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**A SIMPLE METHOD FOR DETERMINING PROPELLER OPEN WATER EFFICIENCY**

UNSANAN Deniz, IZET Kunsel Ozel, *Faculty of Maritime Studies, Near East University, Nicosia, North Cyprus, Naval Equipment Dept. Ovidius University, Constanta, Romania*

**Abstract.** The weakest link of the analysis of the propulsive phenomenon of the ship starting from the engine output to the forward motion of the vessel, is the determination of open water efficiency. Although analytical and numerical methods of analysing the uncertainty in the analysis. This discrepancy mainly lies in the viscosity of the water and the friction between the propeller blades and the water. This paper, starting from the classical momentum theory of propellers, is intended to present an approach to determine the effects of viscosity on propeller efficiency as well as other influencing factors. Only the geometry of the propeller is required to predict its open water performance. It is believed that this method can be used as a part of a performance estimating method.

*Keywords:* propeller, momentum theory, ideal efficiency, viscous drag, viscous efficiency, induced velocities.

**ANALIZA VIBRATIILOR FORTATE ALE CORPULUI NAVEI VRACHIER, UTILIZAND ECUATIA VIBRATIILOR PROPRII**

PRICOP Mihail, *Academia Navala Mircea cel Batran, Constanta*

**Abstract.** The aim of this paper is to analyse the steady-state response of the ship hull girder to periodic excitations of the diesel engine, by the transmissions matrices method. It is assumed that Bernoulli-Euler is sufficient for modeling of the ship hull girder.

*Keywords:* ship hull vibration, diesel engine, transmissions matrices method.

## **SIMULAREA TERMODINAMICA MONOZONALA A ARDERII IN MOTOARELE NAVALE**

NECULAI Tudor, *Compania de Navigatie Maritima PETROMIN*

**Abstract.** The objective of this paper is to present an single-zone thermodynamic model of marine diesel engine combustion. In proposed model the cylinder charge is assumed to be uniform in both composition and temperature, and the first law of thermodynamics is used to calculate the mixture energy. Also, the fuel injected into cylinder is assumed to mix instantaneously with the cylinder charge, wich is considered as an ideal gas. Using an specified heat release rate of fuel mass burning rate we used this single-zone model to predict the evolution of pressure and temperature, during combustion process.

## **MODELAREA PROCESULUI DE ARDERE IN MOTOARELE DIESEL FOLOSIND METODA RATEI DE COMBUSTIBIL**

SABAU Adrian, DUMITRACHE Louis, *Institutul de Marina Civila Constanta*

**Abstract.** This paper introduce a thermodynamic single-zone combustion model for the rate of heat release calculation using the fuel rates method. This model led to semi-empirical formulae for calculating combustion rates which allowed for fuel injection rates and the amount of oxygen available in the cylinder during the combustion process. It assume as after injection the fuel is prepared for combustion by a mixing and diffusion process, but in this hypothesis the rate of mixing was assumed to be dependent upon the total surface area of the droplets forming the fuel spray.

*Keywords:* modelare, ardere, rata de combustibil pregatit, rata de combustibil ars.

## **CAMPUL DE TEMPERATURA AL SUPAPEI DE EVACUARE LA UN MOTOR NAVAL LENT**

OMOCEA Ion, *I.M.C. Constanta*

**Abstract.** In this paper is made determine the temperature field in the exhaust valve periodically action of burnt gases and to the contact with the valve seat.

## **GENERAL PLANNING OF AN EXPERIMENTAL MECHANICS COMPLEX PROJECT – CASE STUDY: NAVAL INTERNAL COMBUSTION ENGINE**

OANTA Emil, *Merchant Marine Institute, Constanta*

**Abstract.** The purpose of most of the experimental projects is to obtain in an effective way relevant data regarding the phenomenon to be studied. In the paper there is presented the case of a naval engine whose state of stresses must be evaluated.

Taking into account the complex shape of the engine there was established that the use of strain gauges offers reliable data even if some parasitic effects might occur, effects that can be eliminated, compensated or corrected.

In the paper is presented the general planning of the experiment and the degree of accuracy of the predictions regarding the conditions and quality assurance of the data of the ongoing experiment.

*Keywords:* experiment, parasitic effects, measurement chain, reliable data.

## **EXPERIMENTAL MECHANICS PROJECT: COOLING PROCESS OF A NAVAL INTERNAL COMBUSTION ENGINE**

OANTA EMIL, *Merchant Marine Institute, Constanta*

**Abstract.** In the paper is presented an experimental study of the temperatures in some given measurement points located on the external surface of a naval engine. In these measurement points there must be estimated the mechanical and thermal stresses. Taking into account the complex dynamic feature of the experiment, the temperatures must be assessed with a high degree of accuracy without any supplementary complications. The values obtained must be checked in order to be used as input data for all the following calculations: corrections of the values resulted from the dynamic data acquisition, estimation of the general state of temperatures of the engine.

*Keywords:* temperatures, naval engine, cross-references, reliable data.

## **INSTALATIE DE TURBINA CU GAZE CU MOTOR TURBOPROPILSOR SI CAZAN DE APA FIERBINTE**

URSESCU Dan, ZUBCU Victor, DRAGOMIR-STANCIU Daniel, HOMUTESCU Vlad-Mario, *Universitatea Tehnica "Gh. Asachi", Iasi*

**Abstract.** In the paper possibility to realize a cogenerative unit based on AI 20 turboprop engine and CAF 6 hot water boiler is analysed.

*Keywords:* cogenerare, turbomotor, cazan de apa fierbinte, compatibilitate.

## **SIMULATING ANALYSIS OF THE MARINE FRESH WATER GENERATING SYSTEM**

GOGAN Adina, *Ovidius University of Constanta*

**Abstract.** The paper presents a way of simulating the operating of a marine fresh water generating system. In this purpose ASPEN software is used. The analysis starts from some assumptions that model the real system upon the soft requirements. Final results are compared with those ones obtained from a classic analysis that uses real data from shipboard.

*Keywords:* simulating, thermal marine systems, fresh water generating.

## **ALGORITHM OF CALCULUS FOR THE DIFERENTIAL METACENTER RADIUS IN CASE OF INFINITEZIMAL INCLINATION IN LONGITUDINAL PLANE**

CHITU Greti Mihaela, ZAGAN Remus, *“Ovidius University” Constanta*

**Abstract.** The paper analyzes the moving of longitudinal metacenter point, at the variation of the hull volume in the case of infinitesimal inclination and propose an calculus algorithm for the differential and longitudinal metacenter radius.

*Keywords:* longitudinal differential metacenter radius

## **PROGRAM DE CALCUL PENTRU STUDIUL MECANISMULUI DE BRAT DIN INSTALATIILE DE RIDICAT PORTUARE**

NICOLAE Ionel, *“Ovidius University” Constanta*

**Abstract** – not available

## **REGULATOR ELECTROHIDRAULIC PENTRU DIRIJAREA PROCESELOR DE LUCRU PE UN UTILAJ PORTUAR**

NICOLAE Ionel, COTRUMBA Mirela, *“Ovidius University” Constanta*

**Abstract.** The paper presents the global energy consume criterion used in electrohydraulic regulator process control for port machinery. The multiple advantages are emphasized: low energy consume, good maneuverability, lower shocks in cinematic chain and metallic structure.

*Keywords:* regulator adaptiv multivariabil, mecanism de deplasare, echipament de lucru.

## **STUDIUL PRIVIND EVOLUTIA SISTEMELOR HIDRAULICE DE ACTIONARE A INSTALATIILOR NAVALE DE RIDICARE SI TRACTARE A SARCINILOR**

COTRUMBA Mirela, *“Ovidius University” Constanta*

**Abstract.** This paper presents the hydraulic action evolution of the navy mechanisms with winch.

*Keywords:* winch, hydraulic action, hydraulic proportional element, automatic action.

## **ASPECTE TEORETICE SI EXPERIMENTALE CU PRIVIRE LA IMBUNATATIREA PARAMETRILOR MOTOARELOR ASINCRONE TRIFAZATE CU ROTORUL IN SCURTCIRCUIT ALIMENTATE DE LA CONVERTOARE STATICE DE FRECVENTA**

SAMOILESCU Gheorghe, *Academia Navala “Mircea cel Batran”*

**Abstract.** This paper presents an analog electronic device designed for measuring the moment, the tension to the output of the engines which is made by means of discrete components and the method for an economical dimensioning of the asynchronous electric motor.

*Keywords:* asynchronous motor, static frequency converter, superimposed harmonics.

## **CONSIDERATII PRIVIND CARACTERISTICILE DE FUNCTIONARE ALE MASINILOR ELECTRICE DE CURENT CONTINUU IN DOMENIUL ACTIONARII INSTALATIILOR ELECTRICE NAVALE**

SAMOILESCU Gheorghe, *Academia Navala “Mircea cel Batran”*

**Abstract.** The paper presents the algorithm and calculus program for the characteristics of the direct current motors which are in design phase, this way being possible to act for the obtaining of the characteristics required by user or for the increase of their technical performances.

In the paper there are presented relations for the exact calculus of the e.m.f.s. induced in the conductors from the different zones of the slot.

*Keywords:* DC machine, commutation process, dispersion field, excitation solenoid.

## **THEORETICAL BACKGROUNDS OF MARINE ENGINE TORSIONAL VIBRATION**

BUZBUCHI Nicolae, SABAU Alexandru, NECULAI Tudor, *Merchant Marine Institute of Constanta, PETROMIN Shipping Company*

**Abstract.** The purpose of the present paper is to be a tutorial one, intended to show the relation between, on one hand, the actual engine slider-crank mechanism subject to combustion gas pressure and, on the other hand, the models commonly used for torsional vibration analysis that involve constant inertias subject to torques expressed as Fourier series. The presentation is in terms of a single cylinder, tow-stroke marine diesel engine with load. The determination of natural frequencies and the forced vibration response calculation are briefly described to complete the analysis.

*Keywords:* slider-crank mechanism, gas pressure, inertia masses, torsional vibration.

## **OPTIMUM PROPELLER POSITION IN AXIAL VIBRATION IMPROVEMENT OF MARINE ENGINE SHAFTING SYSTEMS**

BUZBUCHI Nicolae, SABAU Alexandru, NECULAI Tudor, *Merchant Marine Institute of Constanta, PETROMIN Shipping Company*

**Abstract.** The crankshaft of a two-stroke marine engine and the propeller shafting driven by it are subject to axial vibration as well as the well-known torsional vibration. The larger the number of cylinders and cranks in the engine, the more pronounced this axial vibration becomes. It is caused both by the radial forces acting on each crank by the periodic thrust of the propeller. Rotation of the propeller relative to the engine through an angle which was fixed to produce a substantial improvement. Analysis of the vibration measurements in three different relative position of propeller and a concrete two-stroke marine diesel engine finally proved that the propeller had been turned into its optimum position, no further improvement being possible.

*Keywords:* two-stroke marine diesel engine, shafting systems, propeller phasing, axial vibration.

## **CONSIDERATIONS CONCERNING THE COLLAPSE OF VAPOR BUBBLES IN THE NEIGHBORHOOD OF A SOLID BOUNDARY**

SIMIONOV Mihai, RUSU Eugen, *University "Dunarea de Jos", Galati*

**Abstract.** In this paper is presented the application of the boundary element method to collapse of vapor bubbles in the neighborhood of a solid boundary. The boundary element method (BEM) is used to analyse the dynamics of three-dimensional vapor bubble collapse near a solid boundary. Lagrange polynomial interpolation of second order is

applied to both geometrical modeling and source variation. This use of non-planar elements allow for more precise definition of free surface geometries. At each time step, an integral formulation for the potential field derived from the use of simple sources, is solved by a variational method. The Green function singularity is handled on the curved boundary by a novel numerical scheme. Fluid velocities are recovered in compact fashion without taking differences. Subsequent to each displacement, a regridding of the free surface nodes is performed to correct for tangential migrations. Sample results include the Rayleigh bubble, and initially spherical single bubble, and bubble pairs positioned close to, as well as in contact with a solid boundary.

*Keywords:* boundary element method, vapor bubble, Lagrange polynomial interpolation.

## **STEADY OBSTRUCTION OF UNIFORM FLOW WITH FREE SURFACE**

RUSU Eugen, SIMIONOV Mihai, *University "Dunarea de Jos" of Galati*

**Abstract.** The paper presents a variational principle of Hamiltonian structure, characterizing a class of steady nonlinear waves excited by localized nonhomogeneities on a laterally unbounded water layer. The unboundness of the domain is handled by means of the decomposition of the domain.

*Keywords:* flow, water waves, variational principle, free surface.

## **ABORDAREA SISTEMICA A TRANSPORTULUI MARITIM**

POPESCU Violeta, IZET Kunsel-Ozel, POPA Teodor, *Universitatea "Ovidius" Constanta, CPPMC Constanta*

**Abstract.** Maritime transportation is the system constituted by four great conditioned subsystems, requiring their harmonious development.

The building of new ships needs supplementary of modern follow-up, control and regulating systems, for all on-board installations.

The complex automation of navigation systems insures the optimal operation of the ship, by decreasing the time of arrival to destination and by increasing the safety of navigation.

The harbour activity can be analysed as a complex and dynamic system, constituted by more subsystems. In rivalry conditions, in order to obtain optimization, the study of harbour activity uses mathematical models and computer simulation.

*Keywords:* system automat, exploatarea navei, exploatare portuara.

## **FACTORII DE INFLUENTA A TAMPULUI DE ROTIRE A NAVEI PORTCONTAINER IN PORT**

POPESCU Violeta, *Universitatea "Ovidius" Constanta*

**Abstract.** Operarea navelor portcontainer in terminalele maritime special proiectate se face cu utilaje de mare productivitate care asigura un timp redus de operare. Cu toate acestea timpul de rotire a navei este diferit de la port la port, ca urmare a capacitatii, eficientei si gradului de ocupare a terminalului respective.

Cum stationarea acestor nave este foarte costisitoare, iar concurenta dintre porturi existenta deja, porturile se inscriu pe linia imbunatatirii indicatorilor de performanta in scopul atragerii navelor si marfurilor.

Lucrarea se refera la "timpul de rotatie a navei in port" – un indicator important, care sintetizeaza intreaga activitate portuara, urmarind componenta lui si factorii care-l influenteaza.

*Keywords:* terminal portuar, performanta portuara, timp de servire.

## **NOI TEHNOLOGII DE NAVIGATIE: PUNTEA INTEGRATA (IBS)**

PESCARU Ioan, *Institutul de Marina Civila Constanta*

**Abstract.** For the last few years significant advances have been made in several areas of marine technology. Large liquid crystal display (LCD) screens, with the high resolution of standard VGA computer displays, were incorporated in a wide range of chart plotters, depth-sounders and radars. New instrument bus systems offered easier installation, flexibility and mounting; multi-displays with remote controls that select and display any information on the bus including NMEA navigation, wind, depth and speed data became more popular. Internal processors now calculate effects of current, produce graphic trends and record data for later review. The integrated bridge system is by far a revolutionary innovation to the sailing world be it professional or pleasure.

## **ACHIZITIA DATELOR GPS PRIN INTERMEDIUL CODULUI C/A**

PESCARU Ioan, *Institutul de Marina Civila Constanta*

**Abstract.** GPS is a system funded and controlled by the U.S. Department of Defense (DOD). While there may be thousands of civil users of GPS world-wide, the system was designed for and is operated by the U.S. Military. GPS provides specially coded satellite signals that can be processed in a GPS receiver, enabling the receiver to compute position, velocity and time. Four satellite signals are used to compute positions in three dimensions and the time offset in the receiver clock. Its high performance in accuracy and reliability of data made GPS a valuable tool for navigators and many who found

thousands of uses in as many areas of their work: mapping, geodesy, telecommunication, search and rescue missions etc.

## **MODELAREA DATELOR GPS CU AJUTORUL FILTRULUI KALMAN**

PESCARU Ioan, *Institutul de Marina Civila Constanta*

**Abstract.** Since its introduction in 1960, the Kalman filter has become an integral component in many navigation systems. This deceptively simple, recursive digital algorithm conveniently integrates (or fuses) navigation sensor data to achieve optimal overall system performance. To provide current estimates of the system variables, i.e. position and velocity data, the filter uses statistical models to properly weigh each new measurement relative to past information. It also determines up-to-date uncertainties of the estimates for real-time quality assessments or for off-line system design studies. Because of its optimum performance, versatility and ease of implementation, the Kalman filter has become especially popular in GPS/inertial and GPS stand-alone devices.

## **ASPECTE PRIVIND CLASIFICAREA ACTIVA A TINTELOR RADAR**

PRICOP Codruta, *Institutul de Marina Civila Constanta*

**Abstract.** This paper presents a new method in target classification, based by an active classification scheme that combines phenomenology derived features with an appropriate classifier structure. The active identification approach spans a wide spectrum of signal processing topics: target physics, exploration of projection spaces, wavelet processing, feature optimization, environmentally adaptive processing. The performances of classifier are depending by own architecture, which minimizes the mapping error between input features and decision space. The wavelet-based signal processing techniques and data fusion led to feature optimization and data compression.

*Keywords:* radar, oceanography, active classification, data fusion, wavelet, feature optimization, target physics.

## **STUDIUL ASUPRA MATRICEI DE ROTATIE EXPRIMATA PRIN CUATERNIONI, IN SISTEMELE DE NAVIGATIE INERTIALE**

IZET Kunsel-Ozel, ZAGAN Remus, *Universitatea "Ovidius" Constanta*

**Abstract.** In inertial navigation systems, the problem of rotation between two or more reference frames intervenes always. The rotation matrix has not a single form, thus important errors can appear due the different transformation formulas.

*Keywords:* matrice de rotatie, cuaternioni, sisteme de navigatie inertiala.

## **CALCULUL POZITIILOR ARTICULATIILOR ROBOTILOR INDUSTRIALI**

CHIRCOR Michael, *Universitatea "Ovidius" Constanta*

**Abstract.** In this paper there is presented an algorithm for the computation of the position of the end-effector or of the joints, using matrixes. There is also presented a numerical method of computation. The method presented is efficient and new because it uses invariants.

*Keywords:* robot industrial, invarianti, calculul pozitiilor.

## **CALCULUL CINEMATIC AL ROBOTILOR DE TOPOLOGIE PARALELA**

CHIRCOR Michael, *Universitatea "Ovidius" Constanta*

**Abstract.** In this paper there is presented the parallel topology of the industrial robots, as well as a cinematic analysis. There are presented the advantages of this relatively new topology. The cinematic analysis presented in the paper can be easily implemented in an adequate software.

*Keywords:* robot industrial, topologie paralela, calcule cinematice.

## **DETERMINAREA PARAMETRIILOR INERTIALI AI ROBOTULUI RIP 6,3**

CHIRCOR Michael, *Universitatea "Ovidius" Constanta*

**Abstract.** In this paper is presented a method for the computation of the inertial parameters an a serial type industrial robot, using CAD-CAM methods. The parameters obtained can be used for the dynamic simulation, as well as for other researches.

*Keywords:* robot industrial serial, parametrii initiali, CAD-CAM.

## **CONSIDERATII PRIVIND ECHILIBRAREA STATICA A ROBOTILOR INDUSTRIALI**

CHIRCOR Michael, *Universitatea "Ovidius" Constanta*

**Abstract.** Dans cette etude nous avons essaye de trouver les meilleurs moyens pour l'équilibrage statique de cette type des robots industriels. Les resultats obtenus nous permettent d'améliorer le déséquilibre et le fonctionnement. Finalement nous presentons les courbes de variation du déséquilibre statique en fonction des différents paramètres.

*Keywords:* robot industrial, echilibrare statica.

## **OPTIMIZAREA PROCESULUI DE PRELUCRARE MECANICA PRIN ASCHIERE**

LUNGU Ioan, *Universitatea "Ovidius" Constanta*

**Abstract.** In lucrare este analizata mai intai notiunea de prelucrabilitate si factorii de care depinde aceasta si este scoasa in evidenta necesitatea optimizarii procesului de aschiere in scopul cresterii productivitatii si micsorarii pretului prelucrarii. In capitolele urmatoare sunt prezentate succinct metodele de optimizare a unor functii care in procesul de prelucrare prin aschiere sunt functii obiectiv. Urmeaza prezentarea atat a functiilor obiectiv cat si a restrictiilor impuse procesului de aschiere. In finalul lucrarii este prezentat modelul mathematic al problemei optimizarii regimului de aschiere, precum si algoritmul de calcul.

*Keywords:* prelucrare mecanica prin aschiere, optimizare.

## **STRUCTURI INTELIGENTE IN CONTROLUL SI OPERAREA UTILAJELOR – EXCAVATORUL ROBOT**

NICOLAE Ionel, *Universitatea "Ovidius" Constanta*

**Abstract.** Lucrarea prezinta modul de implementare a unei structuri inteligente (sistem adaptiv) la un excavator. Aplicatia speciala presupune excavarea automata, care consta in faptul ca masina poate excava in diferite categorii de terenuri, in conditii de inalta performanta, fara ca omul sa intervina. Programul este divizat in doua parti distincte: un controler de viteza de nivel mic si un manager de activitati de inalt nivel care contine regulile de excavare.

## **INTERFATA NEUTRALA PENTRU INTEGRARE PARTENERI IN INTREPRINDEREA VIRTUALA**

CURAJ A, STANESCU A.M, *Universitatea Politehnica Bucuresti*

**Abstract.** The new manufacturing paradigms, starting with agile manufacture and lean production is loading our civilization towards the new generation of concurrent enterprises involving virtual enterprise architecture and concurrent engineering extended methodology. The present paper aims to present a solution for a neutral interface for the integration of partners in the framework of virtual enterprise.

*Keywords:* Virtual Enterprise (VE), EDI, Production Planning and Control (PPC).

## **BENEFICII SI LIMITARI ALE PARADIGMEI FABRICATIEI INTEGRATE PRIN CALCULATOR**

CURAJ A, STANESCU A.M, *Universitatea Politehnica Bucuresti*

**Abstract.** Even the name for the manufacturing paradigm is NGMS (Next Generation Manufacturing Systems), ADMS (Advance Manufacturing Systems), DEE (Dynamic Exchange Enterprise), IMS (Intelligent Manufacturing Systems) or CE (Concurrent Enterprise) based on the experience rising from CIM (Computer Integrated Manufacturing) experience and based on the new manufacturing reference models (holonic, fractal, bionic, virtual) the future manufacturing system will be the results of the pressure of the Information Technology and will have common characteristic proprieties: autonomy, co-operation, interdisciplinary, integrated approach product-process-system, rethinking of human position and role, will be agile as organization and virtual as geographic distribution and alliance.

*Keywords:* CIM, Virtual Enterprise (VE), EDI, Production Planning and Control (PPC).

## **A DATABASE APPROACH IN COMPUTER AIDED ENGINEERING**

OANTA Emil, *Merchant Marine Institute, Constanta*

**Abstract.** In this paper I present some of the most important features regarding the use of the “standard” user defined files in the Computer Aided Engineering codes. There are also presented the advantages of this approach in a series of case studies.

There must also be noticed that the use of the database approach is the most proper one, advances codes being readily written in different technical domains: general numerical methods, FEM, elasticity, experimental mechanics, CFD, economics, bookkeeping activities.

*Keywords:* data structures, advantages, advanced computer code examples.

## **GENERAREA MODELELOR SOLIDE COMPLEXE – STUDIU DE CAZ**

POMAZAN Valentina, *Universitatea “Ovidius” Constanta*

**Abstract.** The paper presents the parametric solid modeling and connex advantagees regarding the classical graphic CAD solutions. A complex topology solid is analysed, generated from a simple sketch, using the facilities of Autodesk Mechanical Desktop. The consequent steps are presented with optimum graphic solution commented.

*Keywords:* sketch, extrusion, intelligent features, parametrization, biassociativity, export format.

## A NEW APPROACH OF THE STRUCTURES SHAPE OPTIMIZATION

POMAZAN Valentina, *Universitatea "Ovidius" Constanta*

**Abstract.** In this paper a method is proposed for the design optimization of structural components where both shape and topology are optimized. The boundaries of the shape of the structure are represented using contours of a shape density function, defined over a feasible domain and represented by a continuous piece-wise interpolation over the finite elements for structural analysis. The values of the density function at the nodes serve as the design variables of the optimization problem. The advantage of this shape representation is that both the shape and topology of the structure can be optimization algorithm, with the objective of minimizing the compliance subject to a constraint on the total mass of the structure.

*Keywords:* shape, topology, optimization, boundaries, density function, optimization variable.

## DETERMINAREA ARIEI ACOPERITE PE UN STATOR DISCRETIZAT IN ELEMENTE FINITE, DE UN ROTOR DE FORMA ALEATOARE

POMAZAN Valentina, *Universitatea "Ovidius" Constanta*

**Abstract.** The paper presents the code for intersection area between a fixed contour, named stator and a mobil contour, named rotor. The approach is made for uniform rotation movement. An ASCII file is generated, containing the data base with superposed areas for each polar position of the rotor. The results can be easily correlated using common algebra with correct fluid flow or electromagnetic calculus.

*Keywords:* rotor, stator, meshing, elemental area, AutoLIPS.

## MORPHOLOGY OF SOME MELT-SPUN AlMg AND AlSi ALLOYS

NOCIVIN Anna, CIUCA Ion, *Universitatea "Ovidius" Constanta, Universitatea "Politehnica" Bucuresti*

**Abstract.** Rapidly solidified AlMg (0 to 16,5 at % Mg) and AlSi (0 to 20,2 at % Si) alloys were produced by melt spinning. The AlMg ribbons were single-phase, whereas the AlSi ribbons were dual-phase. In the ribbons of both alloys systems the fineness of the microstructure and the hardness also increased with increasing alloying element content.

*Keywords:* rapidly solidified alloys, ribbons, morphology and hardness.

## **SOME STUDIES CONCERNING MECHANICAL PROPERTIES OF SOME Al-Ti-Ce ALLOYS OBTAINED BY ULTRA-RAPID SOLIDIFICATION**

NOCIVIN Anna, CIUCA Ion, *Universitatea "Ovidius" Constanta, Universitatea "Politehnica" Bucuresti*

**Abstract.** This paper reports a research study of some samples from rapidly solidified Al-Ti alloys and Al-Ti-Ce alloys, which present a microcrystalline structure. After hot extrusion, we have determined the values of some important mechanical properties.

*Keywords:* rapidly solidified alloys, microcrystalline structure, mechanical properties.

## **THE INFLUENCE OF THE HEAT TREATMENT PARAMETERS ON MICROSTRUCTURE OF THE Ti-8Mo-8V-2Fe-3Al ALLOY**

CIUCA Ion, NOCIVIN Anna, BUNEA Daniel, RADUCANU Doina, *Universitatea "Politehnica" Bucuresti, Universitatea "Ovidius" Constanta*

**Abstract.** In this paper we have studied some microstructural aspects of Ti based alloy Ti-8Mo-8V-2Fe-3Al, obtained by varying the cooling rate of sample which has suffered a solubilisation at high temperature in  $\beta$  monophasic domain.

*Keywords:* Ti based alloys, solubilisation,  $\beta$  monophasic domain, cooling rate.

## **THE HEAT TRANSFER IN THE HEATING PROCESS FOR A STEEL HEAT TREATMENT**

DUMITRACHE Constantin, BARHALESCU Mihaela, *Institutul de Marina Civila Constanta*

**Abstract.** This paper introduces a calculus model of thermal transfer at heating and cooling process. It's known that at heating and cooling of steels the thermal transfer could be through conduction, convection and radiation process depending on temperature and the type of thermal installation. Fourier general differential equation has good validity, it could be applied for all thermal transfer cases from nonstationary or stationary thermal systems. Using the sequence Matlab programme we find approximate solution of transcendental equation and it is drawing the heating and cooling curves.

*Keywords:* heat transfer, convection, radiation, conduction, heat treatment.

## **THE CORRELATION BETWEEN FORMAT, INDICATOR AND FOLDING MODALITY OF THE DRAWING IN RESPECT OF ACTUAL STANDARDS**

POPESCU Violeta, MOGA Gabriela, *Universitatea "Ovidius" Constanta, Academia Navala "Mircea cel Batran" Constanta*

**Abstract.** This paper presents a title blocks trying to correlate the standards: SR ISO 5457:1997, SR ISO 7200:1994 and SR 74:1994.

*Keywords:* reprezentare grafica, pliere, indicator.

## **CONCEPTS OF « ACTIVE METHODS » AND IMPLICATIONS OF THE DISCIPLINE « DESCRIPTIVE GEOMETRY AND TECHNICAL DRAWING » IN PREPARATION OF THE GRADUATES FROM NAVAL ACADEMY**

MOGA Gabriela, *Academia Navala "Mircea cel Batran" Constanta*

**Abstract.** Under its double motivation, the instructional methodology is science, technique and art the same time. It is science because it requires an enhanced effort of scientific development: it is a technique because it requires an enhanced effort of scientific development; it is a technique because it's the carrier of the instructional and educational activity representing a real action: it's act as it's the results of combining a multitude of factors that grants it high subtleness.

The task of improving the methods cannot be accomplished by scientific research alone. Every teacher has to contribute by his own activity to the fundamental quality of the method: efficiency.

## **MODELAREA RELATIONALA A SISTEMELOR CU EVENIMENTE DISCRETE**

BORDEA Gheorghe, *Institutul de Marina Civila Constanta*

**Abstract.** Starting from the basic concepts of the simplified action structures, the paper shows the relational modeling formalism of discrete event systems witch facilitates the solving of specific problems, such as action ordering, study of a plane, determination of a minimal plane, calculus of repetitive action sequences.

*Keywords:* sisteme cu evenimente discrete, relatii, modelare.