ABSTRACT - MECHANICAL AND ELECTRICAL SCIENCE

OCTAVIAN BALTAG, DOINA COSTANDACHE, MIUTA RAU (pg.98-108)
University of Medicine and Pharmacy "Grigore T. Popa" Iasi, Faculty of Medical Bioengineering
ASPECTS CONCERNING THE ELECTROMAGNETIC COMPATIBILITY OF A BIOELECTROMAGNETISM LABORATORY
Abstract: The paper presents the installation components consisting of a nonferromagnetic shielded room, lined inside by microwave absorbent material with pyramidal geometry and a complex triaxial coils system to control the ambient magnetic fields: geomagnetic components and those due natural variations, the fields produced by human activity - the movement of masses of metal, vehicles, magnetic field of 50 Hz etc. The installation permits the detection of magnetic activity of the heart (magnetocardiogram – MCG) and the measurement of the internal temperature of living structures (microwave radiometry). This is an application for non-invasive early breast cancer detection. Performances of the installation are presented.
Key-words: bioelectromagnmetism, biomagnetism, EMC, shielded room, dynamic compensatin, microwave radiometry.

PAUL BURLACU, FLORENȚIU DELIU (pg.109-116)
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THE IMPLEMENTATION STUDY OF THE LOCAL ELECTRICAL HEATING SYSTEMS AT A NAVY SHIP
Abstract: It is known that the central heating efficacy system is lower than the normal level for a navy ship. A lot of equipments have the level of the temperature increased specially during summer days so it is need to implement supplementary local electrical heating system. These systems must be navalizedin accordance with the specification of the STANAG rules.

AURELIA CHIOIBAS (pg.117-119)
Naval Academy, Constanta, Romania
QUALITY ASSURANCE IN DESIGN OF PIECES DEEP-DRAWING
Abstract: The quality of the pressed parts is provided with the quality design and quality of their manufacturing. It is characterized by physical continuity function of the piece, the dimensional accuracy, precision shape, relative position accuracy and mill-finished of workpiece surfaces as well as the physico-chemical and mechanical properties of workpiece material, corresponding development necessary to satisfy a given function.
Key-words: projectedquality, production quality, reliability and durability of the die

IVAN EVSTATIEV, HRISTO BELOEV, BOYAN RASHKOV (pg.120-125)
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MODELLING OF ENERGY AND MASS EXCHANGE IN PLANT FOR PROCESSING OIL

NADEZHDA EVSTATIEVA, GEORGI GEORGIEV, NIKOLA MIHAILOV (pg.126-130)
Department of Theoretical and Measuring Electrical Engineering, Faculty of Electrical and Electronic Engineering and Automation, University of Ruse, Bulgaria/Department of Electrical Power Engineering, University of Ruse, Bulgaria
MODELLING THE ENERGY EXCHANGE IN A FOOD STORAGE REFRIGERATED CHAMBER
Abstract: The food storage refrigerated chambers are widely used in the food industry. During their operation it is very important to comply with the technology regime requirements, i.e. maintaining the required temperature of the stored in the chamber products. The operation specifics of a food storage refrigerated chamber have been analyzed. The necessity for a temperature estimation of the stored products in the chamber during loading and unloading has been substantiated. The main approximations and dependencies during the process modeling have been grounded. A model of the energy exchange in a food storage refrigerated chamber has been suggested, allowing to simulate the kinetic curves of the products temperature. The model could be used to control the temperature regime of the stored production by means of an electronic system
Key-words: food storage refrigerated chambers, model, energy exchange.

TOLGA MERT, UGUR BUGRA CELEBI (pg.131-134)
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OCCUPATIONAL HEALTH AND SAFETY ASSESSMENT OF EMISSIONS OF CUTTING AND GOUGING ELECTRODES USED IN TURKISH SHIPYARDS
Abstract: Welding is the most widely used joining process in shipyards to join shipbuilding sheet metals and stiffener members. SAW, GMAW and SMAW processes are highly utilized in shipyards. Covered electrodes are employed not only in welding but sometimes also in gouging and cutting. Arc welding and cutting processes form fume emissions and as a consequence, welders are exposed to an assorted mixture of toxic particulates and noxious gases and these are believed to put a large number of workers at increased risk of adverse health effects. Welding has been associated with many respiratory problems, which vary from acute or chronic respiratory symptoms, such as malaise, cough, chronic bronchitis, asthma to lung cancer. Many epidemiologic studies demonstrate that welding workers have high risk of cancer. In this study, some experiments with regard to fume formation rate have been realized and results have been assessed in terms of occupational health and safety.
Key-words: cutting, gouging, electrode, emission, shipyard, FFR, welding fume

CORNELIU MOROIANU (pg.135-141)
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ANALYTICAL AND EXPERIMENTAL DETERMINATION OF STRESSES IN THE PLANE COMPOSITE PLATES
Abstract: This work presents the mathematical method for solving the differential equations by means of which we can determine the stresses in the plane composite plates used to build crafts. The results analytically determined are compared with the experimental ones. The first chapter of the work presents the differential equation system for composite materials (glass reinforced polyester resin) to determine the stress function F(x,y) and the deflection w(x,y) by which the stress condition in the composite is established. In chapter 2 they are presented the analytical resolution methods (simple and double trigonometric series), approximate analytical methods (Ritz) and finite element method (COSMOS and ALGOR programs). In chapter 3 the theoretical results are compared with the experimental

ones obtained on a plate model made by five woven roving plies produced in FIROS S.A. Bucharest. The impregnation resin is NESTRAPOL 450 produced by POLICOLOR S.A. Bucharest.

GEORGE NOVAC (pg.142-148)
Naval Academy, Constanta, Romania
DIMENSIONAL CHARACTERISTICS CHANGES OF MARINE DIESEL ENGINES DURING OPERATION
Abstract: *This paper aims to study geometric parameters changes of marine diesel engines during operation. It presents the assembly operations of main naval engine components, and the values of dimensions measured during periodic overhauls, as result of mechanical wear. Values are tabulated and so compared, both to the assembly values, and the values of other wear measurements, extended over a period of time and hours of engine operation. The research is centered on two SULZER 7K80MC-C type engines, and wants to make a contribution for the realization of estimation software for marine engine components wear reported to the number of operation hours, for future improvements of the engine reliability.*

FLORIN POPESCU, FLORIN ENACHE (pg.149-151)
Military Technical Academy
MICROCONTROLLER BASED AUDIO SIGNAL GENERATOR
Abstract: *This paper describes a signal generator build around a single microcontroller, which is used as test equipment in audio domain. Due to architectural elements, microcontrollers can be used in applications requiring repetitive operations such as signals generation.*
Key-words: microcontroller, audio waveform, embedded, DDS, LFSR

MIHAIL PRICOP, VALENTIN ONCICA, IONUT CRISTIAN SCURTU (pg.152-157)
Naval Academy, Constanta, Romania
FACTOR OF SAFETY IN OFFSHORE STRUCTURES DESIGN ACCORDING TO ENVIRONMENTAL LOADS
Abstract: *Factor of safety in offshore structures will be analyzed in models using Solidworks Simulation Xpress on a specific build model according to shipyard specifications according to environmental loads. The Fos is used in all project and is a way to enrich the structural capacity of the structure in order to carry loads higher than normal use. The factor of safety for offshore structures is determined according to design and material strength, and the value commonly used is between 1.2and 2. According to results is recommended to use a highet value than 2.1 for the models used.*
Key-words: factor of safety, calculus using solid works software, offshore structures, jacket FoS.

MARIAN RISTEA, FLORIN NICOLAE, ALEXANDRU COTORCEA, DANIEL MĂRĂŞESCU, TRAIAN FLOREA, ANASTASE PRUIU (pg.158-164)
Naval Academy, Constanta, Romania
A CFD STUDY ON THE FLOW AROUND A FIVE BLADED NAVAL PROPELLER
Abstract: *Computational fluid dynamics (CFD) represents a branch of fluid mechanics that uses algorithms, numerical methods and computers in order to simulate various processes associated to flow conditions. In this manner the flow developed during the work of naval propellers is simulated by using a number of conservation equations together with several additional equations, models for turbulence, pressure, cavitations, heat exchange and chemical species transport or dispersed phases equations.*
Keywords: CFD, efficiency, turbulence, propeller

SERGHEI RADU, GHEORGHE SAMOILESCU, ADELINA BORDIANU (pg.165-167)
BARKLAV Ag., Constanta/ Naval Academy, Constanta, Romania/Polytechnics University, Bucharest
ANALYSIS PROBLEMS OF THE SHORT CIRCUIT CURRENTS THAT APPEAR ON BOARD A VESSEL

FILIS TULEI, SILVIU WALTER ISĂRESCU (pg.168-170)
Naval Academy, Constanta, Romania
STUDY ON ABOUT THE INFLUENCE OF GOODS TRANSPORT BY SEA ON ECONOMY AND WORLD TRADE DEVELOPMENT
Abstract: *Paper refers to the role and importance of goods transport for economy and world trade development. Will be dealt with topics related to the current state of maritime transport infrastructure in Romania and its development prospects.*
Key-words: goods, maritime transport, trade