ABSTRACT - MECHANICAL AND ELECTRICAL SCIENCE

BEAZIT ALI, HANDERIS ALI (pg.68-70)
Naval Academy, Constanta, Romania
STUDY UPON THE CAVITATION PHENOMENON OF THE PROPELLERS AND AXIAL ROTORS
Abstract: *The main problem of the hydrodynamics of cavitation implosion of a single bubble, consists in pressure and velocity fields determination, including the collapse velocity of the bubble wall.*
By analysis the theoretic and experimental phenomenon it establish the implicit function which describes this phenomenon. By application the $\prod$ *theorem for this implicit function it finds the criterion equation of phenomenon.*
Depending on operating condition various cavitation patterns can be observed on a body surface as travelling bubbles, attached sheet cavitation, shear cavitation or vortex cavitation. Leading edge attached partial cavitation is commonly encountered on rotor blades or on hydrofoil. It corresponds to the case for which a vapor cavity is attached in the vecinity of the leading edge and extends over a fraction of the foil surface. It generally takes places at incidence angles for which a leading edge pressure peak occurs and reduced below the liquid vapor pressure. At the early phases of development, leading edge partial cavitation is steady.
Keywords: *The bubble's implosion, incompressible liquid, the bubble surface, the* $\prod$ *theorem.*

DANIEL APOSTOL (pg.71-77)
Depot Iasi
THE STUDY ON THE TRANSTION IN ELECTRIC GENERATOR REGIME OF TRACTION MOTOR FOR 060 DA LOCOMOTIVE
Abstract - *This piece of work aims at dealing both with the passage to a generating set-like conditions of the driving electric motor for the 060DA Diesel railway engine and the influence of this passage upon the electric outfit. There is also a short presentation of the 060DA Diesel railway engine and its main power parts.*
Keyword*s – diesel-electric locomotive, traction motor, DC generator.*

NICOLAE BADARA, OVIDIU CRISTEA (pg.78-79)
Naval Academy, Constanta, Romania
THE MATHEMATICAL MODEL TO DETERMINE THE UNDERWATER EXPLOSIONS DIRECTION AND DISTANCE
Abstract: *This report presents the triangulation of the underwater explosion source. The analysis is based on the time-delay measurement the underwater acoustic wave, deriving the range and the direction to the underwater source of explosion. The mathematical model is simulated for different values of the time-delay at three sensors. It was built a practical demonstrator, which gave the possibility to verify in real environment the mathematical model.*

REMUS BOBOESCU (pg.80-88)
Polytechnic University Timisoara
ANALYSIS OF DYNAMIC ASPECTS OF STEEL PIECES MELTING IN LASER WELDING
Abstract*. We analyze the conditions for obtaining molten zone for welds made with laser Nd: YAG on carbon steel plates 10mm thick. Power and welding speed are the main parameters that control the welding process. We analyze the effects of distance between the focal plane and the work piece surface (defocusing). From the analysis of welds cross section the welding regime is identified by shape and area of molten zone. Dynamic aspects of the welding process are showed by solid waves on the weld surface and by crater at end of the welding process.*
Keywords laser welding, carbon steel, weld surface, solid waves, response surface

PAUL BURLACU, FLORENȚIU DELIU (pg.89-92)
Naval Academy, Constanta, Romania
AUTOMATIC VOLTAGE REGULATORS IMPLEMENTATION FOR REAL TIME TARGETS
Abstract - *Many different models have been developed to represent the various types used in a power system. The literature present various types of AVR model, some more difficult to implement on real time targets than others. This paper presents those models and a software implementation in Labview, which can be used in simulating power systems.*
Keywords*: Labview, Real Time, Automatic Voltage Regulator, Hardware in the loop*

FLORENȚIU DELIU, PAUL BURLACU (pg.93-102)
Naval Academy, Constanta, Romania
THE INDUCTION MACHINE. MODELLING AND SIMULATION
Abstract*:simulation analysis is made for various operating regimes of an asynchronous machine functioning at variable speed. In the first phase, machine parameters are introduced which the author concluded and the experimental information is combined with information from specialty books , through his own methods ,revealed at a previous chapter. We must keep in sight that when simulating an asynchronous machine in no-load mode we have three ways: without pelicular effect, with pelicular effect theoretically estimated and with pelicular effect experimentally estimated. Simulations can be done for a motor system or for a generator system, working with load, keeping track of time variation of the current, torque and speed. With the results gained we can obtain validity for the models(patterns) built Analyzing these simulations , we can highlight the influence of temperature over the evolution of current and pulses ,and also these aspects can be observed when considering the pelicular effect.*
Keywords: *induction machine. modelling and simulation*

TRAIAN FLOREA, ANGHEL CHIRU, MIHAI BEJAN, TRAIAN VASILE FLOREA (pg.103-105)
Naval Academy, Constanta, Romania
THE CONVECTION COEFFICIENT IN THE REGENERATOR OF STIRLING ENGINES
Abstract: The performance of Stirling engines can be predicted with accuracy by using a concept of a regenerator losses coefficient, concept used often in the designing precess of new Stirling engines and in predicting the power and efficiency of a particular Stirling engine.
Keywords: *Stirling, cycle, losses, efficiency, regenerator, heat, transfer.*

CORNELIU MOROIANU, ILIE PATRCHI (pg.106-110)
Naval Academy, Constanta, Romania
SPECIAL PROBLEMS ON THE HYDRODYNAMICS OF THE HIGH SPEED PLANING CRAFT
Abstract: *In the first part of this paper there are presented the stages achieved at the design of the craft and the necessity of replacement the traditional building materials by others with high performance. The influence of the waves on the hull plates of the craft is analysed, performing a calculation program for the study of the wave elements as a function of the wind speed. In the second part, there are analysed the wave effects on the craft's hull plates, both statically and dynamically, determining the dynamical bottoming factor of the wave. Finally, it is calculated the number of cycles in a navigation season, acting on the hull plates on the wave steps.*
Keywords: *waves, the wave characteristics in the Black Sea, loads, number of cycles from the wave, material fatigue.*

IONEL POPA, FLORIN ZAHARIA (pg.111-115)
Naval Academy, Constanta, Romania/Maritime University of Constanta
THE OPTIMIZING OF THE HYDROCABONS CAPACITY ON THE DISCHARGE OF OIL TANKS
Abstract: *The transport activity of hydrocarbons from the extraction site to the purification zone has known a significant increase in the last decade and, therefore to increase the efficiency of this activity we have to keep in mind the processing duration which should provide a short time spent by the ship at the oil terminal, also the energy capacities during the discharge process. This essay has the purpose to analyze the account between the heating temperature of the cargo and the hydraulic losses on the transportation pipe thus the energy capacity on liquid cargo transportation to be reduced to minimum.*
Keywords: *optimizing, discharge, oil, RMH 45.*

SERGHEI RADU, GHEORGHE SAMOILESCU (pg.116-119)
Zodiac Company/ Naval Academy, Constanta, Romania
METHODS FOR CALCULATING THE CURRENT TRAFFIC IN CASE OF SMALL ELECTRICAL NETWORKS
Abstract: *Knowing the short circuit current values is particularly important in the design and choice of apparatus used in electrical systems. Experimental determination of short circuit currents is usually done on the model. Taking into account the usefulness of short circuit currents calculations and the fact that most times they must be known too precisely, are introduced certain general assumptions, to simplify calculations. In addition, the exact calculation of short circuit currents is very difficult, especially in complex systems.*

LIVIU CONSTANTIN STAN (pg.120-123)
Maritime University Constanta
OPERATION FACTORS INFLUENCE ON THE DYNAMIC BEHAVIOR OF MARINE PROPULSION SYSTEMS
Abstract: *This paper represents a step forward toward the introduction of engineering advanced research methods for the study of dynamic behavior of marine propulsion systems. The large dimensions of this work and the theoretical and research materials developed in it via numerical simulation are witnessing the author's effort for an exhaustive treatment of the proposed theme. Via numerical models/simulations, the behavior of the marine engines and propulsion systems is easy to be done, more economical, allowing various design solutions and optimization studies. As it was mentioned before, the process described in the paper is based on the numerical simulation and had as departure point a real marine diesel engine.*
Keywords*: marine engines, propulsion systems, dynamic behavior, finite element analysis*

ALECU TOMA (pg.124-129)
Naval Academy, Constanta, Romania
NUMERICAL MODELING OF INTERACTION BETWEEN UNDERWATER GAS BUBBLE AND SUBMERGED TORPEDOES
Abstract*: The experiments have determined that, even close to the detonating underwater charge, the gas bubble and shock wave are sufficiently separated to produce individual effects onr structures. These results allow evaluating the shock wave parameters and the effects of these two phenomena to be studied separately. This paper focuses on the numerical modeling of the underwater gas bubble effect on submerged torpedo. A torpedo is simplified as free-free beams made from rigid perfectly plastic material. A detailed fluid structure interaction is analytically studied to obtain the equation governing the fluid force per unit length of the beam and the fluid - beam interaction equation. The time history of a bubble radius and explosion magnitude is graphically shown. The numerical simulation of interaction between underwater explosion and underwater structure will be presented.*

DENİZ ÜNSALAN, KUNSEL IZET-ÜNSALAN (pg.130-133)
Turkish Navy (R), Tuzla, Istanbul, Turkey/Faculty of Mechanical, Industrial and Maritime Engineering, "Ovidius" University, Constanta, Romania
CARBON NANOTUBE ELASTIC ENERGY STORAGE AS A POWER SOURCE FOR TORPEDO PROPULSION
Abstract- *Speed and range are two of the most important parameters determining the effectiveness of torpedo as a weapon. While the first parameter, speed, requires a high level of propulsive power, the latter, range, requires a high amount of energy stored within the limited weight and space available in the torpedo. This requires both high power and energy levels per weight and volume. The purpose of this paper is to propose a new energy source - carbon nanotube elastic energy storage. Carbon nanotubes, with their high modulus of elasticity, high strength and strain endurance within the elastic limit, constitute a media that is capable to store large amounts of energy per volume and per weight, capable of delivering mechanical energy directly. Since carbon nanotube springs provide a completely air independent and high energy density storage media, they are considered to be a perfect energy source for torpedoes, as well as autonomous underwater vehicles (AUV's), remotely operated vehicles (ROV's) and even for small submarines.*
Keywords: *Carbon nanotubes, elastic energy, Young modulus of elasticity, strain, energy storage, torpedo propulsion*

FLORIAN VASILE, DUMITRU CATANĂ, ION ŞERBĂNESCU, CĂTĂLIN PETRIŞOR MIREA, DOREL DUMITRU VELCEA (pg.134-140)
Military Technical Academy, Bucharest

THE ENGINE THERMAL BALANCE. DETERMINATION OF ENERGY QUANTITY NECESSARY FOR LUBRICATION OF A NAVAL ENGINE

Abstract*. To keep the engine parts temperature between some limits, a waste of energy is needed. This paper presents aspects link to the importance of lubrication of engine mechanism and afferent installation and the elements of lubrication installation which influence the thermal balance of the engine. For example were determined the quantity of energy necessary of lubrication of a naval engine, using the technical documentation.*

Keywords: *thermal balance, energy quantity, lubrication.*