Technical University of Cluj-Napoca, North University Center of Baia Mare

Faculty of Engineering, Department of Electrical Engineering, Electronics and Computers

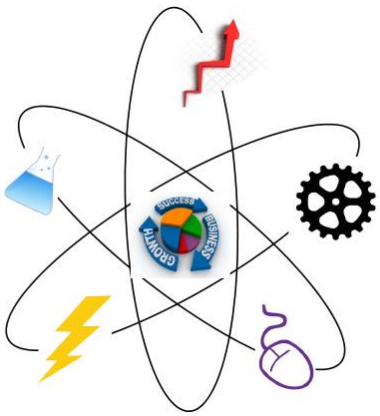
University of Business Engineering and Management Banja Luka

Mississippi State University, Department of Mathematics and Statistics

BOOK OF ABSTRACTS

INNOVATIVE IDEAS IN SCIENCE 2018

SOCIAL AND TECHNOLOGICAL DEVELOPMENT 2018



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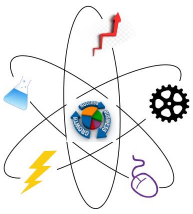

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A Mathematical Model for Inverse Optimal Control to Achieve Stabilization and Trajectory Tracking for Mobile Robots

Nicolae Pop, Luige Vlădăreanu and Adrian I. Pop

ABSTRACT

The basic idea of inverse optimal control theory for nonlinear systems is to find a feedback control law based on a priori knowledge of a Control-Lyapunov function (CLF), that leads to Lyapunov stability of the system and minimizes a cost functional [1], [4]. The problem of inverse optimal control leads to the Hamilton-Jacobi-Bellman (HJB) equation, but in case of non-linear systems it does not have exact analytical solution. HJB equation in the linear case, may be reduced to Riccati equation when using the linear quadratic regulator (LQR). Kalman's inverse optimal control theory in linear systems for finding a certain state feedback should provide an optimal control, relative to a useful performance index.

The problem addressed in this article is the construction of the control Lyapunov function for non-linear systems for which there are no well-established techniques. One option is to use a global recursive adjustment of time dependent parameters of the Liapunov quadratic control function by means of the extended Kalman filter algorithm (EKF). Inverse optimal control applied in the case of following a robot trajectory is to design a control law u for tracking the desired trajectory, generated by a reference robot. A recursive high-order neural network identifier (RHONN) will also be used in this process [3], [4]. In order to identify the model of the trained plant by an extended Kalman filter algorithm (EKF), we assume that the whole state-space is available for measurement. Also, inverse optimal control is designed to track the speed of the robot on the desired trajectory. By applying the inverse optimal control for non-linear systems, we intend to avoid solving HJB equations, to apply feedback control to stabilize the system and then to prove that this control optimizes a cost functional. Using MATLAB simulation, we have made a test to justify the exposed theory [5].

KEYWORDS

Control Lyapunov function, extended Kalman filter, Hamilton-Jacobi-Bellman equation, inverse optimal control, robot tracking optimization.

Adaptive Fuzzy-FMEA Expert System for Predictive Control Industrial Processes with Example

Tihomir Savo Latinovic, Mladen Todic, Cristian Barz, Adina Pop-Vadean and Paul Petrica Pop

ABSTRACT

Modern processing is a combination of individual production cell, designed to complete the business of manufacturing parts of subassemblies and their integration into the final product of the product. The success of such a system depends on stability operations while minimizing the possible errors in the system. The continuous monitoring system is necessary to maintain the functionality and quality of production, because of deviation from the normal situation caused a drop in productivity.

Reliable detection and isolation of faults is an important part of a successful maximizing productivity. For this, we need methods and information for the diagnosis and correction of errors. In addition to continuous monitoring is necessary to predict the possible situations for the emergence of errors. Error detection and quality control of the production process is based on an insufficient prior information. Interpretation of the measurement results is also complicated by the uncertainty in the collected data.

Data vary at the entrance and we can easily set the threshold bad and good products. a lot of the parameters affecting the quality of them and they cannot set effective thresholds. Experience shows that the best method of application of fuzzy logic to measure inputs, as well as materials from which the real product, which together with the production process affect the quality of the product. Fuzzy logic is set up like a real logic to group indeterminate and uncertain data into groups that give soft linguistic variables (e.g., bad, good, better, excellent). Also, the output quality can be rated as not good enough, good, better, as good, excellent). FMEA logic gives us possibility to predict all possible errors in the system and calculated risk factor for using such a system.

KEYWORDS

Fuzzy Logic, FMEA, Predictive control.

Analysis of a PEMFC System for Automotive Applications

Radu Adrian Tirnovan, Constantin Pica, Maria Cristea and Cosmin Dărab

ABSTRACT

This paper presents a study of the fuel cell system performance operating at low pressure. A polymer electrolyte fuel cell (PEMFC) is analyzed in according with the possibility of using in transport applications. So, it begins with the description of a parametric model of the fuel cell which has been developed using a combination between empirical and mathematics modeling techniques. This model enables to model fuel cells V–J curves in dependences with the stack temperature and the oxygen partial pressure. Also, it can be used to study the influence of the gases management (pressure) on the fuel cell stack performances. The study continues with the modeling and simulation of a blower as the active element for the compression air system. One has used a least squares method for non-linear curves-fitting of fuel cell and blower.

KEYWORDS

Fuel cell, pressure, temperature, modeling, simulation, blower.

Analysis of Central Southern Serbia Wind Energy Potentials

Predrag Miodrag Živković, Mladen Tomić, Dragana Dimitrijević Jovanović, Jelena Janevski and Mirko Dobrnjac

ABSTRACT

The main goal of this paper was to obtain all acceptable locations for siting of wind turbines in the region of Central South Serbia. One of the possibilities to increase the rentability of the wind farm is to reduce the transport loses, using produced energy as close to the production site as possible. The estimations were obtained using the WAsP simulation software. Several wind turbine types were considered, and finally 0.8 and 2MW Enercon E48 and E82 were chosen for the analysis. Results are compared by means of the turbine type, quality and quantity of the wind data and the capacity factor. Finally, the economical analysis of the acceptability of the installing of wind turbines was done, for the best wind turbines chosen.

KEYWORDS

Wind energy, estimation, numerical simulation, WAsP, wind turbines.

Analysis of Traffic Induced Emissions on Air Quality

Predrag Miodrag Živković, Mladen Tomić, Jelena Malenović Nikolić, Goran Janaćković, Petar Cajić and Ana Momčilović

ABSTRACT

The air quality is very important for the quality of living in modern cities. It is known that the traffic is the single largest pollutant in Europe. All analysis presented in this paper were done on the case of the City of Niš. A specific approach for measurement of roadside CO2 concentration, as the tracer gas, was implemented. The wind speed and direction have been measured on several locations in the City, considering that pollution distribution is globally determined by wind characteristics. For measured data collecting, specific acquisition system was developed, as well as the software needed. Traffic intensity has been measured on six major crossroads in the City, in order to estimate the traffic generated CO2 emission. CFD techniques are not a solution for the pollution problem, but an estimation tool, which obtains the most detailed data needed by the environment protection experts. Measured data on the traffic are used for defining initial and boundary conditions in the CFD model. Simulations were performed using PHOENICS software package. The numerical simulation results show good agreement with the measured wind data and CO2 concentrations.

KEYWORDS

Traffic intensity, CO2 concentration, measurement, data analysis, CFD.

Angle Position Influences Over External Magnetic Field of a Solenoid in Wireless Power Transfer

Bogdan Iuga and Radu-Adrian Tirnovan

ABSTRACT

The general form of the Biot-Savart law is referring to a closed loop, but it can be integrated over a finite length solenoid to calculate the external magnetic field in a specific point, at a rated distance from the center. The law states that the point of measure must be on the longitudinal axis of the solenoid. In real cases the point of measure has angle orientation in relation to the axis which results in modifications of the field value.

KEYWORDS

Biot-Savart law, exterior magnetic field, finite length solenoid.

Applications of the Thermoelectric Energy Harvester in Air Conditioning Condenser Unit

Adina Pop-Vadean, Paul Petrica Pop, Tihomir Latinovic and Cristian Barz

ABSTRACT

The devices that convert heat into usable electricity and use the three established thermoelectric effects known as the Peltier, Seebeck and Thomson effects are thermoelectric generators (TEG). These devices can generate power how long as there is a heat source. TEGs are made from thermoelectric modules and the cost of this modules is high, but the size of modules is considerably small, for projects that have space limitations. This is a huge advantage for TEGs. Many research and studies are made to increase efficiency of the TEGs and determine potential applications for these devices. With the development of TEGs, the number of TEG based applications will be used in most energy applications in the future where low power is required. This new thermoelectric generator is equipped for conversion of environmental (ambient) thermal energy into electric power for a variety of applications that necessitate low power source use in this paper we study TEGs in air conditioning condenser unit. The study refers to efficiency, power generation capacity, cost, size, and system installation complexity to generate power.

KEYWORDS

Harvesting energy, thermoelectric, electricity, TEGs, converter heat.

Applying Taguchi Method to Control the Thermal Expansion Effect on Machining Process of Aluminum Alloy Extruded Profile

Stefan Adrian Moldovan, Vasile Nasui and Marius Cosma

ABSTRACT

In this paper we present a technological problem encountered in the machining accuracy of the parts for aerospace, made of aluminum alloy extruded profile with 7 meters length. Those parts have very tight tolerances and on milling process appears deviation due to thermal expansion effect, which influences the repeatability of machining processes.

Through several tests and recording all values during the milling process, was defined through Taguchi method the main impact factors which have impact on the machined parts.

Acknowledgement:

Applying Taguchi method to control the thermal expansion effect on machining process of aluminum alloy extruded profile is the result of an experimental research conducted with the support of the machining department of SC Universal Alloy Corporation Europe SRL, Dumbrăvița.

KEYWORDS

Taguchi, thermal expansion, repeatability of machining processes, aluminum alloy, CNC machines.

Aspects of the Use Solar Energy Valorification for City Streets Lighting System

Valeria Mirela Brezoczki and Gabriela Filip

ABSTRACT

The paper presents a viable success alternative for solar energy valorification to generate electricity for city streets lighting system in Baia Sprie town.

The electricity provided by solar power plant starting on 2016 and it's used for city streets lighting system with partially replace for conventional electricity.

Within the Romanian Regional Sustainable Development Strategy there are several measures meant to obtain electricity from renewable energy sources which do not produce negative effects for the environment, which means that the expansion of the photovoltaic plant is desirable.

In accordance with the Development Strategy of the town of Baia Sprie, the increase of the plant's productions capacity through the extension of the plant surface and an optimized energy management of public consumers is desired.

KEYWORDS

Renewable energy, photovoltaic system, Sustainable Development.

Award of Expert Workers as Motiving Factors in Centers for Social Work of the Republic of Srpska

Nikola Vojvodić, Dragana Savić Pešević and Mladen Ivic

ABSTRACT

The postwar period of the rapid social change has brought not only a specific framework in which social work develops but it has also brought ever increasing complex social problems that require new methods of work and different approaches. Legislative regulations, high demands and expectations of skilled workers, and present lack of interest of the social work centers management for the organization of work that will be the core support for the worker; weak personal and professional capacities of experts and therefore their motivation to work. In the theoretical part of this paper, traditional and modern scientific approaches have been researched with a special reference to the process of promoting and rewarding employees and how does it influence their motivation to work. In addition, an empirical research has been conducted, whose aim was to look at the role and significance of remuneration by the manager on the motivation of skilled workers in social work centers in Republic of Srpska. The survey encompassed 252 skilled workers at 41 Center for Social Work in Republic of Srpska, which is considered to be a representative sample in comparison with the population. The results of the theoretical analysis of the empirical research suggest that the level of motivation of workers depends half on the age of workers and the other half on their working age, that in most social work centers in Republic of Srpska there is no rewarding system established, that managers mostly approach the use of material rewards on the payroll, that the intangible forms of reward are missing, that experts are exposed to great challenges of professional activity which causes workers to be demotivated and that by self-perception of workers, rewarding can raise the motivation of workers to a higher level. Furthermore, it implies that the initial assumption of the paper is confirmed by the fact that rewarding can have a strong influence on support, it has a certain role in motivating skilled workers in social work centers in Republic of Srpska

KEYWORDS

Professional workers, social work centers, motivation, rewarding.

Beyond Environmentalism Towards a New Ecological Politics

Octavia Domide

ABSTRACT

The paper presents some theoretical aspects regarding ecological politics. Due to the advanced environmental damage in the past decade, the involvement and the responsibility of international and political actors has increased. The impact of human actions over the environment is one of the main causes of the damage in this field.

The role of politics in the ecological field is considerable, is bigger today than in the past as a result of social and technological changes that provide the idea of a 'natural' environment and may soon bring, under human control, the operation of the ecological processes.

The development of the ecological field can be solved only by political means and political processes and by committing the society to be involved in elaborations and implementation of environmental policies.

KEYWORDS

Environmentalism, ecological policies, social responsibility, sustainability.

Characteristics of Marketing in the Energy Sector

Stet Mihaela

ABSTRACT

The liberalization of the Romanian energy market has led, for some companies in the energy sector, to the necessity of marketing campaigns. If for a long time, individual consumers had the status of consumers and, implicitly, supply companies had their own regional market, the passage of consumers into the category of eligible ones also generated competition between new and existing suppliers. In this context, some marketing characteristics of energy companies can be identified.

KEYWORDS

Marketing, energy, consumer, supplier.

Comparative Study Conducted on Metal Carbides Coatings Deposited by Plasma Spray

Laura Maria Benea

ABSTRACT

The use of ceramic materials in thermal pulverization technique has led to a massive enlargement of the range of areas in which they find their use. Due to the large hardness, the dielectric properties, the resistance to high temperatures, ceramic materials find many applications in areas such as the automotive industry, the aviation industry, the repair / rebuilt of various component.

This paper presents a comparative study of plasma jet coatings realized with three types of carbides: W-Cr 17% Cr, W-Cr 12% Cr and Cr-Ni-Cr carbide. These coatings pose very good mechanical characteristics, very low porosity and a high compactness which confers them a high resistance to chemical agents. The fairly high operation temperatures, the high hardness and high tensile strengths, mean that these materials can be successfully used to confer wear resistance to the metallic substrate, even at a very small thickness.

The paper wants to prove that metal carbide can be used for plasma jet deposited coatings, conferring to the metal substrate very good proprieties.

KEYWORDS

Plasma deposition, metal carbides coatings, coating characterization.

Concept for a Precise Academic Gripper

Steffen Epple, Rolf Jung, Cristian Barz and Vasile Nasui

ABSTRACT

A new, precise, scalable multi-purpose gripper system for academic research purposes is proposed. The multi-purpose gripper is intended to be easily adapted to different tasks and object sizes. The gripper system is driven by two separate motor-gear-lead spindle units, operated by a small CNC control. Software running on the CNC unit is completely open source. A novelty for a gripper in this constellation is an interlock-line that may for example be used for a safety door, allowing to stop movement of the gripper fingers and thus being capable to avoid the bruise of an operator's finger or arm part. This paper describes the steps mechanical parts were designed and simulated to allow a lightweight concept leaving some payload even for relatively small industrial robots used in academic research. Stability of the gripper fingers was tested by pressing the gripper finger towards each other by hand while "blocking" the movement with a finger showing no visible bending effect of the gripper parts. To test the concept of the gripper system, a first prototype is under construction. Parts of the gripper system were simulated, 3D-printed with poly-lactic-acid (PLA) and mounted to a small laboratory robot. The CNC-gripping function will be furthermore optimized and tested at the prototype.

KEYWORDS

Multi-purpose, robotic gripper, precise, concept.

Concept of The Formation of Scientific and Educational Informational Space for Design Activities

Lesya Shkitsa, Volodymyr Kornuta, Olena Kornuta and Iryna Bekish

ABSTRACT

There has been formulated definition of scientific and educational information space of technical higher educational institutions in the conditions of modern development of information technologies (information environment). The information models of the scientific and educational process, role functions of participants, influences of new standards and design methods are described. The concept of scientific and educational information space for project activity is proposed.

Consideration of the Actual Stage of Nanomaterials Used in Dentistry

Corina Monica Pop, Adina Pop Vadean and Ioana Tașcu-Stavre

ABSTRACT

The present paper is meant to be a short presentation of the actual stage of nanomaterials used in dentistry. It shows some theoretical considerations regarding characteristics of some nanomaterials used in dentistry.

In recent years, increasing demands for dental reconstruction have led to the development of new materials that have multiple applications in dental medicine and which must meet aesthetic requirements, biocompatibility requirements as well as hardness or durability.

Surpassing the extraction period, dentistry has entered the "restorative era" in which it is desirable to introduce new materials that will lead to the most natural restorations with the physical and chemical properties closest to those of the dental tissues. The discovery of such materials has become a definite necessity in order to achieve consistent progress in this respect.

Interest in using nanomaterials, composites with nanomaterials in restorative dentistry, as well as reconstruction, is constantly increasing. It is therefore important that the mechanical and other properties of these materials be carefully studied and especially improved.

The aim of this research is to help dentists, by analyzing and describing existing composite nanomaterials and by widening their area of use of in restorative dentistry, and improving their characteristics.

KEYWORDS:

Nanomaterials; nanocomposites; biocompatibility; restorative dentistry.

Considerations Regarding the Earthing Electrodes for Low-Voltage Electrical Installations

Liviu Neamt, Horia Balan, Olivian Chiver and Alexandru Hotea

ABSTRACT

Some considerations regarding different earthing electrodes types and arrangements are discussed. The computation of the earthing resistance and voltage distribution, the designing, installation and testing procedures are evaluated and compared. Typical mistakes, inadvertences, wrong or incomplete procedures are outlined, e.g. the soil resistivity is very rarely measured before the designing step; the foundation earthing systems is not required at least for new buildings but an option for artificial electrodes; incorrect burial depth and in a lot of cases distances between vertical rods are observed; inconsistent design and more probably empiric electrodes arrangements; irrelevant testing procedures (regarding the earthing resistance and step and touch voltages). Finally, recommendations for improving the quality in earthing systems for low-voltage electrical installations are completed.

KEYWORDS:

Earthing electrode, low-voltage electrical installation, testing, safety.

Determination of the Effective Capacity of Lead-acid Batteries Using the Least Squares Method

Dorin Sabou and Radu Tîrnovan

ABSTRACT

This article presents a new method for determining the effective capacity of a lead-acid battery by applying the least squares theory. Power supply of an isolated power grid can be achieved with a mix of sources, among which the most affordable are solar energy, wind power and fossil fuels. In these cases, the final price of the electricity obtained depends, to a large extent, on the size of the used devices, including those for the storage of electricity. As the lead-acid batteries currently in use are quite expensive, the method presented helps to correctly calibrate them and thus optimize the cost of electricity storage.

In comparison with other studies, the presented method uses the theory of minimum square deviations (the method of least squares).

The major personal contribution is the elaboration of the method and its experimental verification.

In conclusion, using this simple, easy-to-implement method offers an optimal dimensioning path for an expensive component of an isolated power grid, that is, the lead acid battery.

KEYWORDS

Lead-acid batteries, least squares method, isolated power grid.

Development of Science and Society

Goran Kalinić

ABSTRACT

Science is developing rapidly and it is so fast that society can’t follow. The negative consequences of such a rapid development start to appear. First, developed countries can easily apply scientific achievements to improve the lives of their citizens, while developing countries live harder than 20 or 30 years ago. Second, pseudo-science appears as the bearer of "knowledge" for ordinary people. Science has become a rigid and underestimated force in people's minds. On the other hand, there is a positive side of the rapid development of technology, but in social sciences, for example in archaeology. Therefore, science must rebuild bridges to the common people and it will do so by scientists who can approach their research from different aspects and in addition, find a way to simply transfer it to a "common" man.

KEYWORDS

Science development, pseudoscience, applied technology, knowledge transfer.

Development of the Modbus-Module of the Subsystem of Control of Metallic Inclusions for Integration into the Process Control System for the Manufacture of Ceramic Products

Leonid Zamikhovskiy and Ivan Levitsky

ABSTRACT

When preparing raw materials for the manufacture of ceramic products (clay), a significant amount of metallic impurities falls into it. With further technological operations, such raw materials are a source of danger for equipment that can fail if metal inclusions get into it, or the process line. In this regard, an urgent task is the development of a subsystem for controlling metallic inclusions in raw materials, as a functional component of the overall system of automatic control of the technological process of manufacturing ceramic products.

Modern systems for controlling metal inclusions are poorly integrated into existing process control systems, and often their integration is reduced to sending discrete signals about the presence of such inclusions in raw materials to the central controller or directly activating the general emergency button. As a result, the efficiency of such a system is low.

The possibility of integration of the system for controlling metallic inclusions into raw materials in the conditions of a belt conveyor (a patent of Ukraine is obtained for the system) in the central process control system for the manufacture of ceramic products (bricks, tiles, etc.) is considered by the authors based on the scanning signal method. To do this, an analysis of industrial data transfer protocols was carried out: Profinet, ProfiBus, ModBus based on the results of which the ModBus protocol was chosen due to the openness of the structure of the protocol itself and the simplicity of the hardware. The protocol allows you to easily exchange with the central control system a large number of analog and discrete signals.

The development of a ModBus module for the integration of the metal inclusion control subsystem into the central control system is considered. For maximum flexibility, it is possible to change the data transfer rate, set the protocol service bits, as well as the address of the device itself.

The developed ModBus-module allows for full two-way exchange of information between the subsystem of control of metallic inclusions and the central control system for determining the overall dimensions of metallic inclusions, their location along the conveyor belt, as well as other important parameters.

KEYWORDS

Control system, executive devices, measurement, metallic inclusions, data transmission system, conveyor line.

Diagnosing the Technical Condition of the Gas Pumping Unit Type GTK-25 on the Basis of Modern Information Technologies

Leonid Zamikhovskiy and Volodymyr Pavlyk

ABSTRACT

Gas pumping units (GPU) GTK - 25i produced at Nuovo-Pignon company (Italy) have been in operation for more than 40 years and most of them have fulfilled the established service life or are close to it, and therefore their further operation can lead to emergency situations. Considering that on the Urengoy-Pomary-Uzhgorod gas pipeline today more than 150 GTK - 25i are in operation and the urgent task is to ensure their reliable and efficient operation, which requires the development of diagnostic software - methods and means of diagnosing GTK - 25i and
the analysis of the current state of diagnosis of GPA relative to the GTK - 25i showed the lack of effective methods for their diagnosis and indicated the need to develop new methods and means of diagnosing the GTK - 25i on the basis of modern information technologies. The results of the study of 16 statistical characteristics of the technological parameters of the GTK - 25i are given, and 8 of them were selected for further step-by-step discriminant analysis, implemented in the STATISTICA software package, on the basis of which a procedure for selecting a diagnostic sign was developed, which allows to clearly recognize the technical condition of the GPU.

The results of the development of the method of diagnosing the GTK - 25i on the basis of artificial neural networks are presented, using as an informative parameter for teaching an artificial network of acoustic noise generated by its axial compressor during operation. The construction of the INS is carried out using the MATLAB software package, in particular, the GUI - Graphical User Interface of the Network Pattern Recognition Tool. When developing diagnostic methods, information was used on the technical condition of the GTK - 25i, which is operated at the compressor station of the Bogorodchansky LPUMG UMG "Prikarpattransgaz", in the form of its technological and vibroacoustic parameters obtained for the repair of the GTK - 25i, after repair and after a period of long-term operation from using the developed information-measuring system.

KEYWORDS

Gas pumping unit, artificial neural networks, discriminant analysis, statistical characteristics, diagnostic method, experimental data, algorithm.

Dielectric Properties of Pulsed Laser Deposited Nanoscale $CeNi_5$ Films

Daniela Todoran, Radu Todoran and Zsolt Szakacs

ABSTRACT

Electronic properties of pulsed laser deposited, nanoscale CeNi5 alloy layers, on a dielectric substrate are described using the complex dielectric function. This spectral behavior is studied separately for the real part ε1 (the dielectric constant or dielectric permittivity) and imaginary part ε2 (the dielectric loss function) of this function. The layers were obtained from grinded bulk powder [1] using short, modulated laser pulses [2]. The XRD pattern of the bulk was used for structural determinations and phase quality check. The absolute reflectance of the obtained alloy was determined at the 632.8 nm laser wavelength, of a liquid nitrogen cooled and stabilized He-Ne source, which. This value was further used to renormalize the relative differential reflectance spectroscopy measurements from the UV-Vis-NIR domain. The final absolute reflectance spectra, over the above-mentioned domain, was processed using the Krames-Kronig formalism [3, 4], so that the two parts of the complex dielectric function were computed. The behavior of the displayed spectral inflexion points, studied using appropriate theoretical considerations, explains the variation of the dielectric functions. This way one determined the electron energy density functions and the shape of the energy bands together with their variation with the layer thickness and deposition substrate.

KEYWORDS

$CeNi_5$ nanoscale films, UV-Vis-NIR specular reflectance spectroscopy, Kramers-Kronig formalism, electronic energy bands.

Dual Stator Winding Induction Generator System for Low Speed Wind Application

Sorin Ioan Deaconu, Feifei Bu, Marcel Topor, Lucian Nicolae Tutelea, Nicolae Muntean and Dan Hulea

ABSTRACT

The DSWIG scheme proposed in this paper uses an inverter with apparent power lower than the corresponding generator power. The expected ratio between the inverter power and the generator power is 50% in the case of DSWIG. This is similar to DFIG applications. The advantage of DSWIG is the lack of brushes. DSWIG can be used in variable speed applications. It is possible to extract low power even at low speeds, which cannot be obtained when the generator is directly connected to the grid, or when the generator has an inverter on the excitation winding and a diode bridge on the main winding. The DSWIG typology is an advantageous solution when it supplies unpretentious loads. The inverter on the main winding is used to transfer active power and also reactive power required for generator magnetization at low speeds, when the capacitor could not provide enough reactive power. Digital simulations and experimental results, in good correspondence, prove the validity of the theoretical considerations.

KEYWORDS

Wind energy, variable speed range, low speed, dual stator-winding induction generator.

Employment in Balkan Countries- Shortage or Excess of Employees

Mirjana Stojanovic-Trivanovic and Vesna Rodic

ABSTRACT

Many years after the war, in the majority of ex Yugoslavian countries, the main topic has been unemployment issue. Countries passed the process of transition from centrally regulated economy into market oriented one. Money, as one of the highly mobile factor of production, came into region throughout financial channels. Opposite to money, contemporary skills, knowledge and proper attitude of workforce and employer did not come in the same manner. Education of workforce, due to idle and obsolete education system and due to the lack of awareness of importance of these issue in general, created economical environment with shortage of skilled and adequately trained workforce. In the years, 2001 to 2017 it was obvious that certain expertise and workers training were missing at the market, while on the other side, Employment Offices in the countries were recording steadily increase of unemployed people.

Apart from mismatching of “supply and demand” of workforce, nobody paid attention to lack of knowledge and skill of “new owners of business”. Managerial skills of “new” owners of companies were not developed or supported by education or trainings, aiming to provide adequate human resource management skill. In Bosnia and Herzegovina, in last two years was recorded huge outflow of workers with various profile and educational level. Among other issues, three main reasons for this workforce mobility were disclosed: lack of political and social stability, low salaries level and mobbing or mistreatment by employer.

ESP8266 Based Effective Commercial Property Management System

Saša Salapura

ABSTRACT

In this paper we shall describe how to help people in commercial property management with answering the question: are hobby and DIY solutions based on inexpensive microcontrollers good enough and are they capable to manage the energy efficiency of commercial buildings. System is based on network of PIR movement sensors, door and window sensors, lights sensors and finally air quality sensors (temperature, humidity, dust or CO2) and cheap Wi-Fi microcontrollers. This embedded system will turn off the AC if the room is empty and the window is open or turn the light on after someone enter the room on poor daylight or turn off the light if the motion detector has not been activated for more than 15 minutes.

KEYWORDS

ESP826, Wi-Fi, commercial property management, Building Air Quality, building energy management.

Ethical-Political Paradigms and Political Deontology

Octavia Domide and Gherasim Solovestru Domide

ABSTRACT

One of the least researched, but important issues in the field of political sciences is the implication of social responsible policies in making and implementing public policies and which are the bases of the social responsibility issue.

There are some fundamental questions that are philosophical ones, but which represent part of the base of political theories. This are conceptual issues that reflects today society, and which is ought to be defined and researched. On the other side we may find normative issues that refers to the principle that form the fundament of the political constructions, the way in which the political society is grounded and justified.

A number of conceptual tools are suggested for the analysis of the relations between political and the other authorities that seek to govern economic activity, social life and individual conduct. Therefore, we will address some issues related to the improvement of institutions that transfer the theoretical principles into practice, being an area of interest between theoretical politics and practical politics, institutions implementing both principles and mechanisms through which politics serves the public interest.

In this paper we would reveal some classical ethical and political paradigms, which form the basis for a new paradigm, that comes to cover the shortcomings of the traditional paradigms and help to understand the new world, the changes, the crisis, the globalization process and the new responsibilities of the actors involved in all political actions. Thus, this will lead us to a political deontology, often encountered in practice in codes of ethics.

KEYWORDS

Social responsibility, ethical-political paradigms, political deontology, globalization.

Expansion of the Functionality of Automated Control Systems Based on Integrated PLC Web Servers

Mykola Nykolajchuk

ABSTRACT

The analysis of modern technologies for the construction of automated control systems (ACS) and ways to expand their functionality based on modern Internet technologies has been carried out. One of the ways to extend the functionality of the ASC is to use a WEB-server integrated into the PLC (Programmable Logic Controller). Especially useful is the use of integrated WEB-server PLC is during commissioning for flexible access to the PLC for visualization of data and processes, as well as diagnostic purposes. At the same time, it is economically feasible to use access mechanisms through the Intranet and Internet networks based on standard WEB browsers, like HTML or JavaScript.

A PLC-based WEB-server was developed using the AWP (Automation Web Programming) language, the commands of which are integrated into HTML files. AWP is supported by the Simatic S7 PLC WEB server and provides for reading and writing standard and special variables, defining array types, assigning variables for array types, creating blocks of fragment data, displaying PLC data in graphical form, creating and displaying graphical elements, displaying diagnostic information, PLC restart).

This technology supports two types of WEB-pages - standard (for displaying service and diagnostic information) and user (for access to technological data and control functions) with access through local and global information networks, including through mobile terminals.

The experience of using the technology in question has been tested in the development and operation of distributed automated process control systems by technological objects, which indicates the relevance of the tasks being solved, are formulated when building an automated control system with advanced functionality based on modern information technologies.

KEYWORDS

Automated control systems, PLC (Programmable Logic Controller), HTML (Hypertext Markup Language), JavaScript, Automation Web Programming (AWP), WEB-server.

Experience and Prospects of Innovation Development Venture Capital Financing

Uliana Andrusiv, Iryna Kinash, Anzhela Cherhata, Alla Polyanska, Oleh Dzoba, Tetiana Tarasova and Kira Spirodonova

ABSTRACT

The article aims at studying the theoretical basis and developing a methodological approach to assessing the development of urban infrastructure from the point of view of the use of venture capital.

The article explores the tendencies of the development of venture capital investments in the world. Particular attention is paid to comparing volumes of the formal market of venture capital investment in the EU and Ukraine. The emphasis is placed on the fact that venture capital is a way of targeted investment in innovative development and can become a catalyst for the introduction of innovative technologies. It is substantiated that science and education are a reliable segment for the diffusion of innovations. The best practices of Ukrainian universities on the commercialization of innovative developments and technology transfer in the domestic and foreign markets are presented. The creation of an innovative educational-production cluster based on the principles of public-private partnership in the form of a multilateral treaty union of state authorities and economic entities without unification of deposits is proposed.

The results of calculating the accumulative influence of the multiplicative effect from the development of urban infrastructure have been presented and the effectiveness of its influence on the development of the regions of Ukraine economy has been proved.

KEYWORDS

Venture capital investment, investments, innovation, region, cluster.

Experimental Research Based on Statistics, Aimed to Improve the Quality of the Parts Obtained Through Machining, at Some Consumer Goods

Liliana Dragan

ABSTRACT

The paper aims to carry out experimental research meant to increase the quality of some mass produced furniture items. In order for that to happen, a great number of size measurements have been done on beech and birch wood parts obtained through milling and drilling with numerically controlled machines. The experiment lasted for a week, with work being done in two shifts and with a volume of 300 parts per shift.

The experimental database was then processed and interpreted in line with the statistical analysis methods. Finally, conclusions regarding the measures that need to be taken in order to assure an accurate adjustment of the machine as well and an optimization of the production process were formulated.

Guidelines for Mitigating the Consequences of Functioning of Energy Systems

Jelena Malenović Nikolić, Goran Janaćković, Predrag Miodrag Živković, Dragana Dimitrijević Jovanović and Dejan Vasović

ABSTRACT

The paper describes the method to determine the locations of additional measuring points to determine the impact of the sulphur dioxide emission from the Kostolac B thermal power plant for different weather conditions. Concentrations in ambient air, for defined emissions, at a certain distance from the emitters are predicted. The aim is to determine the spread of combustion products in which sulfur dioxides appear in concentrations that are higher than the emission limit value. Measured values of the sulphur dioxide emission are mostly within the prescribed limits, which is a key reason for setting new measuring points and monitoring the spread of pollutants. Screen View software, based on the application of Gaussian model, enables the improvement of the environmental management process by predicting the value of concentration of pollutants in the ambient air. Applied model is suitable for determining the values of the expected maximum concentrations and locations where they occur.

KEYWORDS

Energy system, environment, pollution, monitoring.

Heat Exchangers

Predrag Miodrag Živković, Mladen Tomić and Mića Vukić

ABSTRACT

Heat exchangers are one of the most used and important devices in modern industry, as well as in residential sector. There is no ideal heat exchanger. As a result, there are many types of heat end mass exchangers. The design differs according to the capacity, temperature, pressure, type of work fluids and other factors. As several different types of heat exchangers can be used for same purpose, there is need for adequate choice. In this paper, design criteria, types, materials and usage of heat and mass exchangers is presented. Special attention was given to the most common – shell-and-tube heat exchangers and relatively novel – matrix heat exchangers, both thoroughly studied, experimentally and numerically.

KEYWORDS

Heat exchanger, design, shell-and-tube, matrix, experiment, numerical simulation.

Homogenization Heat Treatment Effects Over the Structure of 2724 Cast Aluminum Alloy Semiproducts

Aurica Pop and Gheorghe Iepure

ABSTRACT

This project showcases the effects of the homogenization treatments applied to 2724 cast aluminum alloy semi-products, as well as the results regarding the resistance and plasticity improvement of these semi-products. These results have proven the validity of the initial processing hypothesis, which states that certain modifications of the crystalline structure can lead to the improvement of the characteristics mentioned above.

A highly resistant 2724 aluminum alloy sample, representing the Al-Cu-Mg system, was used for this experiment. At a structural level, the alloy is made of aluminum based solid α solution grains and a series of binary, ternary or complex intermetallic phases that can either be soluble or insoluble. This type of alloy is mostly used in the machine building or aeronautics industry.

The results are according to the microstructural observations, the homogenization heat treatment effect leading to the removal of any chemical heterogeneity (dendritic segregation) and a balanced structure made of polyhedral crystals and a homogeneous dispersion throughout the whole mass of the alloy.

KEYWORDS

Homogenization heat treatment, cast semiproducts, chemical heterogeneity, aluminum alloy.

Impact of Social Marketing Strategy on a Small Organization in the Bakery Industry

Gabriel Rus and Adrian D. Pop

ABSTRACT

The fact that small enterprises in general and small business in bakery industries in special, are organized and lead by a particular style of management, based on own experience and very often intuition where financial resources to run a strong marketing campaign are limited brought to our attention the concept of social responsibility which offers the chance to all the organizations to become competitive by oriented their strategy on social enterprises or innovative ideas based on the market demands of social needs, so they can get the support they need from the local community.

In this article we analyzed an example of implementation of social marketing strategy done by a small organization from the bakery industry and we followed the grounds that the decision was based on, how this bakery decided to start a social marketing campaign, the steps during the implementation, the feedback from the local community on this initiative and the impact and results of this actions. All factors were analyzed in direct relation with the financial implications of the project and the capacity of small organizations to implement social marketing strategies at this level.

This highlights the major results for the business when adopting this type of social concept. The analysis led to a significant improvement in the business profitability as well as the increase of the brand awareness in the community. This is why, the authors appreciates that the present study can be the basis for future studies of small organizations in various areas of work as guidance and best practice examples of successful implementation of social responsibility strategies.

KEYWORDS

Local development, social responsibility, small organization, competitiveness, bakery industry.

Improving the Metrographic Method for Diagnosing the Technical Condition of Sucker-Rod Pumping Units

Leonid Zamikhovskiy and Andrii Romanyuk

ABSTRACT

The development of modern process control systems for mechanized oil production using sucker-rod pumping units (SRPU), in particular during periodic well operation, requires information not only on the parameters of the reservoir, well and operation mode, but also the technical condition of surface and underground equipment.

On the basis of the analysis carried out on the well-known dynamometric and wattrographic methods of diagnosing the SRPU, it was shown that the most promising of them is the wattrographic. It allows you to monitor the technical condition of the pumping unit, in particular, using the wattmetrogram, the balance of the pumping unit and its efficiency can be calculated, and analyzing the spectrum of the power meter allows you to determine vibration and shock loads, which allows you to diagnose defects in the gearbox and bearings of the pumping unit. The method makes it possible to diagnose also the breakage of belts and rods.

The possibility of using the Sinamics G 120 frequency converter, which is a functional component of the WEB-oriented control system is considered as a power sensor for the implementation of the atmetrographic method. The frequency converter Sinamics G 120 allows you to get arrays of instantaneous values of current and voltage, as well as parameters such as active, reactive and total power, power factor, effective values of currents and voltages for each phase.

The developed method of mathematical processing of metthological paper is given, which forms the basis of the improved metascic method of diagnosing SRPU. The initial data for the analysis of the metro is the arrays of instantaneous values of active power for one period of the beginning of the SRPU. The procedure for processing metastrogram for diagnosing defects in bearings, gears, rocking machine and other defects is shown.

KEYWORDS

Sucker rod pumping unit, measuring method, frequency converter, diagnosing, technique, defect.

Increasing Die Performance in the Extrusion Process of High Strength Aluminum Alloys

Vasile Hotea and Jozsef Juhasz

ABSTRACT

The paper approach some aspects of die design in various shape extrusion is quite complex and it is influenced by a variety of factors, which lead to increased mold performance in the extrusion process of high strength aluminum alloys. The analysis and the Solidworks computer program were used to analyze the extrusion of the shape from high strength aluminum alloys. The results indicate that the predicted values agree qualitatively with the available data. The design and making the die are the most important and demanding aspects of the entire extrusion process.

KEYWORDS

High strength aluminum alloy, extrusion, die, Solidworks Design.

Individualization of companies in legal transactions

Brana Komljenovic

ABSTRACT

Companies are market participants and as such have a justified interest in achieving business reputation or image through their attributes. It is very important that the individuality of companies is differentiated on the market for future business partners as users of their services or in the purchase of products. Therefore, the attributes are of multiple significance: for the realization of business interests of the company, in order to realize the interests of consumers and their protection, achieving and achieving legal certainty in the market, and ultimately to provide wider social interests. Business individuality in the market is realized by every business company through the following mandatory attributes:

1. Name of the company

2. Activities (business subject)

3. President of the company

4. National affiliation

5. A unique identification number or ID number.

Optional attributes include other labels in order to better distinguish on the market, which are commodity and service marks, patterns and models.

Obligatory (legal) elements of the company:

- designation under which it is specifying the name (business name) of the company (e.g., Moses - tours),

- a label which directly indicates the activity of the company (betonara),

- labeling headquarters of the company (with the addition of address)

- designation of the form of a company.

KEYWORDS

Companies, Name, Address, Subject, Law.

Influence of Digital Transformation on the Customer Relationship

Sarah Hahn, Ovidiu Cosma, Cristian Barz and Claudius Klaus Jalba

ABSTRACT

The importance of digital technologies is continuously increasing for the customers and thereby also for the companies. Examples for the digital transformation are the usage of smartphones and other gadgets as well as social media channels as Twitter and Facebook. The changing behavior of the customers has also impact of the relationship between a customer and a company.

For adapting the clients' care regarding to the alteration the changed attitude itself has to be understood. Therefore, the customer behavior without digital technologies is compared to the one influenced by the digital transformation and differences are accentuated. Following it is pointed out how to deal with this differences in the customer relationship. Also, the question will be answered what the consequences are if notwithstanding the digital transformation the marketing strategy is not changed.

KEYWORDS

Digital technologies, digital transformation, social media, customer relationship, marketing strategy.

Influence of Green Living Roof on Urban Stormwater Management

Dragana Dimitrijević Jovanović, Predrag Živković, Jelena Janevski, Petar Cajić and Dejan Jovanović

ABSTRACT

The combined effects of climate change and rapid urbanization inflict a higher risk of flooding in urban areas. Urban storm water runoff results from rain, snow, sleet and other precipitation that lands on surfaces, such as roofs, parking lots, streets, sidewalks, and green infrastructure. Impervious surfaces are recognized as a major problem in many dense urban areas that contribute to the urban storm water runoff. For many cities dealing with sewer overflow problems, storm water runoff reduction, often by 50% or more relative to impervious surfaces, is a crucial service that green living roofs can provide.

This review paper presents the important role that the green living roof can play in the dense urban areas regarding the storm water management showing the seasonal trend in green roof hydrologic performance.

KEYWORDS

Green roofs, runoff, water retention.

Innovative Approaches in Medical Robotics

Calin Liviu Vaida

ABSTRACT

Robotics has slowly entered every domain where progress-imposed activities/ actions that were beyond the natural capabilities of humans. The most relevant example in this sense is the industry with all its branches where the higher and higher level of quality and output capacity have imposed the use of specialized devices that could perform faster and more reliable.

However, there are other fields of work, where classical industrial robots cannot be integrated, imposing the development of personalized, dedicated solution which would fit perfectly a certain task. Such case is the medical field where, especially when talking about direct interaction between the robot and the patient, the robot will never act based on pre-defined programs but rather as an advanced, highly capable, accurate and safe human controlled device.

Making a generic comparison between an industrial manufacturing process where robots have been introduced to increase the productivity and thus the financial efficiency, in medicine the main purpose of a robotic device is to improve the quality of life for the patient. One of the most difficult tasks is to properly identify the medical areas where the need of robotics is most dire and then, to find development solutions that will lead towards efficient medical outcomes.

One of the major changes with multiple implications in the field of healthcare is represented by the demographic changes of the population. More specifically, Europe is facing an increase of the life expectancy whereas, if in 2008 the population aged over 65 represented something around 17% this will increase to over 30% by 2060 while the population aged over 80 will shift from 4.4% to over 12% (EUROSTAT projections). Even on national level, a comparison between the last two demographic evaluations there is a reported increase of over 20% of the elderly population (aged over 60).

While it is clear that the elderly population has a greater tendency towards different medical conditions, the healthcare system will slowly become incapable of providing proper care for all the patients, while aiming towards a continuous increase of the life quality. On the positive side, some of the existing studies have already raised these issues and solutions are thought to prepare the society for the future.

The European Commission through the Eurobotics AIBSL forum has identified three major areas of interest where robotics would play an important role in medicine:

Clinical robotics: robotic systems that interact directly with the patient supporting the “care” and “cure” processes.

Rehabilitation: robotic system that would interact with the patient in order to enhance a recovery process or act as a replacement for a lost function.

Assistive robotics: refer to secondary aspects related to the medical process, providing assistance to the healthcare givers of the patients.

KEYWORDS

Robotic systems, Clinical robotics, Rehabilitation, Assistive robotics.

Innovative Approaches to the Formation of Environmental Safety at the Objects of Oil and Gas Production

Lesya Shkitsa, Teodoziya Yatsyshyn, Mikhaylo Lyakh and Olga Sydorenko

ABSTRACT

In order to solve the problem of environmental safety improvement and the effectiveness of flushing out of well that are being drilled a modernized scheme of drilling rig pumping-circulatory system has been designed. System approach of modernizing separate elements of pumping-circulatory system has been used. The maximum air-tight pumping-circulatory drilling rig system has been designed. While doing this the transportability, ease of assembly, ease of operation of the system had been taken into account. The most of attention was paid to designing the tanks for mud and chemical reagents storage. The offered pumping-circulatory system effectively prevents and reduces the evaporation of the mud containing hazardous substances at different sections of pumping-circulatory system while conducting different technological operations during the process of drilling and also increases the level of radiation safety.

There are separate sections that do not include the advanced pump-circulation system of the drilling rig. These include: the surface of drill pipes raised from the well, moistened with drilling mud and equipment for cleaning the solution from the harvested rock. Using a device of a new design for cleaning the surface of drill pipes from the drilling mud and partially sealed devices for cleaning the drilling mud from the harvested rock have been proposed. Such an approach will avoid the entry harmful substances into the environment and prevent harmful effects of aggressive substances on health personnel of drilling rig.

KEYWORDS:

Environmental safety, oil and gas wells, pumping-circulatory system, rubber-textile reservoirs, mud.

Insurance Broker – risk Manager in the Industrial Field

Gherasim Solovestru Domide

ABSTRACT

The industrial field, like any other domains, come under several risks. The most common risk in this area is the risk of damage. This sort of risks is best quantified by technical specialists in each field. They come with technical solutions for damage risk, but the risks have an economic component too. Damage and economic losses caused by industrial breakdowns must be covered financially.

The best insurance specialist for assessing the financial coverage of the risk damage is the insurance broker. This is a risk adviser for the company's managers.

KEYWORDS

Insurance broker, risk manager, insurance policy

Instruments for Project-Based Learning and Innovative Activities

Lesya Shkitsa and Volodymyr Kornuta

ABSTRACT

Implementation of a project-based learning model in the higher education institution allots a task of coordination of the subject-oriented and project-oriented management of the educational process. The purpose of the paper is the development of the aspects of activity management of the institution of higher education to attract students to scientific and innovative activities within the educational process and the performance of qualifying works.

It has been proposed to create the Center of innovation development at the University. The Center will provide the functioning of the information and reference system. The system includes the following modules: registration of tasks; formation of project groups; organization of the distribution of time and material resources during the implementation of a specific project and between projects; an electronic directory of implemented projects and a database of documents for the verification of project results.

This model of work allows the creation of associations, including the transboundary ones, between different universities depending on the scope of tasks and the level of opportunities in the implementation of solutions.

The main approach in the activity management is to use the tools of lean methods of project development.

A methodology for activity analysis and generating a set of organizational and management documents' templates, which need to be brought into being to ensure the functioning of the proposed system within the framework of the University's activities, has been developed.

KEYWORDS

Technical education, innovation development, student project groups, activity management.

Investigation of Heating Caused by AC Current Inside Conductor

Karolina Kasas Lazetic, Gorana Mijatovic, Dejana Herceg and Miroslav Prsa

ABSTRACT

The heating process inside a conductor, produced by the AC current Joule losses is very complex, because of the numerous parameters acting at the same time. For this reason, the experimental verification of calculated results would be welcome and this paper presents an attempt of temperature measurement procedure.

First of all, in the laboratories at the Faculty of Technical Sciences in Novi Sad, the appropriate, accurate equipment for temperature measurements does not exist. Hence, the wide range, accurate thermometer should be constructed. Starting with the completely unknown temperature probe, its characteristics were determined. It was found that the probe is based on a NTC resistor and its resistance as the function of temperature was measured and calculated.

After that, the NTC probe was applied to measure the time dependent temperature for four different wires; Cu 4 mm2, Cu 6 mm2, Cu 10 mm2 and Al 7.8 mm2. The measurements were performed during 30 minutes and for each wire ten different currents were applied. The measuring results (the resistances) were transferred into the desired results (temperature), applying 1D data interpolation, spline method, called “interp1” in MATLAB. The results are presented graphically, by the time varying conductor’s temperature, depending on time, for 10 different current values as the parameters. Because of the wire’s heating at higher current values, the wire’s resistivity varied significantly and it was difficult to keep the constant current value during the entire measuring intervals. For this reason, an error occurs at the highest temperature values and it is visible in all presented diagrams.

KEYWORDS

Unknown temperature probe, Probe characteristics, Temperature measurements, Interpolation of measuring results.

Kinetics of Drying in a Tunnel Dryer for Fruits and Herbs

Mirko Dobrnjac, Predrag Živković and Sanja Dobrnjac

ABSTRACT

Drying is one of the most important operations in the food and processing industry, primarily because of maintaining the quality of foods intended for storage and use over a longer period of time. Therefore, this process is justifiable to use wherever possible, and most often for drying fruits, vegetables, medicinal herbs, etc. The process of drying wet materials is a technological process, or more precisely, a set of heat and substance transfer processes, which is followed by structural-mechanics, and in some cases, chemical changes of the drying material. A well-conducted drying operation determines not only the quality of the finished product, but also the technical and economic parameters of production. In this paper, on the example of a tunnel dryer for raw plum, the calculations of the heat and material balance in the drying process are presented. These types of calculations, with the obtained experimental data, provide the basis for analysis, constructive improvement and modernization of tunnel dryers. This ultimately leads to the best technical and economic indicators, not just the drying process, but also the complete processing of the raw material.

KEYWORDS

Tunnel dryer, drying plums, humid air.

Methodological Approach to Counseling in Social Work

Călăuz Adriana Florentina

ABSTRACT

The galloping evolution of contemporary society, the abundance of information under its many forms, brings the man in the middle of a personal chaos in which he feels more and more lonely. In a lecture on the so called New Age concept, a journalist described the man in a way that reminded me: he one feels one, another does something else and he says something else.

The loneliness of man has become like an island in an ocean of ignorance, of orienting its own values to what is material, visible, measurable in daily comfort on the background of the survival in a society where you ask for help is equivalent to receiving the label of "poor," "handicapped", "drugged", " delinquent " and other adjectives that even deepen the wound, throwing you in the power of impotence.

In a Romania that, after the 1989 revolution, who had to reorganize the social work system and align it with the European standards of the developed countries, there is now a need to adapt our counseling methods to our cultural specificities.

In this article, I will address the following issues: methodological explanations and precautions of social work counseling, myths about counseling, the counseling process. The practical part consists of a series of counseling meetings, in a theoretically explained order, before the actual sessions are held.

KEYWORDS

Counseling, process, method, client, social work.

Methods for Control of Turbidity of River Waters

Leonid Zamikhovskiy, Svitlana Petriv and Olena Zamikhovskaya

ABSTRACT

Measuring the turbidity of water is an important step in testing its quality, since it is one of the methods for determining whether it is safe to use. Today, there are many methods for measuring the turbidity of water, some of them are designed specifically for regular research, others are used to monitor the quality of water associated with the use of process control.

The paper discusses the method of monitoring turbidity of river water at the water intake of the utility enterprise (KP) “Ivano-Frankivsk Water-Eotechprom” using the sensor of turbidity developed as a component of the distributed (WEB-oriented) water turbidity monitoring system. The system automatically shuts off the flow of river water for purification with a sharp increase in water turbidity. The development of the technique is due to the complex topography of the Bystritsa Nadvornyanskaya river bank, which is why water is forced into the turbidity sensor using a centrifugal pump to a distance of 150 m, which introduces a significant error in the results of turbidity measurement.

The experimental stand on which the process of supplying water to the turbidity sensor is modeled is considered, the choice of parameters is justified (geometric - length and diameter of the pipeline, distance from the sensor to the centrifugal pump; and technological - rotational speed of the pump, installation in the sensor and after the turbidity sensor, etc.) that affect the measurement results, as well as the methodology for conducting experimental studies.

The obtained results are presented, which form the basis of the method for monitoring the turbidity of river water, which is implemented in the developed system for monitoring the turbidity of water for the utility company Ivano-Frankivsk Water and Ecotechprom.

KEYWORDS

Turbidity sensor, methodology, experimental stand, monitoring, system.

Milling Convex Surfaces with Toroidal Cutting Edge

Andrei Raul Oșan, Marius Cosma and Vasile Năsui

ABSTRACT

The toroidal cutting edge, also called corner cutter, is a combination of the cylindrical-frontal milling cutter and the spherical head milling. The paper follows at generating the optimal trajectory for making the finished product with the toroidal cutting edge without having to use the flat end mill and the ball nose end mill. This trajectory is accomplished using a CAM (Computer Aided Manufacturing) program that is generated on a 3D model. The proposed method was experimentally verified on a 3-axis numerical control center, making a roughness comparison according to the climb milling or conventional milling.

Multicriteria Modeling with the AHP and FAHP Methods

Adela Berdie, Adeline Berdie, Sorin Jitian, Mihaela Osaci and Cristian Barz

ABSTRACT

In order to solve complex decision-making problems, MCDM has recently known a fast development. One of the main differences between the decision models consists in the way of evaluating the numeric and the non-numeric data that interfere while solving a problem. If the number of the criteria is not high and the evaluation contains both quantitative and qualitative data, an analysis way is necessary to make a successful decision. The analytical hierarchy process (AHP) is one the best ways to decide between the complex criteria structure of the different levels. Fuzzy AHP is a synthetic extension of the classical AHP method when considering the fuzziness, the decision factor. This paper proposes to use the combination of the two methods AHP and FAHP for solving the multi-criteria evaluation problems and making a decision regarding the selection of the best technology for the achievement of a web application on the SAP NetWeaver platform.

KEYWORDS

MCDM, AHP, FAHP, SAP NetWeaver.

Network Control of Simatic S7-1200 PLCs for Industrial Processes

Cristian Barz, Tihomir Latinovic, Paul Petrica Pop, Adina Pop-Vadean, Sinisa Dragutinovic and Felicia Dragan

ABSTRACT

The paper presents different types of controlling and monitoring an industrial process through web interface, depending on the connection types made by PLC or HMI used in the process. We can control the industrial processes through HMI interface directly on the web or phone if we use a Weintek HMI in connection with a SIEMENS PLC for manipulating

The possibility to control the SIEMENS PLC S7-1200 is also given by an internal Web server which requires to create an HTML interface and different levels of security for users. Web interfaces are more necessary in controlling and monitoring different processes for future development in IoT structure.

KEYWORDS

PLC; SIEMENS; industrial process, HMI, network control.

New Structures of Collaboration Between Universities and Industry Involved in Cluster Evolution in the Case of Romania

Dinu Stoicovici, Mihai Bănică and Miorita Ungureanu

ABSTRACT

During research of emergence and evolution of clusters in the particular case of Romania, it was noted the importance of a innovation systems of processes structure that is superposed from the very beginning on the structure of clusters, comprising also universities and research and design institutes. Considerations are made regarding the overlapping modes of these infrastructures. Also are inventoried constituents of this model, the actions that can be considered as well as the modalities of interaction between all these elements. To be able to simulate the effect of the technological transfer on the clusters and innovation systems of processes, one should take into account factors of positive or negative influence on assimilation of new technologies. It is suggested that events should also be considered in terms of the importance of random decisions taken by individuals as independent entities, that cannot be restricted. Only in this respect the events are considered according to the real, incidental aspect.

On Jerk in the Kinematic Study of the Rigid Body

Ioana Craciun and Miorita Ungureanu

ABSTRACT

Jerk, as the derivative of acceleration, is used more and more in the kinematic study of the systems characterised by short travels and requiring a high precision of positioning, including elevators, CNC machine tools, and industrial robots. The acceleration modeling using jerk variation serve as a basis for generating the functioning tahogrames of the mechanical systems. Since peak values of jerk and acceleration are closely connected to safety, and also to comfort in the mechanical systems where human presence is involved, a study concerning the positions of the systems where these values are reached will be performed in this paper. The position vector of the points where peak values of jerk are reached will be determined. Spatial motion as well as the particular motions of the rigid body (translation movement, rotation around a fixed axis, helical movement, the motion of planar mechanisms, spherical motion) will be considered. Since positioning is an important aim for the industrial robots, jerk variation in the various points of the robot's parts may provide important informations about peak values of acceleration, as well as about inertial forces involved in positioning. Also jerk is currently used in speed modeling of elevators and robots, a study considering the positions corresponding to peak values of acceleration has not yet been performed.

KEYWORDS

Kinematics, acceleration, jerk, rigid body.

Optimization of Aluminum Structures Using the FEA Method

Horia Ciobanu

ABSTRACT

As a request of a partner and subject of a research contract, this paper intend to present different stages of studies regarding the behavior of some Aluminum structures under different types of loads. Starting from existing examples, a company from aerospace industry intended to produce similar products but at a larger scale. On a virtual product created in a CAD environment and using a FEA method is possible to optimize Aluminum structures and to apply the conclusions and results given by FEA reports to the real products. Tests made on manufactured structures validate the findings of these studies.

KEYWORDS

FEA method, Aluminum structures, CAD.

Optimization and innovation of gas meters

Costel Ieremie Breban and Nicolae Ungureanu

ABSTRACT

This paper presents the current situation of gas meters in Romania, analyzing types of gas meters and also proposing new methods of optimization for that equipment, as finally to be able to achieve and optimize readings of gas meters with an increased safety against gas theft.

KEYWORDS

Gas meter, optimize, innovation.

Optimization of Reading Process and Data Processing on Gas Consumption

Costel Ieremie Breban and Raul Florentin Drenta

ABSTRACT

This paper wants to present the current status of the reading process and data processing on gas consumption and to present some methods that involves optimization for the mentioned processes.

KEYWORDS

Gas meter, optimize, reading, billing.

Phases of Mobbing

Vesna Rodic, Brana Komljenovic, Mihaela Popa and Mihaela Anamaria Lihet

ABSTRACT

According to Leyman, mobbing has 5 development phases:

1) Conflict - As a potential basis of mobbing, there is an unresolved conflict among associates, which ultimately results in a disorder in interpersonal relations. The original conflict is soon forgotten, and the remaining aggressive tendencies are directed towards the chosen person.

2) Aggressive Behavior - Pushed aggression escalates into a psychotherapist. In the whirlwind of intrigues, humiliation, threats and psychological abuse and torture the victim loses his professional and human dignity and begins to feel and becomes a less valuable subject who loses his reputation, support, and voting rights in his working environment.

3) Involvement of management - In this phase of mobbing involves management. Unfortunately, management generally misjudges the situation. Management instead of providing support to the victim begins the isolation of the victim or denies the problem of the mobbing victim.

4) Stigmatization of the victim - At this stage the victim is already characterized as "severe" or even "mentally disturbed" person. It becomes a "duty culprit" for all omissions in a work organization. The fourth phase is characteristic of the desperate "survival struggle" of the victim, where burnout at work occurs at the time, chronic burnout syndrome, psychosomatic or depressive disorders.

5) Exclusion of the victim from the workplace - After many years of exposure to terror, the victim suffers from chronic illness, disorder, eventually voluntarily or forcedly leaving work or even attempting self-service.

KEYWORDS

Mobbing, Conflict, Aggressive Behavior, Involvement of management, Stigmatization.

Reactive Power Consumption Analysis of a Medium Sized Factory

Olivian Chiver, Liviu Neamt, Cristian Barz, Eleonora Pop and Zoltan Erdei

ABSTRACT

The paper achieves a study on the reactive power consumption in case of a medium sized factory. The factories as others industrial consumers usually have the power factor lower than the neutral one, which in Romania is 0.92; that is why these types of consumers have to pay for reactive power. The reason for the power factor is small (sometimes much lower than the neutral) is not always just because of inductive receptors (as transformers, induction motors, induction furnaces, etc.) but also due to some technical-organizational issues. Many of these issues could have been avoided if more attention had been paid to the proposals made by the power installations designer in the design stage and it would not have been considered only the aspect of investment costs, which, though not decreased very much, provoke much more operating costs. This paper will emphasize these features that cause additional costs with reactive power for a medium sized factory who has more substations with two transformers in each of them. It also proposes, after an analysis of the current situation, technical-organizational solutions to minimize the reactive power consumption.

KEYWORDS

Reactive power, neutral power factor, industrial consumer.

Regarding the Difficulties of Contaminated Site Management in Romania

Gilbert Taro and Mirela Coman

ABSTRACT

The nature of impact of human activities over the environment can be various and depending of many implied factors, as the intensity, period and the toxicity of the involved materials. The concept of ecological restoration is relatively new in the dictionary of the environmental protection field of activity and implicitly the regulations regarding this field are in the beginning. Lately, at global level and in the European Union a growing interest is observable regarding the inventory and finding economically and technically viable solutions of solving the problem of the contaminated sites. This process involves at first a revolution in the field of regulations on which our country must line up to. In our country an endeavour was made to manage these sites, but the legal instruments involved in the process were limited and without any real results. The paper identifies a set of instruments implied at global level regarding the management of contaminated sites, the EU legal instruments and the struggle of alignment of the local regulations to the global tendencies.

KEYWORDS

Ecological restoration, contaminated site management.

Relevant Aspects of the Responsibilities in International Projects Management

Anamaria Dăscălescu and Miorița Ungureanu

ABSTRACT

Usually, the international Projects are of greater importance and with greater founding than national projects, involve multiple partners from different countries and are subject of nationals and international controls. The paper underline responsibilities of the management team both to the Project Contract and to the national laws requirements, responsibilities for managing human resources, time and costs. For a successful Project implementation, the same importance should be given to communication, visibility and dissemination rules as well as reports quality. Major importance is granted to the quality of Project results.

Research of Quantitative Indicators of the Solar Energy Potential in the Carpathian Region of Ukraine

Oleg Mandryk, Nataliya Moskalchuk, Liudmyla Arkhypova, Mykola Prykhodko and Olena Pobigun

ABSTRACT

The paper presents the results of theoretical research of the solar energy resource potential calculated by different methods for administrative areas of the Carpathian region. The advanced methodology of the estimation of the solar power plants influence on the natural environment is proposed, which deals with the determination of the significance of the residual effects of renewable energy on the environment and is carried out after screening and mitigation measures and is based on the three identified parameters of influence: spatial, temporal and intensity of influence. The results of statistical analysis of observational data of meteorological stations within the studied region are presented. The results of experiments showed the power generation dependency by photovoltaic panels from meteorological elements of weather conditions. It is proved that the amount of received energy significantly depends on the cloudiness and air humidity. At the same time, it has no direct dependence on atmospheric pressure and wind speed indices. The paper presents the results of the cartographic processing of quantitative indicators of the potential of solar energy for the arrangement of the objects providing renewable energy in the Carpathian region of Ukraine.

KEYWORDS

Solar energy, estimation of the influence, Carpathian region.

Research on the Behaviour of the Metallic Material in the Draw-Plate While Drawing the Wire

Elena Pop

ABSTRACT

This research introduces the theoretical and experimental study of the plastic deformation through drawing of the copper wire, the presentation of the microstructures resulting after each drawing, certain possible flaws which occur within this plastic deformation process and the conclusions on the grains` flip-over and elongation. During the drawing process, the metallic material undergoes some important transformations in the draw-plate. The equiaxed grains are compressed in transversal direction and elongated in the drawing direction. The wire drawn is hardened due to the elongation of the grains and due to the development of a substructure of dislocations in the deformation grains. The theoretical presentation of the topics in discussion is then followed by a calculation of the reduction and the Δ parameter which causes less unused deformation energy if it is low value, limits the hardening of the wire and allows the possible execution of a higher total reduction between two annealing processes. A smaller angle for the drawing favours the coating of the lubricant and lengthens the contact area. Thus, a better cooling is obtained for the wire – draw-plate interface and the lubricant film is more stable.

KEYWORDS

Plastic deformation, elongation wire.

Research on the Integration of Systemic Thinking Applied Technical Field

Paul Petrica Pop, Adina Pop-Vadean, Cristian Barz and Tihomir Latinovic

ABSTRACT

Technical needs a permanent revision of thinking and orientation of a restructuring of how to integrate its components to keep up with the demands of the information society. Systems thinking provides for technical field models that make it more dynamic and oriented for interconnection, information and interchange. Our approaches will bring together these two areas of research in science and technology through theoretical considerations and practical applications. We hope that our article will open a window to new ideas and it will be a part of new approaches.

KEYWORDS

Systemic, thinking, integrate, mechatronic, information, interconnection, interchange.

Research on Variation of the Main Geometric and Functional Parameters at the Bistable Fluidic Amplifier with Jets of Different Physical Type

Adriana Cotetiu and Radu Cotetiu

ABSTRACT

The paper presents the theoretical research regarding the variation of the geometrical and functional parameters at the fluidic device which operates based on Coanda effect. The experimentally tested bistable fluidic element is a special device with incompressible fluid as supply jet and compressible fluid as command jet recommended for automatic adjustment systems of the injection water pressure and automatic adjustment of the advance force at the pneumatic rotating machines, used in industry. The paper is focused on the presenting of several relations based on the system's analytical model, as well as in the graphical study of variation of the main geometrical and functional parameters allowed by these.

KEYWORDS

Bistable fluidic element, supply and command jet, attachment length, wall angle, pressure in the separation bubble.

S-Parameters Utilization for Analysis of High Frequency Analogue Two-Port Circuits

Erdei Zoltan, Mihai Iordache, Dragoș Niculae, Cristian Barz and Alexandru Grib

ABSTRACT

This study, using the theory of electric circuits, shows the right definition of scattering parameters (S-parameters) for any two-port electric circuit and the practical way to use these parameters in streamline the processes of information transmission and propagation, and the transfer of the active power from the electric quadrupole input (output) to their output (input). Starting from the correct definition of S-parameters, their calculation is performed automatically. Passive linear circuits in harmonic regime can be described by a certain number of equivalent circuit parameters, like transfer coefficients matrix (fundamental) T, impedances matrix Z, admittances matrix Y and S-parameters matrix S. In this study are presented the relations that permit the transition from a matrix to another one. To generate the reflection coefficients, input and output impedances, active power transmission efficiency from input to output (from output to input), signal transmission efficiency, S, T, Z and Y matrices, and Smith charts, there are developed specific routines in MATLAB and there have been used the current subroutines from MATLAB microwave toolbox. S-parameters variations by frequency have been presented graphically and on the Smith chart. The results obtained through simulation processes have been compared with the ones presented in the specialty literature and with the experiments results, calculated deviations being less than 5%.

Secondary prevention of mobing

Vesna Rodic, Brana Komljenovic

ABSTRACT

When mobbing has already begun, it may be difficult to keep it under control if immediate action is not taken. Trusted advisers and mediators can play a very important role.

To intervene early, the supervisor must be able to read the first signs of mobbing process in development. Top management can be to appoint one or more persons in the organization, where employees according to which place mobbing activities can turn to for advice. It is important that the management top of the company authorize one person, which would enable it to become active in one case.

Case studies so far have shown very clearly that inactivity at these levels also includes a supervisor who is very unsure of his organizational role in such a conflict. Company policy should also provide clear information about it.

KEYWORDS

Mobbing, Prevention, Advisor, Mediator, Supervisor.

Seeds Germination Under Copper Stress

Stela-Gabriela Jelea, Marian Jelea, Oana-Corina Jelea, Lucia Mihalescu and Zorica Voşgan

ABSTRACT

Copper sulphate is used as an antifungal agent. Long-term applied fungicides allow the accumulation of copper in soil. This metal pollution is a problem when it enters in the food chains. In this study we investigated the effects of CuSO4 x 5H20 at different concentrations (0.05g/L; 0.1g/L; 0.5 g/L; 1 g/L) on seeds germination. The experiments have been carried out on two species Triticum aestivum L and Lactuca sativa L. For each variant, we used two replications (each with 30 seeds). The process of germination was determined by means of the indicators that are considered representative in the specialty literature. In the study we have demonstrated that treatments with minimal concentration (0.05g/L and 0.1 g/L) stimulate the germination energy and germination capacity. Instead, the treatment of seeds with 0.5g/L and 1 g/L copper sulphate affected the process of germination. The stress produced by the concentration 1 g/L copper sulphate determined a strong inhibition of the plants growing. The inhibitory effect of heavy metals on seeds germination is in correlation with the species and with the concentration of heavy metals. Copper is necessary for the development of plants, but at high concentrations it is extremely toxic.

KEYWORDS

Copper, toxicity tests, seeds.

Simplifying and Improving Student Knowledge Through Artificial Intelligence

Marius Calin Benea

ABSTRACT

The Artificial Intelligence will be to the human brain what the backhoe was by hand. The great intellectual professions will all be impacted, which will free the human brain for more imagination. All the leaders of higher education establishments - engineering or business school, are facing two great challenges of artificial intelligence (AI). It is not only a powerful lever for transforming teaching methods and teaching practices, but it is also a fantastic transformator of the trades that their various schools are preparing for. In short, Artificial Intelligence finds itself propelled at the highest level of strategic concerns. In short, the Artificial Intelligence is propelled to the highest level of strategic concerns the AI is propelled to the highest level of strategic concerns. With quite different levels of awareness. The analysis of this true revolution is varied. So, a two-dimensional disruption? For some it is obvious, for others a chimera. Certainty: it will be cleavable, as it will be greedy for financial resources. It will therefore create even more gap between schools. At the risk of widening the gap with universities.

KEYWORDS

Student, knowledge, artificial intelligence.

Social Policies of Labour Force Reconversion in Order to Protect the Environment

Octavia Domide and Gherasim Solovestru Domide

ABSTRACT

The mining industry in Maramureș area was an important factor of economic and social progress in this zone.

The gradual reduction of th mine activity, until its actual shutdown, has caused disturbances in the economic and social field. This type of industry was, and it continue to be, even in inactivity periods, a pollutant factor.

Protecting the environment is an objectiv to be taken into consideration cross-borders, from local to national and, certainly, to the global level. The national policies of labour force reconversion and retraining are needed in former industrial areas, where mines or factories have been closed.

There where pollutant industries had developed, all actions which are protecting the environment are useful and required.

If the steps of retraining the labor force that worked in polluting industries are taken in order to improve the economic activities which includes environmental protection, it will be an advantage for the sustainable development of the local and the national community.

KEYWORDS

Labor force reconversion, environmental protection, polluting industries.

Some aspects of environmental assessment of renewable energy sources in the Carpathian region of Ukraine

Oleg Mandryk, Nataliya Moskalchuk, Liudmyla Arkhypova, Mykola Prykhodko and Olena Pobigun

ABSTRACT

The paper presents the results of theoretical research on the resource potential of solar energy calculated by different methods for administrative areas of the Carpathian region; The advanced methodology of the estimation of the influence of solar power plants on the natural environment is proposed, which concerns the determination of the significance of the residual effects of renewable energy on the environment and is carried out after screening and mitigation measures and is based on the three identified parameters of influence: spatial, temporal and intensity of influence. The results of statistical analysis of observational data of meteorological stations of the studied region are presented. The results of experiments that study are dependent on power generation by photovoltaic panels from meteorological elements of weather conditions; It is proved that the amount of energy received significantly depends on the cloudiness and air humidity. At the same time, it has no direct dependence on atmospheric pressure and wind speed indices. The paper presents the results of the cartographic processing of quantitative indicators of the potential of solar energy for the arrangement of the objects providing renewable energy in the Carpathian region of Ukraine.

KEYWORDS

Renewable energy sources; environment; estimation of the influence.

Study of the Combustion Chamber of a Gas Pumping Unit from the Point of View of Monitoring Its Ecological and Technical State

Leonid Zamikhovskiy, Oleksandra Mirzoieva and Sergii Zikratii

ABSTRACT

The efficiency of operation of gas pumping units (HPA) is characterized both by their technological parameters and the technical state of HPA as a whole. If a number of methods and technical means for their implementation have been developed to control the technical condition of the main units of HPA (power bearing elements, blades, piping, etc.), then this important unit of HPA does not pay much attention to the combustion chamber. At the same time, the technical condition of the combustion chamber determines not only the efficiency of HPA operation, but also leads to environmental pollution by its exhaust gases, which contain harmful substances. In this connection, the task of studying the HPA combustion chamber from the point of view of monitoring its ecological and technical state is relevant. To solve this problem, we analyzed the results of heat engineering, vibration, and environmental-technical surveys of various types of HPA and with different periods of operating time at the Prikarpattransgaz Group of Mines over the past five years. The work presents the obtained results, in particular, on the concentration of harmful emissions in exhaust gases containing O2, CO2, CO, NO2, NO2, and also NOx (in eq. NO2), which make it possible to substantiate their quantitative and qualitative composition. It has been established that the most harmful emissions from the operation of compressor stations are carbon oxides (53%) and nitrogen oxides (24.5%). The dependences of changes in the technical state of the combustion chamber on the quantitative and qualitative composition of its harmful emissions and their impact on the technical and economic performance of HPA are established. The results of calculations of indicators of reliability of control, reliability and efficiency of control of the ecological and technical state of the HPA combustion chamber are given.

The obtained results allow us to recommend the use of single-channel analyzers to measure these emissions and integrate them into the monitoring system of the environmental-technical state of HPA.

KEYWORDS

Gas pumping unit, ecological and technical condition, combustion chamber, harmful emissions, control.

Techno-economic Analysis of Thermal Waste Treatment Facility: A Case study of the City of Niš

Ana Momčilović, Dragana Dimitrijević Jovanović, Predrag Miodrag Živković and Nevena Tomić

ABSTRACT

In Serbia it has been shown that the ecological awareness of the population has been growing in recent times. Especially in the last ten years, when various transformations in the area of governance and competencies in the republic began to acquire conditions for the implementation of projects in the field of waste management. First of all, it refers to the preparation of the necessary technical conditions for establishing a systemic solution of waste management problems and the use of municipal waste in order to obtain energy. This paper deals with the thermal treatment of municipal waste in the territory of the city of Niš. A techno-economic analysis of the plant has been made, in which certain waste types generated on the territory of the city are treated, while the heat energy is sold. Economic analysis examined the baseline scenario and three possible scenarios of financing the plant. Taking into account the results of the analysis, the high investment costs of the premises limit the possibility of achieving positive effects if the financing of the factory is assumed solely on the basis of the sale of products and charging of the waste treatment fee. However, by involving a third party in the process of financing the plant, it is possible to achieve multiple effects. This implies the achievement of positive socio-ecological effects, as well as the economic ones. Also, the increase in the time period for which the analysis is carried out, as well as the possible increase in the waste treatment fee or the percentage of investments made by third parties, would lead to an additional increase in financial parameters, in this case NPV

KEYWORDS

Thermal treatment, economic analysis, case study.

The Danger of Mercury Poisoning through Fish Consumption

Katalin Fodor, Tatiana Barz and Felicia Drăgan

ABSTRACT

Fish is an important source of protein, iron and zinc - essential nutrients for child growth and development, a source of energy for adults, elderly. Omega-3 fatty acids found in different fish species help develop children's brains, maintain flexibility in blood vessels and contribute to brain oxygenation by annihilating the destructive effect of the free radicals that have become more and more present in our everyday lives. Due to the mercury pollution of both the terrestrial and aquatic environment, there is the chance for the population to ingest significant amounts of mercury that could cause the undesirable diseases and metabolic manifestations once they have entered the body. Food security requires the elaboration of procedures and measures of informing the population in order to minimize the risks of mercury contamination in food.

KEYWORDS

Fish, acids, omega-3, mercury, toxicity.

The Headscarf Debate in the French Republic

Adeline Berdie

ABSTRACT

Within the European context, there are factors that have changed Europe's way of thinking about itself and about the Islam. Such factors include for example the debates about wearing a headscarf in public schools. Such debates have occurred in many European countries. While the existence of the Islam has been long recognized by the constitutions of the major European countries, the extent in which this religion can be practiced remains questionable. The most important problem is the wearing of religious clothing, especially the wearing of an Islamic headscarf in public schools. This produced a major debate which deals with the question of whether wearing an Islamic headscarf in public schools should be allowed or prohibited.

This paper presents a study concerning the situation of the Islamic headscarf in the public schools of the French Republic. This study relies on an analysis of the information from the mass media and from the law issued after the debates related to this subject.

KEYWORDS

Islamic headscarf, religious symbols, public schools, laicism.

The Manure Influence on Cr^{2+}, Cu^{2+}, Mg^{2+} and Zn^{2+} Regime in the Green Waste Compost

Irina Smical and Adriana Muntean

ABSTRACT

The composting is one of the most effective recycling method of green waste. The presence of some heavy metals as Cr^{2+}, Cu^{2+}, Mg^{2+} and Zn^{2+} may influence the compost quality. Thus, by adding some components like manure the micronutrients and heavy metals regime suffer changes which might influence their bioavailability for plant uptake.

The bioavailable and unavailable metal forms for plants determined by sequential analysis showed similarities in relation to the percentages of extracted forms. The lowest percentages were recorded for the bioavailable metal forms for plants uptake. Thus, the succession F6 >F5>F4>F3> (F1+F2) is characteristic for chromium, the succession F5>F6>F4>F3> (F1+F2) is characteristic for copper and zinc and the succession F5>F4>F6>F3> (F1+F2) is characteristic to the zinc and manganese. The research results show that the manure additives have a positive influence on the composting process.

KEYWORDS

Green waste, compost, manure, heavy metal.

Theoretical Investigation of the Tapered Thread Joint Surface Contact Pressure in the Dependence on the Profile and the Geometric Parameters of the Threading Turning

Oleh Onysko, Volodymyr Kopei and Vitalii Panchuk

ABSTRACT

The tapered screw joints are widely used in the formation of the drill string. They consist of two parts - a box and a pin. during the process of screwing box and a pin the contact pressure between thread surfaces arises, the magnitude of which affects the intensity of wear on these surfaces. For the first time, the authors offer in this work to change the contact area of the thread face by the change in the shape of the cutting edge of the threading turning tool. Previously, in the works of these authors themselves, it was offered to change the shape of the cutting edge exclusively to increase the tightness of the joint. In other works, the justification for changing the geometric parameters of such cutters was offered in order to obtain the possibility of the thread manufacturing from materials with a strength limit of more than 1300 MPa. In this paper an analysis of the influence of the geometric parameters size of the cutter on the value of the contact pressure between the thread surfaces of the box and the pin is carried out. Among the above geometric parameters, the back rake angle is the most important. As a result of theoretical studies, a certain functional dependence of the contact pressure in the tapered thread joint from the shape of the cutter edge and the magnitude of its back rake angle is obtained.

KEYWORDS

Tapered thread tool joint, back rake angle, turning tool, box, pin.

Vibration Monitoring of the Technical Condition of the Blade Unit of the Gas Pumping Unit Gpa-Ts-16S

Leonid Zamikhovskyi and Natalia Ivanuyk

ABSTRACT

Monitoring of the technical condition of gas pumping units (GPU), including the average power of the GPA-Ts-16S type, is important during operation, since damage to its main unit - the blade apparatus can lead to significant economic losses and, in some cases, to an accident. The analysis of the methods of parametric and vibroacoustic control relative to the technical condition of the HPA blade apparatus showed that the methods of vibroacoustic control were most widely used. The paper discusses the possibility of using discriminant analysis of vibration arising during the operation of the GPA-Ts-16S to highlight the necessary information about the technical condition of its blade apparatus. One of the features of the discriminant vibration analysis method is a high sensitivity to incipient defects, which is especially important for a blade apparatus. At the same time, the sensitivity of the S-discriminant can be adjusted by changing the value of the flare threshold.

A block diagram of the developed algorithm for vibration monitoring of the technical condition of a blade apparatus with adaptation to its original (normal) one based on the results of one-dimensional discriminant analysis of the experimental data of vibration of GPA-Ts-16C is given. Vibration records obtained using the developed methodology and technical means of measuring vibration based on the latest Siemens design, the vibration module SM1281. The results of the implementation of the algorithm of vibration monitoring of the technical condition of the blade apparatus using the records of vibration GPA-Ts-16S at the compressor station KS-3 "Dolina" of the management of main gas pipelines (UMG) "Prikarpattransgaz", which were obtained within two years and describes the technical condition of HPA Ts-16C before repair, after repair and during long-term operation.

KEYWORDS

Gas pumping unit, technical condition, vibration monitoring, discriminant analysis, experimental data, algorithm.

Wi-Fi Positioning Technology Applied in the Cities

Andjela Španović and Dragana Preradović

ABSTRACT

This paper deals with a problem of finding the right address in the new city or unknown part of the city, the right door. The psychological pressure on people in this situation can be quite large and unpleasant, especially when the GPS could not provide enough support. The outdoor position systems are based on GPS signal and besides that, they are not so accurate outdoor they can't be applied indoors. IPS are expensive, not user-friendly and not suitable for everyone. This paper identifies the low-end segments in the market and suggests the solution based on known technology.