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CUPRINS

ŞTIINŢE NAUTICE

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1. Management of Actions to Prevent Piracy and Improve Maritime Security in High-Risk Areas

Author: Ștefan Constantin POPESCU, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Cpt. Ş.L. Dr. ing. Sergiu ȘERBAN
Abstract: The paper "Action management for preventing piracy and improving maritime security in high-risk areas" highlights the issue of piracy prevention in risk areas, which is increasingly common because of the financial wishes of those who commit such acts. Also included in the composition of the work is a study on the possibilities of removing piracy by engaging the Romanian Navy in missions in high-risk areas. The first idea presented in this paper is general considerations on piracy, definitions of piracy, the current state of the problem of piracy at sea, and some of the loudest cases of piracy that occurred in the 21st century. The second idea of this paper is a description of the high-risk areas. The third and the most interesting one is about the actions of the Romanian Navy against piracy. The last idea of this paper a detailed study on the possibilities of removing piracy by engaging the Romanian Navy in missions in high-risk areas, the main advantages of carrying out missions against piracy at sea, and in the end these short conclusions will be presented.

2. The Influence of Shipping on Global Change and Methods of Reducing Environmental Impact

Author: Tiberiu Andrei BURCEA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Lt. Cdor. Ș.L. Dr. ing. Alexandru COTORCEA

Abstract: The development of transport has closely followed the world economic development, which has required a continuous increase in the volume of goods transported. This has led to an increase in the number of road freight vehicles, additional costs, pollution, accidents and adverse social effects. The need to decouple economic growth from increasing transport volume, in order to further reap the benefits of economic growth without having adverse effects, is gaining new value by promoting ''environmentally friendly'' and safer modes of transport.

3. Identify and Assess the Risks Associated with the Shipment of Harmful Liquids in Bulk

Author: Mihail Michena FEDUL, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Throughout the development of the it was recognized that it must be based on sound naval architectural and engineering principles and the best understanding available as to the hazards of the various products covered. Gas carrier design technology is not only a complex technology but is rapidly evolving and the Code shall not remain static. The Organization will periodically review the Code, continually taking into account both experience and future development.

4. Effects and Consequences Associated with Accidents in Containerized Shipping

Author: Marius GHINEA, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The purpose of this paper is to highlight the number of dangers to which today's seafarers are exposed. The different types of defects that appear on board ships are analyzed, their causes, as well as the preventive measures that must be taken to eliminate or reduce them. This paper shows that human error is the main cause of accidents at sea and emphasizes the responsibilities that a good navigator must accumulate to reduce incidents. To consolidate this subject, we will refer to statistics concerning marine casualties and incidents involving container vessels. The causes and measures that could have been taken to prevent the tragic accident are analyzed.

5. The Post-Pandemic Evolution of Maritime Transport of Petroleum Products

Author: Răzvan-Cosmin GÎRTONE, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Conf. univ. Dr. ing. Mihail PRICOP

Abstract: In my project I talk about the post-pandemic evolution of the maritime transport of petroleum products, about how it was and how I think that the international maritime transport will be affected, through the analysis of the naval transports performed in the EU countries.

6. Analysis of the Effects and Consequences Associated with Accidents in Containerized Shipping

Author: Silviu HAGI, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: In this paper it will be presented the analysis of the effects and consequences associated with accidents in

containerized shipping: what is an accident, why accidents occur, how often, what can be done to prevent them and what measures were taken to improve ships in order to avoid casualties.

7. Ship Tonnage Measurement Considerations

Author: Indira ISA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. Mihail PRICOP

Abstract: The relative magnitude of ships was indicated for centuries using the term 'tonnage'. The term 'tonnage' was used since the days of wooden sailing vessels and was based on the number of wine-barrels, or tuns. The term 'tunnage' was used for a period of time and later became 'tonnage'. In present the 'International Convention of Tonnage Measurement of Ships, 1969' is the international standard for tonnage measurement of ships. In this paper is presented the historical evolution of different tonnage measurement methods, followed by the current regulations regarding tonnage in present.

8. Autonomous Underwater Vehicles Used for Underwater Research

Author: Ștefan-Constantin TOADER, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: S.L. Andra NEDELCU

Abstract: There has been a vast evolution regarding underwater research with the help of underwater vehicles. Since times even before the bathysphere, people have been trying to discover the uncovered depths of our ocean, nowadays benefiting from technology able to explore autonomously, guided remotely by people in front of a computer screen. Realizing that 80% of the underwater space is unexplored, gives us a good idea about the vastness and the multitude of opportunities that it could present us, to the point where it could help us get a better grasp of our

history as human beings. Therefore, autonomous underwater vehicles are a technological aid which could offer us the assistance to reach greater depths of research and progress.

9. Loading and Discharging of Cargo Vessels
Author: Roxana Simona VICICA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: CLC. Dr. Marius APETROAEI
Abstract: This project is covering the loading and discharging of general cargo vessels. Special attention is given to the different methods of securing cargo, as well as careful handling procedures to prevent damage.

10. The Use of Privately Contracted Armed Security Personnel on Board Ships in the High-Risk Area
Author: Ioan Gabriel CERNAMORIT, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: CLC. Dr. Marius APETROAEI
Abstract: The increased threat to commercial shipping by pirates has led to extended use of armed guards and a marked expansion in the number of firms offering armed maritime security services for ships transiting the High-Risk Area (HRA). The Organization, whilst not endorsing the use of privately contracted armed security personnel (PCASP), understands that shipping companies may find it difficult to identify reliable, professional private providers of armed security. The purpose of this guidance is to assist shipowners, ship operators and shipmasters considering the use of PCASP on board ships to provide additional protection against piracy. It is important to note that flag State jurisdiction and thus any laws and regulations imposed by the flag State concerning the use of PMSC and PCASP apply to their ships. Furthermore, it is also important to note that port and coastal States' laws may also apply to such ships. The use of PCASP should not be

considered as an alternative to Best Management Practices (BMP) and other protective measures. Placing armed guards on board as a means to secure and protect the ship and its crew should only be considered after a risk assessment has been carried out. It is also important to involve the Master in the decision-making process.

11. The Future of Containerization and Logistics

Author: Florin GOBEAJĂ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. Mihail PRICOP

Abstract: The chosen theme aims at an evolution of the maritime trade of containerized goods, as well as an adaptation of this sector lately, in a world with limited freedoms of movement, in which most of the events took place under the image of the COVID-19 pandemic. The adaptive capabilities of the present have allowed rapid developments in technology, with vaccination, automation and digitalization playing key roles in these processes. However, trade remained a very important factor, being supported from all sides, from traders, carriers to governments, to remain functional, which led to collapse prevention. And after all the events we are left with a legacy that has shown us that we can adapt to a pandemic situation, always looking for modern solutions.

12. Considerations Regarding Maritime Security and ISPS Code

Author: Adrian CONSTANTIN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: CLC. Dr. Marius APETROAEI

Abstract: Maritime transport is the most economical way to mobilize goods. As the dynamics of the economy change with "globalization" and countries open the door to a new policy, the shipping industry has resisted and endured change by providing

the world's best services. Today, the industry is threatened with being used by criminals to fulfill its malicious desire. The International Maritime Organization (IMO) has taken steps to stop such acts. These measures are useful when incidents that jeopardize maritime security are identified before they reach their target. The dissertation retrospect legal instruments and introspects the industry and finds that the industry is vulnerable to maritime crime such as piracy and armed know-how against ships and maritime terrorism which are maximum threats that may affect maritime security. The study examines the maritime security measures applicable to ships and port facilities, the implementation of technologies and evaluates solutions for better optimization.

13. Methods of Collecting Hydrocarbons from Water Luster. Hydrocarbon Spot Dispersion Simulation.

Author: Tiberiu Viorel COJAN, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: S.L. Andra NEDELCU

Abstract: The following work is going to elaborate methods of collecting hydrocarbons from water luster. After a hydrocarbon spot dispersion simulation with data collected from different charts the following work details the international laws that are restricting maritime pollution. As a general introduction the paper aims to present the beginnings of commercial fleets to the peak and relate some of the most dangerous oil spills in history one of them being the Exxon Valdez Oil Spill which was an international incident.

14. Grounding of the U.S. Tankship Exxon Valdez

Author: Marian-Marius MARIN, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The study presents the grounding of the U.S.

Tankship Exxon Valdez that occurred in Prince William Sound, Alaska, on March 24, 1989. After running aground, the oil tanker spilled more than 11 million gallons of crude oil. The accident was the largest crude oil spill in the United States at that time and it was anticipated to have disastrous effects on the ecology and fisheries of that coastal region. ExxonMobil Shipping Company and the U.S. Coast Guard began a massive cleanup effort that included over 11.000 personnel, 1.400 vessels and 85 aircrafts. This study will explore the Exxon Valdez accident, environmental and economic losses, the safety issues like the vessel's navigation watch, the role of human factors, manning standards, vessel traffic service and oil spill response.

15. Assessment of the Environmental Impact Associated with Offshore and On-Shore Accidents for the Romanian Black Sea Coast Area.

Author: Victor PASCAL, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The most important support decision software for the management of a crisis in case of major marine oil spill is related to the time prediction and analysis of the oil slick trajectory on the sea surface. Such software is based on a very complex 3D mathematical model and a large set of hydrological data. This software will work only for the maritime area configured by the hydrological and geographical data sets. For the General Coordinator of the oil spill response, the prediction of the oil slick movement, under real time meteorological conditions, is crucial for the decisions that must be taken in the following hours after the spill. The aim of this paper is to underline the use of such software for oil spill crisis management in the Romanian maritime waters.

16. Characteristics of a Ship Used for Marine Pollution Research

Author: Constantin-Alexandru TABARCEA, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: S.L. Andra NEDELCU

Abstract: In the dissertation project entitled "The characteristics of a ship used for marine pollution research" I will first present the example of the laws and regulations included in the field of maritime pollution, referring to MARPOL, IMO, SOPEP, SMPEP. In the following, I will present the construction features, equipment and technologies currently used on board ships specialized in marine pollution research, with special reference to such ships as: Electra af Asko, The Celtic Explorer and Celtic Voyager. For the end part of the paper I will address innovative topics that will revolutionize research, prevention and cushioning of the harmful effects of marine pollution, innovative technologies such as autonomous ships, to present the evolution and direction the field of marine pollution research is heading.

SISTEME ELECTROMECANICE NAVALE

BIROUL SECŢIUNII
Preşedinte: Prof. univ. Dr. ing. Beazit ALI
Membri: Conf. univ. Dr. ing. Adrian POPA
Conf. univ. Dr. ing. Marian RISTEA-KOMORNIKI

1. Main Engine Behaviour Comparison on Different Types of Fuels

Author: Cristian BARBULESCU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing Corneliu MOROIANU
Abstract: This paperwork presents the goods and drawbacks of using biodiesel, comparing it with marine diesel oil and heavy fuel oil, based on MAN B&W engine thermodynamic design calculation. As biodiesel with Petro diesel blends are more often used than simple biodiesel, the software was designed to also compute the thermodynamic calculation for the desired percentage of fuel combinations and to display specific parameter graphs for easy comparison of the Main Engine performances. In this paper, combinations of 10% biodiesel with 90% diesel, 20% biodiesel with 80% diesel and 50% biodiese with 50% diesel were used.

2. 18 000 TEU Container Ship. Modeling of Cooling System Using Calculation Programs Based on Finite Volume Theory.

Author: Nichita MLADIN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Șef lucrări Dr. ing. Daniel MĂRĂȘESCU
Abstract: For this work I will model the cooling system using calculation programs based on finite volume theory. For doing this we will use ANSYS as main program and we will apply this for an 18 000 TEU container ship.

3. Contribution to the Optimization of Electrical Systems in Commercial Maritime Vessels

Author: Claudiu Carol NICOLCIOIU, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Cpt.cdor conf. univ. Dr. ing. Florenţiu DELIU

Abstract: The elaborated thesis "Contribution to the optimization of electrical systems in commercial maritime vessels" tackles the topic of analysis and optimization of the naval power systems. Analysis of the structure of the entire electrical system starting from the production of electricity on board to the analysis of the consumers is aimed in order to reduce electrical consumption with purposeful reduction of fuel consumption, by automation of entire electro power system is reduced the crew, reducing and eliminating pollution, final aim is to reduce the price of maritime transport of goods carried on board. In the work was pursued its necessity and opportunity and it's objective was materialized in the optimization of the electrical systems on board merchant vessels by creating a software program that carries out the power balance in each of the marching regime of the vessel depending on the load of each consumer.

4. Advanced Emissions and Purification System (AEP) (Scrubber System)

Author: Claudiu-Alexandru SARCU, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Beazit ALI

Abstract: The PureSOx Exhaust Gas Cleaning system is designed to remove Sulphur oxides (SOx) from the exhaust gas. As a secondary effect, part of the particulate matter (PM) in the exhaust gas is also removed. The Pure SOx scrubber mixes water and exhaust gas thoroughly for maximum contact

between exhaust gas and water. The Pure SOx system is equipped with bypass arrangements to protect the engine(s). Bypass mode is also selected when there is no need to "scrub" the exhaust gasses. There is a bypass damper in the funnel and an uptake damper situated at the entry point of the scrubber. The bypass damper has a “failsafe open” pneumatic actuator. In the software, the uptake damper and the corresponding bypass damper are controlled in such a way that the uptake damper cannot close before the bypass damper is fully open, and vice versa.

5. 18 000 TEU Container Ship. Modeling of the Lubrication System Using Calculation Programs Based on the Finite Volume Theory

Author: Mihai – Ionuţ ŞERBAN, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Șef lucrări Dr. ing. Daniel MĂRĂȘESCU

Abstract: Modeling of the lubrication system using calculation programs based on the finite volume theory will be done in Ansys and will be applied for an 18 000 TEU container ship.

6. Study of the Cooling Systems Onboard

Author: Bogdan-Mihai TANASE, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Beazit ALI

Abstract: The following project presents the cooling system onboard with all its components. Here we can learn how to install and maneuver many types of cooling systems and all the necessary instructions. Also, in this presentation we can see how to adjust the parameters and how to treat the cooling water properly.

7. Criteria, Ways of Recovering Thermal Energy Lost Through Exhaust Gases

Author: Mihail CACENCO, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Beazit ALI

Abstract: This paper shows that significant fuel cost savings can be achieved by adding a WHRS to a ship project. Whether a full WHRS (ST & PT), a stand-alone WHRS (STG) or WHRS (PTG) solution are selected, all of these solutions offer large fuel savings. Fuel reductions of between 4-11% are possible, depending on the selected WHRS solution, main engine power level, electric need at sea, operational profile, etc. The larger the engine power, the greater the possible fuel saving. In addition to large fuel savings, a WHRS gives large CO2, NOx, SOx and particulate reductions to the benefit of the environment. The payback time is short for all three WHRS solutions, which alone can give the ship owner high fuel savings throughout the lifetime of the ship. Furthermore, a WHRS will rather substantially reduce the ship's energy efficiency design index – same reduction level as the WHRS recovery ratio – thereby helping the ship owner meet even tighter EEDI requirements from IMO in the future.

8. Determination of the Loads and the Pushing Force Generated by the Propeller, Based on the Theory of the Finite Element

Author: Ionuț Daniel MOISUC, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Șef lucrări Dr. ing. Daniel MĂRĂȘESCU

Abstract: In generally, the performance characteristics of a propeller is determined and analyze by experiments like open water and self- propulsion model test which are costly at the initial stage of the design. Numerical analysis using Computational Fluid Dynamics simulations could be an

important alternative on this case. This paper presents the investigation of marine propeller hydrodynamic performance and parameters through Computational Fluid Dynamic analysis. In this paper, a B-series propeller model is developed with respect to some design constraints such as ship speed, vessel draft etc. and analyzed the performance using CFD tools. In this analysis, we consider Realizable k- ω Turbulence Model & Multiple Reference Frame Model. Results found that all thrust coefficient and torque coefficient decreases with the increasing advance coefficient. The efficiency of propeller performance showed characteristic trend of nonlinear increases to a peak an optimum value before decreasing drastically with increasing advance coefficient. The numerical results obtained from CFD Tool are compared with theoretical available publish data.

9. Analysis of Combined Propulsion and Steering Systems

Author: Aihan SEITMOLA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Beazit ALI

Abstract: Ships developed rapidly and generated major changes in the shipbuilding industry. Steel was used as a building material and then propellers appeared in the propulsion of ships. In time, the builders focused on their automation. In this paper I had analyzed the combined propulsion and steering system, a sensitive and current topic, and its advantages and specific characteristics for a good operation at the optimal parameters.

OPERAREA ŞI CONDUCEREA SISTEMELOR ELECTROENERGETICE NAVALE

BIROUL SECŢIUNII
Preşedinte: Prof. univ. Dr. ing. Vasile DOBREF
Membri: Cpt. Cdor Conf. univ. Dr. ing. Florenţiu DELIU
S.L. Dr. ing. Iancu CIOCIOI

1. Modeling and Simulation of Speed Regulation of Electric Drive Systems with Single-Phase Induction Motors.

Authors: Georgian BUȘE, stud. Robert-Sebastian DRON, stud. Cosmin BONDĂR, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Vasile DOBREF
Abstract: The paper presents a SIMULINK model for a drive system with single phase induction motor. The simulation of the model highlights the multiple possibilities of adjusting the performance required by tuning the parameters of simulation and optimizing the motor-load configuration.

2. Study of the use of Renewable Energy Sources on Board Ships

Author: Vasile STAICU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor conf. univ. Dr. ing. Florenţiu DELIU
Abstract: The paper examines the following issues related to the implementation of renewable sources on board merchant ships and the reduction of pollution at sea: Carrying out a detailed study in order to determine and analyze the main polluting gases and greenhouse gases, due to maritime transport. Identify, in the current technological context, the main unconventional energy sources and the possibilities for their efficient use on shipping vessels. Description of the main

components of the hybrid system. Original system design and sizing method. Original theoretical considerations on the influence of large vertical wind turbines installed on the deck of the container ship and the Flettner balloon on the maneuverability and road stability of the ship. Carrying out a study on various types of naval propulsion, using unconventional methods.

3. Modeling and Simulation of the Electric Propulsion of a Passenger Ship

Author: Marius-Alexandru STAN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor conf. univ. Dr. ing. Florenţiu DELIU

Abstract: In the present project, the modeling and simulation of the electric propulsion of a passenger ship was performed. The first chapter, the introduction of the paper, begins with the presentation as a cost-effective and environmentally friendly option, the use of electric propulsion in the naval field.
In the second chapter, the three main types of passenger ships are presented, namely cruise ships, ferries and liners. The second part of this chapter describes the reference ship, the Costa Diadema, a Dream-class cruise ship whose construction was completed in 2014. Chapter III presents a study of the energy systems on board passenger ships and the calculation of the power requirement of the propulsion installation of the reference ship, the calculation of the forward resistance being carried out using the Delft Ship program. The fourth chapter represents the special theme of this paper, in this section being presented the modeling and simulation of the propulsion system of the reference ship, using the MATLAB / Simulink system.
The conclusions resulting from the modeling were presented and discussed in the fifth chapter, which concludes this paper.

4. Modeling and Simulation of a Drive System with Asynchronous Motor Powered from a Static Converter
Author: Ioan-Vlad MUSUROI, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Vasile DOBREF
Abstract: The present paper aims to model and simulate a drive system with asynchronous motor powered by a static converter, presenting the mode of operation, improving the performance of drive systems modern electric motors using a static frequency converter to change the rotational speed of an asynchronous motor with a short-circuited rotor and the advantages and disadvantages of using this type of command.

5. Study of Sources of Electromagnetic Disturbances on Board Ships
Authors: Eduard-Mihai NEGOIȚĂ, stud. Dimitrie TOMOȘOIU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: S.L. Dr. ing. Iancu CIOCIOI
Abstract: The diploma project "Study of sources of electromagnetic disturbances on board ships" aims at examining a number of items, during which the correlation between electronic and electrical equipment on board ships is explained and clarified, this correlation being in the field of electromagnetic compatibility. This paper also presents the electromagnetic environment on board of maritime ships being characterized by the sources of electromagnetic disturbances and the mutual impedance between linear elements; the paper finally culminates with the simulation and determination of the parameters of a monopole antenna, the simulation having a practical character, after which the monopole antenna is designed being characterized by the introduction of the initial parameters and the actual construction of the desired structure.

Another aspect to be considered in discussing the subject of this document is the need to test equipment both from the point of view of electromagnetic compatibility and from the point of view of compliance with European standards. The first principle mentioned above, i.e. the need for prior testing of equipment, is absolutely vital in the installation and commissioning of any equipment to be placed in any installation, be it electromagnetic, electrical, thermal, etc. This concerns both the operation of equipment at maximum working capacity and the protection of those around it. It should also be noted that it is not convenient to test each individual arrangement, but this is recommended for optimal deployment.

6. Study on Anti-Disturbance Measures to Ensure Electromagnetic Compatibility of Ship Equipment

Authors: Eduard-Mihai NEGOIȚĂ, stud. Dimitrie TOMOȘOIU, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: S.L. Dr. ing. Iancu CIOCIOI

Abstract: Electromagnetic environment (EME) on board the ship is a confined space, characterized by the existence of disturbance sources, represented by propulsion systems, various electrical drive systems, navigation equipment, radio equipment, e.t.c., but also by disturbance receivers. This electromagnetic environment can be divided into the ship's own and its external electromagnetic environment. The ship's own electromagnetic environment is determined by the intentional and unintentional emissions of on-board systems and equipment; the external environment is characterized by emissions from external sources of the ship. For the proper operation of the equipment on board, it is imperative to achieve an optimal level of electromagnetic compatibility. Electromagnetic interference may be considered to be under control only when each of the installed electronic systems is

functioning properly both independently and in common with all other ship's systems. In other words, none of the systems will act as a source of interference that would adversely affect the operation of another system. Such a utopian goal would only be achieved if the most skilled ship and equipment technologists were able to design, develop, produce, install and maintain the systems in such a way that all possible sources of electromagnetic interference were anticipated and eliminated. Because such an ideal goal cannot be realistically achieved, skillful techniques must be practiced to restore and maintain the integrity of electromagnetic compatibility. These techniques include shielding, grounding, and the skillful design and construction of the upper part of ships. As an electromagnetic barrier or protective coating, shielding is the process of protecting systems and equipment from the harmful effects of electromagnetic fields that are external to the equipment itself. Therefore, shielding can be considered as a decoupling mechanism used to minimize the interaction of interference produced by the apparatus with other systems located in the vicinity. The main reason why the grounding of electrical installations is necessary is safety. We are talking here about both user safety and that of the elements connected to the electrical network. If we have all the electrical equipment connected to the mains properly grounded then we make sure that, in case of a fault, there will be no dangerous voltage on the surface of the housings of these elements. The purpose of all grounding procedures is to combine the reference potential of distributed equipment. The judicious use of these procedures, and not only, is imperative for the proper functioning of the equipment and, consequently, for the performance of the tasks entrusted to the various types of seagoing vessels.

7. Study on Led Electromagnetic Disturbances

Author: Constantin Emanuel ZVÂNCĂ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: S.L. Dr. ing. Iancu CIOCIOI

Abstract: Study on led electromagnetic disturbances highlights the impact that non-accidental electromagnetic emissions have on the electromagnetic spectrum, especially on electronic equipment in their area of action. The electromagnetic spectrum is one of the most important fields when it comes to deconflicting emissions from various electromagnetic wave generating equipment. Exploitation of the electromagnetic spectrum is one of the current topical problems, precisely in terms of the increasingly developed technological environment, requiring innovative and efficient solutions.

8. Marine Full Electric Propulsion Power System-Modelling and Simulation

Authors: Claudia Georgiana ENE, stud. Constantin Cristian URSEA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Vasile DOBREF

Abstract: The paper deals with the SIMULINK model of a fully electrically integrated ship with electric propulsion and also electrically operated thruster-type steering systems. The results of the simulation are obtained for a series of operations with variable times that correspond to the modification of the electrical loads in the power plant.

9. Use of PLCs in Conducting Power Processes on Board the Ship

Author: Alexandru IVANOV, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cdor conf. univ. Dr. ing. Paul BURLACU

Abstract: The introduction will talk about the world of programmable logic controllers (PLCs) and their evolution in

the last fifty years as the top and most dominant choice of all available systems for process control and automation applications, understanding the concepts of controls, the advantages of using PLCs on board, efficiency brought in all fields of engineering and not only. Nowadays every automated system on board consists of programmable logic controllers, modules, PCBs, The SIMATIC S7-1200 automation system from SIEMENS, for example, a modular controller system, will be presented. The programming environment STEP 7 Professional SP1 V16 (TIA Portal V16) used to create the program for any control, any action, will be presented. Presentation of PLCs and their use, the term PLC, how the process control is ensured, how to obtain information about the status of the process, the difference between normally closed and normally open contacts, how to address individual signals input / output by the SIMATIC S7-1200 PLC or any other PLC used.

10. Naval Applications of Induction Motor Drives Systems Powered by Static Converters

Authors: George-Dan MOȘOIU, stud. Mirel SLABU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Vasile DOBREF

Abstract: The paper presents a SIMULINK model for a drive system with induction motors powered by electronic power converters. The simulation of the model highlights the multiple possibilities of adjusting the performance required by tuning the parameters of the converter and optimizing the motor-converter configuration.

INGINERIE ŞI MANAGEMENT

BIROUL SECŢIUNII
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Membri: Cpt. Cdor Conf. univ. Dr. ing. Filip NISTOR
Cpt. Cdor Conf. univ. Dr. ing. Alexandru COTORCEA

1. Impact of Freight Transport on the Environment
Author: Maria-Eliza ANDRIȘ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Lt. Cdor. Alexandru COTORCEA
Abstract: Due to the slowdown in the world economy and trade, the growth of international maritime trade was attacked in 2019 and reached its lowest level since the 2008-2009 financial crisis. After moderate growth (2.8%) in 2018, volumes expanded to a marginal of 0.5% in 2019. A number of factors weighed on the performance of maritime trade. These include trade policy tensions, negative economic conditions and social unrest in some countries, sanctions, supply disruptions, such as the collapse of the Vale Dam in Brazil and Cyclone Veronica in Australia, and rising oil demand. UNCTAD estimates the total volume of maritime trade in 2019 at 11.08 billion tones.

2. Monitoring Solutions for Dangerous Goods in Container Yard
Author: Andreea Luminița CORBEANU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE
Abstract: The purpose of this paper is to present the monitoring solutions for dangerous goods in container yard, using IoT technology. This offers an infrastructure for management and data analysis and utilization. According to the features of

dangerous goods, this technology offers information about the container, container gate-in and gate-out management, environmental parameters monitoring, and fire control as well. IoT realizes the automatic recognition and information sharing among things (or goods) through the Internet. IoT has several different implementation methods, such as RFID, GPS, laser sensor, infrared sensor and other equipment.

3. Integrated Management System at a Seaport Company

Author: Erhan ENAN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: The world relies heavily on port infrastructure, as it serves at least 80% of global trade. Over the last decade many companies around the world have shown great interest in integrated management system. Improving business, introducing industry management systems and integrating them with the quality management system will enable companies to increase their efficiency, reduce overall costs and increase their competitiveness. Today, many international and national standards have been implemented in almost all areas of business and major functional areas.

4. Innovative Solutions to Reduce the Environmental Impact from Merchant Vessels

Author: Livia IONICHI (RAUCA), Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Global warming is a general concern and affects millions of people every year. The maritime industry is one of the most important pollutants in the world, with its specificity of moving huge quantities of cargo every minute in every port around the world. In recent years, the International Maritime

Organization (IMO) has imposed strict and harsh limits on its efforts to reduce the environmental impact. Merchant ships, and especially port container vessels, need to develop and invest in new technologies over the next decade. This would be the only long-term option in compliance with strict regulations imposed by international organizations. The options are very limited for existing ships and focus mainly on operational measures and modernization solutions. In addition, low-sulfur fuels, such as LNG, may be short and medium-term options. Various technologies are being developed for new ships, and research is moving in the direction of technologies based on hydrogen, methanol, ammonia, batteries, etc., depending on the type and size of the ship. But new technologies require new ship models. This paper will focus on presenting available and future technologies to be compliant and to reduce environmental impact. There will be different case studies and calculations of the values of several pollutants in different scenarios and different technologies used. The results will highlight the trajectories that companies and owners must follow to find the best solution in the decarbonization process.

5. The Impact of Shipping on the Environment in Terms of Energy and the Role of Green Logistics

Author: Liliana CODREANU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Gheorghe SAMOILESCU

Abstract: In this paper, I have proposed to address some aspects of how to recover the residual energy of an oil tanker from an energy point of view, by developing appropriate calculation and simulation programs. It will be taken as a reference a vessel of 305000 tdw tonnage, on board which we have carried out the measurements we used in the calculation and in the validation of the results obtained in the simulations.

The reference shall also be made on board the ship to include energy installations: The main propulsion engine, the recovery caldre, the technical water generator, the turbocharger. Calculations will be made from actual installation operating parameters as well as from initial design data required by equipment manufacturers.

6. Analysis of the LNG Transport Variant on Inland Waterways on the Galati-Bratislava Route

Author: Bianca ICHIM, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The paper discusses the specific research study comprising several variants of liquefied natural gas (LNG) carriage from chosen seaports to the port of Bratislava using the Danube waterways, which are evaluated by multicriteria analysis techniques. Two ports in Turkey and one in Georgia are deemed export terminals. A total of twelve transport variants are compared, and the comparison is carried out based on multiple evaluation criteria being defined by the panel of experts who laid particular stress on their importance. In the first phase, an economic calculation is performed, which evaluates the LNG transport in all the variants. This represents the very foundation for the multicriteria evaluation, which is conducted using, Multicriteria Decision Analysis (MCDA) and the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS). The evaluated variants differ not only in terms of export port location, but also in relation to transport technology.

7. Analysis of Logistics Automation Solutions

Author: Ana-Maria ALBU, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: Automation is a well-known means of creating productivity and efficiency. Warehouse automation technologies can be broadly classified into devices that help move goods and improve handling. DB Schenker is the world's leading provider of logistics and transportation - supporting industry and commerce in the global exchange of goods by road, rail, air and sea freight anywhere in the world, through contract logistics and supply chain management. In the study case will be presented the automation solutions adopted by the company in the last years.

8. Impact of COVID-19 on the Recruitment of Ship's Crew

Author: Elena Mirabela ANTONACHE, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: The felt effects of the Covid-19 have affected maritime transport and all that it entails, as well as shipboard personnel. All the measures adopted so far have been aimed at protecting the health and ensuring the availability of essential services, and the transit of seafarers must be carried out without hindrance in order to ensure their professional activity. It is necessary for seafarers to be able to perform their services, but at the same time it must be ensured that the return home can be carried out without problems, regardless of whether the landing takes place inside or outside the European Union. Many navigators on cargo ships operating in European waters are third-country nationals. Regardless of nationality, they must be able to travel to the ports of embarkation and be allowed to disembark and return home, which will also help to ensure that the sector remains operational in the long term. medium and

long, a fact confirmed by the Communication on the implementation of green aisle.

9. Analysis of the Ship's Agent in the Logistics Chain
Author: Monica ARGHIR, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR
Abstract: They discussed chartering where it was an outline of the most important elements that the agent should ensure he was informed of the ship's arrival. There has been discussion of the meeting of the parties to chartering and notification where the ship is called and described in various ways, and the notification is present when a charterer may request the shipowner to provide regular notification of the expected time of arrival of the ship in the ports of loading and unloading. The analysis of the role of the ship's agent in the logistics chain and the necessary cargo documents have been discussed. In the first phase, the costs of the ship were discussed during the stay in port for unloading the cargo. In the second phase, calculations were made for goods from the point of storage in the port to the destination with the help of trucks.

10. Modeling Pedestrian Access in a Passenger Terminal Using AnyLogic
Author: George BURTEA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. Andrei BĂUTU
Abstract: For maritime terminals it is necessary to use a modern passenger system, in particular the dynamic system for simulating passenger flows, which is the only way to obtain information based on the analyzes performed, an duse them to make decisions when it is necessary to solve the problems related to: the number of staff needed to serve the passengers,

the safety of the transport, different forecast tasks, etc. The most important aspect remains the choice of the type of simulation model and the practical implementation conditions for the operation of the base based on the reality of the terminal. This paper will consider the analytical information (reality), the analysis the workload and the efficiency of the organization of the maritime terminal.

11. Business Process Modeling in the Supply Logistics Function

Author: Oana-Elena CARANI, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Col. Conf. univ. Dr. Cătălin POPA

Abstract: This paper proposes to analyze the business process models in the supply logistics function. The logistics chain is presented as a special element in creating the portrait of an exceptional organization. Business process modeling involves the proposal of innovative models that will allow the automation of IT process. The ability to efficiently manage supply chain activities is presented to us as a strong determinant of ensuring a competitive advantage and stimulating performance within a firm. It is considered that in order to be fully effective in today's competitive environment, companies need to extend their integrated behavior to include customers and suppliers. This extension of integrated behaviors, through external integration, is called supply chain management by Bowersox and Closs (Bowersox and Closs 1996).

12. Safety Analysis of the Logistics Processes for Transfer and Storage in an Oil Port Terminal

Author: Daniela CERNADÎRCĂ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The paper describes the problem of crude oil transfer in a port oil terminal and includes the safety analysis of this operation and analysis of potential causes and possible scenarios of oil spill events in a port terminal. Oil terminals are a key element of the petroleum supply logistics of crude oil to refineries and oil transit. Analyzing the safety of crude oil transfer in a port terminal as a multidimensional problem, in the paper, an approach focusing on a technical system analysis is presented, by performing the reliability and availability analysis of oil transfer system, as well as the analysis of crude oil transfer operation process, including the human factor. Various classifications of causes of oil spill accidents are proposed, which may help to identify and analyze potential causes and possible scenarios of oil spill incidents and accidents in the oil port terminal during oil transfer.

13. Implementation of a Quality Management System Within A Company

Author: Ioana Alexandra CHIRIAC, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: In this work we have highlighted the implementation of a quality management system within a company. The main purpose is to plan and implement a quality management system in accordance with ISO 9001:2015 standards for the crewing company Seaway International CO. The quality management system within the company has been designed, documented, implemented and maintained in such a way as to ensure compliance with the requirements of the reference standards SR EN ISO 9001:2015 and MLC 2006, as well as continuous improvement of the quality of the organization's processes. The process system of the company is designed to run in such a way

that, on the one hand, the customer requirements are met and, on the other hand, a positive financial result is achieved.

14. Capitalization of Multimodal Transport on the Example of Containerized Goods

Author: Roxana-Mihaela CÎRSTEAN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: The most important thing for the freight forwarders is to optimize routing and total shipping costs before setting the sail. Sometimes a combination of different transport carriers is the best to achieve the total shipping cost. However, that means more logistics coordination. On the other hand, a single carrier may achieve the best routing and requires less paperwork. Choosing what to use also depends on the nature of cargo.

15. Study on European Union Requirements for Valley Recycling

Author: Antonio CIUPERCA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: CS3 Elena-Rita AVRAM

Abstract: Recycling rates of municipal waste, packaging waste and waste electrical and electronic equipment — which represent significant sources of secondary materials and critical raw materials — are increasing in Europe, indicating a move towards using waste as a resource and a more circular economy.

16. Logistics Assurance for An International Naval Force Mission

Author: Georgian-Gabriel CONSTANTIN, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: Prepares and integrates at the level and, where necessary, make use, in accordance with the law, of all the resources made available for the sacred mission of defending the country, in the context of the collective defense of NATO, as well as the clause of mutual assistance of the European Union. Army Romania exercises its constitutional role of guarantee of sovereignty, independence and unity of the state, constitutional democracy and of the territorial integrity of the country, as well as for support for Allied action in situations of crisis, based on the commitments made and a political decisions taken at NATO and EU level, involving coordination the efforts of all administrative authorities central and local public institutions and public institutions with responsibilities in the field of security and defense from the composition of the national system of security, to ensure consistency and complementarity of actions with those of NATO, EU, strategic partnerships and initiatives regional.

17. Modeling the Loading-Unloading Processes of Bulk Goods in Port Warehouses

Author: Gina DRAGU, Academia Navală „Mircea cel Bătrân”, Constanţa

Scientific Advisor: Conf. univ. Dr Andrei BĂUTU

Abstract: Whit the expected growing in maritime container terminal and the exponential growth in vessels size, container terminals operations are facing higher demands. being able to simulate the operations that occur inside container terminals can lead to obtain valuable insights, help to identify possible problems and solve them, and also some decision-making tools can be created. the simulation software used in any logic. once the model is created, an explanation of it and its limitations are presented. the databases used to run the simulation are

explained and a validation of the model is performed whit real data. after that, a probabilistic function to generate new data is found in order to run simulations of future vessels.

18. Analysis of the Impact of COVID-19 on Maritime Transport

Author: Dragoș DUMITRACHE, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor. conf. univ. Dr. ing. Filip NISTOR

Abstract: COVID-19 affected not only maritime cargo flows and port calls but also liner shipping connectivity levels. It would be important to ascertain whether the observed shift is temporary or permanent. This study looks at the different components used to estimate the liner shipping connectivity levels of container ports. Comparing the first and second quarters of 2020 with the same quarters in 2019 has generated useful insights regarding impacts. With maritime transport being the main channel for SIDS's access to the regional and global marketplace, the vulnerability of these economies to disruptions in the maritime supply chain cannot be overemphasized. For SIDS, transport is not a sectoral activity like any other. Shipping and ports are the lifeline sustaining SIDS and their livelihood.

19. Blockchain Technology and its Possible Use Cases in the Marine Industry

Author: Cristian GAŞPAR, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. Cornel MOROIANU

Abstract: Blockchain technology, which first emerged in 2008, was initially used to facilitate transactions of cybercurrencies such as Bitcoin. Often described as a disruptive technology, blockchain use has since increased dramatically in numerous

applications, from the energy sector to real estate to finance. Indeed, some see blockchain as a groundbreaking solution to many of society's problems. This paper explores some potential uses for blockchain in the maritime sector and sheds light on if and how blockchain might align with or run counter to goals and objectives of stakeholders in the maritime sector.

20. Use of Modeling and Simulation in Transport Operations

Author: Lavinia-Georgiana GRIGORAȘ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: Globalization has increased the complexity of supply chain management due to the numerous factors: suppliers, customers and logistics service providers located in different geographical locations. In order to manage this complexity, modeling and simulation software's can be used as they mimic real life situations and they will help managers in making decisions on areas like facility location, transportation choice. This paper presents the advantages of adopting simulation to aid in the decision-making process thereby improving Supply Chain Performance. Moreover, the paper aims to demonstrate that simulation is a powerful tool that can be used in modeling complex supply chain activities.

21. Energy Potential Analysis of Black Sea Waves and Conversion Equipment which Can Be Used

Author: Constantin Daniel HOLTEA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Gheorghe SAMOILESCU

Abstract: The paper analyzes the possibility of mounting a turbine park in order to catch the Wave Dragon types of waves

and also the presentation of mounting this park in the Black Sea. The constructors use many methods for projecting the equipment for the purpose of exploiting the energy of waves. These methods and equipment are ecological, do not generate CO2 emissions, are available in unlimited quantities and can be used locally. Regarding the Black Sea area, a study about its waves will be presented firstly so that the turbines can be placed after as a real possibility. The aspects which are considered follow the height of the waves and their frequency. For the study there will be analyzed two different systems, with three and four wings for the dragon wave turbines. The tests applied on the models will confirm the very good performances for each of the impellers in both of the geometrical ways that were approved to be developed.

22. Organizing and Managing the Transport of Dangerous Goods

Author: Raluca Gabriela MAZILU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: Due to many incidents and accidents that have occurred so far on the field of transport of dangerous goods, with significant effects on the environment, people and even infrastructure, it is necessary to give much more importance to studies in this field. This paper includes the most important information about the dangerous goods facts, their effects in case of certain non-compliant events, with examples, and the measures you need to take in order to minimize the effects. It will also consider the description of the impact on the environment, but also the proposed measures to protect it.

23. Modeling the Loading and Unloading Processes of Cereals in Port Silos

Author: Dan-Ștefan MIRON, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Conf. univ. Dr Andrei BĂUTU
Abstract: The model simulates the basic set of operations of a grain terminal. These operations are: unloading grain from the main silos on a ship: the ships docks at one of the available perforations, each ship’s bilge may contain only one type of grain, however the types of grain in the different bilges be different.

24. Logistics Insurance in the Diamond Recovery Vessel Construction Project at S.N. Mangalia
Author: Cristina PETRO, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE
Abstract: The exploitation of mineral resources from the seas and oceans has taken place for many years, with commercial enterprises focusing on aggregates, diamonds, tin, magnesium, salt, sulfur, gold and heavy minerals. Activities have generally been limited to shallow depths near the shore (less than 50 m water depth), but industry is evolving, and mining in deeper waters appears to continue, with phosphates, massive sulfide deposits, manganese nodules and cobalt-rich crusts considered as possible future prospects. In order to exploit these resources, high-performance ships, equipped with adequate equipment, are needed. The purpose of this research is to highlight the logistics insurance activity for a ship built at Ș.N. Mangalia, meant to exploit diamonds from the bottom of the seas and oceans.

25. Environmental Impact Assessment for Special Purpose Vessels
Author: Mihai POPA, Academia Navală „Mircea cel Bătrân”, Constanţa

Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: International shipping is a major source of greenhouse gas emissions and is growing. The EU supports global action to combat these emissions and has implemented data collection measures at EU level. Shipping emits about 940 million tones of CO2 annually and is responsible for about 2.5% of global greenhouse gas (GHG) emissions (third IMO GHG study). These emissions are expected to increase significantly if mitigation measures are not implemented quickly. According to the third IMO GHG (greenhouse gas) study, shipping emissions could increase by 50% to 250% by 2050, in a normal scenario, undermining the objectives of the Paris Agreement. This paper presents the carbon footprint of a military ship within the Romanian Coast Guard and the proposed innovations to reduce fuel consumption, reduce electricity consumption on board and, implicitly, the carbon footprint. proposed investments on the mechanical side, modernization of the propulsion system, on the electricity side, installation of photovoltaic panels and on the crew side, an internal regulation that helps to streamline the consumption of electricity.

26. Strategies for Supply Chain Integration

Author: Florina Alina SLĂTINEANU, Academia Navală „Mircea cel Bătrân", Constanţa

Scientific Advisor: Col. Conf. univ. Dr. Cătălin POPA

Abstract: Common to all manufacturing companies is the need to control the flow of material from suppliers, through the value adding processes and distribution channels, to customers. The supply chain is the connected series of activities which is concerned with planning, co-ordinating and controlling material, parts and finished goods from supplier to customer. The first chapter is entirely dedicated to supply chain management, including information on types of supply chains,

the advantages and disadvantages of implementing a supply chain, components of supply chain management, but also the fields of application of supply chain management**.**

27. Risk Assessment in Maritime Transport of Containerized Cargo

Author: Florentina ZLATOV, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE
Abstract: Risk assessment in interdependent infrastructures is a difficult topic due to the complexity and nature of critical infrastructures. This paper describes a methodology for assessing the risk of an infrastructure or a sector, considering the presence of interdependencies between infrastructures. Port activities must be developed by ensuring conditions of operation and safety that involve reducing uncertainties through the use of prediction methods that can manage the risk of overtaking. This document provides a risk assessment methodology, which is integrated into a state-of-the-art risk management framework, to deal with port safety issues. Considering all the data that have been exposed will result in a broader assessment of the risks of port accidents and the provision of operational safety conditions by using prediction methods that can overcome the risk management.

28. The Risk Assessment Associated with Port Logistics Operations Carried Out in a Grain Terminal

Author: Gabriela BÎCÎIN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE
Abstract: In this paper it is demonstrated that it is possible to estimate, via rational methods, the mean value of the likelihood of cereal explosion, the quantity of return, the time of return,

and the risk, i.e. the likelihood of occurrence of casualties to operators, such as death or injury. Time and quantity of return determination helps to understand the explosion risk in grain handling facilities well. In the first phase, by the analysis of the events and occurred incidents information bank about the surveyed matters and also setting brainstorming sessions with the terminal's experts, 22 risks were identified. In the second phase by using from the Shannon's Entropy, the criteria (occurrence frequency, severity and detection) were weighted. Based to the achieved results, the risk of the operator's chair shaking and the risk of the grain discharging dust and vacuuming the filters were attained the top priority respectively.

29. The use of the LCA Method for the Management of the Operation of a Military Vessel

Author: Petru Pavel COMAN, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Military vessels are also subject to all rules and regulations in force and established by international treaties, similar to civilian ships. The aim of this work is to calculate the impact and analyze the usefulness of this management technique on military vessels. Assessment of a ship's life cycle is the wealth and analysis of the consequences of its environmental impact. The objectives of the analysis are risk assessment, environmental performance assessment and environmental impact assessment, but also identification of possible changes in each phase of the life cycle that can bring environmental benefits and savings from overall costs

30. Use of Software Solutions for Planning Maintenance Operation

Author: Laura DIACONU, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Cpt. Cdor Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: Few organizations have the financial power to apply proper maintenance, thus obtaining advantages related to the technical and technological level during operation and eliminating the problems raised by equipment maintenance. A possible rather expensive strategy would be to acquire new ones with higher performance. Any technical system must include a process of equipment maintenance, which has the role of maintaining the operating condition at their specific parameters. Therefore, the integration of the maintenance management system appears as an opportunity in order to increase the level of quality performance and reduce production costs. The object of the study is the analysis of the complexity of maintenance activities performed within an organization, to meet the full range of activities in which they are engaged, effectively using software solutions specifically designed for planning maintenance operations.

31. Using the Carbon Footprint Assessment Method to Analyzethe Performance of Transport Logistics Systems

Author: Raluca-Maria IVĂNUȚĂ, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE
Abstract: At present, all parts of the world promote a "green wave", such as "green food", "green industry", "green consumption" and so on. In modern logistics operations, as an importantpart of trade in goods, there are also issues of energy efficiency, environmental protection and sustainable development. The main purpose of this paper is to establish the impact of green logistics. The first objective is the relevant literature on the green logistics which lays the foundation for

the research in this paper, green logistics. The second objective is the energy consumptions of the various mechanical equipment for UMEX S.A., an important port operator in ConstantaPort.

32. Study Case on the Project Management Tools Application in the Technical Investments' Implementation

Author: Ana-Maria POTERAȘ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Col. Conf. univ. Dr. Cătălin POPA

Abstract: This paperwork is approaching the project management framework, dedicating a study case to reflect the suitability of dedicated tools in the implementation of technical investments. To reflect the potential added value of the project management tools in naval industry and strategic applied management, the paperwork presents a study case focused on project management software usage in a specific technical project implementation in this field.

33. Study Case on Resource Management Particularities for Naval Forces

Author: Marina-Ramona STÎNGACIU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Col. Conf. univ. Dr. Cătălin POPA

Abstract: Based on the present premises and the information accumulated during the scholarship, I have documented and developed the paperwork „Study Case on Resource Management Particularities for Naval Forces", in which I have approached the major particularities of the logistics and financial matters in Navy, including in regard of the accounting system and budgeting rules and regulations, under a multinational comparative perspective

34. Management and Optimization of the Integrated Logistic System of a Container Handling Company

Author: Laurențiu VERDEȘ, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Beazit ALI

Abstract: In today's highly competitive global marketplace, the pressure on organizations to find new ways to create value and deliver it to their customers grows ever stronger. In the last two decades, the logistics function has moved to center stage. There has been a growing recognition that effective logistics management throughout the firm and in supply chain can greatly assist in the goal of cost reduction and service enhancement. The keys to success in Logistics Management require heavy emphasis on integration of activities, cooperation, coordination and information sharing throughout the firm and the entire supply chain, from suppliers to customers. To be able to respond to the challenge of integration, modern businesses need sophisticated decision support systems based on powerful mathematical models and solution techniques, together with advances in information and communication technologies.

35. Measures to Improve Energy Efficiency and Reduce the Environmental Impact of Military Vessels

Author: Andreea Elena MANOLE, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Historically, economic considerations have driven innovation in warship propulsion and power architecture rather than environmental factors. Very few studies exist on carbon footprint of warships despite global resolve against climate change encapsulated in the Paris Agreement. More recently, the Royal Navy, US Coastguard, Royal Canadian Navy and US Navy have enacted environmentally friendly policies. This bold

step has impacted positively on operational efficiency and led to reduced fuel consumption, net emissions and overall operational cost. The work detailed what navies have done and what obtains presently in terms of energy efficient warships, emissions data collation and contributions to the global fight against global warming. So far, there is little awareness among navies despite the IMO 4th Greenhouse Gas Study stating that 30 percent of shipping emission is domestic. A case study ship (Frigate 120) from the Nigerian Navy fleet was adopted, its January -December 2019 fuel consumption data for main and auxiliary engines was also collated. Three other prototypes of Frigate 120 with Energy Efficiency Improvement Methods, Hybrid Electric Drive, Waste Heat Recovery System and enhanced propeller were developed with their operational profiles. Also, examined compatible Energy Efficiency Improvement Methods for warships and the results of the different cost and emissions calculations. Results showed the potency of Energy Efficiency Improvement Methods and its impact on fuel consumption, net emissions (>30 percent) and Levelized Cost of Energy value reduction.

36. Risk, Safety and Occupational Health Management in the Naval Forces

Author: Sorin-Mihai NEAGU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Public interest in risk analysis has expanded into leaps and limits over the last three decades, while risk management has emerged as an efficient and comprehensive procedure to complement the overall management of almost all aspects of our life. The personnel of military, health, environmental and physical infrastructure structures shall incorporate risk management into their decision-making process. In addition, the ubiquitous adaptations to risk

management by many disciplines, together with their implementation by industry and government agencies in decision-making, have led to an unprecedented development of theory, methodology and practical tools. Since the first test requests, the IMO members have realized that the FSA is a precondition for any significant change in the regulations on maritime transport safety. In addition, the FSA adopts the latest risk assessment techniques. The FSA is now the state-of-the-art method for assessing the risk of maritime transport and formulating safety policy.

37. New Mathematical Formulations of Container Terminal Problems

Author: Gelya-Fatma ABDURAIM, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. Dan LASCU

Abstract: This chapter presents the constructing mathematical programming formulations. In order to understand a given problem, it is valuable to construct mathematical models for it. Through the iterative process of modeling, implementing, and testing, the problem structures and properties clarify, facilitating the subsequent process of developing solution methods for the problem. Altogether, three mathematical optimization models are suggested: An initial conceptual model and two models capturing the CPP. Through different objective functions, the goal of all three models is to minimize the total cost of positioning and reshuffling containers. The initial mixed integer linear programming (MIP) model represents the entire port container terminal - from unloading of vessels on the quayside to loading onto trucks and trains on the landside of the port - and is called the container terminal problem (CTP) model. The second, also a MIP model, captures the CPP called the CPP model. The third, also representing the CPP, is a pure

binary integer linear programming (BIP) model building on a discretization of the time horizon and is called the CPPT model.

38. Autonomous Vessels: State of the art And Potential Opportunities in Logistics

Author: Anamaria POLIFRON, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The growth in technology on autonomous transportation systems is currently motivating a number of research initiatives. This paper first presents a survey of the literature on autonomous marine vessels in general. By identifying the main research interests in this field, we define nine thematic categories. The collected articles are then classified according to these categories. We show that research on autonomous vessels has increased dramatically in the past decade. However, most of the published articles have focused on navigation control and safety issues. Studies regarding other topics, such as transport and logistics, are very limited. While our main interest is the literature on autonomous vessels, we contrast its development with respect to the literature on autonomous cars so as to have a better understanding about the future potentials in the research on autonomous vessels. The comparison shows that there are great opportunities for research about transportation and logistics with autonomous vessels. Finally, several potential research areas regarding logistics with autonomous vessels are proposed. As the technology behind remote-controlled or autonomous ships is maturing rapidly, we believe that it is already time for researchers in the field to start looking into future water-borne transport and logistics using autonomous vessels.

39. Method for Determining the Impact on the Environment for Military Missions Carried Out in Peacetime

Author: Cristian-Florin LEIZERIUC, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The effective and sustainable environmental performance of a business is a result of various factors and most important the integrated outcome of the environmental management. Likewise, the integration of environmental protection into the armed forces functions has also gain interest for the military sector internationally. Therefore, the environmental management system (EMS) is recognized as one of the most widely used tools. This study provides a review on environmental management issues related to the military activities and their assessment globally. The multitasking characteristics of the defence sector result in the need for the eco-friendly related issues to be directed in a holistic and integrated way, with the help of a certified environmental management system. North Atlantic Treaty Organization (NATO) itself and NATO countries, like USA, UK, Canada, Holland, Denmark, Czech Republic, Greece, as well as non-NATO countries like Sweden and Australia have an environmental management system structure in place to assist military environmental management and studies reveal that the armed forces could anticipate positive outcomes from environmental management system. A case-by-case approach, of the above, is examined and based on the results, appropriate recommendations are presented, which may contribute to the environmental management system considerations as the most important tool for effective management framework and most importantly to evaluate its effectiveness as a structure for the defence sector's activities.

40. Analysis of the Logistics System for Operating Goods in Grain Terminals

Author: Diana Florentina NEACȘU (BELIGAN), Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: From the second half of the last century, it was possible to note a rapid logistics efficiency increase. Over the years, it is remarkable the transition that has been passing logistics, more specifically regarding the production, storage and handling operations. This study is devoted entirely to the analysis of the current state of the issue regarding the logistics system of cargo operation in the port terminal for cereals, including information on the logistics system, port administration management, but also about operational policies on strategic port management of grain terminal.

41. Analysis of the Main Logistics Hubs on The European Continent

Author: Constantina-Cristina OLTEANU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor Conf. univ. Dr. ing. Filip NISTOR

Abstract: Logistics has become more complex and increasingly important in recent decades and is now as important in companies as traditional divisions like finance, production or marketing. Current developments in logistics are driven by global economic mega-trends. These trends are mainly globalization, the development and introduction of new information technologies, environmental protection as well as quality and time-based competition. Logistics hubs are generally defined as linking points –infrastructure facilities and nodal points – in logistics networks. They serve primarily as transshipment points for flows of goods. Accordingly, there is not only storage activity but also processes of ordering,

bundling and unbundling. The variety of logistics hubs – each with its own and specific characteristics – hampers an explicit assignment of hubs to specific a type and class. In order to enable a typification, however, a simplistic differentiation is very often made on the basis of a spatial or functional analysis.

42. Studying and Application of Cyber Security Means for Industrial and Military Computerised Systems

Author: Andrii YERMOLENKO, Naval Institute of National University "Odessa Maritime Academy", Odessa, Ukraine
Scientific Advisor: Vladlen Shapo, professor, PhD

Abstract: Over the past two decades, information technology is rapidly developing. IoT, IIoT, Industry 4.0 concepts, wireless data transmission systems, high-speed satellite and mobile communications, industrial automation systems using programmable controllers have become extremely popular. But at the same time, the vulnerability of such systems to hacker attacks is steadily increasing. To meet this challenge, the Naval Institute has introduced the discipline “Cybersecurity”, which provides corresponding theoretical knowledge and practical skill. In particular, the discipline covers the TC 3002T-3G router from German Phoenix Contact company. The device has the following features: firewall, NAT, IPsec, OpenVPN, which allow to study a wide range of protocols and technologies to ensure cyber security of office, industrial and military applications. Learning of approaches for building, configuring and operating industrial and military cyber defense systems will improve the skill of relevant personnel, reduce the possibility of cyber-attacks and significantly improve the security of critical systems.

43. Analysis of the Evolution of Logistics and Transport Management in Recent Decades

Author: Radu Constantin ZIBILEANU, Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: Cpt. Cdor Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: The term logistics, known until recently only by a small circle of specialists, is now gaining in importance. The main cause of this phenomenon is that the concept of logistics began to be used in economics. The term logistics was first used in the military. The concept evolved from the need for military forces to stock up during wars. According to a number of European scientists, logistics has become a science due to military art. Transport is a strategic sector of the European Union economy, with transport services accounting for about 5% of gross value added and 5.2% (or about 11 million people) of total employment in 2016. They directly affect daily life. every day and ensures the movement of goods from over 11 million producers and manufacturers in the European Union to consumers.

44. The Analysis of a Company's Supply Chain Management in the Context of the COVID-19 Pandemic

Author: Mihaela-Adina CELMARE (AGUŢĂ), Academia Navală „Mircea cel Bătrân”, Constanţa
Scientific Advisor: CS3 Dr. ing. Elena-Rita AVRAM
Abstract: This paper presents the analysis of the supply chain management of an enterprise in the context of the COVID19 pandemic. The paper is structured in four chapters, as follows:

- The first chapter presents the negative effects of the COVID 19 pandemic on the supply chain;
- The second chapter presents the approaches regarding the remodeling of the supply chains;
- The third chapter presents the research methodology;
- The last chapter presents a case study on how to manage a company's supply chain during the COVID 19 pandemic.

One of the most publicized and immediate impacts of the global COVID-19 pandemic was and still is, the impact on supply chains. Everything impacted supply chains - from the restrictions being placed on the movement of people and the ways in which goods could be transported, to the human impact of the virus.

45. Workforce Management in a Distribution Center
Author: Andreea ION, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. COTORCEA Alexandru
Abstract: This paper presents the topic associated with workforce management in a distribution center, illustrating the characteristics, operations and functions of the distribution center and focusing on human resource assignment systems. In this presentation modeling and simulation programs will also be analyzed, main focus being on Any Logic Simulation Software.

46. Management of Hazmat Transportation
Author: Alexandru-Adrian JURAVLE, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. COTORCEA Alexandru
Abstract: Risk assessment is of particular importance in identifying the vulnerability of supply chains and in risk management planning. For the transport of containers of dangerous goods, the transit of the port terminal may present operational risks, such as the lack of special slots in storage areas which cause delays in the handling of containers. The paper deals with the modeling of the container port terminal as a system for waiting and simulating its activity to assess the risks of delay in handling. The simulation results provide

various logistical parameters that are informative for several possible management decisions and show that there are critical thresholds at which system performance measures are severely impaired.

47. The Importance of the Ten-T Network for the Development of Intermodal Transport

Author: Andreea Madalina PITEA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cpt. Cdor Conf. univ. Dr. ing. Filip NISTOR

Abstract: Transport is one of the key factors in the development of every modern society. This is one of the most important areas that governments around the world should address when developing national policy. The aim of the paper is to define the importance of the Trans-European Network (TEN-T) corridors in the development of smart, secure and intermodal infrastructure connections, at international and local level, to connect all EU regions. The Trans-European Transport Network (TEN-T) plays a crucial role in ensuring the freedom of movement of passengers and goods in the European Union. It includes all modes of transport and supports about half of the passenger and freight traffic. Thus, in this paper, all relevant information about TEN-T sections has been consolidated. The work in the last part aims at the reality behind the TEN-T project, and all the needs of Romania, which has not yet realized the primary terrestrial infrastructure network to ensure safe connections between all regions of Romania as well as connections with neighbors, in particular with neighbors - EU states.

OCEANOGRAFIE ŞI HIDROGRAFIE

BIROUL SECŢIUNII
Preşedinte: Conf. univ. Dr. ing. Romeo BOŞNEAGU
Membri: Cdor Conf. univ. Dr. ing. Dinu ATODIRESEI
Cpt. S.L. Dr. ing. Andra NEDELCU

1. Acoustic Waves Propagation in Shallow Water

Author: Cătălin-Dan COCA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Prof. conf. univ. Dr. ing. Romeo BOŞNEAGU

Abstract: This paper is devoted to the propagation of low-frequency waves in shallow seas. As a source of sound waves, underwater disturbances generated by ships are used. A specific feature of the propagation of sound waves in shallow water is the proximity to the boundaries of confining media characterized by different impedance characteristics, which affect the sound field from sound sources located in the water layer, which are "distorted" by different phenomena. The sound field distribution in real shallow seas is affected not only by multiple reflections, but also by random changes in the shape of the free surface and statistical changes in the shape and impedance of the seabed. This paper discusses fundamental issues of modal sound propagation in different types of bottom sediment water layers. In this case, the basic task is to determine the sound pressure level as a function of distance and depth. The results of the conducted investigation can be useful in indirect determination of the type of bottom.

2. The Impact of Environmental Factors in the Northwest of the Black Sea on Sonar Detection Performance

Authors: Nina-Camelia SANDU, stud. Vlad AHTAMON, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: CS II Emanuela MIHAILOV
Abstract: Sonar detection performance is related to spatial and temporal variability of the environmental parameters. In this paper, the evaluation of the sonar performance is accomplished by WADER software, which use the HARCAM acoustic model to provide accurate propagation loss data at low and high frequencies. The results on various sonars (active/passive, bow-mounted/towed) and seasonal temperature and salinity at Mangalia, Constanta and Portita areas are provided to indicate the sonar performance prediction in the northwest Black Sea waters.

3. Presentation of Ballast Water Treatment System Chlorination Type - Purimar

Author: Adrian STOIANOVICI, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. Romeo BOȘNEAGU
Abstract: Presentation of Ballast Water Treatment System Chlorination type – PURIMAR contain short introduction about the necessity of treating ballast water according with IMO resolution, a system description and a system configuration showing major components, how are interconnected and general operating procedure. In order to reduce and stop the threaten of spreading invasive species and to prevent an echological damages to biodiversity the IMO State Members adopted a convention-Ballast Water Management Convention-would represent a significant step towards protecting the marine environment for this and future generations. The Ballast Water Treatment System Chlorination type is using sea water in order to filter and produce an effluent which is injected into ballast water tanks during sea voyages and reduce close to zero the total amount of residual oxidants.

4. Opportunities and Conditions in The Development of New Tourist Ports in the Romanian Coastal Area of the Black Sea

Author: Cristiana-Corina RADULESCU, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Cdor Conf. univ. Dr. ing. Dinu ATODIRESEI

Abstract: The Black Sea coast is developing economically, based on the implementation of new projects in the tourist area, offering the possibility of opening new tourist ports (marine) in addition to existing ones. The implementation of such projects can be beneficial for the development of the area at the macroeconomic level, by creating new jobs, developing the economy, implementing new opportunities at the local level.

5. Water Quality Monitoring on Navigable Canals

Author: Dorin Ovidiu CLIM, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. Romeo BOȘNEAGU

Abstract: This paper describes how is monitoring the water quality on navigable canals. Here are presented the objectives of the monitoring system, the location, the components and the measured parameters.

6. Innovative Technologies for Effective Hydrography

Authors: Nina-Camelia SANDU, stud. Mircea MARTIN, stud. Gelu COCA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. ing. Romeo BOȘNEAGU

Abstract: The new technologies have to respond to challenges such as climate change and coastal urbanization in many ways. Knowing the shape of seafloor and bathymetry is fundamental for understand the oceans and support the blue economy. This paper presents the innovative technologies for high-quality and

scale hydrography: airborne lidar bathymetric for coastal bathymetric data, autonomous underwater vehicle for high-resolution seabed exploration, autonomous surface vehicle for hydrographic and geophysical surveys.

7. Phytoplankton Between Past and Future

Author: Diana-Ștefania BOANTA, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Conf. univ. Dr. Romeo BOȘNEAGU

Abstract: My paper deals with the subject of phytoplankton, both in terms of advantages and disadvantages.

8. The Main Environmental Problems at the Black Sea

Author: Albert BEER, Academia Navală „Mircea cel Bătrân", Constanţa
Scientific Advisor: Simion NICOLAEV

Abstract: The project is about biodiversity and the main threats. In the coastal area of the Black Sea on the territory of Romania, coastal erosion and the real risk for the environment, the phenomenon manifests itself in different levels of intensity along the approximately 245 km of the coast, measured from North to South, from the arm. Chilia (Musura Bay) and up to Vama Veche (border with the Republic of Bulgaria).