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ABSTRACT - MECHANICAL AND ELECTRICAL SCIENCE

NICOLAE BADARA, OVIDIU CRISTEA (pg.75-76)
Naval Academy, Constanta, Romania
AIS MONITORING OF DANUBE DELTA AND DANUBE-BLACK SEA NAVIGATION ROUTE
Abstract: *The paper presents a method to monitoring the Danube Delta navigation traffic routes and offshore side of Black Sea.*
The method refers to AIS (Automatic Identification System) monitoring. All ships transmit there references via AIS to shore AIS receivers which upload them on an internet server. To have access at this information, the user must have installed on his PC monitoring software and must be connected to the internet. All information is being displayed over an electronic chart.

MOHAMMED J. BARZANJY (pg.77-78)
Mechanical Dept., College of Engineering, ERBIL, IRAQ
KINETIC METHODS APPLIED TO THE ASSESSMENT THE LIFE TIME OF ARTILLERY POWDERS
Abstract: *An artillery powder undergoes slow exothermic decomposition because of their nature, even at moderate temperature. Nitrate esters and especially Nitrocellulose are not stable in nature. Add a certain amount of stabilizer material to the artillery powder to prevent a self - acceleration of its decomposition.*
Such a product, generally Diphenylamine or Centralite, reacts with nitrogen oxides evolving during the degradation and absorbs them. When it is fully consumed, there is some auto – ignition risks and then the powder is considered to be dangerous. So the predication of time when such a phenomenon happens would be much appreciated. Chemical kinetic methods have been proposed 20 years ago by Jack and Trenchant. Recent progress, especially in an analytical chemistry, allows us to re – examine the question.
Stability tests, now performed on artillery powder, give only and even not always an idea of real stability of the product which may be defined as the slowness of its decompositions. They do not allow assessing any life time value. Only Stan (60 days of artificial aging at 65.5 ^{o}C and spectro – photometric determination of stabilizer content decrease) assures a 5 years life time in normal storage conditions as positive.
All usual tests involve high temperatures and their results can not be easily connected with the real stability of powders. Moreover, the determination of life time of powder requires several experiments. It is possible to manufacture an artillery powder satisfying stability tests and, in fact, being instable. Therefore; there is a need to define a scientific method assessing the life time of an artillery powder.

PAUL BURLACU, FLORENŢIU DELIU (pg.79-82)
Naval Academy, Constanta, Romania
SOFTWARE IMPLEMENTATION OF A MODERN VOLTAGE CONTROLLER
Abstract - *This paper presents a real-time software implementation of a robust voltage controller developed for multimachine power system. The software implementation is realized in LabVIEW and the hardware target is a PXI system with analog inputs, analog outputs connected to a power amplifier.*

VERGIL CHIŢAC, OCTAVIAN TARABUTA (pg.83-84)
Naval Academy, Constanta, Romania
ACADEMIC EDUCATION VS. VOCATIONAL TRAINING FOR EUROPEAN NAVAL OFFICERS

FLORENŢIU DELIU, PAUL BURLACU (pg.85-90)
Naval Academy, Constanta, Romania
THE MAGNETIC INDUCTION MACHINES' DEGREE OF SATURATION DETERMINING
Abstract*. The variation shape of the stator current in time is non-sinusoidal for an electric saturated machine. The magnetic field from the machine's air gap has the same variation shape (according to the law of the magnetic circuit).*
Because the rectangular pattern comes from an electric machine powered by a symmetrical phase system that gives a magnetic field for the air gap distributed sinusoidal in space, modeling a machine with a non-sinusoidal field assumes fragmenting the non-sinusoidal field in harmonics and considering the final product as an assembly of elementary machines that have a sinusoidal distribution of the magnetic field in the air gap.
Keywords: asynchronous machines, magnetic saturation, electrical current

VASILE DOBREF, ALEXANDRU SOTIR (pg.91-95)
Naval Academy, Constanta, Romania
A HIGH POWER ELECTROMAGNETIC PULSE SIMULATION MODEL
Abstract *- The paper presents a calculus and a simulation model to generate a great power electromagnetic pulse – one of the frequent causes of the electromagnetic interferences in case of electronic equipment; these phenomena being usually produced by natural phenomena, such as thundering, but also by the electromagnetic pulse weapon, in case of military conflicts. As a source of this type of pulse, it is used a flux compression generator (FCG), whose resistance and inductivity will vary linear parametrically, during the magnetic flux compression. This one being produced by an ultra-rapid short-circuit process of the FCG coil by means of one metal framework, using a controlled explosion.*

VLADIMIR DUKOV (pg.96-98)
THE CALCULATION OF THE MAXIMUM RATED VOLTAGE FOR DIFFERENT TYPES OF LOADING
Abstract: *In the first part of this work, we examined the determination of the stresses in the cross sections with a closed fracture. This placement of fracture is typical for objects with stress concentrator. In the second part we consider the possibility of determining the maximum rated voltage for various configurations of the location of the test sample zone, which has a closed fracture.*
The maximum rated voltage σ_{imax} is also proposed to determine within fraktographical analysis result, and therefore the method of finding these voltages is valid for objects with a clearly defined zone. Features of this technique are mainly related to the configuration of breaks for different types of loading. Given the lack of such solutions in reference books we are about to review in details the nature of methods for determining the maximum rated voltage at the example of the two most common types of loading: tension with a coefficient of asymmetry of the cycle R> 0 and cyclic bending / 9 /.
Keywords*: tension; fatigue fracture; crack form*

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KASIANOVSKYI IERUSLAN (pg.99-101)
Maritime Academy of Ukraine

ON ASSESSMENT OF RESIDUAL LIFE OF METAL CONSTRUCTION OF HOISTING MACHINES USING THE PARAMETER OF THE COERCIVE FORCE

Abstract: According to the Rules of the device and the safe operation of hoisting machines [1], after the crane worked its legal life, it is necessary to assess its remaining lifetime and make a conclusion about the possibility of further exploitation.
Keywords: *residual life, hoisting machines, the coercive force.*

NECULAI IUREA, VICTOR TUNARU, DANIEL DRAGOMIR (pg.102-107)
The School of Naval Petty Officers, Constanta/Romanian Navy Force/S.C. Peugeot Constanta

RESEARCHES ON A TURBOBLOWER PERFORMANCES AS PART OF NAVAL DIESEL ENGINES AFTER BEING REPAIRED

Abstract: *Although many different power sources are used not only for shipping and carriage but also in other branches of the economy heat engines continue to be the main alternative to nuclear, aeolian, hydro or thermo - electrical powers.*
Being aware of pneumo – hydraulics and dynamics phenomena, knowing the technical and functional particularities specific to turboblowers – used in civilian and military ships, we can get some experimental results comparable with the ones in the technical manual.Alike other power sources, propulsion devices on board ships break down and pollute the environment, especially when they work in an insertion process.
Although means of water transport pollute the environment with less than five percent of the total emissions, we must not neglect the fact that the pollution effects make ozone get thinner, a matter that has a terrible impact on human health.
Concluding, the present paper discusses measures that lead to increased power and energy savings by repair works made to supercharged diesel engines, that supposes a decrease of pollution which is beneficial to everybody.
Keywords*: ship, diesel engine surcharge, repairs, research, tests/try, insertion process performance, dynamic, efficient, high performance, low fuel consumption, noxious.*

GEORGE NOVAC (pg.108-116)
Naval Academy, Constanta, Romania

THE CONSTRUCTION TYPES EVOLUTION OF INTERNAL COMBUSTION MARINE ENGINES

Abstract: *Diesel engine has dominated the commercial ship segment since the first powered ships (1912). Improvements over time, of which we mention the transition to two-stroke cycle („Sulzer" – 1905), the introduction of scavenging (1910), adopting turbo charging („MAN" – 1950), direct coupling with the propeller (~1980) and also the constructive modifications determined diesel engine propulsion systems to maintain supremacy in the field, by economy, simplicity and reliability. Low-speed engines with electronically controlled fuel injection and hydraulic drive systems of the exhaust valve are entering service in increasing numbers, opening the way to future automated control engines that reaches powers up to 90,000 kW.*
Since the working principle of diesel engine remains unchanged, the main objective of development is heading towards an improvement of the low-grade fuel combustion ability (without compromising reliability and quantity of exhaust gas emissions) of the turbocharger efficiency, lubrication systems but also of the diagnosing, monitoring and computer aided automation systems. Management programs of maintenance operations and exchange of parts have also an important role in the extension of the period between overhauls and the operating costs reduction.

PRUIU, TRAIAN FLOREA, TRAIAN VASILE FLOREA, MIHAI BEJAN (pg.117-118)
Naval Academy, Constanta, Romania

CALCULUS AND MATERIALS FOR STIRLING ENGINE`S BOLTER AND REGENATOR

Abstract: *The performances of the Stirling engine are affected by the convection coefficient and the "X" factor and not only by the variation of the gas quantity from the cylinder with the medium pressure variation. The convection factor indicates that a sensibility study concerning the characteristic parameters is mandatory.*
Keywords: *Sterling, cycle, engine, convection.*

MARIAN RISTEA, DANIEL MĂRĂŞESCU, ADRIAN POPA, ALEXANDRU COTORCEA (pg.119-123)
Naval Academy, Constanta, Romania/Romanian Navy Staff

THE INFLUENCE OF VARIABLE COMPRESSION RATIO ON THE CONNECTING ROD'S STRAINS

Abstract*: We can see, at this moment, a worldwide trend concerning the fuel economy and limited pollutant emissions, especially when we are thinking to naval thermal engines. One of the various options in this direction is to alter the running cycles by correlating the compression ratio with engine`s load.*
This paper presents the results of a study carried for a four stroke naval engine, where were calculated the main parameters and their relation with the value of the compression ratio.
In the first step, there was realized a theoretical study, using a basic thermodynamic calculus and after correlating the results with the basic aim (the relation between performance and consumption) is presented a starting point for developing a concept of variable compression ratio naval engine.
Keywords*: engine, compression, ratio, efficiency, naval*