmer land in Kahramanmaraş conditions in 2017-2018 production year. ZDY255 and ZDY301 advanced oat lines developed by a private seed company were used in the study. Four different samples with three replications were taken from the production plots by using quadrat (33x33 cm) during the grain filling period (end of milk stage, beginning of dough stage) of the plants. In this study, green forage yield (GFY), hay yield (HY), dry matter ratio (DMR), crude protein ratio (CPR), crude ash ratio (CAR), neutral detergent fiber (NDF), acid detergent fiber (ADF), relative feed value (RFV), macro and micro element contents were investigated. Obtained values were calculated by applying “t test” formula in Microsoft Excel program. Afterwards, the statistical significance of the data was determined by comparing with the table t. According to the results, the highest green herbage yield as 6476 kg / ha, hay yield as 2162 kg / ha, dry matter ratio as 33.88%, crude protein ratio as 11.32, NDF as 55.73%, ADF as 32.24% and RFV as 137.61 was found. There was no statistically significant difference between the varieties. However, it has been found that the ZDY255 line has superior properties compared to the ZDY301 line in terms of the investigated properties.

Keywords: Feed quality, hay yield, macro and micro elements, ndf and adf, oat, relative feed value.

Develop and Investigate an Appropriate Al Based Alloy by Enhancing the Thermo Mechanical Properties to Mitigate the Issues in Existing Applications

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Abstract

The automotive engines and other components which work under high temperature and pressure need appropriate material for high efficiency and long durability. From the literature reviews, Si, Ni and Cr were found as suitable alloying elements for this purpose. The science behind these elements was studied thoroughly and they were selected as alloying materials. Al-Si, Al-S-Ni and Al-Si-Cr alloys were prepared under various compositions and tested for strength, thermal conductivity and other desired thermo mechanical properties; and the results are evaluated. The preparation of the samples is carried out in burnout furnace machine under controlled environment. The samples are tested for hardness and it is converted into tensile strength values. The electrical conductivity was calculated and it is then converted into thermal conductivity results. The density calculation also carried out in order to find the void content and for the comparison of the weight. Meyers hardness and Wiedemann–Franz law were used as additional support for arriving at the conclusions. At the end of the study, the new materials we prepared were found to be capable substitutes for current materials which are in trend for the above mentioned purpose.

Keywords: Automotive engines, Thermo-mechanical property, Al alloy, Hardness, Density.

Evaluation the Organizational Readiness for Firms in Agricultural Industry to Adopt ERP Sytems via Intuitionistic Fuzzy Sets

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Abstract

The main purpose of this study is to analyze the organizational readiness for agricultural industry to adopt ERP systems based on organizational agility dimensions. So for this purpose organizational readiness factors to adopt ERP systems in terms of organizational agility dimensions are determined according to depth literature review. McKinsey 9S model is preferred to evaluate factors by extending 7S model. Agricultural industry is selected because there is not any study for evaluating organizational readiness factors to adopt ERP systems in the context of organizational agility dimensions. In order to rank the weights of organizational agility criteria intuitionistic fuzzy AHP method is applied. While organizational readiness factors to adopt ERP systems are considered as alternatives, organizational agility dimensions are handled as criteria. Views of fifteen decision makers in agricultural industry are taken into the account. According to the authors' knowledge it is the first study to analyze the organizational readiness factors for agricultural industry to adopt ERP systems based on agility dimensions via intuitionistic fuzzy sets.

Keywords: Organizational readiness, organizational agility, intuitionistic fuzzy AHP

A Review on Marketing and Distribution Problems of Beekeeping Enterprises

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Abstract

Beekeeping, which is one of the important areas of the agricultural sector, is an important source of income especially for the people who lives in the rural areas. In beekeeping activities, the need for initial and operating capital is low, the return period of investment is short and the return rate is high. Beekeeping, an important area of the agricultural sector, faces a number of obstacles. One of the most important obstacles related to the local and national beekeeping activities is the marketing and distribution problems of these agricultural products. In this study, the problems faced by beekeeping enterprises in marketing and distribution were investigated and evaluated conceptually.

Keywords: Agricultural Sector, Beekeeping, Marketing, Distribution.

A Review on Industry 4.0 and Its Effects on Agricultural Sector

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Abstract

Agricultural sector is vital importance to every community and is one of the most important issues on the world. Technology continues to be an integrated part of this important sector too. Technology makes itself felt much more in the agricultural sector. With Industry 4.0, technologies have become even smarter that make the farmer's work easier by increasing productivity, earnings and quality in agriculture. While the World rapidly adopting the 4th Industrial Revolution, it is aimed to increase the speed and efficiency many times by interacting the agricultural machines which are the results of Industry 4.0. In this study, the effects of industry 4.0 on agricultural sector are examined and evaluated conceptually.

Keywords: Agriculture, Industry 4.0, Intelligent Agriculture, Agricultural Economics.

A Study on Value Creating Green Approach Applications in Logistics Companies: Case of TR A1 Region

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Abstract

The deterioration of environmental factors, economic and technological development, the formation of complexity in societies, the rise of complex structures have made the environment and green and green management practices more important. Especially value-creating green approaches are considered as critical components in both public and private sector applications and defined as indicators of success in terms of sustainability. In this context, the determination of the difficult and the value-creating green approach, which is a complex process, and the combination of multiple variables in decision-making can be considered as a problem. According to the results of the analysis, the most important main factors were “environment-oriented strategic decisions”, “green supply chain initiative” and “product, process and service valuation”.

In this respect, this study is aimed to determine the importance of the factors that should be considered in the process of determining the application level of value creating green approaches. With the obtained data, the importance levels of the factors were determined by using ENTROPİ method. The other relatively major factor was found to be “systematic environmentally friendly applications”. The least important main factors are; “environmental life cycle analysis” , “Decision making and monitoring for environmental-friendly products” and “Designing recyclable and reusable products” respectively.

Keywords: Green Approaches, Value Creating Green Approaches, ENTROPİ Method.

A Study on Determination of Green Supplier Firm Selection Criteria in Textile Business: Case of Giresun Province

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Abstract

Nowadays, supplier selection is an important process that needs to be emphasized in terms of ensuring customer satisfaction, meeting the needs and operating efficiency. However, businesses must consider sustainable environmental criteria when selecting suppliers. This is because enterprises have to prioritize ecological conditions in supply chain components such as production, distribution and storage.

In this context, the aim of this study is to determine the importance of the factors that should be considered in the process of determining the criteria for the selection of green suppliers. According to the obtained data, the importance of the factors was determined by using SAW method. According to the results of the analysis, the most important main factor was “quality”, “green elements” and “service”. The other relatively important main factor was “cost”. The least important main factors are “delivery” and “technical elements” respectively.

Keywords: Green Supply, Green Supply Chain Management, SAW Method.

A Research on Determination of Feed and Feed Quality Properties of Some Oat Advanced Lines

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Abstract

This research was carried out on seed plots in a farmer land in Kahramanmaraş conditions in 2017-2018 production year. ZDY255 and ZDY301 advanced oat lines developed by a private seed company were used in the study. Four different samples with three replications were taken from the production plots by using quadrat (33x33 cm) during the grain filling period (end of milk stage, beginning of dough stage) of the plants. In this study, green forage yield (GFY), hay yield (HY), dry matter ratio (DMR), crude protein ratio (CPR), crude ash ratio (CAR), neutral detergent fiber (NDF), acid detergent fiber (ADF), relative feed value (RFV), macro and micro element contents were investigated. Obtained values were calculated by applying “t test” formula in Microsoft Excel program. Afterwards, the statistical significance of the data was determined by comparing with the table t. According to the results, the highest green herbage yield as 6476 kg / ha, hay yield as 2162 kg / ha, dry matter ratio as 33.88%, crude protein ratio as 11.32, NDF as 55.73%, ADF as 32.24% and RFV as 137.61 was found. There was no statistically significant difference between the varieties. However, it has been found that the ZDY255 line has superior properties compared to the ZDY301 line in terms of the investigated properties.

Keywords: Feed quality, hay yield, macro and micro elements, ndf and adf, oat, relative feed value.

Determination of Fixed Fat Ratios and Components of Two Different *Hypericum* Species

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Abstract

In this study, fixed fat ratios and fixed fat components of two different *Hypericum* species were determined. These species; *Hypericum confertum* subsp. *stenobotrys* (Boiss.) Holmboe and *Hypericum venustum* Fenzl. *Hypericum* species are among the important medicinal plants. The materials were collected during the field trip from Nurhak district of Kahramanmaraş province and dried in the shade. The above-ground parts of the dried material were milled and extracted with ether in Soxhlet Extraction apparatus for six hours. At the end of the time the ether was removed and the fixed oils of the species were taken into tubes. The study was conducted in Kahramanmaraş Sütcü Imam University, Faculty of Agriculture, Department of Field Crops, Medical and Aromatic Plants Laboratory. Fixed oil components were determined in the USKIM laboratory of Kahramanmaraş Sütcü Imam University. Considering the fixed oil ratio between species, *H. confertum* subsp. *stenobotrys* 17.64%, *H. venustum* species contain 15.90% fixed oil. Total of 21 fatty acids have been identified in terms of fatty acid components and the amount of these components varies between species. The major fatty acid components of species; *H. confertum* subsp. *stenobotrys* were gamma-linolenic acid (%29.76), oleic acid (20.97%), linoleic acid (9.72%), palmitic acid (14.92%) and behenic acid (7.63%) and *H. venustum* was determined as gamma-linolenic acid (42.17%), oleic acid (4.37%), linoleic acid (7.48%), palmitic acid (11.20%) and behenic acid (17.33%). There are significant differences between these species in terms of fixed fatty acid components.

Keywords: Fixed fatty acid, *Hypericum*, Oil component

Determination of Mitotic Effects of Lead on Germination and Root Tip Cells of Hungarian Vetch Seeds

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Abstract

In this study, four different doses of lead heavy metal (PbCl₂) were applied to Hungarian vetch (*Vicia pannonica* Crantz) seeds and their mitotic effects on germination, seedling growth and stem tip cells were investigated. Different concentrations of PbCl₂ (0.00, 0.50, 0.25, 0.125, 0.0625 g/l) were used. The study was carried out in Kahramanmaras Sütçü Imam University, Faculty of Agriculture, Department of Field Crops, Laboratory of Medicinal and Aromatic Plants, at temperature of 20 oC. The experiment was established with randomized plot design with three replications. Observations were made every day at the same time and seeds with a root length exceeding 1 mm were considered germinated. Seeds were observed in the air conditioning cabinet for 14 days and then different characteristics such as percentage of germination, seedling length, root length, plumule length, seedling fresh and dry weight were examined. The differences between the averages of all investigated properties were significantly affected by the heavy metal concentrations applied. Mitotic observations showed that increasing heavy metal doses decreased mitotic index and increased chromosomal abnormality percentage. It was observed that it could cause mitotic abnormalities such as failure to collect in the metaphase plate, bridge in anaphase, bridge in metaphase and persistent chromosome in telophase. The lowest dose of PbCl₂ (0.0625 g/l) triggered germination compared to the control, while increasing heavy metal doses caused a decrease in all properties compared to the contro.

Keywords: Heavy metal, germination, mitosis, lead chloride, Mitotic index

Topographical Effects of Fishing Coastal Structures

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Abstract

Coastal structures have a social, economic and environmental role in daily life. Some of these structures are breakwater, ports, fishing ports, board yards, ect. Coastal structures are the home of economic activities in the coastal area such as transport, fishing, tourism ect. Coastal structures affect the area where they were built and their vicinity, by the effect of wind and wave. These kind of effects cause some topographical changing in coastal area during the year and some of the coastal facilities cannot achieve its tasks. Samsun city is located Blacksea and it has a harbour and has some fishing port. In this study topographic changes occurring around fishing ports located in Samsun were investigated using GIS. According to the results some topographic changes were observed in fishing ports, some of them are exposed to coastal erosion others are fill with alluvium and soil.

Keywords: Coastal Structures, Fishing Port, GIS, Temporal Analysis

Investigation Air Firefighter Teams in Forest Fires Using GIS

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Abstract

In order to prevent forest fires or to reduce the damages caused by forest fire is a vital role in sustainable environmental management. Preventing or reducing damages forest fires can be reached effective fire management in forest area. Forest fire management has some components such as forest and fire lookout towers, water supplies, forest roads, fire fighters, air fire fighter teams etc. Air fire fighter teams such as planes and helicopters used to fight forest fires, they can quickly reach to the scene and start to fight fire in a short time even though not accessible or difficult to access areas. Helicopters increase the efficiency of firefighting by using pools and water sources located in various places in sea, lake, pond and forest areas for water supply in extinguishing forest fires. In this study, the efficiency of helicopters used in firefighting in forest area was investigated using GIS in the Vezirköprü Forest Management Directorate responsibility area. Buffer analysis was used to determine coverage area of helicopters teams, considering the critical response time. It was observed that air fire fighter teams have an important role fighting in forest fire and sustainable fire management in forest area.

Keywords: Forest Fires, firefighting, helicopter, GIS, buffer analysis

Factors Affecting Biogas Production and Current Study Results

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Abstract

The need for energy is a major problem in the world today. Our world is average; 33.1 % oil, 30.3 % coal, 23.7 % natural gas and 5 % nuclear energy. Renewable energy sources constitute about 8 % of the world's energy resources. The depleted natural energy resources have led the world in search of a new energy. This energy requirement includes biogas, which replaces the natural gas that is being exhausted and which is in the status of renewable energy. Biogas can be produced from organic materials by anaerobic fermentation method. Methane gas in biogas content is flammable. In this study, detailed information will be given about current studies with the effect of loading rate on reactor, ammonia, volatile fatty acids, pH and alkanite, pressure, mixing ratio, temperature and C/N ratio among parameters affecting biogas production.

Keywords: biogas, methane, anaerobic fermentation.

The Robust Estimation Approaches in Georeferencing of 3D Point Clouds

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Abstract

3D point coordinates determination is getting easier depend on technological developments. 3D point coordinates are calculated according to the coordinate system. Generally, the origin of coordinate system is taken as the point where the measuring instrument. All points should be determined the same reference coordinate systems, to use together the previous and next point clouds. This procedure is named as coordinate transformation or georeferencing. The coordinate transformation has two stage. The first stage is the determination of coordinate transformation parameters according to control points, the coordinates are known two coordinate system. Then, the second stage is the transforming all points according to these transformation parameters. The point clouds contain a lot of outliers inevitably. The outliers must be removed from measurement group to provide accurate and reliable results. The robust estimation is one of the methods for this process. In this study, firstly, 3D coordinate transformation method using the 3D point clouds and the robust estimation methods using determination of outliers have been described. Then, the application results have been obtained for using real application data.

Keywords: Point clouds, Coordinate transformation, Robust estimation.

Sequential Treatment of Industrial Wastewater by Electro-Fenton and Electrocoagulation Processes

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Abstract

Along with rapid industrialization, a large quantity of wastewater is generated by different industries. Industrial effluents contain a wide-ranging of pollutants, including complex pollutants, nitrogen, phosphorous, toxic and resistant organic compounds. Biological processes are commonly used for the treatment of industrial wastewater containing high concentrations of biodegradable organic matter. However, they may not be feasible due to long hydraulic retention time and large area requirement. According to the literature, a single process is also inadequate for treatment of industrial wastewater containing resistant organic matters. Therefore, in recent years researchers have been focused on the combination of two or more processes. Electrocoagulation (EC) process has been successfully conducted for the treatment of industrial wastewater but was not sufficient meeting the discharge limits without applying co-treatment. By the synergetic effect of electrocoagulation and electro-Fenton sequential processes, degradation efficiency of resistant organic pollutants was maximized with minimal operating costs, versatility, high energy efficiency and simple equipment design. Combination of electrocoagulation (EC) and electro-Fenton (EcF) processes easily oxidize and lead to mineralize most organic matters to produce CO₂, H₂O, and inorganic ions by production of hydroxyl radicals. In this study, applications of EC and EcF sequential processes were investigated for the treatment of different industrial wastewater.

Keywords: Industrial wastewater, electrocoagulation, electro-Fenton, sequential.

Investigation of the Treatability of Industrial Wastewaters Treatment with High Organic Content by Supercritical Water Oxidation

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Abstract

One of the biggest problems with industrial wastewater treatment is that wastewaters with high organic content cannot be treated with conventional systems. Increasing environmental awareness, legal requirements, being highly dangerous to the living things, there is a necessity to treat these wastewaters. Hazardous or non-hazardous wastewater with high organic content is usually treated in incineration plants with many disadvantages such as the need of well-established air pollution control and treatment systems.

In this study, the treatment efficiencies of different industrial wastewaters with high organic content by supercritical water oxidation (SCWO) process which is an alternative to incineration systems were investigated. Water, the most important solvent in nature, has very interesting properties as a reaction solvent under supercritical conditions (374.8 ° C and 221.3 Bar). SCWO is based on the complete separation of hazardous organic chemicals present in wastewater with an oxidizing agent to give harmless by-products such as carbon dioxide (CO₂), nitrogen (N₂) and water (H₂O). A pilot SCWO system used in the disposal of industrial wastes will be investigated in this study.

Keywords: Supercritical Fluid, Supercritical Water Oxidation, Industrial Wastewater, Advanced Oxidation Process

Traffic Signal Controller Based on Flower Pollination Algorithm

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Abstract

In this study, the applicability and performance of a new control approach have been demonstrated by developing a control system that optimized the phase plan and signal timing with Flower Pollination Algorithm (FPA). The performance of the system according to two different intersection geometry, with and without left turn pockets, was demonstrated in 6 different traffic situations, including low, medium and high. In the comparison of performance, fixed time traffic control obtained with optimum cycle length search system based on Differential Evolution Algorithm (DEA) approach was used. Simulations of control systems were realized through the KU-Trsim simulation program and delay values of traffic situations were obtained. It was found that the system developed with FPA could provide an average of 9.75% improvement in intersection geometry without left turn pockets and 15.6% average of intersection geometry with left turn pockets. It has been seen that FPA approach which has fast and effective performance can be used as an alternative method in intersection control and it is also possible to increase intersection capacity by combining different approaches and to reduce negative effects such as delay and fuel consumption.

Keywords: Traffic signal controller, Flower pollination Algorithm, Differential Evolution Algorithm

New Method for Evaluation of the Medicinal Plants Anti Angiogenesis and Anticancer Effects

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Abstract

Nearly 2000 taxa of plants are evaluated for medicinal purpose but the evaluation method for dose and effect optimization are not mimic the reality. In this study, our aim are to design a new method for evaluation of the medicinal plant's anti-angiogenesis and anticancer effects. The transwells inserts are used to analyze the ability of Co-Cultured cells to directionally respond to various chemo-attractants whether they are chemokines, growth factors, lipids, or nucleotides. The blood-brain barrier (BBB) essentially restricts therapeutic drugs from entering into the brain. In this relation HUVEC, brain cancer cells and cortex neurons mainly are used for neuronal base anticancer studies. It is critical that effective in vitro models are developed to model the in vivo environment to aid in clinically relevant research, especially regarding plant ingredient screening and permeability studies.

Keywords: Transwell, Medical plants, Blood-Brain Barrier, Brain cancer, and neuron

A RAS Inhibitor: Farnesylthiosalisilic Acid

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Abstract

RAS mutation is the most common in many human malignancies such as pancreatic cancer, papillary thyroid cancer, colorectal cancer and non-small cell lung cancer. RAS proteins are involved in cell growth and differentiation. These proteins trigger gene transcriptions transmitting extracellular growth and differentiation signals to the cell nucleus via receptor tyrosine kinases. RAS proteins undergo through post-translational modification called farnesylation to anchor inner cell membrane. Developing anticancer drugs by targeting oncogenic RAS proteins has become one of the new therapeutic approaches. Farnesylthiosalicylic acid is a novel RAS inhibitor. FTS competes with farnesylated RAS for binding sites on the plasma inner membrane by mimicking the c-terminal farnesyl cysteine which are found in all RAS isoforms. GTP bound RAS activation is inhibited by FTS in different human cancer types.

Keywords: RAS, farnesylthiosalisilic acid, cancer

Investigation of the Current Situation and the Amount of Food Wastes in Turkey

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Abstract

In this study, it is aimed to determine the current status and amount of cafeteria wastes and to evaluate alternative disposal methods for these wastes. For this purpose, a survey was conducted in cafeterias with different capacities. The questions in the questionnaire are aimed at determining the capacity of cafeterias and methods of catering, determining the amount and content of cafeteria wastes, and the level of awareness of cafeterias about the cafeteria wastes and the level of support for the disposal system for these wastes. According to the results, 84% of the cafeterias consistently produce food waste and 9% of the food is completely finished. The highest rate among the cafeteria wastes was bread with 40%. The bread was followed by 23% meat dishes, 21% salads, 13% others and 3% milk and dairy products, respectively. However, There is a significant amount of plastic, metal, glass, paper, cardboard waste in the cafeteria wastes due to packaged products like drinks, desserts etc. given along with the meal. As a result of the study, it is concluded that the cafeteria wastes are not homogeneous, their characterization and quantity varies according to time, place, number of people and an effective collection method is needed to determine the proper disposal method.

Keywords: cafeteria wastes, food wastes, waste management.

Structural Characterization Studies with the Calculated Comparisons of Some Biological Active NHC Complexes

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Abstract

N-Heterocyclic carbene (NHC) precursors have drawn considerable attention in organometallic chemistry. There have been numerous studies on the medical applications of metal-NHCs for the past two decades. The chelating effect of NHC precursors with unique sigma donor properties has recently attracted the attention of organometallic chemists. This effect could be effective on biological activity. Because of their great structural diversity and multitude of chemical properties, NHCs have been utilized in a variety of capacities. Most recently, NHCs have been utilized as carrier molecules for many transition metals in medicinal chemistry. Specifically, Ag+NHCs have been investigated as potent antibacterial agents and chemotherapeutics and have shown great efficacy in both in vitro and in vivo studies. In this study, structural characterization of two biological active meta-Cyanobenzyl-substituted N-heterocyclic carbene (NHC) complexes were investigated with single-crystal X-ray diffraction technique. Also their theoretical calculations were carried out in order to understand the biological activity behaviors of the complexes and compared to the experimental ones.

Keywords: N-heterocyclic carbene, crystal structure, X-ray diffraction, DFT

Single Crystal X-Ray Structural Investigations of Three New Phthalimide Derivatives

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Abstract

Phthalimides belong to the imide ring containing heterocyclic class of compounds which possess extensive biological activities. The most important biological activity properties that have been reported for phthalimide derivatives are anti-cancer, anti-microbial, anti-oxidant and anti-inflammatory [1-3]. The chemical core of phthalimides (-CO-N(R)-CO-) displays their hydrophobic properties and this increases their potential to cross biological membranes in vivo [4]. Due to wide range of applications in medicinal chemistry, interest is increasing in the synthesis, structural characterization and biological activities of phthalimides and its derivatives. So, in this study, molecular and crystal structures of three phthalimide derivatives were investigated by single-crystal X-ray diffraction method. The crystal structures of the compounds are stabilized by N-H...O type intermolecular hydrogen bonds and C-H...O type weak intermolecular interactions.

Keywords: phthalimide derivatives, crystal structure, X-ray diffraction, weak interactions.

Adsorption Capacity Of Lead On Natural Bentonite Modified With Magnetite

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Abstract

In this study, the adsorption capacity of natural bentonite collected from Unye region in Turkey modified with magnetite prepared via co-precipitation method was investigated on lead (Pb). The characterization study using X-ray diffraction (XRD) improves the presence of magnetite in our bentonite after modification. Adsorption and kinetics study was established in batch method sorption experiments with different concentration of lead at pH = 6 and shaking speed = 200 rpm. Experimental data of lead adsorption kinetics fitting well with pseudo second order model. The study of the equilibrium adsorption isotherms was fitting using Langmuir, Freundlich and Redlich–Peterson models and revealed that the experimental data were better fitted in Freundlich and Redlich Peterson isotherms with good values of R² up to 99 %.The results of the study of the concentration with Shaking time show that the removal efficiency of (Pb) was above 96 % after 150 min. Measurements of the metal concentration in solution was made with Atomic absorption spectroscopy (AAS).

Keywords: Adsorption, Bentonite, Co-precipitation, Magnetic separation, Lead

Investigation of Ibuprofen and Paracetamol Removal by Membrane Process

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Abstract

The use of painkillers is increasing in parallel with the increasing population. After the drugs are taken to human body, some of them are metabolised and some of them are discharged from the body and reach to wastewater treatment plants. Conventional wastewater treatment plants are inadequate for the removal of these pollutants called micropollutants. Drug residues that cannot be completely removed are mixed with the aquatic environment. In this study, removal of ibuprofen and paracetamol substances with high persistence and toxicity in aquatic environment was investigated using a microporous membrane in a continuously operated system. A synthetic water containing 92.1 µg/L ibuprofen and 98.8 µg/L paracetamol were prepared for the experiments. Samples were taken from the outlet water of the operated membrane at certain time intervals (0-2-4-6-8-20-24 hours). Total nitrogen, total phosphorus, sulphate, temperature, pH, dissolved oxygen, electrical conductivity and turbidity were measured. The removal efficiencies were determined by COD, TOC and LCMS/MS analysis. Ibuprofen was 37.6% and paracetamol removal was 83.5% at the end of 24 hours.

Keywords: Ibuprofen, Paracetamol, Membrane, LCMS/MS, Wastewater

Aromatization Variation Due To Ground and Excited States: Studied On Two Oxazolone Derivatives

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Abstract

Aromaticity, which is the result of electron delocalization, is defined by HOMHED parameter with harmonic oscillating model for groups of molecules containing hetero atoms. It has traditionally been defined by the base states of molecules and the geometry obtained by X-ray crystallography.

In this study, the aromaticity of two unsaturated oxazolone derivatives containing furan rings were investigated for the ground state and the excited states obtained by TD-DFT method. The furan ring has a lower aromaticity and a greater HOMO-LUMO gap than benzoid rings. CDA (charge decomposition analysis) analysis show that, oxazolone as a bridge in the transfer of electrons from one part of the molecule to the other, and on the contrary to the known phenomena, the hetero atom containing rings act as electron acceptor, the furan ring acts as electron donor.

Keywords: TD-DFT, aromaticity, CDA, HOMHED

Detecting and Recognition of Normal and Premature Births by Bispectrum-Based Signal Processing Strategy

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Abstract

Novel strategy developed for detecting and recognition of normal and premature birth is suggested. Proposed strategy is based on the extraction the classification features from the third-order statistics evaluated for the electromyography (EMG) signals measured on the abdominal surface of a pregnant woman. Uterine activity evaluated for different pregnancy periods has been examined. Results of experimental investigations are demonstrated and discussed. Results of clinical monitoring indicate the opportunity of extracting novel class of classification features testifying to premature birth.

Keywords: Electromyography signal processing, normal and premature births, uterine activity, abdominal signals, bispectrum, bimagnitude, biphasic, bicoherence.

Investigation of Wear Properties and Characterization of Borided AISI D3 Steel

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Abstract

The AISI D3 steel was boronized with commercial Ekabor II powder at 850 and 950 °C for 2 and 6 hours and the wear resistance of the boride layers formed was investigated. Also, SEM, EDX, X-ray diffraction, micro hardness and microstructure properties of boride layers were investigated. As a result of X-ray diffractometric analysis, FeB, Fe₂B, CrB and Cr₂B phases formed on the surface of steel. Wear tests; at room temperature, in unlubricated environments, under 5 and 10N load, at a sliding speed of 0.4m/s at a distance of 1000 meters. As a result of abrasion tests, it was determined that the wear rates of boronized and unborinated AISI D3 steel ranged between 3.86-61.32 mm³ / Nm.

Keywords: AISI 420, Boride layer, Micro-hardness, Corrosion

Investigation of Perlite Brick Production Method

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Abstract

The aim of this study is to investigate the production of bricks by using expanded perlite aggregate as the main raw material. The control brick produced for this purpose (50x100x100 mm); The production parameters (firing time, firing temperature, pressing pressure ratio, chemical additive ratio, size analysis and water / solid ratio) have been optimized along with engineering properties such as unit volume weight, mechanical strength. As a result of the studies, water / solid ratio of 1.0, produced at 50 bar pressure and cooked at 400 0C temperature for 1 hour the lowest unit volume weight value 522.5 ± 48.3 kg / m³ and the highest strength value 12.13 ± 0.13 kg / cm² was obtained.

Keywords: Perlite, Brick, Cooking time, Cooking temperature, Water/solid ratio

Corrosion Behaviors of Borided AISI 420 Steel

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Abstract

In this study, the corrosion behaviors of AISI 420 5120 steel borided in Ekabor-II powder at a temperature of 950 °C for 5 h were investigated in a 4% M HCl acid solution. The properties of the boride layer were evaluated by optical microscopy, X-ray diffraction, the micro-Vickers hardness tester. X-ray diffraction analysis of the boride layers on the surface of the steels revealed the existence of FeB, Fe₂B and CrB compounds. The boride layer thickness on the surface of the AISI 420 steel was found to be 50.62 µm and 148.74 µm, respectively depending on the chemical composition of the substrates.

Keywords: AISI 420, Boride layer, Micro-hardness, Corrosion

Calculations of Reaction Rate of ^{232}Th Target Nuclei Induced Fast Neutron

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Abstract

In this work, reaction rate values of Thorium target are calculated by using Tel and Levkovski's formulas. In the present study (n,p), (n, α), (n,2n), (n,d) and (n,t) reactions at 14-15 MeV neutron energies are calculated. Total absorption cross section, absorption rate and mean free path of ^{232}Th target nuclei are calculated. Obtained results are compared with each other and the new results of ^{232}Th target are contributed to literature.

Keywords: ^{232}Th , reaction rate, bsorption rate, mean free path

Calculation of Diffusion Coefficients for Certain Moderators at Thermal Energy using Modified UN Approximation

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Abstract

Modified UN method is applied to neutron transport equation in slab geometry for isotropic case and diffusion equation is obtained in accordance with Fick's Law. Then diffusion coefficient's values at thermal energy are calculated for certain moderators. Obtained results from modified UN method are compared with PN method results and ANL results.

Keywords: UN Method, Thermal Energy, PN Method.

Electrical and Structural Properties of Zinc-Indium-Titanium Oxide

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Abstract

Synthesis of new transparent conducting oxides are growing subject for last two decades. In this study, structural and electrical investigation of cosubstituted In₂O₃ were investigated. Moreover, phase diagram and solubility limit of Zinc and Titanium in Indium have discussed. Here, (2-3-4) ternary system of Indium oxide co-substituted with Zn⁺² and Ti⁺⁴ (ITiZO) ceramics have been synthesis with high temperature solid state reaction method under O₂ atmosphere. Furthermore, pellets of prepared samples structural investigation have been made by XRD and electrical properties measured with four-point probe method. It has been observed that increment substituent concentration leads to decrease of conductivity and formation of secondary phases.

Keywords: XRD, substitution, In₂O₃, conducting oxide

Elastic and Inelastic Neutron Reaction of ^{52}Cr (n,el) and ^{52}Cr (n,inl)

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Abstract

The differential elastic scattering at different energy and neutron spectrum measurements at 14.1 MeV has been measured for ^{52}Cr by using TALYS 1.8 nuclear code. The effects of energy resolution and multiple interactions in the sample on the accuracy of the data have been studied. Theoretical calculations of neutron spectra from the ^{52}Cr (n,n') reactions were carried out in the Hauser-Feshbach model. Theoretical values which obtained by using TALYS 1.8 were compared experimental data from EXFOR.

Keywords: EXFOR, TALYS, Elastic Scattering, Neutron Spectrum

Elastic Scattering of Neutron from ^{27}Al and ^{28}Si Targets

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Abstract

The elastic scattering of neutron has been evaluated on ^{27}Al and ^{28}Si targets at various incident energy by using TALYS 1.8 nuclear reaction code. The theoretically obtained cross-sections are compared with available experimental data on EXFOR nuclear data library. The calculated values similarities and discrepancies are discussed and analyzed.

Keywords: TALYS 1.8, Elastic scattering, Differential scattering

Investigation of the Field Size Dependence of Primary Barrier Transmission Coefficients in Shielding of Megavoltage Linear Accelerators

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Abstract

In the shielding design for megavoltage linear accelerators, barrier transmission coefficients help determine the required thickness for primary barriers. NCRP Report 51 recommends to measure these values for each candidate shielding material according to the following specifications: considering the actual room dimensions, source-to-barrier distance (SDD) to be at least 3 m; beam area for measuring set to the maximum available field size; detector to be positioned 30 cm gap from the barrier. However, these measurements are difficult to perform in clinical linear accelerator rooms due to narrow room dimensions and large sizes and weights of the barrier materials required for the measurements. Therefore, barrier transmission coefficients values were obtained in some studies at different SDDs and their variation with field size was generally investigated. This study investigates the effects of SDD and effective field size on barrier transmission coefficients using 4, 6 and 10 MV photon beams. It was observed that the primary barrier transmission coefficients vary not with the actual field size but with the effective field size.

Keywords: Radiation, Shielding, Linac

Characterization of Boronized Stainless Steel

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Abstract

In the present study, characterization properties of borides formed on stainless steel have been investigated. Boriding was performed in a solid medium consisting of Ekabor-II powders at 1073 and 1273 K for 2 and 6 h. The boride layer was characterized by optical microscopy, X-ray diffraction technique and the micro-Vickers hardness tester. X-ray diffraction analysis of boride layers on the surface of the steels revealed the existence of Fe_2B , Cr_2B and Ni_3B compounds. Depending on the chemical composition of substrates, the boride layer thickness on the surface of the stainless steel was found to be 91.62 μm , respectively.

Keywords: Boronizing, Characterization, Stainless steel

Tribological Behavior Borided AISI 410 Steel

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Abstract

In the present study, tribological and characterization properties of borides formed on AISI 410 steel have been investigated. Boriding was performed in a solid medium consisting of Ekabor-II powders at 1073 and 1273 K for 2 and 6 h. The hardness of the boride compounds formed on the surface of the AISI 410 steel ranged from 1745 to 2128 HV_{0,1}, whereas Vickers hardness values of the untreated steel AISI 410 was 328 HV_{0,1}. The wear tests were carried out in a ball-disc arrangement under a dry friction condition at room temperature with an applied load of 10N and with a sliding speed of 0.35 m/sec at a sliding distance of 1000m. The wear surfaces of the steel were analyzed using a SEM microscopy and X-ray energy dispersive spectroscopy EDS. It was observed that the wear rate of unborided and borided AISI 410 steel ranged from 10.43 to 102.36 mm³/Nm.

Keywords: AISI 410, wear rate, friction coefficient

Surface Characterization of Pure Nickel Coated with Sol Gel Method

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Abstract

In this study, pure Nickel alloys was coated with TiO₂ and ZrO₂ by sol gel method. used. Pure Nickel processed in 15x5 mm dimensions were polished in 1 µm Al₂O₃ solution after required sanding operations before the left gel treatment. B₄C, Tinkal and Sassolite boron compounds in dimensions of 75 boyutmm were dissolved in 30% by weight of Acetone at about 70 ° C by means of magnetic stirrer. The samples were dipped in 1 M H₂SO₄ prior to coating the left gel. It was then dried in purified water for 1 minute and washed with acetone. The prepared samples were immersed in dissolved boron compounds on the magnetic stirrer and kept vertically for about 5-6 minutes. The characterization of these coatings was investigated.

Keywords: W80-Cu20, Ti6Al4V, Nickel, Sol Gel Method

Surface Characterization of Plasma Paste Boronizing of Titanium

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Abstract

In this study, the surface properties of plasma paste boronized titanium were investigated. Boronizing in titanium plasma, which is widely used in industry, was carried out in 80% Ar - 20% H₂ gas mixture at 800°C for 4 hours under 5 mbar pressure. The boride layers, X-ray diffraction, SEM and microhardnesses were obtained. As a result of X-ray analysis, TiB and Ti₂B layers were formed on the surface of titanium. The plasma boronizing process has been successfully carried out at a lower temperature than the traditional boronizing methods.

Keywords: Titanium, Plasma Paste Boronizing, XRD

Plasma Paste Boriding of Ti6Al4V Alloy with B2O3 paste

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Abstract

In this study, the surface properties of plasma paste borided Ti6Al4V alloy with B2O3 paste was investigated. Plasma paste boriding in titanium alloy, which is widely used in industry, was carried out in 80% Ar - 20% H2 gas mixture at 800°C for 4 hours under 5 mbar pressure. The boride layers, X-ray diffraction, SEM and microhardnesses were obtained. As a result of X-ray analysis, TiB and Ti2B layers were formed on the surface of titanium. The plasma boriding process has been successfully carried out at a lower temperature than the traditional boriding methods.

Keywords: Ti6Al4V alloy, B2O3 paste, Plasma Paste Boriding, Hardness

Locating Electric Vehicle Charging Stations

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Abstract

In recent years, with the increased focus on climate protection and sustainable environmental management electric vehicles have become an alternative to conventional motorized vehicles. Some of car manufacturers focused on electric vehicle as well as conventional vehicles and also some of national governments promote electric vehicles. Electric vehicles have some limitations such as lower drive range, lower power etc. but they have many important advantages such as zero emissions, low running cost ect.

Due to the lower range or battery power electric vehicles need frequently charging. Charging an electric vehicle can be done at a variety of charging stations, these charging stations can be installed in both houses and public areas. In the current study it was investigated where electric vehicle charging stations should be installed. With regard to the daily activities of car users, potential positions for charging station were determined using GIS. Frequently visited areas, frequently used roads, large car parks etc. data were collected. Euclidian distance analysis was done layer by layer and obtained raster layers was overlaid according to their weight and potential charging locations were determined.

Keywords: Electric vehicles, Charging station, GIS

Prospects of the Market and Models of Innovative Development of Steel Production

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Abstract

The article deals with the problems and prospects for the development of the world steel market, the main technical and economic indicators of steel production methods. Innovative models of steel production and ways of their realization at the metallurgical enterprises of Ukraine are analyzed. Constantly changing economic indicators of the world economy condition cause regular study of the current state of the steel market, its specifics, factors affecting its development, as well as identifying obstacles and problems hindering the development of this market. The need to use innovative models for the development of the mining and metallurgical complex of Ukraine as a whole, as well as its individual redistribution, has been repeatedly written. The steelmaking industry of Ukraine offers enormous opportunities in this respect. The study of the peculiarities and the state of the world market of steel has attracted special interest both from the enterprises of the metallurgical complex and in the scientific community. This is due to the need to use steel in many sectors of the national economy. Therefore, the production of steel is a kind of engine that ensures the development of not only the industrial complex of a particular country, but also the prosperity of world industry. The results of the research testify to the expediency of using man-caused wastes of various origins for obtaining new materials of a specified functional purpose.

Keywords: steel production, innovative development, process of Consteel on processes of desulfurization

Use of Neural Networks in Prognosis of Marketing Environment Indicators of Enterprise

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Abstract

It is offered to consider practical aspects of application of neural networks (NN) in the marketing information system (MIS) of the enterprise. The aim of the research is to improve the information system of the enterprise by introducing an intellectual decision support system (IDSS) with the use of the neural network and considering its capabilities in forecasting the state of the marketing environment. As a result of the study, recommendations for the use of such an improved system have been developed and testing has been carried out in two directions. The first direction is the forecasting of the indicators of the macro environment of the company as the main factor of the marketing environment, by developing an appropriate mathematical model, in order to implement appropriate exit strategies for external markets. The second direction is the use of NN in forecasting the state of the elements of the internal environment of the enterprise, for example, an enterprise providing engineering services. Consequently, the proposed subsystem of analysis and forecasting on the basis of the IDSS with the use of NN will enable to predict the indicators of the marketing environment of the enterprise. On this basis, managers will be able to make informed decisions based on the information foundation, adequate actions, skilled performance and, as a result, to ensure the success of the entire enterprise.

Keywords: marketing environment, information system, neural network, decision making, forecasting

Improving Simulating Efficiency of Statistic Characteristics of Linear Voltages within Workshop Grids of Industrial Enterprises to Implement Power and Economic Model of Asynchronous Motor

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Abstract

The article is sanctified to date issue of the day of choice of facilities of defence of asynchronous motors working in the workshop electric networks of industrial enterprises with off-grade electric power. Possibility of presentation of energyeconomic model of asynchronous engine is shown as disjunction of predicates and application to them algorithms of recognition of patterns for a decision-making. Main dignity of new model is an openness and possibility of accumulation of knowledge about the modes of operations of electromechanics equipment.

The special attention is spared to procedures of authentication and adaptation of predicate model on the basis of calculable experiment on an economic criterion. Method application of reduction of description of characters allowed to accelerate the receipt of this model on the stage of educating in future to execute necessary structural transformations during her adaptation with maintenance of exactness of description of intercommunications between technical and economic sizes, qualificatory efficiency of work of electromechanics equipment in an electric network with different facilities of defence or without them.

In the article is open up the processes of search of the best decision on defence of asynchronous engine, that is realized on the basis of known in science the algorithm of recognizing static optimization of the nonlinear objects presented by totality of predicates. This algorithm uses principle of local surplus.

Keywords: protection equipment, asynchronous motor, poor quality electricity, economic loss, poor quality, energy economic model

Spatial Suitability Analysis of School Sizes in Giresun Province

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Abstract

Schools are expected to both preserve and maintain the existing culture of the society, as well as to develop and change the society in which they live. For this reason, schools need to be active and dynamic structures. This dynamism is made possible by the establishment of adequate physical spaces in the schools. This study provides a framework for determining the spatial adequacy levels of the existing school areas in the province of Giresun. For this purpose, spatial adequacy analyzes were conducted on data such as school locations, campus area sizes, school quota numbers and accessibility criteria. As a result of the study, it was determined that the school areas in the region were insufficient in terms of spatial standards and various suggestions were presented.

Keywords: spatial size, suitability analyze, school facility areas

Green Building Concept for Sustainable Energy Development

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Abstract

Green buildings are energy efficient, resource efficient and environmentally responsible. Their design, construction and operational practices that consider sustainability will minimize their negative impact on the environment and people, while taking into consideration the financial impacts. To become a sustainable energy leader among emerging economies, Turkey would have to implement a progressive and coherent sustainable energy policy. Although solid energy policy architecture is in place, sustainable energy targets are weak, government support is limited, and bureaucratic hurdles for energy investment still frustrate potential investors. Most importantly, many top policymakers do not seem to be ready to play a productive role in designing a forward-looking, sustainable energy policy for Turkey. Construction sector has a great potential to reduce total energy consumption through sustainable projects. All over the world policy makers have already realized the potential and begun setting some governmental goals. As an energy dependent country, Turkey has also set some energy oriented policies in which sustainability issues in Turkish built environment are also gaining attention. This paper discusses the green building concept for sustainable energy development.

Keywords: Green building concept, Sustainable energy development, Building environment

Heat and Power from Renewable Woody Biomass

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Abstract

Turkey's annual biomass potential is about 120 million tons and the total biomass energy potential is about 36 Mtoe. The amount of usable biomass potential of Turkey is approximately 18 Mtoe. Turkey has the potential to produce 6.0 million tons of wood pellet has approximately 1480 million dollars of market value by the help of existing woody biomass. Ukraine has the potential to increase renewable energy use tenfold from 87 PJ in 2009 to 870 PJ of the total final renewable energy in 2030. Out of this, 73% is accounted for heat, 20% by electricity generation, and 7 % by transport. Nearly 80% of this total comes from biomass technologies, power generation, and transport fuels. In Ukraine, annual imports of 150-750 TWh of primary energy would be needed to meet the country's targets. These imports will probably be in the form of pellets for the most part, due to their lower transport costs. The volumes above correspond to between 30-150 million tons of pellets for Ukraine.

Keywords: Biomass, forest biomass, woody biomass

Performance of Solar Assisted Dual Source Heat Pump for Residential Heating

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Abstract

Dual source heat pump systems comprise of a main cold source heat pump that is supported by an additional heat source. Two arrangements have been studied in detail: air source heat pumps combined with solar collectors; and ground source heat pumps coupled with solar collectors. In addition to a situation where solar collectors are devoted solely to direct heating, the solar system can be used with the heat pump in either a series or a dual source scheme. When set up in series, a higher COP can be achieved, but there is often a lower free energy fraction. This is due to the lack of direct solar heating, meaning that auxiliary energy is required more frequently. A careful analysis of all the plant elements, including location, heating and cooling demand, solar collector area, thermal ground probe length, etc. is fundamental for achieving the best outcome in terms of both good primary energy savings and profitable economical performance.

Keywords: Solar energy, Heat pumps, Energy storage, Residential heating

Researches and Academic Studies Analysis on Solar Energy in Some Leading Countries

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Abstract

Global warming, environmental pollution and therefore energy crises lead researchers to obtain energy in a cheap and clean way. Solar energy, which is one of the renewable energy sources, has gained great importance in the developed countries in terms of having almost no adverse impact to the environment. In addition to providing a significant part of the world's energy needs, solar energy does not consume natural resources and does not cause gas emissions such as CO₂ to the air. Therefore, developed governments have created solar energy policies with concerns such as climate change and reduction of greenhouse gas emissions. In this regard, scientific researches on solar energy area have been increased every year. The aim of this study is to reveal the statistical distribution of academic studies in the field of solar energy in some leading countries such as China, Japan, Germany and the USA, and to observe how it overlaps with research and activities in this field. Thus, data and statistical analyses related to the academic studies obtained from the Web of Science database were conducted by using the SQL server management studio program. The results of the analysis show that the academic studies on solar energy in the selected countries coincide with the researches and activities in this area and they tend to increase with each passing year.

Keywords: Solar Energy, Researches and Projects, Academic studies, Statistical analysis.

Association of Scientific Studies with Existing Wind Energy Potential in Turkey

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Abstract

In order to generate energy, technological developments are increasing every time. However, it is interesting that the energy requirements are increasing with technological development. As in the whole world, energy consumption also shows an increase with energy production in Turkey. Dependence on imported energy sources and environmental factors such as air pollution which lead to economic hardship are increasing the requirement for clean and sustainable renewable energy sources in Turkey. Turkey is an appropriate country with its geographical position to utilize from the main renewable energy sources such as hydropower, biomass, biofuels, wind power, solar energy and geothermal energy. Among these, in terms of having the highest potential among the European countries, wind energy is extremely important for Turkey. Even though wind turbines have difficulties in choosing the site due to environmental factors, wind energy generation has an important place among other energy sources. In this study, the indexed academic studies on wind energy data collected from Web of Science database and the statistical analysis of this data compared with existing wind energy potential in Turkey. As a result, it has been observed that the academic studies in the field of wind energy progress in line with the projects and investments made with the existing potential.

Keywords: Wind Energy, Energy Potential, Scientific studies, Automated Data Retrieval.

The Relationship between the Activities and the Scientific Studies on Solar Energy in Turkey

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Abstract

Considering the increment in energy requirements, each country should define the potential of solar energy as a clean and inexpensive energy type. With this definition, projects, investments and especially academic studies in solar energy area have been increased in order to meet the energy demand through domestic resources. Turkey has a high potential value in solar energy with approximately 3.6 kWh/m² average solar-radiation and 2610 h total radiation period in a year. Therefore, it is very important to investigate the relationship between the scientific studies and the projects and investments which will process this existing potential in this area. From this point on, the data collected by statistical analysis of academic studies on solar energy has been compared with the projects and investments in Turkey. For the analysis of scientific studies, data were collected from Web of Science database by utilizing Automatic Data Acquisition Methods and statistical analysis was performed with Excel program. In addition to the activities on solar energy in Turkey, it has been increasing in direct proportion to their academic studies in this area. In addition to the activities in solar energy area in Turkey, the academic studies have also been increased proportionally by years.

Keywords: Solar Energy, Energy Potential, Statistical analysis, scientific studies.

The Role of Lactic Acid Bacteria in Formation of ACE-I Inhibitory-Bioactive Peptide

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Abstract

Hypertension (high blood pressure) has been considered as a risk factor for the cardiovascular disease (arteriosclerosis, stroke and myocardial infraction). Angiotensin I-converting enzyme (ACE) plays an important role in the regulation of blood pressure. The drugs used to treat high blood pressure are called as antihypertensive drugs. In recent years, it is observed that some foods have antihypertensive activity. The beneficial health effects of the foods which had antihypertensive activity result from the bioactive peptides produced during fermentation and storage of them. Some bioactive peptides which had ACE-I inhibitor activity are the metabolite of various lactic acid bacteria (LAB). The inhibition of ACE-I is one of the important functional properties of the LAB. Further scientific studies on this feature of LAB should be increased. Therefore, ACE-I can inhibit with functional foods.

Keywords: Antihypertensive activity, Angiotensin I-converting enzyme (ACE-I) inhibitors, functional foods

Definition Of The Total Antioxidant Capacity And Vitamin D Levels In Professional Athletes Who Play Football In Giresunspor

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Abstract

The aim of the study was to determine serum 25(OH)D and total antioxidant capacity of professional football players. The working group consist of 56 professional soccer players (26 of them are team A, 30 of them are substructure teams) playing in Giresunspor Football Club. The control group consisted of 30 volunteer healthy male subjects. The SPSS 21 package program was used to calculate and interpret the survey data applied face to face to the study group. In addition, the body composition of the players was determined by the InBody 230 device which works with the principle of BIA. Serum 25(OH)D levels of the soccer players were compared with reference values (≥ 30 ng/mL). Serum total antioxidant capacity was compared with 30 healthy volunteers in the control group. As a result of the study, mean serum 25(OH)D levels of the players were determined as 31, 68 ng/mL (team A mean value of 33,56 ng/mL, substructure teams mean value of 29,4 ng/mL). A sufficient amount of vitamin D levels; while protein synthesis, muscle strenght, jumping height, speed, exercise capacity and physical performance increase; stress fractures cause a decrease in the rates of injury, fall, muscle relaxation, muscle pain and weakness. Serum 25(OH)D levels are very important for maintaining and improving optimal performance in soccer players. The mean serum antioxidant capacity of the participants was found to be 1.97 mmol Trolox Equiv/L. The mean serum antioxidant capacity of the control group was 1.94 mmol Trolox Equiv/L. There is an increase in metabolic rate during training, which leads to a rapid release of free radicals. Despite this thought, there was no significant difference in serum total antioxidant capacity between the study and control groups.

Keywords: athletes, sports nutrition, soccer players, vitamin D, total antioxidant capacity

Investigation of Corrosion, Contact Angles, Tribological Properties of Different Coatings by Sol Gel Method

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Abstract

In this study, tribological, corrosion, non-wettability and surface energy properties of were coated with TiO₂ and ZrO₂ by sol gel method. Ti6Al4V, W80-Cu20 processed in 15x5 mm dimensions were polished in 1 µm Al₂O₃ solution after required sanding operations before the left gel treatment. The wear tests were carried out in a ball-disc arrangement under a dry friction condition at room temperature with applied load of 5 N with a sliding speed of 0.3 m/sec at a sliding distance of 200m. Corrosion tests of the samples were performed in 4.5 molar hydrochloric acid solution, 3 molar sulfuric acid in bath. Contact angle with water of each samples with and without additive were measured by using sessile drop method to determine the hydrophobicity of the materials.

Keywords: Sol-Gel, Corrosion, Contact angles, Tribology

Schools for a Global World: Village Institutes and Bauhaus

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Abstract

Modernism, increased communication opportunities between countries and cultures, recognized other cultures and their perspectives, naturally made globalization compulsory. With this globalization, an understanding had emerged that technological innovations were easily reached, high level studies were conducted in science and technology oriented education and that the society could produce economically. There were also schools where the effects of modernism were seen. These schools are examples of the Bauhaus in the world and the Village Institutes in Turkey. In these schools, modernist individuals who were thinking about the future with perseverance and positivist method were raised. In the light of all the information in this study, the idea of sphericity that started to form with modernism will be examined and compared in the context of sociological theories through Village Institutes and Bauhaus School.

Keywords: Modernism, Globalization, Village Institutes, Bauhaus.

Effect of Photovoltaic Panels Shade on Growth and Yield of Tomato Inside a Canary Type Greenhouse

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Abstract

Photovoltaic electricity is inexhaustible energy since it is directly generated from the sun. Its development is a necessary answer to current energy issues.

The use of photovoltaic energy for greenhouse environment control to reduce or replace the consumption of fossil energies is an important objective for sustainable greenhouse crop production. The aim of this work was to study the effects of photovoltaic panels array shading mounted on two parts of the roof area of greenhouse in checkerboard format, on the development and production of tomatoes (*Solanum lycopersicum* L., cv Prisyła) inside a canarian greenhouse, typical of the Mediterranean region. Tomato plantlets were planted at a density of 0.73 plants m⁻². The results of this study show that the solar panels covering 20 % roof area of the greenhouse did not affect yield and growth of tomatoes.

Keywords: tomato, photovoltaic panels, Shading, renewable sources.

Investigation of Mechanical Properties of a Polymeric Light Weapon

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Abstract

Today, as a result of the increase the customer satisfaction and to increase the competitive enviroment; improvements in the production methods and raw materials of light weapons have become compulsory. Therefore, some parts of light weapon has been wanted to produce using with different production method and raw materials by taking in the consideration several criteria. Thanks to this advance in technology, many parts of light weapons are now produced from polymer-structured materials. Due to good technical properties like mechanical, thermal and so on, interest has been shown both the manufacturer and customer by polymer built weapons instead of steel built weapons. Polymer structures are composed of many simple molecules that are repeating structural units called monomers. While polymers can be classified into several categories, such as natural, synthetic, and semi-synthetic, depending on the source of the raw material, they can also be divided into elastomers, fibers, thermoplastics, and thermosets, based on the forces between their molecules. Polymer materials are under the influence of several force during the usage. Depending on the applied force, behavior of materials changes. They break, elongate, bend, tear. Mechanical properties are all responses of a materials pulling and compression force. Understanding mechanical properties of a material allows us to know in which areas the material can be used and which treatment techniques can be applied. In this study, mechanical properties of a polymeric light weapon body part are studied and the most suitable production methods are detemined.

Keywords: Hazelnut transportation, Brushless DC motor, Motion in mountainous fields, Pallet vehicle, Renewable battery system.

The Effect of Nutrition on Infertility

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Abstract

Infertility is a worldwide problem which affects about 10-30% couples of reproductive age. Nutrition affects reproductive health directly or indirectly. Sufficient and balanced nutrition provides significant contributions to the solution of reproductive problems. Infertility is an important problem in the world. Infertility is the inability to conceive despite the unprotected one-year regular relationship. The etiology of each case of infertility is unknown. Although there are many causes of infertility, one of the obvious reasons is nutrition. Changes in nutrition; ovulation, menstrual cycle, development of secondary sex characters, pregnancy formation, live births and the success of assisted reproductive techniques. However, there is no specific food or beverage group that increases fertility. However, there are food groups effective on reproduction. Healthy diets that support consumption of seafood, poultry, whole grains, fruit and vegetables provide increased fertility in women and quality sperm formation for men. Vegetable protein, total fat, monounsaturated fatty acid, polyunsaturated fatty acid uptake transfer, polyunsaturated fatty acids have positive effects on ovulation. In addition, the transfer of thiamine, riboflavin, vitamin B6, magnesium, phosphorus and iron to individuals is enhanced by the adequate and balanced intake of macro and micro nutrients to improve embryo quality. In the case of fertility in women, not eating enough nutrients can cause moderate malnutrition, zinc, iron deficiency and vitamin C deficiency. A serious deficiency can cause tissue breakdown, stop women's ovulation, and men stop producing sperm. Excessive consumption of micro nutrients, trans fats, caffeine and alcohol groups with poor nutritional value adversely affects reproductive functions by affecting hormone levels in the individual. It can increase fertility by giving the body the proper amount of all the nutrients it needs and by using calories in a healthy way. The application of healthy eating habits in the treatment of infertility, improving the quality of life contribute to the solution of related problems.

Keywords: Reproductive health; infertility; nutrition; health

Using Kinetic Typography on Screen Credits of Television Series, Design Challenges and Solution Offers

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Abstract

Renewed screen credit perspective in today's series is mostly inspired of series of foreign origin and it is pursuing positive progress ever so slowly. Screen credits may be explained briefly as a short entry and opening which show the audience what they're about to see, what is about to start by giving clues about its content and style before the film or the programme starts and after which the title of the programme is written. In graphic context, it is the business card of the film or the programme. It is the way of preparing the audience to the main presentation by the means of active use of music, visual elements and typographic components which are among the recent trends and thus, attracting the viewer's attention.

In 1990s, typography, motion, editing, sound, sinematic and graphic statements peculiar to screen credits create a whole that is in its infancy although these were the years that dynamic image design began to be influential in motion pictures, television and advertisement. Today, how to use more effectively, enhance and improve the quality of the parts of this whole is being questioned.

This paper is a study made up for making screen credits of the series in accordance with graphic design principles and it is prepared for creating awareness of the need of a multidisciplinary approach in this field. It also examines design extent, which is expected to have aesthetic concerns, of these products that belong to television, to virtual environment and it is questioning the current situation by comparing the screen credits of Turkish and foreign television series that are broadcasted in Turkey.

Keywords: Screen Credits, Typography, Kinetic Typography, Dynamic Typography

The Effects of Cutting Parameters on Cutting Tool Performance and Surface Roughness in Hard Turning of Bearing Steel

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Abstract

Hard turning is an alternative machining process to grinding for finishing of hardened steels. Hard machining is compared to grinding has some benefits such as more flexibility, lower investments lower energy cost, fast material removal, easy chip control, no coolant. The dimensions and surface quality of the workpiece are the most important parameters after hard machining process. For this purpose, an experimental investigation was conducted to determine the effects of cutting tool material, feed rate and cutting speed on surface roughness and tool wear in hard turning of AISI 52100 steel (62 HRC). Machining experiments were conducted in a CNC lathe using CBN and ceramic cutting tools. Surface roughness measurements were performed by using a Mahrsurf PS1 device. Four different cutting speed and three feed rate and constant depth of cut (0,1 mm) were used as machining parameters. wear modes were evaluated by tool makers' microscope. The results showed that flank and crater wear are the more common wear pattern in both CBN and ceramic inserts. However, increase in cutting speed and number of machined parts also produced relatively higher tool wear. CBN inserts produced good surface roughness and more tool life than ceramic inserts. The low feed rates increased the surface quality of machined surface.

Keywords: Hard turning, Tool wear, Surface roughness, CBN, Ceramic

The Effects of Cutting Conditions on Surface Roughness in Turning of 1.4462 Duplex Stainless Steel

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Abstract

In this study, the effect of cutting conditions on surface roughness during dry turning of Duplex Stainless Steel (DSS) 1.4462 was investigated. DSS is used in applications like marine, oil and chemical industries due to its combination of corrosion resistance and high strength. The low thermal conductivity and ductility of the DSS, make them difficult to machine. The CVD coated and PVD coated cemented carbide tools were used for dry turning. Cutting speed in the range of 120 to 240 m/min and feed in the range of 0.15 to 0.3 mm/rev were used. Depth of cut (DoC) of 1 mm was kept constant. The effects of cutting speed, feed rate and coating type on surface roughness were analysed. The experimental results indicate that feed rate was the more influential factors for surface roughness. Surface roughness increases with increasing in the feed rate. The lower surface roughness was obtained by PVD coated tool compared to CVD coated tool. The chip control is the big problem for turning of DSS, uncontrolled chips were made deterioration on surface roughness with machining of both cutting tools.

Keywords: Duplex stainless steel, Surface roughness, PVD coating, CVD coating

The Effect of Nutrition on Infertility

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Abstract

Infertility is a worldwide problem which affects about 10-30% couples of reproductive age. Nutrition affects reproductive health directly or indirectly. Sufficient and balanced nutrition provides significant contributions to the solution of reproductive problems. Infertility is an important problem in the world. Infertility is the inability to conceive despite the unprotected one-year regular relationship. The etiology of each case of infertility is unknown. Although there are many causes of infertility, one of the obvious reasons is nutrition. Changes in nutrition; ovulation, menstrual cycle, development of secondary sex characters, pregnancy formation, live births and the success of assisted reproductive techniques. However, there is no specific food or beverage group that increases fertility. However, there are food groups effective on reproduction. Healthy diets that support consumption of seafood, poultry, whole grains, fruit and vegetables provide increased fertility in women and quality sperm formation for men. Vegetable protein, total fat, monounsaturated fatty acid, polyunsaturated fatty acid uptake transfer, polyunsaturated fatty acids have positive effects on ovulation. In addition, the transfer of thiamine, riboflavin, vitamin B6, magnesium, phosphorus and iron to individuals is enhanced by the adequate and balanced intake of macro and micro nutrients to improve embryo quality. In the case of fertility in women, not eating enough nutrients can cause moderate malnutrition, zinc, iron deficiency and vitamin C deficiency. A serious deficiency can cause tissue breakdown, stop women's ovulation, and men stop producing sperm. Excessive consumption of micro nutrients, trans fats, caffeine and alcohol groups with poor nutritional value adversely affects reproductive functions by affecting hormone levels in the individual. It can increase fertility by giving the body the proper amount of all the nutrients it needs and by using calories in a healthy way. The application of healthy eating habits in the treatment of infertility, improving the quality of life contribute to the solution of related problems.

Keywords: Reproductive health; infertility; nutrition; health

New Modeling of Plant Density on Sugar Beet (*Beta vulgaris saccharifera* L.) Production

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Abstract

Sugar is one of the basic foods of humanity and is usually obtained from two source plants (sugar cane and sugar beet). Turkey, which also include the most European countries need to use the more sugar derived from sugar beet. Due to insufficient rainfall in beet grown areas in Turkey, production of it have been irrigated 90%. Decreases in water supply lead producers and scientists to search for new techniques in production, thus seeking ways to use water more and less. The aim of this study is to increase the average number of plants to 8 plants instead of 10 plants in m by increasing the row spacing to 50 cm instead of 45. Drip irrigation line in two rows instead of each row, yield and quality of irrigation water is to investigate what is the change. The important thing here is to keep irrigation water to a minimum and to go to economic production.

This study was carried out in drip irrigation system under Konya-Ilgın premises in 2018. Experiment drip irrigation system was applied in each row at 45X25 (45-45) X25) cm distance and in two rows at 50 (30-70) X 25 cm distances. Thus, instead of 10 plants in M2 is used of 8 plants and irrigation water efficiency and quality of the use of less water was tried to put.

Keywords: Sugar beet, production, plant density models, yield, quality, economic reflections

Are Graphic Designers Modern-Day Don Quixotes

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Abstract

The controversy about graphic designer's social and political role on society is a very popular and a never-ending discussion among contemporary designers and it will not come to an end until so many legitimate justifications and objections still continue to exist. For this reason, there is no consensus in this aspect. In our times, beside the classical job definition of a graphic designer, there is also one more essential task which is taking a part in the fight of social and political injustices, along the way of designing. Since that time and even long before that, designers have been questioning the idea of this statement; whether it has a sense of reality or nothing more than just a utopia. Some of them saw the positive and effective sides of their profession, produced some beneficial works and defined their personal and professional path in this direction. However, there have always been some others having kept their sceptical approach on the issue and questioned the idea of being effective on the solutions of society's social and political problems. The discussion starts at this point, whether social and political graphics have a visible effect on the mindset of society or it is not more than just a pointless endeavour like Don Quixote, who is the symbol of the fighting with the authority on his own, did. These two sides of the issue will be discussed; some opinions of the graphic designers and examples of the contributions will be presented in this paper, without looking for a certain answer.

Keywords: Graphic Design, Poster Design, Social Design, Design Movements, Propaganda

Post-Digital as a term, Technology and Effects on Design

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Abstract

Given the developments in the history of humanity, the speed and change of the trend towards computer technologies has been surprisingly affecting everyday life in almost every aspect. In the information age, everyday life is now composed of algorithms and codes. Now, computers manage lives and provide a safer, faster and more comfortable life. But even in the midst of major changes and technological developments, it is not possible to draw a sharp line between the present and the past. Considering the historical process of visual culture, we cannot say that one period followed another. Because there are no sharp lines between these periods. A medium is usually not only separated visually, in spelling and materially, because these channels often overlap and merge together. The visual memory of humanity has brought all the media into a hybrid form. Although the technology has provided new opportunities, no medium has been completely destroyed, completely changed or replaced, but they are overlapping. This is referred to as post-digital in visual culture, and its short definition is the transformation of art, design and media after digitalization. In this study, this transition between media, post-digital concept and its possible effects on contemporary design will be discussed.

Keywords: post-digital, visual culture, design, digital technology

Relationship Between Profit and Corporate Governance Scores: An Application on Borsa Istanbul Corporate Governance Index (XKURY)

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Abstract

Borsa İstanbul (BIST) Corporate Governance Index (XKURY) was established in order to measure the price and return performance of companies whose shares are traded in Borsa Istanbul markets and which have certain characteristics. The aim of this study is to determine the relationship between corporate governance scores and corporate profits calculated by the rating agencies listed by the Capital Markets Board in the Corporate Governance Index (XKURY) of Borsa Istanbul. In conclusion, the relationship set forth in the right way in the literature, but also for the companies within the scope of the Borsa Istanbul Corporate Governance Index in Turkey was concluded that partially correct.

Keywords: Corporate Governance, Borsa Istanbul Corporate Governance Index, Company Profit

Digital Art As A Graphical Language In Contemporary Art And Related Light Art

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Abstract

With this research, in the Contemporary Art as a Graphical language, Digital Art concept will be explained in terms of editing in the Computers environment. In this context, it will be clarified with giving examples using the Light as a material in Digital Art. It will be examined the use of the Light in Digital Art and the subject of transforming into Contemporary Art form. The aim of this reasearch is to analyze the contributions of digital art and light usage in contemporary art to the change / transformation processes in time.

Keywords: Contemporary Art, Light Art, Digital Art.

Technical Aspects of Analysis of Offshore Wind Power Plant Installation in Turkey

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Abstract

Wind energy, hydropower installed capacity in Turkey in terms of non-renewable energy sources is leading the way. One of the most important parameters for wind farm installation is wind speed. With the developing technology, new turbine systems and above sea winds have a stronger and more regulated regime than the land, which led to the installation of a wind farm on the sea. With a short 30-year history, offshore wind farms are expected to play an important role in generating electricity at a global level in the coming years. In this context, Turkey's seas to explore the potential of wind energy is becoming an important task. The study was conducted primarily analyze the current situation in Turkey. In addition, criteria for selecting an above-sea wind power plant were determined and examined technically.

Keywords: Renewable Energy, Wind Power, Offshore Wind Power Plant

Comparison of Output Voltage Stability of Buck-Boost Converters with Fuzzy Logic Controller and Fuzzy-Tuned PI Controller

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Abstract

In this study, the control of the output voltage of the buck-boost converter with a variable reference voltage is provided by Fuzzy Logic Controller and Fuzzy-Tuned PI Controller respectively. Then the performance of these two controllers was compared. The effects of the controllers on the speed and torque stability of the DC motor connected to the output are examined. To measure the ability of the system to withstand disturbing external influences, the successes of the controllers under the variable input voltage, variable torque conditions at the load connected to the motor were compared. The studies on the system were performed in Matlab / Simulink digital environment.

Keywords: Fuzzy Logic Controller, Fuzzy-Tuned PI Controller, Buck-Boost Converter, Voltage Control

Comparison of Speed Control of DC Motor with DC Buck Converter with 2-DOF PI and Fractional PID control

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Abstract

In this study, the control of the output voltage of the buck converter with a variable reference voltage is provided by 2-DOF PI controller, Fractional PID controller respectively. Then the performance of these two controllers was compared. The effects of the controllers on the speed and torque stability of the DC motor connected to the output are examined. To measure the ability of the system to withstand disturbing external influences, the successes of the controllers under the variable input voltage, variable torque conditions at the load connected to the motor were compared. The studies on the system were performed in Matlab / Simulink digital environment.

Keywords: 2-DOF PI controller, Fractional PID controller, Buck Converter, DC Motor

An Effective Boost Converter Design for Electrolysis in Hydrogen Production

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Abstract

Voltage energy is obtained from the solar energy which is one of renewable energy sources utilized in many fields today. The voltage having been increased by means of (DC/DC) boost converter is used in electrolysis cell and pure form hydrogen is obtained as a result of water electrolysis. Accordingly, the hydrogen is provided which is required by hydrogen fuel cells usually in electric vehicles as one of the common technologies of our time. In addition, fuel economy and emission promotion are both provided after using this technology in both fuel cell and as an additional fuel for internal combustion engine in a hybrid vehicle. Until this project, there have been some works done separately on these two systems, yet the hydrogen has been fed by a single storage which is the tank up to now. This project aims to obtain hydrogen by electrolysis by enhancing the power provided by solar panels.

Keywords: Solar panels, DC-DC boost converter, hydrogen fuel cell

A New Ball on Plate Application with PID Control

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Abstract

In this study, the transfer of the image to the microcontroller with the help of a camera in the Ball on Plate, which has an important place among the applications of the control systems, is provided and the image is processed and PID control of the motors that change the plate position is provided. The digitized data in the camera, which is the input parameters of the system, ensures that the ball on the plate remains on the desired coordinates with high stability. The system is designed to monitor the movements of the ball in real time on the computer. The control in the system is based on PID and adjusts the position of servo motors that keep the plate in balance. The feedback required by the PID controller is provided by a camera capable of detecting the momentary position of the ball with image processing technique.

Keywords: Ball on plate, image processing, servo motor, PID control

Biogas Production and Current Purification Methods

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Abstract

Biogas is a gas mixture which has the potential to be produced from organic materials by anaerobic fermentation method. It contains about 60-65% CH₄ (methane), 35-40% CO₂ (carbon dioxide) and H₂S (hydrogen sulfide) at 100-4000 ppm. In this study, carbon dioxide, which prevents the combustion of biogas, and hydrogen sulfide removal methods that cause corrosion in the bioreactor are emphasized. For carbon dioxide removal, water quenching, polyethylene glycol passing and separation using a membrane filter are possible. Hydrogen sulfide removal methods include quenching, quenching with sodium hydroxide solution, adding Fe₂O₃ (iron oxide) to the reactor, adding FeCl (iron chloride) to the feedstock. In industrial areas, the most commonly used method is water permeation. The dehumidification of the reactor as a result of the quenching process is possible by cooling the treated biogas up to 4 °C in the final stage.

Keywords: biogas, anaerobic digestion, biogas treatment.

Development of the Pneumoelectric Separator of Small Seed Cultures

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Abstract

On the basis of the finished theoretical and experimental researches, a design of a pneumatic and electrical separator of small-seeded crops was developed and its rational parameters were grounded and determined. According to the methods of planned multifactorial experiment the mathematical models of pneumatic and electrical separator operation were worked out and optimized. The main parameters of machine operation were taken into account: air flow velocity in the separator channel, the voltage between the electrodes, the feed rate. Optimal values of these parameters were set, in which the seed quality of the most widespread perennial grasses in Ukraine was substantially increased. The treatment of seed material in a pneumatic and electrical separator made it possible to separate from the bulk of impurities of numerous weeds and biologically defective (without germs) seeds. Thus, the quality of the seed material was levelled to the requirements of DSTU 7160: 2010 "Seeds of vegetable, melon, fodder and spicy aromatic crops. Varietal and sowing qualities. Specifications".

Keywords: pneumatic and electrical separator, small-seeded crops, cleaning.

Process Flow Scheme and Equipment for Oil Recovery

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Abstract

In order to meet the growing demands in high-quality agricultural production with required increasing of its production the production of plant oils was studied. Ukraine occupies an important place in the world for growing of oilseeds, the structure of which is initially represented by sunflower, rapeseed, soy, mustard and flax. It is possible to cultivate such valuable oilseeds like castor, false flax, milk thistle, and sesame, poppy, amaranth. Different industries, medicine and veterinary increasingly need these crops.

Testing of the developed complex of equipment in the program of researches of Lviv National Agrarian University shows that the use of such complex will allow receiving high-quality oil and oil cake for food and feed purposes for medicine and various industries, providing higher profit from sales of processing products.

Constructive features of the developed screw oil presses with two-point screw are marked with high lifetime, stable operation mode and continuous productivity.

Keywords: equipment, screw press, oil seeds, cold pressing.

Influence of Production Technology on Qualitative Parameters of Vegetable Oil

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Abstract

Vegetable oils are not only a source of energy, but also an important source of irreplaceable biologically active components - polyunsaturated fatty acids, fat-soluble vitamins, phospholipids and others. The most important among them are omega-3 and omega-6 acids - linoleic and linolenic, which do not synthesize the human body. The chemical and biological stability of these compounds is achieved by minimizing the influence of temperature, light and atmospheric factors created by technological equipment and storage conditions. Maximum preservation of the natural balance of biologically valuable components of vegetable oils is an important prerequisite for the development of technologies and equipment for the processing of oilseeds: qualitative selection and preparation of raw materials; providing the temperature regime for the process of obtaining oil (cold pressing); reduction of the duration of the work of the equipment bodies on the oil-containing raw materials; quick cleaning, filtering and packing.

Approval of the technical level of the developed technologies and equipment is determined by the quality of the oil was obtained. For this purpose the spectral-luminescent properties of vegetable oils content of fluorophores (tocopherols, polyunsaturated fatty acids, vitamins, and pigments) have been investigated and reported for their native state, depending on the action of various technological factors.

Keywords: spectral-luminescent properties, screw press, cold pressing.

The cost planning of natural resources for the integrated agro-industrial projects implementation taking into account the risk

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Abstract

The expediency of tools development for the cost planning of natural resources for the integrated projects implementation of agro-industrial production with consideration of risk is substantiated. A method of planning the natural resources consumption for the integrated projects implementation of agro-industrial production has been developed. The proposed method involves disclosing system interconnections between the components of integrated agricultural production projects. The method involves of three stages implementation, which determine the need for certain types of resources for integrated agricultural production projects. At the first stage, the components of the natural and climatic risks of projects are estimated, which include weather conditions (precipitation, humidity, temperature, etc.). They determine the variable duration of the raw material production projects implementation. At the second stage, the forecasting of the need for volatile resources for the raw material production projects realization are executed taking into account the risk of climatic conditions (the variable duration of the project implementation periods, which determines the variable amount of resources supply for the raw material processing projects implementation) and the risk of organizational-scale components, which are reflected by the changing structure of product demand of the integrated agricultural production projects. The third stage identifies the main responses to the risks of resource requirements for the integrated agricultural production projects implementation. The study of the project environment characteristics for the Brody district conditions of Lviv region has been performed.

Keywords: integrated projects, agro-industrial production, risk, planning, resources, value.

System approach to management by industrial and technical resources in projects of agricultural enterprise

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Abstract

A developed method of system approach to the management of production and technical resources of the agricultural enterprise is proposed. It consists in outline the production system and the input impacts of the project environment. The main factors influencing the production program of an agricultural enterprise and the identification of its characteristics were the scale of the project, the type of agricultural culture and technological regulations (production technology), the market value of raw materials and agricultural products. These factors influence the formation of the annual production program of the agricultural enterprise. In turn, the agricultural enterprise has a limited set of production and technical resources. They are a limiting factor in the formation of the annual production program of the enterprise. The volume of the product of a separate project, the loss of the project product, expressed in cash equivalent, the cost of production and performance indicators of the use of a plurality of industrial and technical resources are indicators of the system functioning. The efficiency of management of industrial and technical resources in agricultural enterprise projects is to find the values of project values for a given set of industrial and technical resources of the enterprise, which provide the least losses of the product of the project.

Keywords: System approach, project, production and technical resources, agricultural enterprise.

Time Management of Combine Work in the Projects of Early Grain Cultures Harvesting

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Abstract

Current models of the process of early cereals harvesting analysed to solve the problems of both tactical and strategic management, indicates their imperfection. In particular, they incompletely account climatic factors which have a stochastic nature. The developed scientific and methodological principles of the study of these factors impact include the simulation of a) the terms of the harvesting beginning; b) good and bad weather condition intervals; c) climatically acceptable daily working capacity; d) climatically acceptable harvesting start time for good weather condition days. Basing on these principles, the stochastic simulation model has been developed. It allows determining the impact of the organizational model of a harvesting combine usage on the amount of the organizationally adjusted time capacity.

The developed method of studying the probabilistic effect of climatic factors on the harvesting process efficiency involves usage of multi-year statistical data of agro meteorological stations.

As a result of agro meteorological data processing (Yavoriv agro meteorological station, Lviv region), it has been discovered that the beginning of the full maturity for early grain crops correlates with the naturally permissible start of their planting. Probabilistic models have been grounded: the weather-resistant and temperate time periods (the Weibull law), the climatically acceptable time-frame for harvesting (Gauss's law), the climatically acceptable start of work (Gauss's law).

Keywords: management, modelling, simulation model, harvesting combine, field.

Justification of the Configuration of the Logistic System for Time Sensitive Agricultural Products

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Abstract

The state of the question of the delivery of perishable agricultural products in the theory and practice is analysed. The expediency of the development of tools for harmonizing the configuration of the logistic delivery system of perishable agricultural products with production conditions is substantiated. A new approach to substantiating the configuration of the logistic system for the delivery of perishable agricultural products is proposed. This approach is based on a statistical study of production conditions and simulation of transport processes. The algorithm of the justification of the logistic delivery system configuration of perishable agricultural products with the take into account of changing production conditions is developed. System interconnections between the components of changing production conditions and elements of the logistics system are involved in the algorithm with implementation of five stages. At the first stage, the components of changing production conditions are quantified. They are the basis of the justification of the configuration of the logistics system. The second stage involves the definition of rational routes for variants of the fleet of cars with the same load-carrying capacity on the basis of simulation of transport processes. The third stage justifies the basic version of the configuration of the logistic system for the delivery of perishable agricultural products on the basis of the iterative overview of possible variants of car load. The fourth stage provides justification for rational routes for variants of the fleet of cars with different load-carrying capacity. In the fifth stage, the cost criterion determines the effective configuration of the logistic system for the delivery of perishable agricultural products.

Keywords: configuration, logistics system, perishable products, planning, efficiency.

Influence of the technological system components consistency on the efficiency of crop harvesting processes

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Abstract

The components of the technological systems of project environment of agricultural crops harvesting are analyzed. The factors of the external and internal project environment are singled out. The connections of their impact on the effectiveness project product have been identified. The components that need to be taken into account during the development of the harvesting crops technological systems projects are singled out. The methods of production observations and computer experiments are described. These methods have been developed for modelling of the corresponding technological systems projects. The advantages of statistical modelling methods using for taking into account the combined effect of uncontrolled and stochastic components of the environment project on the timeliness of work and the implementation effectiveness of these projects are presented. The projects efficiency indicators of harvesting technological systems are established. For this purpose, the regularities of the functional parameters dependencies of the sugar beets harvesting technological processes are used. The determinations of these laws, was achieved with statistical modelling methods with multiple projects iteration of the corresponding technological systems. The dependencies are used for optimization calculations and their results are presented. According to these results, the optimal value of the production area will vary at different times of project time and unchanged technical support for crops harvesting projects.

Keywords: modelling, projects, harvest, crop, stochasticity, management, efficiency.

Optimization of Action Radius of the Service and Repair Center of School Buses in the Stryi District of Lviv Region

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Abstract

In order to organize safe and regular transportation of pupils and workers from home to work and school in the countryside place the Cabinet Ministers of Ukraine in 2003 approved the state target social program "School bus".

With buses in district centers a number of problems began to arise: 1) the absence of a service base (since buses are on the balance of schools, they are stored and serviced there); 2) absence of qualified service personnel (since drivers can only carry out operations related to daily technical service (TS), and for the implementation of technical maintenance of 1 and 2 or current repairs it's required the certain knowledge and production base).

Accordingly, the engineering task appears of radius optimizing of the technical service point of school buses. Solution of these problems should be carried out in two stages: first determine the optimal amount of work, the second stage – determine its capacity. The optimal range of service point of the school buses, along with other conditions, depends on transport energy costs for the buses delivery and specific structural energy inputs in the technological process. The optimal repair program is determined based on the condition of obtaining the minimum combined specific energy consumption.

Keywords: transportation, school bus, technical service point.

Model of the Impact Bar of Small-Size Crusher of Grain Materials

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Abstract

For the grinding of grain the machines applied widely that use shock destruction, crushing and grinding. In order to intensify the process of grinding the grain materials with simultaneous use of impact crushing and grinding, it was proposed to change the geometry of the impact or shock bar working surface, so that the thickness of the working part increases in the tangential direction opposite to the direction of rotation of the bar. In addition, to the inner surface of the case plates in the form of a ring sector were attached. The installation of such plates contributes to the intensification of the grinding process, due to the additional grinding of the crushed material that has fallen into the area between the bar and a stationary plate. When the geometry of the workpiece of the bar was changed, the center of its mass slightly offset from the bar's vertical axis. As a result, the gap between the working surface of the bar and the plate decreases in two planes: in the radial direction from the center to the inner surface of the body, and in the tangential direction, opposite to the direction of rotation of the bar or hammer.

Keywords: grinding of grain, crushing, shock bar.

Optimal Design of Gearboxes of Mechanical Drives

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Abstract

In the process of optimization the variable design parameters are set, and on these parameters the functional, parametric and other restrictions are imposed. In the practice of optimization of gears for various purposes, the following criteria are used: • minimum dimensions of transmission (minimum sum of axle bases, gear lengths or heights, total drive volume); • minimum mass of the gearbox; • strength equilibrium in contact and bending stresses; • minimum total costs on transmission and gearbox body parts. The parameters of the functional limitations can be following: contact or flexural strength, load mode, the recommended value of the gear ratio, the load concentration factor. The solution search procedure allows finding the optimal value of the formula in the target cell of MICROSOFT EXCEL. This procedure works with a group of cells that are associated with the formula in the target cell. To obtain a formula in the target cell, the procedure changes the values in the cells that effect on that result. One should apply restrictions to narrow the set of model values. It is important to realize that one should formulate the task in order to use the “Solver” add-in program in the worksheet model. Concerning this fact, a mathematical model is developed. It includes: • an equation system that describes the interrelation of parameters; • system of restrictions; • a system of conditions.

Keywords: optimization, design of gearboxes, mechanical drive.

The Use of Automated Design Systems for Modelling of Manufacturing Processes in Maintenance of Automotive

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Abstract

The complexity of actions for the formation and analysis of schedules of technological process operations significantly limited the practical application of the methodology of structural-parametric analysis and synthesis of technological processes in engineering practice.

The developed system of automated design makes it possible to solve the complex problem of modelling of maintenance technological processes and synthesis of parametric series of production structures of technological lines of different productivity without special knowledge in the field of schedule theory. The use of this system reduces the time required to complete all stages of process design, leaving the practicing engineer only the task of preparing the initial data and interpreting the results.

The developed algorithm will allow modelling of receiving and maintenance of repair orders. One should take into account the objective variability of the annual repair program, as well as the need to comply with the warranty period of repair in accordance with the actual operating conditions of the maintenance enterprises.

Using the developed algorithm allows choosing a production line or a section from a pre-formed parametric series and to justify the guarantee duration of repair in the post-warranty period

Keywords: manufacturing, design, modelling, maintenance, parameter.

The Scientifically-Applied Aspects of Design and Calculation of Machines for the Shock-Oscillation Crushing of Materials

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Abstract

The operation of impact and vibration impact crushers has been studied. For that purpose a generalised mathematical model has been developed with the help of Lagrange's equation of the second type, being a system of non-linear differential equations of the second order. An application program has been created for numerical integration of this system. The mathematical model enables studying the dynamics of vibration impact crushers with elastic, hinge and rigid mounting of bars on elastic or rigid supports of working camera - both of serial manufacturing production and of those proposed by us. The operation of vibration impact crusher example with elastic mounting of bars is shown the higher effectiveness in comparison with the analysed and studied machines.

Keywords: vibration impact crushers, design, mathematical model, differential equations.

Tensiometric Measurer of Mass of Friable Materials in Tank

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Abstract

The work presents a review and analysis of existing designs of measurers of friable materials in bunkers, the disadvantages of the designs of measurers are analyzed, the purpose of the research was set.

A flow block of the system and the method of measurement are proposed. The motherboard of the computer with a built-in analog-digital conversion board (ADC L-154) is developed. Proposed unit provides the means for measuring, recording and transmitting information by electrical signals of the current values of the mass of bulk materials in bunkers in dynamic mode, display and storage of information and instrumentation. The developed design of the mass meter of bulk materials in the bunker will simplify the information taking from the meter and also measurer design, improve the accuracy of measurement and transmission of the measurement signal to the computer. Proposed structure of measurement plane improves the accuracy of measurements and obtains a linear dependence of the output signal on the value of deformation plane. The design significantly simplifies the data taking and determines the weight of bulk materials in bunkers.

Keywords: measuring of mass, friable material, tensiometric measurer, bunker.

Enhancement of Manual Fruit Shakers

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Abstract

The analysis of designs of manual fruit shakers was carried out. Basically, these are vibrating action shakers that generate harmonic vibrations of the skeletal branches of the fruit trees. The inducer of oscillations of pneumatic or mechanical action is used in these shakers. Nowadays, vibrating action shakers equipped with crank-shaft inducers and driven by internal combustion engines have been widely used. Shakers are equipped with a shock mechanism and fork clamp to expand the technological possibilities of manual shakers, which will allow them to be transformed into vibration and stroke mode and generate a spectrum of frequencies of higher orders in the skeletal branches of different diameters. These frequencies generate acceleration, which provides the perturbing oscillations of the skeletal branches and removal of fruits of different cultures, including nut plants.

Key words: manual shakes, fruits, vibration, vibro-shock, clamp.

Study of Static Resistance to Cracks of 30 XГCA Steel With Cover

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Abstract

In the case of the operational destruction of the working surfaces of the hammers and for the economy of the expensive 30 XГCA steel for the further usage of the crushing equipment by the restoration of hammers by welding more sturdy cover on its basis, the further research data is proposed.

For the purposes of experiment, six samples of 30XГCA steel were manufactured with consequent hardening at heating up to 950 °C and release at 450 °C. The side samples of 5 mm wide and 25 mm deep, was welded with a powder wire of the mark of Sv 08Г2C with diameter of 1.6 mm using a welding machine of A-826M type.

After cutting with a grinding wheel of the side concentrator in three samples in the middle of the sample and in three samples along the fusion line of the welding with the base of the beam the ready-made samples were ready to fatigue crack study. After study of each sample at the proposed procedure we can make conclusions about use of with the concentrator up to 10 mm and we can determine the crack resistance of seam and the seam along the fusion line with the main material.

Keywords: crack resistance, cover, hammer, crushing equipment.

The Impact of Preplant Treatment of Seeds on Germinating Power

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Abstract

Vacuum mode in the milking machine plays a significant role at the milking of cows. The long-term reliable operation and energy efficiency of the vacuum pump is due to the wear resistance of the friction pairs of the working bodies and their coefficient of friction. We designed and manufactured a full-scale sample of a vacuum pump for the study of the sliding friction coefficient in a lubricated medium whose operating principle is based on the use of a gas meter (blower). A 100 kPa vacuum gauge was used to account the results of study. The working bodies were lubricated by the natural circulation of the lubricated fluid. From the closed container, due to the vacuum created in the pump, the liquid is fed through the tube to the working bodies, lubricates the working surfaces and flows into the tank. From the tank, the liquid returns to the tank through the pipeline. The engine speed is changed by the frequency drive of the induction motor. A full-scale sample of a vacuum pump for the study of the sliding friction coefficient in a lubricated medium made it possible to determine the peculiarities of the operation of the developed vacuum pump, the duration of reliable operation and energy saving during its use in the cow milking plant. According to the results of observations of the full-scale sample, the 40 ... 50 kPa vacuum pressure ensures the operational parameters of the vacuum pump for milking of cows.

Key words: milking machine, vacuum pump, sliding friction coefficient.

The Impact of Preplant Treatment of Seeds on Germinating Power

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Abstract

Separate methods of improving the crop quality of grain material are considered in order to increase its similarity. It has been established that among the most simple and accessible methods of widespread use, forced preplant mechanical partial damage to the seeds of the shell with the simultaneous removal of dust, dirt, bacteria and fungi from the surface and increase in the moisture content of the grain.

The proposed method of experimental researches, describes the design and operation of machines with abrasive working body, used for the mechanical processing of seeds of grain crops before sowing. The influence of the corresponding pre-treatment of seeds on the intensity of drawing of moisture by it is analyzed. It was established that for the same duration of soaking, the intensity of the absorption of moisture by seeds cultivated on a machine with an abrasive deck is 1.49 times higher than untreated.

The influence of moisture content of a seed with different preliminary processing on the intensity of its germination in the same term is studied. Experimental data with graphical representation of the specified process are obtained. It was established that seeds that before sowing were soaked grew better and faster in all experiments. It has been confirmed experimentally that compulsory pre-sowing mechanical partial damage to the seeds of the shell with a moisture content of 14-18% has no significant effect on its similarity.

Key words: seed, processing, humidity, similarity.

Experimental Study of Ecological Evolution of Soil Fertility by Controlled Electromagnetism for the Purpose of Cultivated Crop Production

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Abstract

The ecological evolution of soil fertility by controlled electromagnetism for the purpose of cultivated crop production was experimentally studied for long years. It is argued that of the energy of electromagnetism induced on seed material at the stage of its homeostasis is transformed into the life energy of crops according to the laws of nature. Partly it occurs by means of transition of radiation, initiated by controlled electromagnetism. The process occurs at the crossing and action of electric charge on the boundary of “air space – a plant cell”. Experimental study confirms the coherent interaction of the spectra of transition radiation with the spectra, which generate bio-electromagnetisms of cell organelles. For one’s turn at the interactions the life energy conditions of a cell is transformed sufficiently with rise of biological potential e.g. simultaneous and intensive germination of seeds, better resistance to disease, and as a result greater plant yield. There is also a need for further studies of the influence of electromagnetism of different parameters on soils, diseases, pests and weeds in different stages of ontogeny, genetic homeostasis etc.

Key words: ecological evolution, yields, induced electromagnetism, radiation, coherent interaction.

Study of Contact Temperature on Mutual Surfaces of Friction Elements

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Abstract

Contact temperature on mutual surfaces of friction elements has the significant meaning at the design of new machinery, expertise of machinery failure, at the long term reliable operation and energy saving of machines and equipment. So the contact temperature on mutual surfaces of friction elements is studied. When the relative slip of two bodies in a thin sub surface layer is generated, heat generates local softening and melting of the material. After reaching a certain level of temperature contact, there are qualitative changes in the mechanical and frictional properties of the material, resulting in a change in the intensity of wear. A mathematical model is proposed, according to which the speed of slipping, temperature and wear at any given time (or process stop) is determined.

Key words: contact temperature, friction element, sub surface layer.

Restoration of Technical Objects (Towers Clocks) of the Historical Heritage

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Abstract

With the independence of Ukraine we could observe the revival of numerous traditions, including the restoration of churches, the restoration of town halls and bell towers. At the same time, it turned out that the tradition of tower clock was lost, the base for design and production was completely absent - old watches and chimes were mostly destroyed, traditions almost forgotten.

An analysis of the structures of the reconstructed mechanisms of dozens of Galicia towers clocks made it possible to establish a manufacturer - Michal Miensowicz of Krosno (Poland) (1864 - 1938) - founder and owner of the First National Tower Clock Factory (1901). The characteristic features of the mechanisms and design of the dials are identified, allowing identifying the works (towers clocks construction) in the absence of parts of the mechanism with the signature. Over the past 19 years of restoration activity at the Lviv National Agrarian University, the Ukrainian segment of Mikhal Miensovich's clock heritage, which accounts for a large proportion of all tower clocks in Western Ukraine, has been practically restored.

Keywords: restoration, towers clocks, mechanism.

Study of Stress Concentration in a Plate with Two Circular Openings Connected by a Crack

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Abstract

Studies of the interaction of two circular openings connected by a crack were performed using the internal force method, the elastic potential method and the singular integral equation method. An article examining the stress concentration in a boundless plate with two circular openings connected by a crack is given under the action of bending using the biopolar coordinates and Erie stress functions. The contours of the openings were taken free of loads. The component of the tangential stresses on the crack surface is zero. The resulting normal component of surface forces on the crack surface is zero. The voltage on the contour of the circular openings was obtained. The following solution makes it possible to calculate the value of the maximum stress concentration factor as a function of the distance between the centres of the openings and their radii.

Key words: crack, stress concentration, singular integral equation method.

Analytical Conditions of Illumination of Multilayer Weakly Absorbing Interference Structures

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Abstract

Analytical conditions for achieving of zero reflectance from a multilayer plane-parallel low-absorption structure were defined. These conditions allow you to determine the thickness of two layers of the structure, in order to provide a minimum reflection coefficient at a certain wavelength. Developed analytical conditions can be used to improve the characteristics of interference coatings of different types. The interference coatings were made using low-absorbent materials. Developed analytical conditions can help to design various structures in order to improve the characteristics of interference coatings of different types.

Keywords: analytical conditions, multilayer plane-parallel low-absorption structure.

Study of Peculiarities of Work Safety on Lathes

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Abstract

In the work the risks of injury to workers when working on turning machine tools with manual operation was analysed. The probability of risks and the expected severity of the worker's injury by machinery, tool and equipment are substantiated. The level of risk of occurrence of a dangerous situation is calculated with the help of expert estimation technique. Taking into account that during operation on turning machine tools with manual control, hazardous zones for different groups of threats are characterized by stationary, the duration of the employee's stay in the danger zone during the change is estimated as the indicator of duration. At calculating of the level of risk, the probability of occurrence of the event, the results of the occurrence of the event, the level of influence of the probability of events and the consequences on the risk, as well as the length of stay of employees during the change in hazardous areas are taken into account. Analysis of the results of the research shows that the level of risk of an employee's dangerous situation corresponds to the average level. At such a level of risk, it is necessary to apply auxiliary protective measures, which include the use of special clothing and eyeglasses. The use of reasonable protective measures will minimize the health risks of workers.

Keywords: risk of injury, danger zone, lathe, safety measures.

The calculation and evaluation of the risk of tractors long-term operation on the basis of defectoscopic control data

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Abstract

The complex method of estimation of professional risk for long-term exploitation of mobile agricultural machinery taking into account the influence of organizational (errors of mechanics and job managers) and technical (presence of operational damages of parts) factors has been developed. It is shown that the construction of models of hazardous production situations should take into account many prerequisites - erroneous actions of workers, technological failure and unfavorable external influences of the production environment.

The results of elements calculating of the logic-simulation model of the process of the traumatic situation enable us to estimate the risk of injury to workers who use mobile agricultural machinery, in particular as a result of accumulation of operational damage in the responsible aggregates. The obtained values, which correspond to unacceptable occupational risk, should be the basis for observance of normative terms of maintenance of mobile equipment and replacement of damaged parts.

It is shown that the comparative analysis of the calculated values of the professional risk of tractor drivers before and after finding of technical and organizational defects allows to distinguish the most dangerous elements of the production activity of drivers, to sufficiently react on the risk of separate technological operations without technical means of protection and in violation of the current safety requirements, which will allow to reduce occupational injuries.

Keywords: professional risk, dangerous situation, logic-simulation model, defectoscopic control

Forecasting of Accident Consequences on Chemically Dangerous Objects

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Abstract

Progressive development of production technologies, chemical industry, the introduction of chemical technologies in many sectors of the economy and in particular in the sphere of life is accompanied by chemical pollution of the environment, threats to life and health of the population, causing economic losses. A characteristic feature of accidents at chemical hazardous objects with the pouring (release) of hazardous chemicals is that at high concentrations of chemical substances, the damage to people will be almost instantaneous. Therefore, it is crucial in such circumstances that the protection measures should be promptly implemented. The chemical safety system based on the analysis and management of chemical risks based on the basic position on the permissible level of risk is substantiated. The methods of reducing the risk of chemical damage to the production facilities, the population and the environment, which provide for adherence to the order of putting into circulation of new chemically hazardous products and technologies, the design and creation of appropriate production, and strict adherence to technological regulations, taking into account the requirements of safety were developed. The directions of scientific research, which include organization of forecasting and warning system, creation of new building materials and constructions, development of new technologies were substantiated and proposed.

Keywords: hazardous objects, risk, forecasting and warning system, chemical industry

Using of Consequence Analysis Method for Road Accident Prevention

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Abstract

In generally the following features of dangerous events in systems of agricultural processes are addressed when we try to evaluate the level of risks: 1) prediction of some accidents in order to create opportunities to resolve production problems as to damage or injury results; 2) analysis of consequences of probable accidents; this analysis helps to manage and minimize the destruction if damage accident was occurred and it provides response for other accident forecasting and perfection of disaster management; 3) improvement and perfection of managerial strategies at the farm or enterprise for minimization of objects and subjects damage.

Consequence analysis quantifies of possible accidents in such parameters as destruction area (the radius or limit of the zone in which the destruction would occur), damage to material goods (equipment, machinery, buildings, animals etc.). The calculation of consequence involves a wide-ranging multiplicity of simulation, logical, physical and mathematical models. For example, source or cause models are used to forecast the level of release of dangerous material (gases, fluids, liquids, dust etc.), in some cases the degree of flashing and the definite rates of material evaporation. Mathematical models for explosions or fires are used to calculate the characteristics of fires. The impact power mathematical models are used to calculate the damage zones due to toxic load, explosion or fires.

Keywords: dangerous event, level of risk, prediction of accidents, analysis of consequence

Informational System of Study of Life and Activity Safety

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Abstract

Computer methodology with interactive software is capable for study the actual agricultural processes on the base of assessing of likely impacts of accidents: toxic release, fires, energy flows and any combination; research of interaction among different accidental events; estimation of probability and consequences. This representation is valuable when carrying out the revision of different areas of agriculture – crop farming, animal breeding, machinery maintenance, poultry, transport or heat using processes etc.

The wider forecasting procedure at the following level and the stage of complexity is conducted to verify the presence of harmful matters, using the damage potential of the first event and the characteristics of the further units. The following characteristics and parameters are considered: the constituent material of the constructions and unit, the chemicals involved in operations of plant protections and the operating conditions with which they are used, detailed of quantities and properties of the pesticides chemicals involved, place of the unit in distance from other divisions, and meteorology conditions, especially the wind direction and its force etc. For this purpose the model for assessing the impacts was generated. And the parameters of events, directional probabilities of hazards, damage area, scenarios of dissemination of failure etc., should be used or developed.

Keywords: computer methodology, life and activity safety, interactive software, accidents.

Modern Agriculture and Typical Translation Difficulties

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Abstract

Translators usually have to deal with different problematic areas in their work, whether they are translating technical or scientific texts. That is why the terminology of agrarian branches and their definitions must provide all scientists, producers, consumers with some clarity, especially in the area that is often confusing, while the number of terms describing agricultural products is still growing and lack of official definitions of many terms in the modern language is perceptible. Lexical-semantic translation problems can be resolved by consulting dictionaries, glossaries, terminology banks and other experts.

The modern agricultural sector has an extensive terminological system. Compound nouns are typical for agricultural terms. It is identified that development and appearance of these terms are caused by non-linguistic factors, and reflect the interaction of extra linguistic and linguistic factors. It is necessary to take into account particular features of certain terminological system. The difficulties with translation of agrarian terminology is often due to the fact of reflection one of the biggest production areas of human activity, which contains a significant amount of words that can be used in everyday life and also be elements of agricultural terminology system. It is very important to translators to use language localization to adapt translation to the target culture correctly.

Keywords: term, technical texts, terminology of agrarian sector, translation difficulties.

Translation Peculiarities of Scientific Terms

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Abstract

Scientific terminology is the sphere of the language that scientists use in their professional activities. The term is a special word, while saving its linguistic character is a part of the field of science and technology and does the nomination function of special concepts. Studying something, scientists often create something new i.e., objects, concepts and try to name them.

Questions concerning the scientific and technical terms formation and their ordering on the basis of certain rules have attracted and attract the attention of scientists, especially because of the term nature as the linguistic unit. The isolation and separation of the invariant meaning of the term as a linguistic sign in the language system of its various meanings, as well as the term concepts in various terminology systems, enable disclosing of the linguistic mechanism of generating different meanings by one invariant meaning within a one and the same language, and to identify identical meanings and term concepts, different (inappropriate) word-terms in two different languages. On the basis of the conducted research it can be affirmed that if the term is a function, the type of use of the lexical unit, and not the unit itself, that is why each word in principle can go into the category of terms, and then to nomenclature units.

Keywords: scientific terminology, nomination, special concepts, invariant meaning.

Protection from Corrosion-Mechanical Destruction of Titanium Blades of Steam Turbines by Plasma Coatings

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Abstract

The problem of protection from corrosion-mechanical destruction of titanium blades of steam Turbines by plasma coatings is considered. The influence of plasma coatings of a different structure-phase composition on the ability to work of TC-5 titanium alloy at different types of abrasive wear is explored. The considerable changes of composition of plasma coatings on comparison with initial composition of powders, interphase interaction of their component composition and forming of complex coatings, with the not identified phases are found out with the phase-structural research. The less intensity of abrasive wear in the terms of not rigid fixed abrasive particles is confirmed. It is established, that most the change of tests chart shows up at the abrasive wear of the plasma coating of ПІОAH-30. The greatest abrasive resistant is in plasma coating by the complex carbide of titanium and chromium.

Keywords: titanium alloy, plasma coating, fatigue, corrosion process.

Application of Variational Approaches to the Analysis of Processes in Complex Electromechanical Systems

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Abstract

Based on the modified Hamilton-Ostrogradsky principle, a mathematical model of an asynchronous electric drive with an increased torque moment was developed. As a power function to the functional action of Hamilton-Ostrogradsky, the modified Lagrangian function is used, which differs from the classical interpretation of the presence of dissipation energy and forces of non-potential nature. The derived ordinary differential equations of the electromagnetic and electromechanical state of the electric drive are presented in the normal form of the Cauchy. To develop the mathematical model, a mathematical modelling apparatus was used that is based on differential, integral and variation calculations. The results of computer simulation in the form of analysed images are presented. The time distributions of the studied functional dependences presented in the work are obtained solely by means of numerical methods for integrating of ordinary differential equations.

Keywords: mathematical model, modified Hamilton-Ostrogradsky principle, asynchronous electric drive.

Modernization of Lighting as a Way of Energy Efficiency Increasing

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Abstract

Electricity production in the state in 2017 decreased by 10.2% to 163.3 billion kWh compared to the previous year. At the same time, the saving of electric energy is interested not only to the state and business owners, but also to the households. Every year the issue of energy saving and energy efficiency is becoming more and more relevant. There are a number of reasons for this, among which are following: shortage of energy resources in Ukraine; reduction of natural resources; rising of prices for energy imports; annual increase in electricity consumption.

Nuclear power plants, which today produce almost 60%, in 2017 reduced electricity production by 0.9% to 87.6 billion kilowatt-hours compared to the previous year.

So the problem of energy saving has a global scale. Electric lighting takes up to 20% of the total electricity consumption in the industry. One of the ways to increase the energy efficiency is to modernize the lighting.

A few years ago, the introduction of LED-type lamps was too expensive, so it was not effective. Therefore, we studied experimentally the different types of lamps in order to compare the economic expediency in time. The outcome of study was not so good for households. But now the situation in the market is changing; the cost of LED is reduced, as well as the electricity consumption and modernization of lighting as a good way of energy efficiency increasing

Keywords: LED lamps, energy saving lamps, electricity consumption, energy efficiency.

Simulation of the Process of Frequency Start of an Asynchronous Motor under Different Control Laws and the Moment of Loading Depending on Speed

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Abstract

The process of frequency start of an asynchronous motor under different control laws and the moment of loading depending on speed was simulated. In the mathematical package of MATLAB / Simulink the structural and mathematical models of the asynchronous motor were developed as well the frequency converters with three control laws and moment of static loading, which depend on the speed of the engine linearly and quadratically. All elements are assembled into a model consisting of three identical load-bearing motors, powered by three frequency converters with different control laws. On the frequency converter, a control signal from a single intensifier is given, the signal increases linearly from zero to a nominal value. The research was carried out for two load types and the graphic dependences of the transient processes of speed and momentum of engines during the frequency start with the three laws of control.

Keywords: asynchronous motor, frequency converter, modelling, start, control law.

Study of Qualitative Characteristics of LED Lamps at the Reducing of the Voltage of the Nominal Value

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Abstract

One of the effective methods of electricity saving for lighting today is the replacement of incandescent lamps and compact fluorescent lamps on LED lamps, because they have better indicators of light efficiency. The purpose of the work is to investigate the effect of reducing the voltage by 10 and 20 % of the nominal on the qualitative characteristics of modern LED lamps. The situation with reducing of the voltage is often in peak load, or in the cold seasons. The illumination and light efficiency of the lamps were studied by a lux meter. The thermal mode of lamps was studied by a pyrometer. The electrical mode of lamps operation was maintained using voltmeter, ammeter and wattmeter. The spectral distribution of light was studied with a spectrograph. The light efficiency of LED lamps is almost 10 times higher than the light efficiency of incandescent lamps, a power factor of 0.6 versus 0.999 in incandescent lamps, a bulb temperature of 36 degrees Celsius versus 190 degrees. The spectral distribution of LED lamps differs significantly from the spectral distribution of the incandescent lamps in the worst direction. When the voltage decreases by 10 %, the value of light efficiency decreases by less than 10 %, but when the voltage decreases by 20 %, in certain types of lamps, the light efficiency decreases by more than 20 %, and some lamps were turned off.

Keywords: LED lamps, spectral distribution, electricity saving, qualitative characteristics of light.

Mathematical Modeling of the Electrotechnical System of Rectification of the Alternating Three-Phase Current on the Hamilton-Ostrogradsky principle

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Abstract

The paper analyses scientific publications, which showed that today there is no unanimous mathematical modelling theory of electrotechnical systems of rectification of alternating three-phase current, and the transient electromagnetic processes was studied using ready-made computer software, which is unacceptable, since it is not scientific methods, but engineering tools, which are intended to solve applied engineering problems. The scientific and practical necessity of development the efficient and relatively simple models of electrotechnical systems as to rectification of alternating three-phase current as the key elements of electric networks of direct current is substantiated. On the basis of the generalized interdisciplinary method of mathematical modelling, which is based on modifications of the Hamilton-Ostrogradsky integral variation principle, the equation of the electromagnetic state of the studied electrotechnical system of three-phase alternating current rectification is derived. The developed mathematical model makes it possible to analyse transient electromagnetic processes in the elements of the studied electrotechnical system of rectification the alternating three-phase current and their mutual influence between the physical processes in the load.

Key words: mathematical model, transient processes, current rectification system, variation approaches.

Substantiation of Parameters and Working Conditions of Solar Dry Kiln of Fruits

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Abstract

The presented results of solving scientific and applied problems consisting in substantiation of parameters and working modes of the fruits solar dry kiln are aimed at energetic efficiency rise of small volumes of fresh fruits drying in the conditions of private farmsteads and farms.

The study is focused on the solar energy using for fruits drying which is acceptable for the latitude of Rivne region dislocation. The area is characterized by 3,41 kW·h/m² of average annual solar radiation power for a light day. This allows to have of 1,5...2,3 kW·h power from 1 m² of air-type collector per 1 day.

The analytical equations for calculating the construction and technological parameters of fruits driers were derived and parametric group of mini – solar dry kilns were proposed. The mathematical model of the technological process of fruits drying in solar dry kilns was developed; the influence of solar dry kilns constructive and technological parameters and environmental physical parameters on the modifications in thermo-mass exchange characteristics of the process of fruits drying was studied; energetic and economic efficiency of the given scientific and technical project was evaluated and the ways of its introducing into production were developed.

Keywords: fruits raw material, solar energy, air collection, thermo accumulator, combined drying.

Alternative Energy and Its Effects on Environment

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Abstract

In today's diversity of environmental problems, energy takes is one of the first places. Due to the intensive involvement of secondary and renewable energy sources in practical use, particular attention is paid to the environmental aspect of their environmental impact. It is now widely believed that alternative energy production is environmentally friendly technologies. In our opinion, such statement is not entirely correct, because sources of energy have a fundamentally different spectrum of environmental effects compared to the traditional energy equipment operating. Some of the environmental impacts of alternative energy on the environment are not studied especially in the spatial aspect. And therefore the engineering and technical issues of the use of these energy sources should be studied. Our analysis provides grounds for alternative energy sources study. Naturally, not taking into account the environmental impact of the use of alternative energy sources there was not enough scientific and practical developments of environmental protection measures, which ought lead to the use of these types of energy in the near future to a deep crisis. In this regard, the possible environmental consequences of the use of alternative energy sources should be studied today more widely.

Keywords: environmental problems, protection measures, renewable energy sources.

Technological Parameters for Installation of Temperature Expansations of Pipelines of the Thermal Network

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Abstract

One of the main problems in the design of heating networks with non-channel laying of pre-insulated pipelines is the correct choice of the geometry of the route and the location of disposable compensators for the temperature broadening of the heat pipes. According to the principle of compensation of temperature broadening of heat conductors, the following methods are used for non-channel laying of pipelines: without compensating, with radial and axial compensation. The first two methods are applied with or without preheating of pipelines, the third - with no preheating. The fulfilment of the conditions of the second method can be achieved in two ways, namely: the first one is to select a material of a conductive pipe, so that the stress, at the calculated temperature difference between the maximum calculated heat carrier temperature and the temperature of the installation of the heat pipe, does not exceed the permissible; the second is the implementation of preliminary pipeline heating during construction and installation works. Our research is aimed at determining the effect of the installation temperature and the material of the pipelines of the pre-insulated thermal conductor on the distance between the disposable compensators and the development of recommendations for determining the maximum distance of the compensators on the heat pipe lines.

Keywords: heating networks, compensators for the temperature extension, temperature broadening.

Determination of Equivalent Gaps in the Hydraulic Drive of Shovel Type

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Abstract

Change of internal gaps on a width and depth stipulates for specified method of calculation of volume coefficient of efficiency at the hydraulic drive. The size of equivalent gap is determined from the condition of equality of sinking volumes through the gap of variable type by times. Taking into consideration the small size of gaps the condition is accepted that the flow liquids through gap are laminar, and a type of every gap in all of cross sections is permanent. In moving joint the variants of small gaps compacting are possible with the use of the special sealing arrangement. In steering shovel drives the majority of internal sinking is observed through radial and butt-end gaps between the walls of lids and shovels. Initial assembling gaps can be described by equalizations of straight lines. Basic complication is made by the calculation of resilient lines of deformation of drive details, cylinder and lids. At the known sizes of assembling gaps the equivalent gaps in every case were determined with finding of one characteristic size of variable gap, and in essence, bending deflection of the deformed detail.

Determination of equivalent radial and butt-end gaps was based on the use of equalization of resilient line of prismatic beam, jammed from two ends. It is possible to conclude that for more exact calculation of parameters of hydraulic drives it is necessary to take into account the change of internal gaps of drive from deformation.

Keywords: hydraulic drive, size of equivalent gap, deformation, moving joint.

The Application of Fuzzy Logic Algorithms for Controlling of Renewable Energy Sources

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Abstract

The application of fuzzy logic algorithms for controlling of renewable energy sources is studied. Seasonal, daily and instantaneous irregularity of solar radiation was determined experimentally. The fuzzy logic controller concept for solar installer of hot water is developed. The fuzzy logic controller consist of data base of knowledge and rules, unit of input information systematic and directing, unit of logical processing of information according to principles of developed fuzzy logic algorithms, unit of forming of output signal. Flowchart of intelligent control system of solar installer of hot water consists of fuzzy logic controllers: FLC of short term weather forecasting, FLC of control by modes of thermoelectric heater operation, FLC of control by central processor operation. Algorithm for controlling the modes of operation of the solar hot water system using the Fuzzy Logic controller was developed for forecasting the probability of weather conditions. The software of virtual controller in Lab VIEW soft is developed and studied. The software of Fuzzy System Designer application consists of window snippets with flow charts for hot water supply controllers.

Keywords: fuzzy logic algorithms, renewable energy sources, solar radiation.

Study of dynamic of different types of solar panels

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Abstract

The dynamic parameters of different types of solar panels are studied. The test stands of a photovoltaic panels and monitoring system were developed. Schematic diagram of an autonomous photoelectric installation based on Epever equipment with visual control of parameters was worked out. And also the schematic diagram of an autonomous photoelectric installation based on Epever equipment with the ability to transfer measured parameters to a personal computer or mobile gadget was developed and studied. Block diagram of an autonomous photovoltaic installation based on the equipment of the Epever firm with the organization of continuous transmission of measured parameters to a personal computer from all studied systems was worked out and researched. With help of developed stands of a photovoltaic panels and monitoring system the values of solar radiation and voltage on the panels were studied: U1 polycrystalline, U2 amorphous or noncrystalline and U3 single-crystal. Step response of individual panels was determined according to amplitude and time.

Keywords: solar panels, test stand, autonomous photoelectric installation.

Study of approach for reducing of nitrate loads on drainage water

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Abstract

Artificial drainage of lands is a common agricultural practice. The overall drained area has totalled 87 % of the agricultural land. The tile drainage systems are transport pathways for contaminants from agricultural land to the rivers and streams. The increased nutrient flow into surface water leads to eutrophication. In Lithuania, 80 % of the total nitrogen enters from agriculture. This is a challenge that requires solutions. Some studies have suggested that bioreactors with heterotrophic denitrification may provide of (NO₃-N) nitrate removal from drainage water. Most of the research have been performed at temperatures not relevant in climates with low temperatures (<10 °C) for extended periods. Woodchips amended with some additional carbon sources are being studied to promote the bioreactor efficiency under low temperature. In this study, the operation of pilot-scale denitrifying bioreactors is considered. The study has shown that the nitrate removal efficiency in bioreactor with no additives was of 44 % and in bioreactor with activated carbon additive it reached of 48 %. In bioreactors with the flaxseed cake and with biochar (20 % v/v) additives of 45 % of nitrogen was removed. The bioreactors were monitored for a 1,5 years period, during which the flow rate, hydraulic retention time, water temperature (T), pH, TDS, dissolved oxygen (O), nitrite, ammonium and nitrate concentrations were measured. The highest nitrate removal efficiency was achieved at a pH of 7,0-7,5.

Keywords: nitrate removal; denitrifying bioreactor; agricultural drainage; biochar.

Research of the Fuel Supply System of the Opel Petrol Engine Depending on the Temperature Mode

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Abstract

The purpose of the work is to improve the starting characteristics of the engine, by installing a heating element in the inlet line. According to research objectives the use and fix in of the heating element in the fuel system of gasoline engine was justified; according to the results of thermal and dynamic calculation the parameters of the engine with standard and upgraded power systems were studied; the operation of the gasoline engine power system in cold and heated air experimentally studied. Balance of energy flows at the moment of initiation of combustion engine was calculated. The scheme of thermal cell for heating of oil in the crankcase and heating of the car battery were proposed to install. Influence of factors of cold start on economic and environmental parameters of engine is considered. The area of the minimum speed of rotation of the crankshaft of the engine (at its start) depending on the external temperature is determined.

Opel-Omega indicator diagrams at basic power supply and with heating element were developed. The thermal balances of the engine of the Opel-Omega car in cold air and with heated air up to +40 °C were calculated as well as the graph of the dependence of fuel consumption from the air temperature at the begin of the engine start and the cost effectiveness of use of the air heater.

Keywords: gasoline engine, cold weather condition, heating element, fuel system.

The Regularity of Speed Mode Change of the Variator on Different Kinematics

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Abstract

The regularity of speed mode change of the variator on different kinematic schemes is studied. The main parts and principle of the operation of a four-stage chain variator and its possible kinematic schemes is described. The maximum and minimum values of the instantaneous transfer number of the variator are given at maximum values of the eccentricity of the center of the chain wheel displacement in relation to the axes centre of its rotation. The results of the study of the regularity change of the variator instantaneous transmission number for the one rotation of the driving and driven shafts are presented. The practical recommendation of the four-stage chain variator using were grounded and proposed on the base of research of the regularity of speed mode change of the variator on different kinematic schemes.

Keywords: four-stage chain type variator, kinematics, transfer number, eccentricity of the center.

LHC Experiments and FCC Project

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Abstract

The study includes general information about the particle physics laboratory called CERN (European Organization for Nuclear Research) and LHC (Large Hadron Collider), and its detectors called ATLAS (A Toroidal Large Hadron Collider Apparatus), CMS (Compact Muon Solenoid), ALICE (A Large Ion Collider Experiment), LHCb (Large Hadron Collider beauty). Moreover, Turkey and CERN relationship has been mentioned. Finally, the next generation collider as FCC (Future Circular Collider) and its options are mentioned, which is supported by EuroCirCol (European Circular Collider) and EASITRAIN (European Advanced Superconductor Innovation and Training Network) projects.

Keywords: LHC, CERN, FCC.

Hydrokinetic Energy Conversion Systems in Turkey; an Experimental Analysis

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Abstract

In this study, hydrokinetic energy conversion system with vertical axis turbine was designed to meet the electricity needs of rural houses especially by utilizing water flow energy for river, river, tea or stream applications. In order to increase the system performance coefficient, fixed wing with internal guide was used. The effect of these fixed wings on system efficiency was investigated. Thus, a clean and renewable energy conversion system has been realized which can compete with solar energy conversion systems in terms of price, has load-frequency stability and can be used in rivers, especially near small settlements and in areas not suitable for accumulating water. turbine, speed increasing mechanism, DC generator, rectifier, battery bank and inverter. In addition, a hydrokinetic channel was constructed to make it similar to river beds and the electricity production was realized in a controlled manner by utilizing the kinetic energy of water.

Keywords: Hydrokinetic Turbine, Fixed Blades, DC Generator, Power Bank, Load Frequency Stability



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