
Studies on Estimation of Delta Ferrite Content of the Welded Joints Structure of Austenitic Stainless Steels

Marian DORICĂ

Student, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Coordinator: Assoc. Prof. PhD eng. Melat BORMAMBET

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract Austenitic stainless steels have a very wide use: the high temperatures, cryogenic, chemical industry, food, aerospace, pharmaceuticals, shipbuilding, nuclear, transport, civil engineering, etc. These steels resist corrosion (except sulphur media), plastic deformation is easy to process, have a good weldability and a resistance even at 1373° K, but no resistance to stress corrosion (especially in high temperature chloride solutions). Among the phenomena that occur in welding these steels are mentioned hot cracking which is characteristic of steels with a large range of solidification and is manifested by the appearance of cracks in the seam or in the transition during cooling, immediately after solidification of metal bath. Ensuring optimum ferrite content, 4-12 FN, that intercrystalline precipitates, can prevent this phenomenon. Ferrite formed an elastic connection between the crystals and takes the efforts occurring in the welding process and prevents cracks.

The paper makes a study of the delta ferrite content of welded joints of X6CrNiTi18-10 and X2CrNiMoN17-3-3 steel. Estimated delta ferrite was made with WRC diagram.

Keywords: austenitic stainless steels, delta ferrite, WRC diagram.

Analytical Studies on Weldability of Heat Resistant Steel 16Mo3 Used to Achieve Pressure Vessels

Alexandru Gabriel PETRESCU

Student, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Coordinator: Assoc. Prof. PHD eng. Melat BORMAMBET

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract Steels with molybdenum and chromium-molybdenum, are for the manufacture of parts and equipment, which working at high temperatures (450-600°C), being used to manufacture energy boilers, of drill pipes, pressure vessels and heat exchangers in chemical and petrochemical industry. 16Mo3 steel weldability is conditional by: occurrence of hardening constituents, which fragile HAZ and seam metal; changing grain size, with effect on decreasing the mechanical characteristics; cracks appearance.

This paper aims to study the weldability of steel with carbon equivalent C_e , heat-affected zone analysis in terms of hardening, analysis of thermal field in welding and $t_{8/5}$ cooling time calculation and preheating temperature determination which has the effect removal of hardening constituents and cracking.

Keywords: heat resistant steel, heat-affected zone, cooling time, preheating.

Options for Substations Battery

Ioan-Victor CERNAT

Student, Faculty of Naval Forces, Naval Academy „Mircea cel Bătrân” of Constanța

Coordinator: Cdor. Prof. PhD eng. Gheorghe SAMOILESCU

Faculty of Naval Forces, Naval Academy „Mircea cel Bătrân” of Constanța

Abstract For several decades, vented lead-acid batteries have been used to power the switchgear and other substations loads. While they tend to have short lifetimes in the harsher environments of small distribution substations these batteries have, on the whole, provided satisfactory service. However, the high cost of some battery maintenance operations, such as water addition, specific gravity checks, and connection maintenance, has given some users to install valve-regulated lead-acid (VRLA) batteries in their substations. VRLA technology offer low cost, high energy density and freedom from some maintenance chores. What many users have not properly understood is that these benefits come at the price of battery life, reliability and overall cost of ownership.

Users have also soon laptop computer batteries evolve from nickel-cadmium through nickel-metal hydride to lithium-ion in the space of just few years. Articles on electric vehicle (EV) research mentions similar batteries, along with more exotic varieties. It is reasonable to assume that all this research work will lead eventually to a better battery for substations.

This paper discusses the benefits and drawbacks of some of the potential alternatives to vented lead-acid batteries in substation service. These include VRLA nickel-cadmium (Ni-Cad), nickel-metal hydride (Ni-MH), lithium-ion (Li-Ion), and lithium-polymer (Li-polymer). The aim of this paper is to provide an overview of ongoing battery development work and an idea of the timeframe for commercial availability.

Keywords: lead-acid batteries, VRLA technology, battery development, commercial availability.

Technical and Managerial Aspects in Shipping of Container

Andreea Ilona STÂNGĂ

Student, Merchant Marine Faculty, Naval Academy ”Mircea cel Batran” of Constanta

Coordinator: Assoc. Prof. PhD eng. Florin NICOLAE

Merchant Marine Faculty, Naval Academy ”Mircea cel Batran” of Constanta

Abstract This thesis describes the performance of a container terminal by using agent-based technologies. The focus of the research involves the performance from the container terminal manager’s perspective and how to improve the understanding of the factors of productivity. The need to manage complex systems such as container terminals requires new ways for finding solutions, e.g., by applying novel methods and technologies. The approach taken in paper work is to model the decision makers involved in the container terminal operations and various types of terminal equipment. In order to evaluate the multi-agent based systems approach, a simulation tool, called SimPort, was developed for evaluating container terminal management policies. Moreover, a multi-agent based simulation approach is used to evaluate a new type of Automated Guided Vehicles (AGV) using a cassette system, and compare it to a traditional AGV system. Results of the research indicate that the performance of a container terminal can be improved by using agent-based technologies.

Keywords: container terminal, the multi-agent based systems, Automated Guided Vehicles.

Features of Position Reference Systems in Dynamic Positioning

Cătălin-Nicușor CRISTIAN

Student, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Coordinator: Lecturer PhD eng. Alexandru PINTILIE

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract The aim of this work deals with a general review on the features of position reference systems in dynamic positioning. A ship is continuously exposed to environmental disturbances. The objective of a Dynamic Positioning System is to maintain the desired position and heading applying adequate propeller thrust and without using device as anchor. Dynamic Positioning can be described as an integration of a number of shipboard systems to obtain the ability of accurate maneuverability.

Keywords: dynamic positioning, IMO classification, position reference systems.

Study Concerning the Steam Machine and the Paddle Propulsion System of Republica Vessel

Florin CHIMBESCHI

Student, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta,

Coordinator: Lecturer PhD eng. Alexandru PINTILIE

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract In the actual context of the papers has been realized a study concerning the steam machine and the paddle propulsion system of the Republica vessel. The vessel's steam machine was design and constructed using the technology that existed at the beginning of the XX century. Also the paddle propulsion system was designed depending on the steam machine's technical parameters, the function mode of this system being very interesting to observe. The paper presents aspects about the paddle propulsion system function mode of the Republica vessel.

Keywords: steam machine, paddle propulsion system.

Analysis of Hydrocarbons from Pollution in Seaside Area Romanian Wrecks

Anca BĂLAN

Student, Merchant Marine Faculty, Naval Academy "Mircea cel Batran" of Constanta

Coordinator: Assoc. Prof. PhD eng. Florin NICOLAE

Merchant Marine Faculty, Naval Academy "Mircea cel Batran" of Constanta

Abstract The problem of Black Sea Wrecks is now an interesting topic for divers and archaeologists perhaps (if ancient wrecks) and less for the makers of the environmental protection sector. The paper proposes, first, a summary of sunken wrecks and a risk analysis of oil pollution from wrecks in the Romanian seaside. In addition technical solution proposed intervention may be an important basis for a practical approach to this problem possibly with major potential impact on the environment.

Keywords: wrecks, oil pollution, the Black Sea.

Comparative Analysis of Environmental Performance of Transportation

eng. Matilda ȚOȚOIU

Masterand, Faculty of Civil Navy, "Mircea cel Bătrân" Naval Academy of Constanța

Coordinator: Assoc. Prof. PhD eng. Florin NICOLAE

Faculty of Civil Navy, "Mircea cel Bătrân" Naval Academy of Constanța

Abstract The main objective of this analysis is focused on establishing guidelines and specific patterns of transmission chains in a critical comparative approach in terms of environmental performance. Method is a proven method based on the European life cycle assessment of several modes of transport. From this perspective the environmental evaluation and impact assessment proposed in this paper proposes a set of specific indicators (OECD Core Set of Indicators, OECD 1993).

The proposed methodology is a tool for quantitative and qualitative characterization of the environmental performance of a transport chain (including all possible modes of transport between points of departure and arrival of goods). Evaluation methods that are highlighted and summarized the work are described in the context of European scientific expertise in the field (Eco-Indicator 99 method, EPS-environmental strategies method, different methods of assessment covered national and international).

The paper shows that maritime transport chain, which has proven economic efficiency, in terms of environmental performance reported to other modes of transport. The work opens new research directions aimed at optimizing the transport chain from the perspective of economic efficiency but also the environmental performance criteria promoted by the European transport policy.

Keywords: transport chain, shipping, environmental performance.

Methods for Quantitative Estimation of Toxic Emissions Resulting from Transport Ship Activities

eng. Adriana MUNTEANU

Masterand, Facultatea de Marină Civilă, Academia Navală „Mircea cel Bătrân” Constanța

Coordonator: Assoc. Prof. PhD eng. Florin NICOLAE

Facultatea de Marină Civilă, Academia Navală „Mircea cel Bătrân” Constanța

Abstract The main objective of this paper is to develop a soft for calculating fuel consumption by type of vessel and its gross tonnage, on which is developing a method for estimating emissions from shipping activities.

The paper is based on a series of studies prepared by both the European Environment Agency (both TERM and MEET(which is a project created specifically to develop methods for estimating emissions from business transport) projects, annual reports compiled by Eurostat on fuel consumption from transport and information provided by the English naval Classified Register (Lloyd's Register of Shipping). The structure of the computer program, the input data that is entered by the user can determinate the volume of emissions from a particular type of pollutant from any scenario developed in a certain period of time in a given area.

Keywords: maritime transport, contaminant, software.

Topical Matters of Wind Energy Harnessing in Romania

Vasile PREOTU-IVAN

Student, Faculty of Naval Forces, Naval Academy „Mircea cel Bătrân” of Constanța

Coordinator: Cdor. Prof. PhD eng. Gheorghe SAMOILESCU

Faculty of Naval Forces, Naval Academy „Mircea cel Bătrân” of Constanța

Abstract The paper shows arguments that support the development of wind farms in Romania. In this way there is analyzed the world's trends regarding Ae investments' dynamic being also named ecological arguments contained in the UN's documents about the emission of greenhouse' gases. There is shown an estimation of Romania's wind energy potential being identified the most favorable sites for wind farms. A study for the future Semenice wind farm it is also drawn out accompanied by an evaluation of Wind Energy Research Center from "Politehnica" University of Timisoara. At the same time there is underlined the targets of the western region of Romania in which means the development of wind energy harnessing.

Keywords: wind energy, installed capacity, wind farm.

Study Concerning the Precessional Gearing Teeth Processing Accuracy

Lucian MEHEDINTI

Student, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta,

Coordinator: Assoc. Prof. PhD eng. Erol CARJALI

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract The paper presents the accuracy of the precessional gearing in light of all causes which contribute to it, regarding, in addition to the newest standards, also the both global and local research results, allowing those involved in the production of the precessional gearing to substantially improve their quality.

Based on the main errors analysis which influences the teeth profile accuracy, the teeth profile modification method for diagram error compensation was proposed. The diagram error is being generated due to the peculiarities of sphero-spatial motion of a gear wheel. In this respect the tooth surface with profile modification was described analytically. The comparative analysis of teeth profiles with/without profile modification for various geometrical parameters of teeth was carried out.

Keywords: precessional gearing, quality, gear wheel, profile, accuracy.

Studies and Researches on How to Grant Technical Expertise for Hot Water Boilers and Low Pressure Steam in Order to Prolong the Service Life

eng. Dorin FOCȘA

Masterand, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanța

Coordinator: Prof. PhD eng. Remus ZĂGAN

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanța

Abstract The parameters of the elements operating conditions and mechanisms of hot water boilers rule are different, so they must specify both for metallic construction and for each mechanism separately.

The purpose of this study is to analyze the methodology to prolong the service life for hot water boilers based on technical examination. In this way we make a special procedure based on legislations rules and norms.

Keywords: hot water boilers, technical examination, technical procedure, service life.

Cranes: Investigations and Technical Examination of Character for Establish Timing in Residual Operation

eng. Daniel TOMA, eng. Lenuța POPESCU

Masterands, Faculty of Mechanical, Industrial and Maritime Engineering, Ovidius University of Constanța

Coordinator: Prof. PhD eng. Remus ZĂGAN

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanța

Abstract The parameters of the elements operating conditions and mechanisms of metal construction cranes rule are different, so they must specify both for metallic construction and for each mechanism separately. On the other hand, they have different function of the metallic construction and mechanism in the machine, which prompts specific features, requires different definition of the parameters correctly.

The purpose of this study is to analyze the methodology to increase the timing operation of cranes based on technical examination.

Keywords: cranes, technical examination, timing operation.

Technical and Economic Study on Compensation of Reactive Consumption of Electricity Power Stations of an Industrial Consumer

eng. Marian ANDREIEV

Masterand, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanța

Coordinator: Prof. PhD eng. Remus ZĂGAN

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanța

Abstract The purpose of this study is to analyze the consumer, from a deep connection station (DCS) in the national energy system and all stations downstream of DCS, in order to establish points of capacitive reactive power injection so with a minimum financial effort to achieve maximum economic efficiency.

The study does not propose to be a theoretical presentation of reactive energy compensation issues but to highlight the characteristics that have relevance in consumer compensation.

Keywords: reactive energy, deep connection station, consumer compensation.

New Gold Savonius Wind Generator Helmet

Petrică Ionel V. CIOARĂ

Student, Faculty of Navigation and Naval Transport, Maritime University of Constanța

Coordinator: Prof. PhD eng. Viorel PANAITESCU

Faculty of Navigation and Naval Transport, Maritime University of Constanța

Abstract Design and construction of a real Savonius wind power generator, for universal use in any conditions, for rechargeable batteries. I will present an original device: invented, designed and constructed by me, for the fun recharging of the batteries .

Keywords: Wind, Helmet, Savonius wind generator, alternative energy sources.

The First New Romanian Cheap Nuclear Submarine

Petrică Ionel V. CIOARĂ

Student, Faculty of Navigation and Naval Transport, Maritime University of Constanta

Coordinator: Assoc. Prof. PhD eng. Victor HRENIUC

Faculty of Navigation and Naval Transport, Maritime University of Constanta

Abstract Nuclear technology uses the energy released by splitting the atoms of certain elements. Nuclear Power is generally electrical produced from controlled (i.e., non-explosive) nuclear reactions. Electric utility reactors heat water to produce steam, which is then used to generate electricity. An U.S. company developed a new hi-technology for small nuclear modules. Using SMR's, is possible to have the first ROnuclear submarine .

Keywords: small nuclear modules, nuclear energy, shipping industry, submarine power plant.

Considerations on Choosing the Cranes for Operating the Ships in Constanta Port

eng. Iulian PISICA, eng. Daniel FAIDA

Masterands, Faculty of Mechanical, Industrial and Maritime Engineering, "Ovidius" University of Constanța

Coordinator: Lecturer PhD. eng. Mirela COTRUMBA

Faculty of Mechanical, Industrial and Maritime Engineering, Ovidius University of Constanța

Abstract Choosing cranes for handling of goods in ports involves comparisons based on specific features of the cranes in relation to the objective pursued, which requires sorting of cranes on types and sizes, capable of meeting the operating parameters according to certain criteria of technical and economical efficiency, viable in a given period.

The present study highlights the growth of productivity obtained for operation with floating crane vessels Gemini 4, with the overlap movements working versus the situation in which they are not overlap.

The measurements were made in the company TTS Operator Constanta.

Keywords: Gemini floating crane, productivity, fuel consumption, efficiency.

Study on the Dynamics of the Traveller's Lifting System at the Occurrence of a Shock During Lifting the Suspended Load

eng. Razvan OLTEANU, eng. Florin SMARANDEI

Masterands, Faculty of Mechanical, Industrial and Maritime Engineering, "Ovidius" University of Constanța

Coordinator: Lecturer PhD. eng. Mirela COTRUMBA

Faculty of Mechanical, Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract Load lifting and lowering movements are the most common working movements of cranes. During the course of these movements dynamic phenomena can take place with unwanted effects both on the structure of the crane and on the suspended load.

In this paper, we study the dynamic behaviour of the load lifting cable of a traveller when producing a malfunctioning in the drive system of the cable drum (e.g. in the coupling, brake, reducer etc.) and causing sudden lifting of the suspended load.

Keywords: lifting system, suspended load, dynamic force.

The Importance of Inside Shipping on the Intermodal Shipping

eng. Camelia GHEORGHE

Materand, Faculty of Mechanical, Industrial and Maritime Engineering, "Ovidius" University of Constanța

Coordinator: Assoc. Prof. PhD eng. Violeta POPESCU

Faculty of Mechanical, Industrial and Maritime Engineering, Ovidius University of Constanța

Abstract. Intermodality leads to efficient use of transport modes, especially those who have significant reserve capacity (inland waterway transport, shipping and rail transport) with beneficial effects on the whole intermodal transport chain, especially in terms of energy consumption and pollutant emissions. The paper aims to highlight the benefits of inland waterway transport participation within the intermodal transport chain. Precisely because of these advantages, the development of transport on the Danube has become a requirement for the European Union.

Keywords: intermodal transport, Danube, inland waterway transport.

The Advantages of 3D Modeling in Steel Shipbuildings

Cătălin-Nicușor CRISTIAN, Bogdan CIULEI, Adrian ANUȚĂ

Students, Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Coordinator: Lecturer PhD eng. Alexandru PINTILIE

Faculty of Mechanical Industrial and Maritime Engineering, Ovidius University of Constanta

Abstract: The purpose of this paper is to present the benefits of 3D modeling in order to built naval steel structures. 3D modeling offers for an engineer a more realistic view on the required drawings. In the present paper we illustrated the advantages for the achievement of three-dimensional space steel structure of an container ship composed by (one bridge deck and one accommodation house) that can be made in any shipyard.

Keywords: 3d modeling, AutoCAD, solids.

3D Animated Ahips: General Considerations and Future Perspectives

Robert VAN DEN BOS, Bogdan ALEXE, Răzvan DĂNILĂ

Students, Faculty of Mechanical, Industrial and Maritime Engineering, "Ovidius" University of Constanța

Coordinator: Lecturer PhD. eng. Alexandru PINTILIE

Faculty of Mechanical, Industrial and Maritime Engineering, "Ovidius" University of Constanța

Abstract The purpose of this paper is to give an insight in the way ships can be animated in 3D. Projecting the model on 2D, the mathematical background, the change of viewpoints and the possible usages of ships that are animated in 3D will be highlighted. Animating ships gives excellent opportunities for ship owners and crews to overview the structure, present the ship to partners and to use the model as training instrument.

Keywords: ship building, 3D presentation, graphical projection, solid motion, animation, virtual reality.

Kit to Ensure Buoyancy for Equipping a Car

eng. Ion BURDUJA, eng. Iuliana IONESCU, eng. Cristian MANOLIU, eng. Alexandru CATARGIU,

eng. Cristian BICHI, eng. Ștefan DINU

Masterands, Faculty of Mechanical, Industrial and Maritime Engineering, Ovidius University of Constanța

Coordinator: Prof. PhD eng. Laurențiu MANEA

Faculty of Mechanical, Industrial and Maritime Engineering, Ovidius University of Constanța

Abstract: In some areas, to move from one point to another, and vice versa need to drive on road and on water. To this request the car is the vehicle that can be adapted for these conditions. So we decided to think a universal set of equipment to provide buoyancy for the vehicle crossing the water surface using floating tire, which will serve to ensure that buoyancy and the car propulsion. This solution is advantageous because the assembly and disassembly of the tire, the car can return to its old destination, namely the reverse may be prepared in a short time to travel on water. Need to procure and use of such equipment are justified in areas frequently affected by floods, rescue purpose, and recreation, etc.

Keywords: floating tire, buoyancy.
