ACADEMIA NAVALĂ „MIRCEA CEL BĂTRÂN”

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MASTER-NAV 2024

23 Februarie 2024
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Vineri, 23 februarie 2024

10.00-10.10 *Deschiderea oficială a conferinței; Ceremonialul de ridicare a Drapelului de stat; Mesajul Rectorului Academiei Navale "Mircea cel Bătrân"- Aula universitară "Viceamiral Ion Coandă"*

10.10-10.50 *Sesiune plenară:*

- "Monitoring the Underwater Environment Using Drones", autor Felician ZAHARIA, îndrumător: Conf. univ. Dr. Romeo BOȘNEAGU
- "Determining the Operating Regime of a Naval Propulsion Machine Based on the Maximization of Propulsion Efficiency", autor Ioan ȚUȚUIANU, îndrumător: Conf. univ. Dr. ing. Ionel POPA

10.50-11.00 *Fotografie de grup;*

11.00-16.00 *Prezentarea lucrărilor pe secțiuni.*

CUPRINS

ŞTIINŢE NAUTICE

BIROUL SECŢIUNII
Preşedinte: Conf. univ. Dr. ing. Sergiu LUPU
Membri: Conf. univ. Dr. ing. Mihail PRICOP
Ș.L. Dr. ing. Sergiu ȘERBAN

1. The Transit of Suez Channel with F222 Frigate

Autor: stud. Vlad-Vasile ABICULESEI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The Suez Canal, opened in 1869, is a central element of the global shipping route, connecting the Mediterranean Sea to the Red Sea and facilitating the efficient transit of ships between Europe and Asia. However, the canal faces challenges such as traffic congestion, ongoing maintenance and geopolitical issues. The temporary blockage in 2021 has highlighted potential vulnerabilities and the need for effective management. The Suez Canal transit study reveals the importance of this maritime passageway in the contemporary global landscape. Choosing this topic provides seafarers with a comprehensive perspective on the technical, strategic and economic aspects of navigating this vital area for international maritime trade. Ships transiting the Channel benefit from significant time savings, operational efficiency with reduced fuel consumption, positive environmental impact through reduced greenhouse gas emissions and advantages in terms of delivery times and costs associated with shipping.

2. Maneuver of Entering and Docking the School and Logistic Support Ship 281 in the Port of Tulcea

Autor: stud. Eduard Alexandru ANDREI Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. ing. Alecu TOMA

Abstract: The detailed work addresses the intricate maneuver of entering and docking the School and Logistic Support Ship 281 in the port of Tulcea, structured into two essential chapters: Theoretical Study and Case Study. The Theoretical Study provides a concise perspective on the importance and complexity of maneuvering in a port. Critical factors, such as weather conditions, water depth, vessel characteristics, equipment used, and port regulations, are highlighted in the context of maneuver planning. A thorough understanding of these aspects is crucial for assessing the impact on the safe maneuvering capacity of vessel 281. The Case Study applies theoretical knowledge to the practical maneuver in the port of Tulcea, emphasizing the consequences of geographical configuration, traffic, and specific port regulations. The distinction between maneuvers in Danube ports and maritime ports is underscored, and the importance of adhering to special conditions imposed by the Administration and the Port Captaincy of Tulcea for vessel 281 is highlighted. Safety for the crew and the vessel takes precedence, and the efficient collaboration between vessels and port authorities is evident in the secure maneuvering, assisted by tugs and on-board pilot.

3. Study on the Characteristics of Liquefied Natural gas Transportation on LNG Ships. Case Study on the Navigation Route Between Freeport (USA) – Gibraltar.

Autor: stud. Cezar BĂICOIANU, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: This study explores the intricacies of transporting LNG via LNG ships, with a specific focus on the Freeport (USA) to Gibraltar route for STS operation. It delves into the unique properties & handling requirements of LNG, a cleaner energy source growing in global importance. The research

highlights the technological advancements in LNG transportation, including the design and operation of specialized LNG carriers. Safety measures, environmental impacts, and the challenges of navigating through diverse maritime conditions are examined.

4. Study on the Use of Commercial Software for the Optimization of Navigation Routes Based on hydrometeorological parameters

Autor: stud. Octavian BĂNĂU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Dinu ATODIRESEI

Abstract: In the present study, meteorological conditions for navigational routes were analyzed based on weather parameters obtained from marine route optimization organizations such as SPOS and Bon Voyage System, which created applications for maritime industry. Therefore, the seaman is able to improve his voyage by using these meteorological services in order to save fuel and time by choosing the optimized route with maximized efficiency while the costs are minimized. Charterers and maritime companies are the ones to input meteorological services on ship as an extra tool to improve ship safety and for economical reasons. In the first chapter are presented route optimization tools, with particular parameters and features. Second and third chapters follows the same maritime route throughout the entire voyage by using mainly SPOS and secondary BVS, therefore the fourth and final chapter is built upon comparison between 2nd & 3rd chapters to identify the strong points and the weak points.

5. Sailing Maneuvers with Training Ship „Mircea"

Autor: stud. Robert-Andrei-Nicolas BARBU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L.Dr.ing. Sergiu ȘERBAN

Abstract: Technological developments in shipping have brought about a significant transformation in ship propulsion from traditional sails to mechanically propelled ships. However, sailing ships retain their importance as training ships, providing valuable training opportunities for future seafarers.
It is therefore essential that young seafarers are properly trained and prepared for sailing, not only to perpetuate maritime traditions, but also to cope successfully with the challenges and emergencies that may arise during navigation.

6. Study on the Main Causes of Accidents Involving Passenger Ships

Autor: stud. Bianca Anamaria BERCARU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Sergiu ȘERBAN

Abstract: The theme presents a study on the main causes of accidents in which passenger ships are specifically involved. The main causes that lead to the occurrence of naval accidents will be clarified, the brief presentation of the maritime accident, as well as its effects and consequences. The studies carried out as a result of the occurrence of naval accidents aim as far as possible to exclude human errors and increase the safety of maritime transport, having at the same time an impact on the protection of the environment, the ecology and the economic environment. A single naval incident can have catastrophic and long-term consequences for marine ecosystems and local economies, but at the same time any loss of human life is one of the most important criteria that must limit the occurrence of naval accidents to a minimum.

7. Study on the Entry and Exit of Ships and convoys From the Danube - Black Sea Canal. Rules Imposed for their Transit

Autor: stud. Dorina BOLOHAN, Academia Navală „Mircea cel Bătrân", Constanța

Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The Danube - Black Sea Canal is regularly transited by river vessels sailing independently or in pushed, paired or towed convoy formation. Navigation on the canal is carried out in compliance with the "Navigation Rules on the Danube - Black Sea Canal and the Poarta Albă - Midia - Năvodari Canal", drawn up by order of the Ministry of Transport. These rules apply both to the two canals and in the ports belonging to them. The entry or exit of ships, respectively convoys from the Danube - Black Sea Canal, as well as navigation on the canal, are only allowed with the approval of the Administration of Navigable Canals. Masters will comply with this regulation and will carry out their work under the guidance of ship traffic controllers.

8. Analysis Regarding the Transport and Operation of Dangerous Cargo on Board a Mine Sweeper Type Ship

Autor: stud. Daniela-Ioana BOTEZ, Academia Navală „Mircea cel Bătrân", Constanța

Îndrumător: Conf. univ. Dr. ing. Dinu ATODIRESEI

Abstract: The aim of this paper is to present an insight in regards to the dangerous cargo that is carried on board a mine sweeper type ship. A specific type of military mine sweeper ship will be discussed in this body of work. In the first part, the IMDG code and its influence upon the maritime industry will be discussed. The ways in which it shapes today's dangerous cargo transportation on sea routes will also be touched upon. Moreover, the type of dangerous cargo that this specific ship carries will be presented and how it falls under the present

maritime regulations in this regard. Finally, the way in which the dangerous cargo is transported and operated on board the mine sweeper will be shown.

9. Optimizing a Journey on a Set Route Using Onboard Ship Software on the Casablanca-Balboa Route.

Autor: stud. Vili-Alexandru CAPLAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Andra NEDELCU

Abstract: The optimization of the Casablanca-Balboa route is beneficial as it reduces fuel and lubricant costs. Moreover, in terms of voyage duration, optimization has led to a one-day reduction. Furthermore, the journey is conducted safely, as the program takes into account navigational elements and hydro-meteorological conditions during the voyage. The NaviPlanner BVS program represents a comprehensive solution for maritime route optimization and management, offering a myriad of benefits to its users. One of its primary advantages lies in operational efficiency, as it streamlines route planning and operational procedures, thereby enhancing overall time and resource management. Moreover, the program prioritizes safety by meticulously planning routes to mitigate risks and prevent adverse situations, ensuring the well-being of crew members and cargo alike.

10. Authorization, Construction and Connection to the National Energy System of Offshore wind Farms on the Black Sea Coast

Autor: stud. Ioan CIOBANU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: This paper studies the development of offshore wind farms in countries such as Great Britain, Norway or Germany and the EU legislation, related to their construction and

operation. Investments in this field are constantly growing and can have a significant influence on the price of the electricity production market and respectively in order to reduce greenhouse gases. In the context of the current progress of the energy strategy of the European Union and Romania in the field of offshore wind energy, this paper aims to analyze the current level from the point of view of the legislative framework and respectively the perspectives of the evolution of such an investment by authorizing, building and subsequently connecting a offshore wind power plants in the Black Sea to the National Energy System.

11. Utilizing Modeling and Simulation for Voyage Planning

Autor: stud. Iustin-Adrian CIUGOLIA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: In this paper I will talk about the advantages of today's technology when it comes to voyage planning and avoiding potential accidents. Also, with the help of Anylogic we can simulate ways to optimize shipping routes in regards to avoiding storms, this way reducing the total travel time. Lastly, this paper will focus on LNG vessels and their special characteristics when it comes to cargo handling and transportation.

12. Trends in the Global Shipping of Frozen and Refrigerated Products

Autor: stud. Valentin-Corneliu CIUREL, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Romeo BOȘNEAGU

Abstract: In global shipping of frozen and refrigerated products, there are some important trends at present:
The pursuit of energy efficiency: Shipping companies are looking to improve the energy efficiency of ships to reduce

operational costs and meet increasingly stringent carbon emission requirements. **Use of temperature control technologies:** Companies are investing in advanced technologies for temperature control and monitoring in shipping containers to ensure the integrity of refrigerated and frozen products is maintained throughout the journey. **Automation and digitization:** Automation and digitization of logistics processes are becoming increasingly important to optimize supply chains, reducing handling time and the risk of human error. **Seeking sustainable solutions:** In the context of growing concerns about climate change, companies are looking for sustainable solutions for shipping, including using greener fuels or even switching to low-emission ships. **Flexibility and agility:** Fluctuating demand and changes in consumption patterns drive the need to be more flexible and nimble in managing supply chains, quickly adapting to market demands and changing transport conditions. These trends reflect the industry's efforts to adapt to the ever-changing demands and respond to the challenges and opportunities in the shipping of frozen and refrigerated products.

13. Ship Maneuvering in Ice Areas of the Arctic Ocean

Autor: stud. Florin Madalin CLOSCA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ş.L. Dr. ing. Sergiu ȘERBAN

Abstract: It is important not to forget the experiences of Maxim Gorkij and other similar accidents that occurred in the Arctic and Antarctic areas. These can help provide a clear picture of the type of information, data, communication infrastructure and SAR resources that need to be developed. The main lesson to be learned from the Maxim Gorkij accident is that in order to conduct effective and safe emergency operations, important information must be available to all parties involved.

14. Mooring Maneuver of an NPR-Type Ship in the Port of Batumi Under Low Visibility Conditions

Autor: stud. Andrei COSTAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The Port of Batumi in Georgia, along the Black Sea, asserts itself as a major hub in Georgian foreign trade, connecting Europe, Central Asia, and the Middle East. The modern infrastructure includes specialized terminals for various goods, from oil to containers and passengers. Strategically located six kilometers from the border with Turkey, the port facilitates maritime transport and significantly contributes to the country's economy. Recent developments have expanded the port facilities to meet growing demand. Additionally, the port serves as a tourist destination, attracting visitors with its port atmosphere. A particularly important aspect is the study of the squat phenomenon in the port and a detailed analysis of the maneuvering in low visibility conditions. By adhering to protocol and efficient coordination, the Port of Batumi establishes itself as a vital center in the maritime transport network of the region, supporting the economy and facilitating international trade.

15. Suez Canal Transit with a Container Ship. Generalities and Cautions to be Taken

Autor: Bogdan-Alin COSTIN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The paper presents the actual transit of a container ship through the Suez Canal in Egypt, including the actions that need to be taken to ensure a safe and efficient passage, with regard to COLREG, SOLAS, Company's policies and the Local Regulations.

16. Naval Human Resource Challenges and their Impact on the Industry

Autor: stud. Andrei COTEȚ, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: The theme addresses the significant challenges facing naval human resource and their impact on the maritime industry. The human resource in this sector faces a number of challenges, including the shortage of qualified personnel, the continuous need for training and adaptation to new technologies, as well as the impact of demographic changes. The research also explores the influence of these challenges on the maritime industry as a whole. Proper human resource development and management is vital to innovation, safety and the overall success of the marine industry. Changes in market demands, emerging technologies and economic pressures require a rapid and sustainable adaptation of the human resource in this field. To meet these challenges, effective solutions and strategies are needed, such as significant investment in training and education programs, implementation of advanced technologies for operational efficiency, and development of innovative and flexible human resource policies.

17. Intelligent Route Optimization System (IROS) Based on Real-Time Weather Predictions

Autor: Lucian CRISTOCEA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The "Intelligent Route Optimization System (IROS) Based on Real-Time Weather Predictions" integrates real-time meteorological data with advanced navigation algorithms to enhance maritime and aerial route planning. Utilizing AI and ML, IROS anticipates weather changes, enabling proactive

route adjustments for improved safety and efficiency. The system aims to mitigate unforeseen weather risks, optimize fuel consumption, and reduce environmental impact, ensuring a sustainable navigation future. Featuring a user-friendly interface for easy access to optimized route recommendations, IROS stands as a pivotal innovation in navigation and meteorology. Through rigorous testing and validation, including detailed simulations, the project promises significant benefits: heightened navigation safety, operational efficiency, and a reduction in CO2 emissions. IROS exemplifies a forward-thinking response to the pressing challenges posed by climate change, marking a significant stride towards safer, more efficient maritime and aerial transportation.

18. General Review of Navigational Accidents-Incidents Cases of Container Vessels

Autor: stud. Florin CUȚOV, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The protection and safety of human life and property as well as the protection of the environment are of outmost importance in maritime transport. In many cases, serious marine accidents mainly happen because of lack of safety procedures and may cause loss of human lives, serious environmental pollution and serious damage or loss of property. The accidents of collisions, contacts, grounding and losing containers are studied in terms of the causes and related consequences. Fault trees diagrams were developed based mainly on the study of official investigation reports.

19. Ship's SAR Manoeuvres

Autor: stud. Ștefan DIAMANDI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alecu TOMA

Abstract: This is an account of the SAR standard maneuvres the ship is required to perform in international waters. Any ship's crew must be familiar with the standard patterns involved either in a simple surface ship's search and rescue mission or in an air-to-sea coordinated mission with the differences each particular pattern might entail. The following work is far from original, albeit detailed in the presentation, as it was intended more as a familiarization than as a personal narrative.

20. Maneuver of Pilot Embarkation/Disembark in Different Situations

Autor: stud. Ștefania-Crina DINU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The purpose of the paperwork is to show the importance of the correct execution of maneuver to embark and disembark for pilots safely. The content of the essay includes the way how pilot can embark/disembark the ship by pilot ladder or helicopter. The entire process includes risks for pilots who need to join the ship safe with well-trained crew.

21. Navigating a Container Port Vessel Through the Kiel Canal Under Challenging Conditions

Autor: stud. Alexandru-Andrei FUCIGIU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: Navigating a container port vessel through the Kiel Canal under challenging conditions requires precise maneuvering skills. The canal's narrow width and varying water currents pose significant navigational challenges, demanding careful coordination and expertise from the ship's crew. Factors such as wind, tide, and traffic add complexity to the operation, necessitating constant monitoring and

adjustments to ensure safe passage. Skillful use of propulsion systems, rudders, and navigation aids is essential to navigate tight turns and bridges along the canal route. Additionally, effective communication between the ship's crew and canal authorities is crucial to anticipate and address any potential hazards promptly. Successfully navigating the Kiel Canal under adverse conditions requires a combination of experience, technical proficiency, and meticulous planning to ensure the safe transit of the vessel and its valuable cargo.

22. The Impact of Anthropic Interventions Over the Last Ten Years Upon the Navigational Areas Related to the Romanian Coast of the Black Sea

Autor: stud. Iacub-Sabin GAFAR, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Dinu-Vasile ATODIRESEI

Abstract: The aim of this paper is to offer a view on the anthropic interventions over the last ten years in the vicinity of our country, in the Black Sea area, and how it affected the maritime area in regards to the transport of various goods. In the first part, an overall presentation of the major changes over the years will be shown. Moreover, an evolution of the Romanian Coast and our country's Black Sea navigational areas is discussed as we emphasise on the transit of ships in the area. Finally, the presentation will conclude with an analysis and comparison of the present day zone of operation and quantity of vessels and cargoes transported near the important points of the Romanian Coast.

23. The Transit of Panama Canal

Autor: stud. Ana GEOGE, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ş.L. Dr. ing. Sergiu ȘERBAN

Abstract: The purpose of the paper is to present the complexity of the channel, its functionality and all the particularities related to this aspect. The paper is composed of three chapters, starting with the history of the construction of the canal, continuing with the presentation of the ship with which I made an international voyage crossing the Panama Canal. Finally, the most important part of the work is exposed, namely the aspects and stages of the transit of the channel.

24. The Study on the Evolution of Ro Pax Type Vessels

Autor: stud. Mihai Paul GHERGIC, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: RORO vessels have either built-in or shore-based ramps or ferry slips that allow the cargo to be efficiently rolled on and off the vessel when in port. While smaller ferries that operate across rivers and other short distances often have built-in ramps, the term RORO is generally reserved for large seafaring vessels. The ramps and doors may be located in the stern, bow, or sides, or any combination thereof.

25. Integration of Unmanned Vehicles on Military Ships

Autor: stud. Alexandru-Eugen LUPU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ş.L. Dr. ing. Sergiu ȘERBAN

Abstract: In the last decades the Unmanned Vehicles (U.V.) used in military operations suffered a very significant evolution based on the change of the maritime warfare, from conventional warfare to hybrid warfare and asymmetrical warfare. By integrating U.V. on ships, the combat capabilities, Information, Surveillance and Reconnaissance (I.S.R.), Search and Rescue (S.A.R) and the Electronic Warfare (E.W.) can be improved. The navy role in hybrid or asymmetrical warfare is significant.

The purpose of this paper is to analyze the possibilities of using U.V. on warships to increase the technical and tactical capabilities or even to develop new capabilities on hybrid or asymmetrical warfare.

26. Maneuvering in Special Conditions – Anchoring Maneuver of the Vessel with a Single Anchor in the Huelva Anchorage Area

Autor: stud. Andrei-Teodor MARIN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: The anchorage is approached, as much as possible, with the bow into the wind, current or the resultant of the two. If this is not possible, the influence of these factors on the movement of the ship will be taken into account, especially when the machines are stopped, and the potential danger of approach. The engine stops in time. In the place where it needs to be anchored, the engine is put asterm. When the ship starts to move backwards, the anchor sinks. In bad weather or when the ship stays at anchor for a long time, a length of chain 6-7 times the depth of the water can be spun. If there are various obstacles near the place where it is anchored, the ship approaches at reduced speed until it reaches the point, stops the cars and anchors the windward by placing the rudder on the sickle the anchor was dropped until the ship comes with the bow into the wind.

27. Analysis of the Transport and Handling of Dangerous Goods on Board a Minelayer Ship

Autor: stud. Denisa-Luciana MIHĂESCU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Dinu-Vasile ATODIRESEI

Abstract: This study examines the intricacies surrounding the transport and handling of hazardous materials aboard Minelayer

ships. Minelayer vessels, designed primarily for the creation of mine barrages, often encounter the challenge of transporting dangerous goods safely and effectively. The abstract delves into the unique considerations, protocols, and safety measures essential for the successful transportation and operation of hazardous cargo on these specialized vessels. By analyzing past incidents, regulations, and best practices, this study aims to provide insights into mitigating risks and ensuring the utmost safety in handling dangerous goods aboard Minesweeper ships.

28. Study on the Transport of Goods on the Danube

Autor: Nicolae-Antonio MOGA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: This study delves into the transport of goods along the Danube River, one of Europe's most significant waterways for commerce and trade. The Danube, spanning multiple countries and connecting various regions, plays a crucial role in the transport infrastructure of the continent. Understanding the dynamics of goods transport on this watercourse is paramount for enhancing logistics efficiency, promoting sustainable transportation, and fostering economic development in the region.

29. REMPEC's Role in Preventing and Combating Ship Pollution in the Mediterranean Sea

Autor: stud. Adrian MORARU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: REMPEC, overseeing maritime activities in the Mediterranean Sea under the Barcelona Convention, addresses heightened risks of oil pollution due to increased tank ship traffic and offshore oil exploration. Its mission aims to prevent and mitigate ship pollution through various measures, including

assisting coastal states in implementing international standards and enhancing response capabilities. The paperwork focuses on REMPEC's role in combating oil pollution, emphasizing its commitment to preparedness, response coordination, and capacity-building initiatives. Despite a growing body of literature on REMPEC's work, this paperwork delves specifically into its efforts to tackle ship pollution, particularly oil spills.

30. The Contributing Factors to Marine Pollution with Hydrocarbons

Autor: stud. Mihai Cosmin MOROLDI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE
Abstract: Maritime transport is indeed a significant contributor to hydrocarbon pollution. This type of pollution can result from various sources, including oil spills from tanker accidents or offshore drilling operations, discharge of untreated or partially treated wastewater containing hydrocarbons, and runoff from land-based activities such as industrial processes, urban runoff, and transportation. Hydrocarbon pollution can have detrimental effects on marine ecosystems, including harm to marine life, degradation of habitats, and impacts on human activities such as fishing, tourism, and recreation.

31. Defining and Describing Modeling Approaches Using Anylogic Software

Autor: stud. Ersin NEZAMALI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: In this paper, I will present the six types of modeling approaches available in Anylogic software: Discrete Event modeling, System Dynamics modeling, Agent based modeling, Dynamic Systems modeling, Multimethod modeling and also

the Combining modeling methods. These are the six different viewpoints that the modeller can take when mapping the real-world system to its image in the world of models. Depending on the simulation project goals, the available data, and the nature of the system being modelled, different problems may call for different methods. This paper offers an overview of the most used multi-method model architectures, and discusses the technical aspects of linking different methods within one model.

32. Maneuvering of Salvage Tug for Rescuing Damaged Ships

Autor: stud. Eduard-Cristian NICULAE, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ş.L. Dr. ing. Sergiu ȘERBAN

Abstract: The maneuvering of a salvage tug for rescuing damaged ships involves meticulous planning and coordination to ensure efficient and safe operations. Key considerations include assessing underwater topography, navigating through changing weather conditions, and optimizing propulsion power for precise maneuverability. Factors such as wind, currents, and waves impact the tug's stability and control during salvage operations. Additionally, the quality of towing equipment and effective communication with the distressed vessel and port authorities are critical for success. Proper training of the tug's crew and adherence to detailed maneuvering plans are essential to effectively address unforeseen challenges and ensure the safety of both the salvage tug and the damaged vessel.

33. Drydocking and Undocking of the Project 1048 Corvette at the Constanța Naval Shipyard

Autor: stud. Ştefan NISTOR, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ş.L. Dr. ing. Sergiu ȘERBAN

Abstract: This thesis explores the theoretical and practical aspects of docking maneuvers in the Port of Constanța. It introduces the significance of docking maneuvers, types of docks, and influencing factors. It then presents a concise case study of a specific ship, covering details, docking plan, onboard and dockside preparations, berthing, and undocking maneuvers. The research contributes valuable insights into efficient docking procedures for maritime operations at the Port of Constanța.

34. Maneuvering of the Training Ship Mircea for Transiting the Sulina Canal and Docking at the Port of Braila

Autor: stud. Alexandru – Daniel NOAPTEȘ, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The project titled: "Maneuvering the Training Ship Mircea for Transiting the Sulina Canal and Docking at the Port of Braila" aims to examine the conditions and the manner in which the ship can execute the voyage along the established route, as well as the maneuvering capabilities of the vessel in various situations. The Sulina Canal, with a length of approximately 64 kilometers, provides a safe passage for large-tonnage vessels to transit from the Black Sea into the Danube River and reach the inland ports of Romania and other neighboring countries. The Port of Braila is one of the largest river-maritime ports in Romania. Situated in the city of Braila on the Danube, from kilometer 175 to km 167 – on both banks of the river, the port is a significant source of revenue for the city, as many large international companies conduct their operations here. The Training Ship Mircea is considered one of the most beautiful sailing ships in the world and a symbol of the Romanian navy, renowned globally for its impressive appearances in ports and maritime festivals. It navigates both

seas and rivers, providing young sailors with valuable experience in ship handling, wind recognition and maneuvering, as well as the development of essential skills such as discipline, teamwork, and decision-making in critical situations.

35. Study on the Transport of Lithium-Ion Batteries in Containers on Board Ships

Autor: stud. Vlad-Stefan OGLAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: The maritime industry recognizes the imperative of prioritizing health, safety, security, and environmental concerns, necessitating collaboration among businesses, governments, and NGOs. With the urgent need to reduce reliance on fossil fuels, the development and safe transportation of lithium-ion batteries are crucial. However, improper handling of these batteries poses significant risks. Guidelines from the CINS Network aim to address these risks by raising awareness and providing suggestions for safe transportation. Stakeholders must engage in dialogue to ensure compliance with international safety regulations and communicate relevant information throughout the supply chain. Given the evolving nature of technology and human factors, effective risk management requires continual updates. This paper addresses both technological advancements and human behavior to ensure the safe transport of lithium-ion batteries.

36. Study of Navigation on the Danube River

Autor: stud. Silviu PAŞCA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ş.L. Dr. ing. Sergiu ŞERBAN

Abstract: The study refers to the situation and prospects of navigation on the Danube river in the dynamics of river waters

transport, directly analyzing the course of Danube river, especially in the Romanian sector. The content of the study, describes the way in which navigation is carried out on the Danube River, referring to the transport of cargo, transport of passengers, the economic importance of the river – but not fully exploited, as well as the main applicable legal provisions and possible tariffs.

37. Global Maritime Distress and Safety System in Restricted Areas

Autor: stud. Robert-Marian PATRU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: The Global Maritime Distress and Safety System (GMDSS) is an international framework designed to significantly enhance the safety and efficiency of maritime communications in emergency or distress situations. Developed by the International Maritime Organization (IMO), it became operational globally in 1999. GMDSS integrates various communication technologies and services, including shortwave radio, satellites, positioning systems, and signaling equipment to ensure that maritime vessels can transmit and receive emergency, safety, and routine messages regardless of location or weather conditions.

38. Vessel Manouvering when Towing an Oil Rig

Autor: stud. Victor-Ioan PAVEL, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN

Abstract: This project is set to describe the procedure for moving one Jack-Up rig from her present location location (oil field in the Black Sea/ Romania) to Constanta South port. The Jack-Up is situated in West Black Sea, 105km east from Constanta/ Romania, in an area with water depth

of around 70m. The purpose of this document is to provide information and guidance to the personnel involved in the Jack-Up Rig location change.

39. Analysis and Preparation of Necessary Documentation for the Commercial Operations of an Oil Tanker

Autor: stud. Vlad-Liviu POP, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: In this work I will explain and demonstrate, how to prepare and how to correctly do the documents for loading and unloading an oil tanker. And compliance with safety procedures to prevent accidents and pollution at sea.

40. Global and Regional Sea Level Changes and Its Causes

Autor: stud. Robert-Bogdan ICHIM, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. univ. Dr. ing. Andra NEDELCU

Abstract: This paper summarizes the complexities of sea level measurement and its variability on global and regional scales. Sea level, defined as the height of the sea surface, can be measured in absolute or relative terms, with satellite altimetry providing global coverage since 1993. Various factors, including gravitational influences, wind patterns, tectonic movements, and climate change, contribute to sea level variations. Global Mean Sea Level (GMSL) reflects changes in ocean volume due to ice melt and thermal expansion, while Mean Sea Level (MSL) represents a temporal average relative to a fixed datum. Steric sea level changes result from variations in water density, including thermosteric and halosteric effects. Barystatic sea level changes occur due to changes in the mass of seawater. Understanding these mechanisms is crucial for assessing climate-related sea level changes and their impacts.

41. Trends in World Transport of the Passengers

Autor: stud. Gabriel-Andrei RUSU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. Romeo BOȘNEAGU

Abstract: This project was established to analyze world trends in passenger transport from the beginning when steamships were used to the present day colossal modern ships. The paper will mention statistics, specific rules for admitting the ship to carry people, and highlight pivotal developments that have shaped the industry. By examining historical data and regulatory frameworks, the research aims to offer a comprehensive understanding of the evolution of maritime passenger transport. Statistical analysis will illuminate trends in passenger numbers, while a detailed exploration of admission rules will underscore safety standards and compliance measures. Through this examination, the project endeavors to contribute valuable insights into the transformative journey of passenger transport, offering a nuanced perspective on its historical development and current regulatory landscape.

42. Making of an Ocean Passage Plan Using on-board software and Routeing Charts

Autor: stud. Alin-Gabriel SINTION, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU

Abstract: This project aims to exemplify and explain the process and thought behind the making of a Passage Plan using common software installed aboard commercial ships and Routeing Charts, which will both help us achieve the shortest and safest route possible when traversing a large body of water like the Atlantic Ocean. During such a long distance passage, it is mandatory to pay close attention to the evolution of the hydrometeorological parameters in order to prepare accordingly in matters of navigation and avoid dangerous situations.

Resources such as the Routeing Charts mentioned are invaluable for this purpose as they provide a lot of useful information for the planning process, as will become obvious after this presentation.

43. Dangerous Cargo – Handling and Transportation
Autor: stud. Cristian STOIAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Sergiu LUPU
Abstract: A short introduction in the process of handling crude oil, some of the requirements of the loading and discharging ports and safety measures that need to be taken in order to have a safe voyage.

44. Manoeuvring of the Vessel in Narrow Spaces. Transiting Manoeuvering of Paraná. Study Case
Autor: stud. Dumitru-Cristian STOIAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Ș.L. Dr. ing. Sergiu ȘERBAN
Abstract: This project is structured in 4 chapters about the ship Seapeak Meridian which is operated by the company Seapeak Maritime (Glasgow) Limited and which has the owner Seapeak Meridian ApS in which a maneuver in narrow spaces, its transit and pilot maneuvers on the Paraná river are carried out.

45. Analysis of Hydrocarbon Dispersion in the Thyrenian Sea in GNOME Software
Autor: stud. Georgian Țuțuianu, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Mihail PRICOP
Abstract: In this software platform is analyzed a case of pollution which is produced by oil.

46. Evaluation of the Longitudinal Strength of a Ship
Autor: stud. Virgil BESTEA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Mihail PRICOP
Abstract: In this paper we are dealing with the importance of a good measurement system in order to keep all the time an exact overview of the longitudinal stability parameters of the ship

47. Prediction and Monitoring of Operational Performance of Ships
Autor: stud. Dumitru-Gabriel IATAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: This research focuses on the prediction and monitoring of operational performance in the maritime industry, addressing the pressing need for efficient fuel consumption and carbon emission reduction strategies. It delves into the significance of performance monitoring in relation to current and upcoming maritime regulations, highlighting the necessity of adopting effective prediction and monitoring methods. The study analyzes various approaches to predict ship performance, examining the impact of navigation conditions and surface roughness on fuel efficiency and operational efficacy. The findings underscore the challenges faced by many companies, such as high costs and lack of standardization, and emphasize the urgent need for industry-wide adoption of more effective practices and innovative solutions to enhance the operational performance of ships and contribute to global carbon emission reduction efforts.

48. Manoeuvring of the frigate Mărășești for crossing Istanbul Strait in bad weather conditions
Autor: stud. LESNIC Theodor-Georgian, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alecu TOMA
Abstract: This scientific work concerns the march of the frigate "Mărășești" on the route between the harbors of Constanta and Alexandria, aiming to cross the Istanbul Strait in bad weather

conditions. This project is structured in several parts, such as a general introduction, technical-tactical characteristics of the frigate, a detailed elaboration of the preliminary march between the two harbors, the manoeuvring of the ship in bad weather in the Istanbul Strait with all the adjacent procedures and the final personal conclusions.

SISTEME ELECTROMECANICE NAVALE

BIROUL SECŢIUNII
Preşedinte: Conf. univ. Dr. ing. Marian RISTEA-KOMORNIKI
Membri: Ș.L. Dr. ing. Octavian Narcis VOLINTIRU
Lect. univ. Dr. Adriana SPORIȘ

1. Some Research on Optimizing Ship Propulsion by Using the Provisions of the Ship Efficiency Management Plan (Seemp).

Autor: stud. Belgin AMET, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: Considering the major importance of reducing the ammount of pollution generated by ships, there has been a consensus that methods need to be put in place in order to minimise the by-product of exhaust gases, particularly NOx. That is why i decided to choose for my masters degree paper "Research regarding the safe operation of SCR-type aggregates on board the ship" under the guidance of Eng. Popa Ionel PhD. This paper is structured into four chapters, as follows: In chapter one is a description about the endangerement of the environment caused by exhaust fumes and the importance of lowering NOx emissions. Chapter 2 revolves around the international laws regarding reduction of nitrous oxides using MARPOL Annex 6 and methods of doing so, the SCR being the most effective one. Chapter 3 is about an analysis between an engine equipped with SCR and one without and the safe operation of the aggregate, parameters and alarms. Chapter 4 concludes the paper.

2. Ship of 21000 tdw. Modeling of the Propulsion Plant Using Soft Programs

Autor: stud. Răzvan Andrei CARAȘ, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: S.L. Dr. ing. Daniel MĂRĂȘESCU

Abstract: The propulsion plant serves as the backbone of various engineering systems, ranging from marine vessels to aerospace crafts, necessitating accurate modeling for design, analysis, and optimization purposes. This abstract explores the utilization of soft programs, including computer-aided design (CAD), computational fluid dynamics (CFD), and finite element analysis (FEA), in the modeling process. Soft programs offer an intuitive and efficient approach to simulate complex propulsion systems, enabling engineers to assess performance parameters, such as efficiency, thrust, and emissions, under diverse operating conditions. This abstract discusses the advantages of integrating soft programs into propulsion plant modeling, including enhanced accuracy, reduced development costs, and accelerated design iterations. Moreover, it highlights the challenges associated with soft program implementation, such as computational resource requirements and model validation. Through case studies and theoretical discussions, this abstract underscores the significance of leveraging soft programs for comprehensive propulsion plant modeling, fostering innovation and advancement in propulsion system design and engineering.

3. Analysis of the Risks Associated with the Activity in the Engine Room

Autor: stud. Marian COSTEA, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. ing. Marian RISTEA-KOMORNICKI

Abstract: This study delves into the inherent risks present in engine room activities aboard maritime vessels. Through a focused examination, it identifies key hazards and evaluates their potential impact on safety. By analyzing typical operations such as machinery maintenance and fuel handling, the study aims to provide insights into effective risk mitigation strategies tailored to the engine room environment. Emphasis is placed on understanding the interplay between human factors, procedural adherence, and equipment reliability in shaping risk profiles.

4. Research Regarding Optimization of Dual Fuel Marine Diesel Engines as Main Propulsion System

Autor: stud. Gabriel-Augustin DOBRIN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: This analysis explores the efficiency, reliability and optimization of WinGD two-stroke marine diesel engines, used as main propulsion on LNG tanker vessels using only the natural boil off gas produces in cargo tanks. Desinged to operate with LNG fuel, these engines offer both energy efficiency and reduced carbon emissions. In conclusion, WinGD diesel engines represent a sustainable and efficient solution as main propulsion system on LNG vessels, ensuring reliable performance.

5. Analysis of the Seawater Flow Dilution Process in an OPEN LOOP

Autor: stud. Robert-Florin DOVLEAC, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Marian RISTEA-KOMORNICKI

Abstract: Considering the major importance of reducing the ammount of pollution generated by ships, there has been a consensus that methods need to be put in place in order to

minimise the by-product of exhaust gases, particularly NOx . That is why i decided to choose for my masters degree paper " Analysis of the seawater flow dilution process in an OPEN LOOP " under the guidance of Lt.cdor.conf.univ.Dr.ing. Ristea-Komornicki Marian. This paper is structured into four chapters, as follows: In chapter one is a description about the endangerement of the environment caused by exhaust fumes and the importance of lowering NOx emissions. Chapter 2 revolves around the international laws regarding reduction of nitrous oxides using MARPOL Annex 6 and methods of doing so, the SCR being the most effective one. Chapter 3 is about an analysis between an engine equipped with SCR and one without and the safe operation of the aggregate, parameters and alarms. Chapter 4 concludes the paper.

6. 16000 TEU Container Ship. Actuation and Automation of Ballast Valves, a Abstract Description, Analys of the System.

Autor: stud. Ionuț Nicolae ELCIU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Beazit ALI

Abstract: Analysis of ballast system play a crucial role in maintaining stability, trim and draft of the vessel. Ballast system was improved during the years by bringing on board a ballast water management system and to avoid contamination by microorganisms brought from international waters. Ballast systems consist of two main components: Control panel which is used to operate Ballast System and Valves with Actuators which control the flow of water into or out of the ballast tanks. Actuators are often installed inside the engine room, pump chamber, bow thruster room or pipe duct, allows easy access for maintenance or direct control. To save valuable space on board, engineers and shipbuilders choose to mount actuators inside the ballast tanks.

7. Analysis of the Stiffening Elements of an ROV on Pressure Levels

Autor: stud. Daniel GHERGHISAN, Academia Navală „Mircea cel Bătrân”, Constanţa

Îndrumător: Conf. univ. Dr. ing. Marian RISTEA-KOMORNICKI

Abstract: The project on the topic "Analysis of the stiffening elements of an ROV on pressure levels", has as its main object the analysis of the rigid elements of ROVs in underwater environments by adapting and designing their structures to withstand the increased water pressure in immersion. To achieve this requirement, the work is structured in four chapters, as follows: ***In the first chapter***, general information on ROV (Remote Operated Vehicles) and UUV (Unmanned Underwater Vehicles) systems is presented. ***In the second chapter***, arguments are presented regarding the use of ROV-type devices, in the civil and military environment - the Naval Forces. ***In the third chapter***, the exposure of an ROV is simulated (in ANSYS), on different pressure levels to analyze and observe the behavior of rigid elements. ***In the last chapter***, it represents drawing conclusions, understanding and optimizing the behavior of structures under pressure while identifying and eliminating potential weak elements or vulnerable areas, reducing the risk of structural failures and operational delays. In the elaboration of the paper I chose the following basic methods of scientific research: historical, prospective analysis, comparative analysis and inductive analysis.

8. Efficiency and Reliability in Power Generation on Icebreaking LNG Tankers: Wärtsilä Four-Stroke Marine Diesel Engines with 12-Cylinder V Configuration

Autor: stud. Dragoș-Ștefan GRAMĂ, Academia Navală „Mircea cel Bătrân”, Constanţa

Îndrumător: S.L. Dr. ing. Daniel MĂRĂȘESCU

Abstract: This analysis explores the efficiency and reliability of Wärtsilä's four-stroke marine diesel engines with a 12-cylinder V configuration, used as power generators on LNG tanker vessels specialized in icebreaking. Engineered to operate with LNG fuel, these engines offer both energy efficiency and reduced carbon emissions. The V configuration allows for seamless integration on ships, optimizing space. The paper also addresses aspects of preventive maintenance and diagnostics, contributing to long-term reliability. In conclusion, Wärtsilä diesel engines represent a sustainable and efficient solution for power generation on LNG vessels, ensuring reliable performance in extreme maritime conditions.

9. Some Research on Optimizing the Main Functional Parameters of SCR Units on Board of Ships

Autor: stud. Andrei-Robert GRECU, Academia Navală „Mircea cel Bătrân", Constanța

Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: Nitrogen Oxides (NOx) are chemical compounds emitted into the atmosphere as a result of burning fossil fuels such as oil, natural gas, and coal. These compounds contribute to the formation of smog, air pollution, and the greenhouse effect. Reducing NOx emissions is particularly important for protecting the environment and public health. In this paper, we will analyze current technical solutions for reducing nitrogen oxides and discuss their advantages and limitations. Current technical solutions, such as low-emission combustion technologies, SCR and EGR systems, and innovative combustion technologies, can significantly contribute to the reduction of nitrogen oxide emissions. However, it is important to consider the advantages and limitations of these solutions, as well as integrate them with other pollution reduction technologies to achieve optimal results.

10. Design of the Propulsion Plant at a Seagoing Tug. Recovery of Thermal Energy on Board Ship.

Autor: stud. Nicolae Marian HOCICĂ, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Prof. univ. Dr. ing. Beazit ALI

Abstract: Tugs are vessels designed to handle other ships or floating units by firing or pushing. They are intended for operation in open sea, laughing and ports, canals or inland waters. In addition to the main firing function, tugs are equipped with facilities and equipment that allow other activities such as rescue, fire extinguishing, depollution, ice breaking, occasional transport Tugs are specialized on different types of operatives, which leads to different constructive and functional characteristics. The main feature of a tug is power and in direct correlation with this hook traction (bollard pull)

11. Research Regarding the Safe Operation of SCR-Type Aggregates on Board the Ship

Autor: stud. Alexandru Tiberiu MEGAN, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: Considering the major importance of reducing the amount of pollution generated by ships, there has been a consensus that methods need to be put in place in order to minimize the by-product of exhaust gases, particularly NOx. That is why i decided to choose for my masters degree paper "Research regarding the safe operation of SCR-type aggregates on board the ship" under the guidance of S.L. Eng. Popa Ionel PhD. This paper is structured into four chapters, as follows: In chapter one is a description about the endangerement of the environment caused by exhaust fumes and the importance of lowering NOx emissions. Chapter 2 revolves around the international laws regarding reduction of nitrous oxides utilising MARPOL Annex 6 and methods of doing so, the SCR

being the most effective one. Chapter 3 is about an analysis between an engine equipped with SCR and one without and the safe operation of the aggregate, parameters and alarms. Chapter 4 concludes the paper.

12. Some Research on Optimizing on –Board Fuel Consumption Through the use of Unconventional Energy

Autor: stud. Cristian-Adrian MIREA, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: This paper deals with the optimization of fuel consumption and the reduction of gas emissions, through the use of non-conventional energies, alternative to fossil energy, or their combination, and the effectiveness of the use of photovoltaic panels, as an alternative energy source, from the point of view of reducing evening-effect gases. and economic.
In recent years, many environmental organizations have been interested in optimizing energy consumption, which has become one of the main concerns of the world today. From this point of view, the maritime industry has tried to optimize the ship's fuel consumption by developing engines and the propulsion system, creating hull design or using alternative energies, thus reducing the amount of CO2 released into the atmosphere. The main idea of this paper is to perform a complex comparative analysis of the design index of energy efficiency, evening gas emissions, solar energy use.

13. Analysis of the Ventilation Process in the Machinery Compartment

Autor: stud. Valerică-Ionuț NEGOIȚĂ, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Marian RISTEA-KOMORNICKI

Abstract: The project entitled "Analysis of the ventilation process in the machinery compartment" will be structured in four chapters, which will deal with issues related to the optimization of the operation of the ventilation system in the machinery compartment on board the T22 frigate. The research will start with the study of the regulations of the ventilation installations on board ships both in terms of classification registers and NATO standards. The first chapter will present the current state of ventilation systems for machinery compartments. Classification societies' specifications. In the second chapter, introductory data on the chosen frigate will be presented (general information, technical-tactical characteristics, mission, etc.). Description of machinery compartments. The third chapter will include the simulation of the operation of the ventilation system. The fourth chapter will present the conclusions of the work. In this paper both theoretical and practical research methods will be addressed.

14. Dimensioning of the Water Fire Extinguishing Installation on an LNG/LPG Tanker. The Fire Detection and Warning System

Autor: stud. Andrei RUSU, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Prof. univ. Dr. ing. Beazit ALI

Abstract: Following this diploma project with the theme: "Dimensioning of the water fire extinguishing installation on an LNG/LPG tanker. The fire detection and warning system", I want to introduce to you in chapter I, the ship with its specific characteristics. In Chapter II, we have extensively presented fires and the three requirements necessary to allow the existence of a fire:

1. A combustible substance.
2. A source of oxygen, in the form of air.
3 A source of heat and/or ignition.

In chapter III I proposed a fire extinguishing installation, it is intended to ensure the amount of water for extinguishing the fire in any part of the ship. In chapter IV I calculated the hydraulic losses of the pump and chose a pump that corresponds to my requirements. Finally, I will draw conclusions regarding this chapter and the diploma project.

15. Some Research on Optimization of Fuel Consumption Using Electric Shaft Generators on Board Ships

Autor: stud. Iulian-Mihai SAVU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: The present work aims to reduce the fuel consumption on board the ship by introducing in the propulsion installation, namely the installation of a shaft generator on the axial line, driven by the main engine of the ships, in the end we also aim to reduce the costs of purchasing the fuel used for the propulsion of the ship and of course for the production of electricity on board the ship.

16. Organization and Maintenance of Hydraulic and Pneumatic Actuation Systems on Board an Oil Tanker

Autor: stud. Gheorghiță SIMA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Beazit ALI

Abstract: This project with the theme: "Organizing and conducting maintenance of hydraulic and pneumatic actuation systems on board an oil tanker" will exemplify how to plan, apply and conduct maintenance of hydraulic and pneumatic actuation systems on board an oil tanker. It is structured in five chapters covering the technical data about the ship, the main installations on board, the organization and implementation of the maintenance of the installations and implicitly the hydraulic

and pneumatic actuators, the application of the theoretical part on the manwinwin software, and finally the final conclusions.

17. Determination of the Optimal Operating Regime in Order to Reduce Pollution of the Marine Atmosphere With SO x

Autor: stud. Sorin STRATULAT, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Ionel POPA

Abstract: The purpose of the paperwork is to show the importance of Determination of the optimal operating regime in order to reduce pollution of the marine atmosphere with SO x. The paperwork illustrates the importance of using scrubbers on board ships to reduce the harmful gases produced by the ship's engines. Ships that have not installed an exhaust gas scrubbing system are required to use only low-sulphur fuel.

18. Calculation of the Ballast and Bilge System on a Container Ship. Command and Control of the Optimal Operation of the System. Automation of the Bilge Separator Operation.

Autor: stud. Gavrilă-Marius TIMIȘ, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Beazit ALI

Abstract: The first chapter details the characteristics of the container ship "Charlotte Maersk," built in 2002 for Maersk Line, including its Class C classification, maximum capacity of 9,640 TEU, Wartsila engine specifications, and vessel dimensions. Chapter 2 focuses on the ballast-sanitary facilities, aiming to adjust the ship's center of mass. It explains main functions such as loading, transferring, and discharging liquid ballast, as well as draining water from the sanitary system. Requirements for ensuring ship stability, preventing marine pollution, and the availability of pump actuation means are

presented, highlighting the importance of hydraulic calculations for the ballast system. In Chapter 3, the operation of the ballast and sanitary system is detailed to ensure optimal navigability and maneuverability, adhering to international standards. Chapter 4 discusses the automation of sanitary separator operations, presenting technologies like sensors, speed control, and monitoring systems, optimizing efficiency and compliance with regulations.

19. Special Tests for Evaluating Maneuverability Performance

Autor: stud. Razvan Marius MUNTEANU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Gheorghe SAMOILESCU

Abstract: When it comes to evaluating the performance of a ship in deep waters, there are several maneuvering and special tests that can be conducted. One important aspect is to minimize the effects on test results and obtain accurate data. To gain a clearer perspective on the ship's performance in real operating conditions, it is recommended to conduct these tests at least five times the maximum draft of the ship when loaded with fuel and cargo. This ensures that the ship's behavior is evaluated at different depths.

20. Sea Trials and Docks

Autor: stud. Răzvan Marius MUNTEANU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Gheorghe SAMOILESCU

Abstract: In the final stage of ship construction, crucial tests are conducted to ensure equipment and systems operate properly. These tests, carried out during construction, at the quay, and during sea trials, involve the ship's crew, naval engineers, and shipyard workers. Key systems like steering, propulsion, and radar are rigorously tested to ensure flawless performance without harming the environment. Ongoing advancements in

naval engineering require sophisticated tests, guided by technological progress and past experiences. The Society of Naval Architects and Marine Engineers (SNAME) is instrumental in establishing standards, crucial for ensuring ship performance and safety in the modern maritime industry.

21. Determining the Operating Regime of a Naval Propulsion Machine Based on the Maximization of Propulsion Efficiency

Autor: stud. Ioan ȚUȚUIANU, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Ionel POPA
Abstract: In the presentation, I will address a broad topic about determining the operating regime of a naval propulsion machine based on the maximization of the propulsion efficiency, in which I will present types of fuels and their influence, criteria for the choice of propulsion in order to increase the efficiency

OPERAREA ŞI CONDUCEREA SISTEMELOR ELECTROENERGETICE NAVALE

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

1. Study of the Shielding of Electronic Equipment

Autor: stud. Akkan ALI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI
Abstract: The dissertation paper titled "Study of the Shielding of Electronic Equipment" by Ali Akan focuses on the critical aspect of shielding in electronic devices. It starts with an introduction that presumably sets the context for the importance of electromagnetic shielding. The document then delves into the materials used in creating electromagnetic shields, providing technical details and analysis of their effectiveness. A significant part of the study seems to be dedicated to the analysis of layered shields, which are likely crucial in mitigating electromagnetic interference. The document concludes with a comprehensive summary of findings and final conclusions, supported by a bibliography indicating the research sources. This work appears to be a detailed study combining theoretical analysis with practical implications in the field of electronic equipment design and safety.

2. The Study of the Installation of Electronic Equipment on Board Maritime Vessels

Autor: stud. Hakan BAIRLI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: The present study aims to investigate the process of installing electronic equipment on board marine vessels, focusing on aspects related to efficiency, reliability and the impact on nautical performance. In the context of the rapid evolution of marine technology, electronic equipment has become essential components for safe and efficient navigation. By using an interdisciplinary approach, we analyzed aspects related to the design, integration and testing of electronic equipment in the maritime environment. The installation efficiency in terms of this process, time and resources involved were evaluated with a focus on optimizing it to minimize the impact on naval operations. Also, the reliability of the installed electronic equipment, they aim to identify possible technical or operational problems that could affect the performance of maritime vessels. The analysis also includes aspects related to the maintenance and updating of equipment in the context of continuous technological changes. The impact on nautical performance was assessed through data obtained from sailing tests and simulations in various conditions. We took into account factors such as navigation accuracy, fuel efficiency and the ability to adapt to varying weather conditions.

3. PWM Frequency Converters and their Applications in the industry

Autori: stud. Dan BIBILOIU, stud. George-Cosmin MITU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Florenţiu DELIU

Abstract: PWM (Pulse Width Modulation) frequency converters are widely used in various industries for efficient control of electrical power. These converters manipulate the width of pulses in a waveform to regulate power output. Here are some applications in the industry: PWM frequency converters are extensively used for controlling the speed of electric motors. By adjusting the pulse width, the average

voltage supplied to the motor is varied, allowing precise control of motor speed in applications like industrial machinery, HVAC systems, and electric vehicles. In power electronics, PWM converters are employed in switch-mode power supplies. They efficiently regulate output voltage by controlling the switching frequency, making them suitable for applications such as computer power supplies, battery chargers, and uninterruptible power supplies (UPS). PWM converters play a crucial role in renewable energy applications. They are used in solar inverters to convert the direct current (DC) produced by solar panels into alternating current (AC) suitable for the electrical grid. Additionally, they are utilized in wind turbine generators for grid synchronization. Overall, PWM frequency converters offer versatile solutions for precise and efficient control of electrical power in a wide range of industrial applications, contributing to energy efficiency and improved performance.

4. Consideration on the Use of PLCs for Controlling Freight Elevators

Autor: stud. Florin BURLACU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Florențiu DELIU

Abstract: The paper addresses the advantages and disadvantages of using Programmable Logic Controllers (PLCs) in this context, highlighting their flexibility and efficiency in the control and monitoring processes of freight elevators. Furthermore, it discusses practice aspects of implementing PLCs in existing systems, with a focus in interoperability with existing equipment and adaptability of the logistics and freight transport industry.

5. Control and Management of Ballast Water and Sediments on Board Ship

Autor: stud. Ștefan DEACU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: Maritime shipping, a vital component of the global economy, relies crucially on the use of ballast water to maintain the stability and optimal operating conditions of ships. Understanding the key concepts associated with ballast water control and management is the necessary basis for assessing environmental impacts and developing sustainable solutions.
Ballast water control and management systems - Mechanical Filtration: This method involves the use of filters of various sizes to retain solid particles from the ballast water. Chemical disinfection: Uses chemicals such as chlorine or ozone to destroy or inactivate marine organisms present in ballast water. Heat treatment: Involves heating ballast water to temperatures that destroy marine organisms. Thermal processes can include heating or cooling water. Ultraviolet (UV) treatment: Uses UV radiation to destroy the DNA and RNA of marine organisms, preventing them from reproducing. Water Exchange Systems: Involves replacing ballast water with clean water, thus removing the marine organisms and sediments present. Hybrid technologies: Integration of multiple technologies to maximize system efficiency. For example, the combination of mechanical filtration and treatment with ultraviolet rays.

6. Study on Reduction of Total Harmonic Distortion Factor in Power Inverters

Autor: stud. Robert-Sebastian DRON, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: The study on the reduction of the total harmonic distortion factor in power inverters investigates methods and

technologies to minimize harmonic distortions generated by power inverters. The research explores various strategies and techniques applied in the design and operation of inverters to reduce their impact on the quality of supplied electrical energy in power networks. By analyzing the total armonic distorsion factor, the research focuses on identifying effective solutions and optimizing the performance of inverters to meet energy quality standards. The results obtained within the study can contribute to the development and implementation of more efficient and environmentally friendly energy conversion system, significantly impacting the overall quality of electrical energy distribution.

7. Protection of Personnel on Board Maritime Vessels Against Electromagnetic Radiation

Autor: stud. Cristian Nicolae DUDUMAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: Electromagnetic radiation is an important aspect of the environment, and personnel on board maritime vessels are exposed to varying levels of electromagnetic radiation during their daily activities. It is essential to implement effective measures for the protection of personnel to minimize the risks associated with exposure to these radiations.

8. Modern Methods and Procedures for Testing High-Voltage Switchboards

Autor: stud. Aurelian Teodor Constantin GLUGĂ, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Leon PANĂ

Abstract: Modern methods of testing high-voltage switchboards are essential to ensure the safety and reliability of electrical systems. Here are some techniques used in testing these boards:

1. Insulation testing: Insulation resistance testing methods are used to check the quality of the insulation between the various components of the switchboard. This involves applying a voltage and measuring the resistance to detect any leaks or faults in the insulation. 2. Vibration measurement and analysis: Unusual vibrations may indicate mechanical problems in switchboard components. Modern systems use sensors and data analysis to detect and assess vibrations in real time. 3. Infrared Thermography: This method involves using the thermal camera to identify any hot spots or overheating in the components of the board. It is useful for detecting potential overload problems or weak connections. Modern methods of testing high-voltage switchboards are essential to ensure the safety and reliability of electrical systems. Here are some techniques used in testing these boards: 1. Insulation testing: Insulation resistance testing methods are used to check the quality of the insulation between the various components of the switchboard. This involves applying a voltage and measuring the resistance to detect any leaks or faults in the insulation. 2. Vibration measurement and analysis: unusual vibrations may indicate mechanical problems in switchboard components. Modern systems use sensors and data analysis to detect and assess vibrations in real time. 3. Infrared Thermography: This method involves using the thermal camera to identify any hot spots or overheating in the components of the board. It is useful for detecting potential overload problems or weak connections.

9. Differential Protection of Propulsion Transformers

Autor: stud. Sorin JUFA, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: S.L. Dr. ing. Leon PANĂ

Abstract: As with automobiles, the main type of engine used in marine vessels is the internal combustion engine (engines such as diesel engines and gas turbines). It is a well-known fact that

as a societal demand to reduce carbon dioxide emissions has arisen, electric motor-driven powertrains have been introduced for use in automobiles, greatly improving the fuel efficiency of the models. hybrid or electric ones. For the same reason, the number of electric propulsion ships built has also increased, and this trend is expected to continue and accelerate in the future. The introduction of electric propulsion systems for use on board ships offers the following four essential advantages: simplification of the propulsion system, including the complicated reducer used, in the case of ships that consume extremely large amounts of energy, a reduction in the financial burden of maintenance and repair, including associated life cycle costs due to the integration of propulsion engines with power generation engines for use in supporting the overall domestic electrical load; noise reduction on board; improved fuel efficiency during travel due to the ability to maintain a constant rotational speed that provides good fuel efficiency for engines used to produce propulsion electricity. The main disadvantages of marine electric propulsion include a higher initial cost compared to propulsion systems based on internal combustion engines, an increased energy conversion loss from fuel to propulsion, and a larger system volume due to the large number of component parts. Electric propulsion systems are often used on large cruise ships and others that emphasize cost and quiet operation, which include icebreakers or oceanographic research vessels, which take advantage of the operational benefits mentioned above, or. The use of industrial technology is pursued as a main strategy to overcome the initial financial disadvantage of marine electric propulsion systems of our times. The electric propulsion system for large passenger ships must have a high power electric motor that provides optimal load characteristics that can also deliver very high torque at a relative low speed and thus can be developed by applying the specific technology of electric motors

manufactured in industrial steel mills, which provide similar torque characteristics. At the same time, on the market there are also downsizing solutions that apply concepts as smart grid technology, this being an area where much of the product development effort is focused on. Electric ship propulsion is an effective means of helping to achieve the low-carbon society demanded by the needs of global society.

10. Theoretical and Practical Aspects of Electricity Generation Using Vertical Axis Turbines

Autori: stud. George Cosmin MITU, stud. Dan BIBILOIU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Florențiu DELIU

Abstract: Vertical axis turbines for electricity generation have both theoretical and practical aspects to consider. Theoretical aspects involve understanding the aerodynamics and fluid dynamics that govern the turbine's performance. Vertical axis turbines are designed to capture wind from any direction, which is advantageous in variable wind conditions. Theoretical models predict the turbine's efficiency, power output, and how it interacts with the wind. Practically, implementing vertical axis turbines requires considerations such as site selection, maintenance, and scalability. Site-specific factors, like wind speed and direction, influence the turbine's performance. Practical challenges involve ensuring reliable and efficient power generation over time, addressing wear and tear, and optimizing the design for the specific application. Balancing theoretical knowledge with practical considerations is crucial for successful deployment of vertical axis turbines in electricity generation.

11. Considerations Regarding the Use of PLCs for Controlling Monitoring and Gas Detection Systems in Fuel Tanks.

Autor: stud. Adrian Gabriel NAE, Academia Navală „Mircea cel Bătrân", Constanța

Îndrumător: Conf. univ. Dr. ing. Paul BURLACU

Abstract: The paper examines both the advantages and disavantages of using Programmable Logic Controllers (PLCs) in this specific context. It emphasizes their flexibility and efficiency in the constant management and monitoring of gas concentrations in tanks. Aditionally, it addresses practical aspects of implementing PLCs, with a focus on their efficient integration into existing gas monitoring systems and adaptability to the specific requirements of the oil industry.

12. Advanced Automation Systems for Marine Diesel Engines

Autori: stud. Gheorghe-Dănuț NEDELCU, stud. Viviana-Elena SANDU, Academia Navală „Mircea cel Bătrân", Constanța

Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: The paper focuses on the design, implementation, and benefits of advanced automation systems for marine diesel engines. The primary objective is to enhance operational efficiency and reliability of these engines, thereby optimizing performance and reducing costs in the naval industry. In the first part of the paper, the evolutionary context of marine diesel engines is examined, highlighting the need for implementing automation systems to meet modern requirements. The advantages of electronic engine control and advanced monitoring systems are emphasized in terms of fuel efficiency and rapid diagnosis of issues. A significant section of the research concentrates on the architecture of automation systems, emphasizing the integration of sensors and control

algorithms. Different models of distributed and centralized automation are explored, analyzing the benefits of each system within marine diesel engines. Regarding system reliability, the paper addresses modern maintenance techniques, including predictive and preventive strategies, to ensure continuous engine operation. In conclusion, the paper proposes solutions and recommendations for the effective implementation of advanced automation systems in marine diesel engines, aiming to enhance operational efficiency, increase reliability, and promote sustainable practices in the naval industry.

13. Propulsion System of a Passenger-Type Vessel

Autori: stud. Dragoș OLTEANU, stud. Teodor STAICU, Academia Navală „Mircea cel Bătrân", Constanţa

Abstract: The selection of the propulsion system should be based on the operational profile of the vessel.

We have divided the operational profiles of cruise vessels into two simplified categories

LEISURE

Cruise vessel operational profile with more focus on passenger comfort than on the covered distance and destinations. The vessels sail more in the low speed range than at high speeds. Onboard activities have a key role.

DESTINATIONS

It is more important to see new places and locations. Onshore activities have a key role

- Direct Drive is a new concept in which the best shaftline solutions are used for maximum reliability and performance
- ABB Azipod propulsion system is widely used in VARIOUS passenger ships. Because of its high performance capability, high comfort class rating and small amount of components inside the hull, it is a perfect solution for passenger vessels on the power level of 10–20 MW per unit

14. Solar Energy

Autor: stud. Alexandru RUSCAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Florențiu DELIU

Abstract: Solar photovoltaics is a renewable energy source that converts sunlight directly into electricity. This process is achieved through photovoltaic cells, which are electronic devices that convert the photon energy of light into electricity through the photovoltaic effect.

Photovoltaic solar energy has a number of advantages, including:

- It is a renewable energy source, which means it never runs out.
- It is a clean energy source, which produces no greenhouse gas emissions.
- It is a reliable energy source that can be used anywhere there is sunlight.

15. The Study of Signal Integrity in Electronic Circuits

Autori: stud. Viviana-Elena SANDU, stud. Gheorghe-Dănuț NEDELCU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: The uninterrupted flow of signals within electronic circuits is paramount for their proper functioning, and ensuring signal integrity has become a focal point in contemporary electronics design. Some of the most difficult and frustrating problems faced by design engineers concern elimination of noise from their circuits or systems. This paper delves into the multifaceted domain of signal integrity, examining its fundamental principles, challenges, and methodologies for analysis and mitigation. Also, it underscores the necessity for continuous innovation and refinement to meet the evolving demands of high-speed, high-frequency electronic systems. Through comprehensive understanding and proactive measures,

engineers can ensure robust signal integrity, paving the way for enhanced performance and reliability in electronic circuits.

16. Technical Study of Bar Protection

Autori: stud. Teodor STAICU, stud. Manfred STOICA, Academia Navală „Mircea cel Bătrân", Constanţa

Abstract:

✓ The protection scheme for an energy system shall cover the whole system against all likely types of failure. Without restrictions, forms of line protection, such as overcurrent and remote protection, meet this requirement, although defects in the distribution bar are eliminated only after a certain delay. But if the protection of the unit is applied to feeders and installations, the busbars are not inherently protected.

✓ True, the risk of a defect on modern metal-coated buses is very small, but it cannot be ignored entirely. However, the damage resulting from a single unsolved fault, due to the concentration of the MVA fault, can indeed be very large, up to the complete loss of the station by fire. Serious damage or destruction of the installation would likely result in extended and prolonged power outages.

17. Powering Ahead - The Technological Innovations of the MS Ampere

Autori: stud. Valerică STÎNGĂ, stud. Radu Paul EREMIA, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Prof. univ. Dr. ing. Vasile DOBREF

Abstract: This study examines the MS Ampere ferry as a model for sustainable shipping, focusing on its energy efficiency and the integration of renewable energy sources. The MS Ampere features full electric propulsion, eliminating greenhouse gas emissions and air pollution while significantly reducing energy consumption. The 1 MWh lithium-ion batteries allow a range of 30 crossings, optimizing consumption and extending life.

The energy recovery system captures energy generated during braking, storing it for reuse. Fast charging capability allows full refueling in 10 minutes, optimizing the operating schedule. Implementing the MS Ampere model in Constanta – Delta Danube Area has significant potential to reduce pollution and emissions. The use of renewable energy sources, such as solar and wind power, which are abundant in the south-east of Romania, is essential. Adapting the port infrastructure in Constanta and the Danube Delta to facilitate fast loading is necessary. Developing funding programmes and incentives to facilitate the adoption of electric ferries by operators in the region is crucial. Raising public awareness of the benefits of sustainable shipping is vital. The MS Ampere demonstrates the feasibility and efficiency of electric ferries, offering a sustainable solution for shipping. Its implementation in the Constanta - Danube Delta area could have a significant impact on the environment, economy and tourism, contributing to a more sustainable future for the region.

18. Uninterruptible Power Supply

Autori: stud. Valerică STÎNGĂ, stud. Radu Paul EREMIA, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Prof. univ. Dr. ing. Vasile DOBREF

Abstract: This project is about the uninterruptible power supplies, the main components of it, onboard use, and maintenance. An uninterruptible power supply (UPS) is a device that allows a system connected to it to keep running for at least a short time when incoming power is interrupted. We described every component of the uninterruptible power supply, and also a few critical ship equipments that are connected to it. Also we talked about the 6 months MAINTENANCE and we added a few diagrams.

19. Maintanance of Marine Electric Generators Using Noise Analysis

Autori: stud. Manfred STOICA, stud. Dragoș OLTEANU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Leon PANĂ

Abstract: The use of noise analysis to determine the technical condition of an installation is a method commonly used by specialists. This paper investigates noise sources in marine electric generators and outlines the importance of noise measurement data for the maintenance of these generators Designing an efficient and cost-effective acoustic enclosure for a large set of diesel generators requires fast and accurate prediction of acoustic insertion loss. There are several methods of analytical and empirical prediction available in the literature; However, you need to make quite a few assumptions, while defining the problem area and boundary conditions as accurately as possible. In this study, acoustic simulation of a large diesel generator with an enclosure by finite element method (FEM) is shown. The model consists of purely acoustic finished elements. Absorbing materials on the inner surfaces are included by the Miki porous material model. Definitions of sound source shall be made on the surfaces of each structurally significant component of the generator as the normal average surface velocity, based on the assumption that sound radiation transmitted by air is equally distributed in terms of sound power. In addition, the problem is modeled as a symmetrical half to reduce the solution time. The numerical results calculated by the model are then compared with the experimentally measured levels and observations are made to explain the possible reasons for the inconsistencies.

20. Fault Analysis and Protection for Wind Power Generation Systems

Autori: stud. Veniamin VIDINEI, stud. Constantin JUFA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Leon PANĂ

Abstract: The rapid growth of wind power as a solution to global energy shortages and environmental issues necessitates reliable and cost-effective systems for generating, collecting, and transmitting electrical power from renewable sources. In Europe, offshore wind farms offer a promising avenue for meeting sustainability goals, but lack comprehensive fault analysis and operational experience. This thesis addresses this gap by focusing on fault analysis and protection schemes for both small-scale land-based and large-scale offshore wind farms. Specifically, it examines fault protection for doubly-fed induction generators (DFIGs) and permanent magnet synchronous generators (PMSGs), common in modern wind turbines. The thesis proposes a novel protection scheme for DFIGs and evaluates protection options for direct-driven PMSGs through simulation comparisons. Additionally, it investigates protection schemes for wind farm collection and transmission systems, including voltage level considerations and multi-terminal DC transmission systems. Theoretical analyses of fault transient performances are supported by simulation results, and the economic implications of redundant system designs are explored using real-world wind farm project data.

21. The use of Vibration Analysis for the Study of Wind Turbine Efficiency

Autor: stud. Veniamin VIDINEI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr**.** Tiberiu PAZARA

Abstract: Wind turbines industry is growing year by year. There are wind farms on land and on sea and these constructions are exposed to harsh weather that affect their performance and integrity. This paper presents how reliability measurements help engineers for the maintenance and improvement of these installations. Because a wind turbine has moving parts, one of the reliability techniques is vibration analysis. Environment and faulty mechanism have an impact on the efficiency of a wind turbine. Using vibration measurements one can determine which component of the installation presents a defect. In this paper will be presented some of the situations when the wind turbine efficiency is affected by the vibrations of faulty mechanism and some remarks and conclusions will be made.

22. Study on Reduction of Total Harmonic Distortion Factor in Power Inverters

Autor: stud. Akkan ALI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: The study on the reduction of the total harmonic distortion factor in power inverters investigates methods and tehnologies to minimize harmonic distortions generated by power inverters. The research explores various strategies and techniques applied in the design and operation of inverters to reduce their impact on the quality of supplied electrical energy in power networks. By analizing the total armonic distorsion factor, the research focuses on indentifying effective solutions and optimizing the performance of inverters to meet energy quality standards. The results obtained within the study can contribute to the development and implementation of more efficient and environmentally friendly energy conversion system, significantly impacting the overall quality of electrical energy distribution.

23. Synchronous Electric Machine

Autor: stud. Alexandru RUSCAN, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Florenţiu DELIU

Abstract: A synchronous electric machine is a type of AC machine that converts mechanical energy into electrical energy or vice versa, depending on its mode of operation. There are two main types of synchronous machines. Synchronous motors: These motors convert electrical energy into mechanical energy. They work by using a rotating magnetic field in the stator (stationary part) to induce a current in the rotor (rotating part). The rotor then locks onto the rotating magnetic field and spins at the same speed. Synchronous motors are known for their precise speed control and high efficiency. They are often used in applications where a constant speed is required, such as clocks, timers, and industrial drives. Synchronous generators: Also known as alternators, these machines convert mechanical energy into electrical energy. They work by using a rotating magnetic field in the rotor to induce a voltage in the stator. The voltage induced in the stator is then sent out to the grid. Synchronous generators are the workhorses of the power grid, and they are responsible for generating most of the electricity that we use.

24. Study of the Shielding of Electronic Equipment

Autor: stud. Domnica TOMOȘOIU, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: S.L. Dr. ing. Iancu CIOCIOI

Abstract: The dissertation paper titled "Study of the Shielding of Electronic Equipment" by Ali Akan focuses on the critical aspect of shielding in electronic devices. It starts with an introduction that presumably sets the context for the importance of electromagnetic shielding. The document then delves into the materials used in creating electromagnetic shields,

providing technical details and analysis of their effectiveness. A significant part of the study seems to be dedicated to the analysis of layered shields, which are likely crucial in mitigating electromagnetic interference. The document concludes with a comprehensive summary of findings and final conclusions, supported by a bibliography indicating the research sources. This work appears to be a detailed study combining theoretical analysis with practical implications in the field of electronic equipment design and safety.

INGINERIE ŞI MANAGEMENT

BIROUL SECŢIUNII
Preşedinte: Prof.univ.Dr.ing. Florin NICOLAE
Membri: Conf.univ.Dr.ing. Filip NISTOR
Conf.univ.Dr.ing. Alexandru COTORCEA
Conf.univ.Dr.ing. Rita AVRAM

1. Methodology for the Calculation of Passage Tariffs on the Danube-Black Sea Canal
Autor: stud. Burmambet ALEV, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin-Marius NICOLAE
Abstract: The aim of the paper is to establish a methodology for calculating tolls on the Danube-Black Sea Canal. European inland waterway transport practices demonstrate the necessity of analyzing transit services on specific waterways. Under these conditions, identifying an optimal tariff system for ship charges on the Danube-Black Sea Canal is a current issue. Initially, we will analyze the necessity and opportunity of transitioning from capacity-based pricing to goods-based pricing. Traffic analysis indicates that approximately 97% of transit activity on navigable channels consists of convoyed river vessels and barges, with around 3% attributed to maritime vessels, inland waterways, pushers/tugs, or technical vessels.
Keywords: inland transport, transit costs, efficient management, transport costs.

2. Model for Environmental Impact Assessment in the Relationship Between Road Transport Logistics and the Port System
Autor: stud. Nadina-Gabriela ALEXANDRU, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The sustainability of transport systems is a key issue in transport. The International Maritime Organization (IMO) in its attempt to avert the global environmental crisis continues to offer policies to mitigate anthropogenic emissions from the shipping industry. Greenhouse gas emissions from the transportation industry are relatively large, alarming, and continuing to grow. Modes of transport are easily classified according to the environment they employ. With this in mind, land transport, sea transport and air transport are easily identified from their involvement with land, water and airspace respectively for the movement of goods and passengers both locally and across the globe. Land transport is an umbrella name that encapsulates road, rail and pipeline transportation. The purpose of this study is to compare maritime and road transport from an emissions perspective. Maritime infrastructures such as ports, ships, channels, waterways, and navigational locks are capital intensive, thereby creating a barrel for new investors due to the immense initial capital cost.
This study presents a review highlighting the comparative advantage of maritime and road transport from an emissions perspective. It supports the environmental superiority of shipping in terms of CO_2 emissions and presents an infrastructure for further scientific comparison.

3. Logistics Planning in meeting operations. NATO (Logistics Operational Planning)

Autor: stud. Aurelian DASCĂLU, Academia Navală „Mircea cel Bătrân”, Constanţa

Îndrumător: Conf. univ. Dr. Cătălin POPA

Abstract: This project examines the critical role of logistics operational planning within NATO's joint operations framework. It delves into the methodologies and strategies that NATO employs to ensure the effective and efficient

coordination of resources, personnel, and equipment across multinational forces. By analyzing case studies and operational scenarios, the study highlights the challenges and complexities of logistics planning in a dynamic and often unpredictable geopolitical landscape. It also explores the innovations and technologies that have been adopted to enhance NATO's logistical capabilities, emphasizing the importance of adaptability and interoperability among allied forces. Through this comprehensive analysis, the project underscores the significance of logistics operational planning in achieving strategic objectives and maintaining the readiness and sustainability of NATO forces in joint operations.

4. Crucial Elements Linked to Logistics Within Naval Operations

Autor: stud. Marius-Adrian BĂLAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Filip NISTOR

Abstract: The Prague Summit in November 2002 marked a pivotal moment for NATO and Europe, conclusively ending 20th-century divisions and initiating a modernization process for NATO. Leaders reaffirmed their commitment to NATO as the primary institution for collective defense. The analysis of global crisis trends foresees changes characterized by increased expeditionary military actions, necessitating new capabilities for long-distance force projection and interoperability. Deployed structures will be smaller, mobile, and possess significant firepower. The Romanian Armed Forces aim to generate deployable forces for self-sustainability and rapid response in multinational environments. Romania, as a NATO member, must collaborate for modern capabilities, emphasizing joint operations within NATO and the EU. To meet these objectives, Romania needs its strategic lift capability for

deploying/redeploying forces. This highlights NATO's evolution, adapting to 21st-century security challenges.

5. Risk and Safety in the Maritime Industry: A Case Study on the Operation of Oil Tanker Vessels

Autor: stud. Tănase BANIOTI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: This study investigates the risks and safety measures in the maritime industry, focusing on the operation of oil tanker vessels. The maritime sector, especially the transportation of hazardous materials such as petroleum, demands a rigorous assessment of potential risks and the implementation of effective safety protocols. This research employs a case study approach to analyze the operational aspects of oil tanker vessels, emphasizing the identification and mitigation of risks. The study explores the regulatory frameworks, technological advancements, and industry best practices that contribute to enhancing safety standards in maritime operations.

6. Enhancing Carbon Footprint Efficiency: Advancing Sustainable Practices in TTS Operator's Port Operations

Autor: stud. Sorin-Ionuț CAZACU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The port operator's activity generates significant carbon emissions, necessitating the need for sustainability-focused process optimization. Despite some measures already in place, further projects to reduce the company's carbon footprint are imperative. Notably lower values are observed at the grain terminal in Constanța Nord, attributed to the adoption of new technologies implemented a decade ago. Substantial investments in port infrastructure are already planned for sustainable progress.

7. Aspects Regarding the Standardization and Interoperability of Logistic Support in NATO Military Operations

Autor: stud. Cosmin-Valentin CIORBĂ, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. Cătălin POPA

Abstract: This paper examines the critical aspects of standardization and interoperability of logistic support in NATO military operations. It explores the evolution of logistics in NATO's framework, emphasizing the need for uniform standards to ensure seamless support across multinational forces. The research scrutinizes current standards and directives, analyzing their effectiveness in operational contexts. Through case studies, the paper identifies challenges to logistic interoperability and proposes solutions to enhance joint operational readiness. It evaluates the impact of standardized logistical procedures on the efficiency and success of military engagements. The findings highlight the importance of a cohesive approach to logistics within NATO, suggesting recommendations for policy and practice improvements. This study contributes to a deeper understanding of the strategic significance of logistic standardization and interoperability in fostering a robust NATO alliance.

8. Fire Risk Management in the Field of Engineering and Naval and Port Management

Autor: stud. Toma-Ionuț DOBRE, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: This paper addresses the critical issue of shipboard fires, a major safety concern in the maritime industry. According to the International Maritime Organization, 19.2% of maritime accidents are due to fires and explosions, most frequently occurring in engine rooms. Despite IMO's

preventive measures, fire risks persist, necessitating studies on fire evolution and risk assessment in engine rooms. High operating temperatures, electrical circuits, and hazardous chemical transport increase these risks. Advanced methods like N-AHP and TrF-TOPSIS are used for risk evaluation, requiring expertise and subjective judgment. The paper also introduces a dynamic analysis approach for assessing the domino effect of fires. This involves a dynamic model using matrix calculations and Monte Carlo simulation to quickly determine fire scenarios paths, times, and probabilities in engine rooms, considering uncertainties in personnel, detection, and firefighting systems, and the impact of multiple simultaneous fires.

9. Dynamics of Freight Transport on the Danube

Autor: stud. Alina FEODOT, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: Freight transport within the continent can be done by road, rail or inland waterways. The Danube is the second longest river in Europe and it connects Western Europe and Eastern Europe. The countries crossed by the Danube have the advantage of having access to inland waterway transport, which, although it has the lowest transport speed, has the most advantageous cost. Ports on the Danube shore are equipped to handle solid and liquid bulk goods, general cargo, even containers. In the Port of Constanta, which is accessed through the Danube-Black Sea Canal, a number of 10,890 river vessels were handled in 2022. This paper will analyze the evolution and change of Danube freight transport throught the time and the events, like Ukrainian war.

10. Hazardous Materials on Board Ships During Dismantling

Autor: stud. Alexandru-Mario GHINGHILOSCHI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The safe and environmentally friendly dismantling of ships at the end of their life cycle is not only a major concern but also a significant challenge in the current context. During this complex process, hazardous materials on board, such as asbestos, polychlorinated biphenyls, fiberglass, solid foam, and used oils, become particularly important factors with the potential to have serious consequences on the environment and human health. In this paper, we focus on the characteristics and harmful effects of hazardous materials on board, providing a detailed perspective on the risks involved. Through rigorous analysis of current methods of disposing of these materials, we identify practical directions for their efficient management. Additionally, this paper proposes practical measures to enhance the hazardous material management process, emphasizing the importance of adopting safe and environmentally friendly practices, presenting two case studies that illustrate the eco-friendly disposal of major hazardous materials during ship dismantling.

11. An Analysis of the Functioning, Significance, and Challenges Associated with the Grain Corridor

Autor: stud. Alice-Andreea GRĂDINARU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: This work aims to explore the developments in the period of August to October 2022 regarding cereal exports from Ukraine. It delves into the challenges and difficulties within the current environment, addressing the intricate developments surrounding the ongoing expansion of the corridor. The

examination encompasses a thorough analysis of the factors influencing the export trends, the economic and geopolitical landscape, and the evolving dynamics that contribute to the complexities of extending the corridor. By providing a comprehensive overview, the study aims to offer insights into the multifaceted aspects of the cereal export scenario in Ukraine during the specified timeframe, shedding light on both the opportunities and challenges faced in the process.

12. Performance Analysis of the Port of Constanta, in the Current Context

Autor: stud. Dănuț ILIE, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Total cargo traffic in Romanian seaports recorded 75.55 million tonnes in 2022, an increase of 12% compared to 67.5 million tonnes in 2021, being the highest cargo traffic in the history of Romanian seaports and thus maintaining the upward trend of recent years. In 2023, maritime traffic in the port of Constanta, increased by 18% compared to 2022, to 71 million tonnes, and river traffic increased by 40% compared to the previous year, to 22 million tonnes. Cereals remained at the top of traffic growth, up more than 50% to over 36 million tonnes in 2023, compared to 24 million tonnes in 2022.

13. The Ecological and Socio-Economic Impacts of the Development of the Bâstroe Canal and the Chilia Arm

Autor: stud. Florentina IVAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: This paper aims at providing a concise overview of the current situation regarding the Bâstroe canal and the Chilia arm, focusing on their socio-economic and ecological impacts. Perspectives from Ukraine and Romania on the environmental

effects of canal construction and maintenance are highlighted. Romania emphasizes alterations in flow discharge, water quality, and fish habitats, while Ukraine advocates for a minimal transboundary impact. The study underscores the dynamic nature of the Danube delta, with implications for water flow distribution and sedimentation. This research shows a brief yet informative overview of the current situation surrounding these critical waterways, shedding light on their socio-economic and ecological complexities.

14. The Risk in Maritime Supply Chain Operations

Autor: stud. Nicoleta-Elena LAZĂR (NEACȘU), Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: The traditional ship collision risk index model based on the distance at the closest point of approach (DCPA) and the time to the closest point of approach (TCPA) is insufficient for estimating ship collision risk and planning collision avoidance operations. This paper constructs an elliptical, dynamic ship domain that changes with speed and maneuverability parameters to overcome subjective human factors. In order to solve the problems of insufficient accuracy of collision risk calculation and poor risk identification in ship collision avoidance decision-making, a new elliptical ship domain is proposed through the combination of Coldwell ship domain and quaternion ship domain. Based on this field, the multi ship collision risk assessment model is improved, and the accuracy before and after the improvement is compared. The results show that the improved model can identify target ships with similar motion parameters, and the identification accuracy is higher.

15. The Flow of Goods in a Grain Terminal

Autor: stud. Cătălin-Adrian MANEA, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: Cargo terminal - any cargo location where it either originates, terminates, or is handled in the transportation process. Cargo terminals are central and intermediate locations in the movement of goods. These often require specific facilities and equipment to enable the traffic we handle. Based on it’s position, the grain terminal can operate simultaneously on any means of transport: road, rail, river and sea, it also has access to silos of different sizes for storage. The grain handling process consists of 3 steps: Unloading/reception from barges, wagons, trucks; Loading/shipping in trucks, ships; Internal - between the cells of the silos. All goods received, shipped or transferred internally (recycled) are weighted with high-precision electronic scales.

16. Considerations Regarding Logistics for Improving the Lifecycle of Military Equipment

Autor: stud. Daniela-Ioana MIRCEA, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: One of the primary characteristics defining the current state of the Romanian Armed Forces is the shift from a numerous military corps equipped with outdated gear to a "lean" yet more potent force employing modern weapon systems. This transition poses a challenge as the focus turns towards recruiting specialized personnel instead of relying on Cold War-era weapon systems. Undoubtedly, this situation arises from the commitment to allocate 2% of the GDP to the defense sector, facilitating the acquisition of modern weapon systems. However, addressing the gaps in numerous capabilities within the confines of the same 2% budget

necessitates strategic decision-making on what to prioritize and how to balance the pace of acquisitions. This paper delves into the perspective of estimating the comprehensive cost of weapon systems, spanning from their inception to decommissioning, and explores methods to manage, calculate, and mitigate the overall financial burden. A robust model guiding this approach is the Life Cycle Sustainment Plan, a framework employed by the US Secretaries of Military Departments and the Directors of Defense Agencies.

17. Features of the Supply Function in Military Logistics Chains

Autor: stud. Beatrice-Maria MUNTEANU, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Cătălin POPA

Abstract: "Features of the supply function in military logistics chains" provides a comprehensive analysis of the intricacies inherent in supply operations within military logistics. Through a detailed examination, this paper sheds light on the multifaceted workings of supply chains in military contexts, emphasizing the crucial roles played by organizations such as NSPA (NATO Support and Procurement Agency) and logistical tools like LOGFAS (Logistic Functional Area Services). Moreover, it meticulously scrutinizes the complexities associated with provisioning a warship during mission deployments, considering factors such as fluctuating demands, resource limitations, and strategic imperatives. By dissecting these dynamic elements, the study aims not only to deepen comprehension but also to offer strategic insights into the unique challenges and innovative strategies essential for maintaining optimal supply management within military logistics frameworks. Such understanding is paramount for enhancing operational readiness and ensuring mission success in today's evolving security landscape.

18. Analysis of the Logistics Engineering Function (MILENG) in NATO Logistics Doctrine

Autor: stud. Alin-Petrișor NANU, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Cătălin POPA

Abstract: In this paper with the title "Analysis of the logistics engineering function (MILENG) in NATO logistics doctrine,, I will present aspects about the logistic supply function in the military system and how the maintenance of aggregates on board ships is carried out and what it consists of.

19. Organization, Coordination, and Execution of Special Transports

Autor: stud. Irina-Mihaela OPRICĂ, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: The organization, coordination, and execution of special transports represent a critical aspect within the logistics and transportation sector. Special transports encompass a wide array of activities, including the movement of oversized cargo, hazardous materials, or sensitive equipment, necessitating meticulous planning and execution to ensure safety, efficiency, and regulatory compliance. Effective organization involves strategic route planning, securing necessary permits, and coordinating with various stakeholders such as transport companies, regulatory authorities, and local communities. Coordination plays a pivotal role in synchronizing the efforts of different parties involved in the transport process, ensuring seamless operations and timely delivery. Execution entails implementing the planned strategies with precision, overcoming potential challenges, and adapting to dynamic conditions while prioritizing safety and minimizing disruptions. Through efficient organization, coordination, and execution, special transports contribute significantly to facilitating

complex logistics operations, supporting industries ranging from construction and energy to aerospace and defense, while also fostering economic development and societal progress.

20. Immersive Training Solution for Both Military and Civilian Tracing Operations Using a HMD

Autor: stud. Paul-Florin PARASCHIV, Universitatea Națională de Știință și Tehnologie POLITEHNICA București
Îndrumător: Ciprian Ion RIZESCU

Abstract: In recent years, the rapid advancement of virtual and augmented reality technologies has reshaped various domains, ushering in immersive experiences that extend beyond traditional boundaries. This transformative influence is particularly evident in both military and civil sectors. The seamless integration of cutting-edge technologies serves to elevate situational awareness, enrich training simulations, and streamline system control processes, which empower real-time decision making. This work refers to hybrid tracking system which boasts multifaced applications, making it an valuable asset across a spectrum of domains, ranging from civil to military endeavors. The authors developed a system based on determining the relative position of two bodies in space.

21. Green Logistics and the Role of Biodiesel in Transport Activities in Logistics Systems

Autor: stud. Claudiu-Marian PĂSCĂLIN, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Prof. univ. Dr. ing. Gheorghe SAMOILESCU

Abstract: Green logistics represents an important evolution of traditional logistics, oriented towards sustainable and environmentally responsible practices in the supply chain. The main goal of green logistics is to minimize the impact on the environment, reduce carbon emissions and optimize resources in logistics processes. To achieve these goals, various strategies

and technologies can be implemented, such as: the adoption of electric or hybrid vehicles in the transport fleet, optimizing transport routes, using recyclable or reusable packaging materials and efficient inventory management. The benefits of green logistics include: cost savings, improved reputation and social responsibility, regulatory compliance, innovation and supply chain competitiveness and resilience. Moreover, case studies of companies such as: Walmart, Ikea, Unilever, Apple, Amazon, Tesla and Coca-Cola demonstrate the positive impact of adopting green logistics practices in their activities. However, there are also associated challenges and future prospects with the use of biodiesel in transport activities. These include availability of raw materials, infrastructure development, and public education and awareness. However, the integrated approach and collaboration between the different parties involved is essential to overcome these challenges and create a more sustainable and energy efficient future. In conclusion, green logistics is essential in the contemporary era, where environmental responsibility is becoming more and more important. Adopting green logistics practices not only minimizes the impact on the planet, but also helps create a more competitive and sustainable economy in the future.

22. Advanced Perspectives on Biodiesel Use in Transportation Logistics: Presenting the Advantages and Disadvantages of Biodiesel use and Exploring Sustainability Implications and Implementation Strategies

Autor: stud. Claudiu-Marian PĂSCĂLIN, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Prof. univ. Dr. ing. Gheorghe SAMOILESCU
Abstract: The use of biodiesel in transport activities is of major importance in the context of environmental concerns and the reduction of dependence on fossil fuels. The advantages and disadvantages of using biodiesel in transport logistics are

analyzed in depth, highlighting the impact on the environment and the efficiency in logistics processes. Regarding the advantages, biodiesel is recognized for its contribution to the reduction of greenhouse gas emissions and to the diversification of sources energy. Its use can also create new jobs and stimulate economic development in local communities. Moreover, biodiesel is considered a clean and biodegradable fuel, having a low impact on the environment. On the other hand, the disadvantages associated with the use of biodiesel include: competition with global food needs and the high consumption of resources in the production process. Moreover, biodiesel can present difficulties in storage and use, as well as higher costs and a shorter shelf life compared to fossil fuels. The implementation of biodiesel in logistics requires adaptation of existing infrastructure and transport fleets, as well as education and awareness for key actors. Issues related to infrastructure, transport fleets, training and government regulation are crucial to the success of biodiesel use in transport logistics. In conclusion, the use of biodiesel in logistics presents both opportunities and significant challenges, and their management requires careful planning and cooperation between different actors from industry and from the public sector.

23. Analysis of Sustainable Solutions for the Transport of Goods

Autor: stud. Tiberiu PAȘCU, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: This paper explores sustainable solutions for freight transport, delving into the systems' current status, innovations, and generalities. It begins with a comprehensive analysis of transport systems, classifying them and assessing their impact on the environment and transport logistics. Emphasizing "green

logistics," it examines technologies and strategies for route optimization, distance reduction, and resource conservation. The study then transitions to the sustainability of freight transport, defining its significance, examining global trends, and evaluating the environmental and economic implications. It presents sustainable alternatives in freight transport, supplemented by a comparative study between two modes of transport—one classic and one sustainable evaluating their emissions and efficiency. The paper underscores the importance of adopting durable strategies in freight operations and concludes by reflecting on the necessity for continuous improvement and innovation to meet future challenges in maritime freight transport.

24. Effectiveness of Inventory Management in the Defense System. Case Study in Logistics Management in Romanian Naval Forces Units.

Autor: stud. Dragoș-Casian PAVEL, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Cătălin POPA

Abstract: This paper presents a comprehensive examination of logistical principles and practices within the Romanian Armed Forces and their alignment with NATO standards. It comprises two theoretical chapters that delve into the foundational logistics doctrine of the Romanian military, with a particular focus on the unique aspects of NATO logistics as applied to Naval Forces. The document specifies a case study analysis of warehouse operations, covering the entire process of stock movement including intake, storage, handling, and issuance, in accordance with consumption norms. Furthermore, it discusses the procedures and justifications for deployment on missions, offering a meticulous overview of logistical operations from a strategic and operational perspective. The study serves as a

critical resource for understanding the intricacies of military logistics in a NATO context.

25. The Influence of the Conflict in Israel on Regional and Global Cargo Traffic

Autor: stud. Leonardo SAVIOLI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: This paper extensively examines the Israeli-Palestinian conflict's impact on global freight traffic, a complex geopolitical issue with profound implications for maritime transport. It delves into the conflict's history, current context, and regional dynamics, elucidating its effects on economic and trade balances regionally and globally. The analysis of freight traffic includes the collection and interpretation of global statistical data, emphasizing the alterations in traffic patterns, trade routes, transportation costs, and maritime security. The detailed case study illustrates the direct and indirect consequences of the conflict on freight traffic and its economic ramifications at regional and global levels. The paper concludes by proposing strategies to enhance maritime traffic stability and mitigate geopolitical conflicts' adverse effects on international trade, providing valuable insights into the intricate connections between global politics, the economy, and maritime transport.

26. Logistics Chain Management at the Level of A Port Operator

Autor: stud. Olivia-Nicoleta TANSAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA
Abstract: Present paper analyzes the role of seaports and port operators in logistics chain management. In recent decades, port services have expanded and diversified not only on an extensive basis, but also intensively, having on the ground new

methods of modeling business processes in addition to updated equipment and technologies. The paper is structured in 3 distinct parts. First part presents generalities about the logistics chain, logistics management, its role in the world economy, trends for transport and logistics at the global level in 2024, statistics and forecasts regarding the evolution of the flow of goods. Second part analyzes the role of seaports and port operators in supply chain management and explains the concept of green supply chain. Finally, the last part of the paper is a study on logistics chain management at the level of a port operator in the port of Constanța.

27. Opportunities for the Development of Danube Ports

Autor: stud. Cristina-Elena COSTEA, Academia Navală „Mircea cel Bătrân", Constanța
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: The paper aims to determine methods for the development of the current ports along the Danube in Romania. Throughout this paper, current information about the Danube and Danube ports, as well as opportunities for their development, have been analyzed. Additionally, emphasis was placed on the Giurgiu port, conducting a case study aimed at bringing economic profit through tourism, cargo transportation, and the development of companies in the shipyards of Danube ports. The paper was undertaken because, as we all know, the Danube represents an extremely important pillar for Romania's economy, and consequently, Danube ports have gained particular significance. Thus, by analyzing the current economic situation and the level at which the ports in the Danube region stand, it was observed that, for a proper development and growth of the economic potential, a series of changes are needed in both infrastructure and the mindset of the people responsible for these areas.

28. Formal Safety Assessement in Maritime Industry

Autor: stud. Arin Peter DRAGU, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Prof. univ. Dr. ing. Florin NICOLAE

Abstract: Risk assessment in the maritime industry involves evaluating potential hazards and vulnerabilities to ensure the safety and security of maritime operations. This process aims to identify, analyze, and prioritize risks associated with various activities such as shipping, navigation, and port operations. Key elements of risk assessment in the maritime sector include evaluating environmental factors, vessel conditions, human factors, and regulatory compliance. The goal is to develop strategies and measures to mitigate or manage identified risks effectively. Robust risk assessment practices in the maritime industry contribute to enhancing overall safety, preventing accidents, and minimizing environmental impacts. Continuous monitoring and adaptation of risk assessment strategies are crucial in this dynamic and complex industry to address evolving challenges and ensure the resilience of maritime operations.

29. Peculiarities of Transport Logistics in Military Operations

Autor: sud. Bianca-Petruța DUȚU, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. Cătălin POPA

Abstract: Even if the origin of the term logistics belongs to the military environment, its meanings differ in the two representative fields, civil and military. Differences also appear in the approach of different linguistic cultures or international organizations regarding the meanings given to the term. Because we have not identified a standard, universally valid definition, we consider it appropriate to present the different opinions related to the meanings of the term logistics,

considering that it is the basis of many concepts specific to the field, which are in continuous evolution adaptive to the needs of its improvement both in the civilian and in the military environment. We identify two main fields in which logistics finds its applicability, the military field and the civil field. Even if the origin of the term belongs to the military field, the civil field is the one that has seen a permanent evolution, adaptive to the market, based on demand and supply. The military field has offered logistics a constant evolution, based only on satisfying the needs of support, where the principle of efficiency sometimes loses its value in exchange for achieving the effects.

30. Methods to Improve the Efficiency of Port Operations

Autor: stud. Oana Gabriela ENE, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. ing. Rita AVRAM

Abstract: Methods to improve the efficiency of port operations are essential to optimize cargo flow and reduce handling times. Modern technologies, such as terminal management systems and process automation, help to increase efficiency and reduce costs. Implementing advanced equipment, such as automated control cranes and container handling robots, can reduce ship loading and unloading times. The use of sensors and the Internet of Things (IoT) for real-time monitoring of port activities can optimize work routines and enable rapid interventions in case of problems. Also, route optimization and intelligent planning of land and waterway transport can help reduce congestion and delays. In conclusion, investments in technology and effective management strategies are crucial to improve the efficiency of port operations and to maintain competitiveness within the global maritime industry.

31. Organization of Handling Oversized Cargo in Port Terminals

Autor: stud. Onur FUCIGI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: The dissertation titled "Organization of Handling Oversized Cargo in Port Terminals" focuses on the complex and essential process of handling large-sized and heavy-weighted goods within port environments. In the current era of globalization and continuous commercial growth, oversized cargoes are becoming increasingly common, and the ability to efficiently handle these goods in port terminals plays a crucial role in terms of logistical flow and port competitiveness.

32. The Impact of the Conflict in Ukraine on the Logistics Chain in Eastern Europe

Autor: stud. Simonel-Alin LEIZERIUC, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: The conflict in Ukraine has significantly disrupted the logistics chain in Eastern Europe, impacting trade and transportation networks in the region. This study examines the multifaceted effects of the conflict on supply chain operations, transportation infrastructure, and economic stability in Eastern Europe. Through a comprehensive analysis of case studies and empirical research, the study investigates the challenges faced by businesses and governments in managing logistics operations amidst geopolitical tensions. Furthermore, it explores potential strategies for mitigating the impact of the conflict on the logistics chain and enhancing resilience in the face of future disruptions. By shedding light on these issues, this dissertation aims to contribute to a deeper understanding of the complex dynamics between conflict, logistics, and regional development in Eastern Europe.

33. Opportunities of Cooperation Between Operators from the Caspian Region and Operators from Constanta Port

Autor: stud. Mihnea-Alexandru MOISE, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: This paper aims to determine the opportunities of cooperation between Constanta Port and the Caspic region. The Russia-Ukraine war has profoundly affected regional and global trade patterns. The Northern Route, bringing goods from China to Europe through Russia, was the most popular but it has seen a significant reduction in traffic following international sanctions. Traffic shifted to the Middle Corridor route, also referred to as the Trans-Caspian International Transport Route (TITR). Although it is the safest route, its multimodal nature puts it at a structural disadvantage compared to other routes. In order for this corridor reach its potential, additional investments are needed to improve the railways, the roads and the vessel capacity in the Caspian Sea region.

34. Case Study on Project Management at a Crewing Agency Using the Monday.Com Platform

Autor: stud. Corina-Elena MURGEA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. Andrei BĂUTU

Abstract: A simple definition of the project is the following: "the project represents a temporary effort made to create, with limited resources, a unique product or a unique service". Projects are how organizations adapt to ever-changing contexts and the needs of a dynamic, profitable market.

35. Innovations in Logistics Activities

Autor: stud. Robert-Daniel PASERE, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Filip NISTOR

Abstract: "Innovations in Logistics Activities" analyzes the transformative impact of technological advancements on the logistics and supply chain management sectors. The study delves into how innovations such as artificial intelligence, blockchain technology, the Internet of Things, and autonomous vehicles are revolutionizing logistics operations. It highlights the shift towards more efficient, transparent, and sustainable logistics processes, emphasizing the importance of adaptability and strategic implementation of new technologies. By examining case studies and current trends, the paper illustrates the potential for significant improvements in operational efficiency, cost reduction, and customer satisfaction. Furthermore, it discusses the challenges and opportunities that come with integrating these innovations, including the need for skilled workforce, cybersecurity measures, and regulatory compliance. The study concludes by emphasizing the critical role of innovation in maintaining competitive advantage and meeting the evolving demands of the global market.

36. The Impact of Climate Change on the Logistic Chain

Autor: stud. Ionuț ROSTOGOL, Academia Navală „Mircea cel Bătrân", Constanţa

Îndrumător: Conf. univ. Dr. ing. Alexandru COTORCEA

Abstract: In today's market economy, the role of logistics is continually growing. The efficient planning and coordination of supply chain logistics determine the speed of goods flows and the value of collected funds. Logistics management helps companies reduce costs and improve the services provided to customers. The impact of climate change on the logistics chain is not slow to manifest, with transportation and the economy being among the most affected sectors. Climate change exerts a significant and complex influence on the entire logistics chain, reshaping strategies for production, transportation, and distribution. This paper addresses the issue of climate change in

the logistics chain through a detailed analysis of the impact of natural disasters caused by climate change on economic activities at the global and European levels. Additionally, it explores methods for mitigating climate change, adaptation strategies, and resilience to it, as well as the risks associated with transitioning to a green economy.

37. Calculation of some characteristics of data transfer and processing systems

Autor: stud. Andrii YERMOLENKO, Naval Institute of National University "Odessa Maritime Academy", Odessa, Ukraine

Îndrumător: Vladlen SHAPO, professor, PhD

Abstract: It's impossible to imagine modern information systems in military field without the integration of different devices in the overall network. But it's necessary to calculate the corresponding network's characteristics to build and develop the network properly.

Some characteristics may be calculated using the proposed approach.

1. Time of data element processing and processing rate (bits, bytes, frames, packets, datagrams per second (Data link, Network, Transport level of OSI model).
2. Probability of data transfer channel using (channel's utilization) and probability of data transfer channel not using (channel's underutilization).
3. Average number of the data elements in the queues in the processing devices, in the data transfer channel and the total number of the data elements.
4. The time of the data elements' waiting in the queue and in the processing device.

Proposed approach may be used for geographically distributed data transfer networks building taking in consideration switches, routers, firewalls characteristics.

OCEANOGRAFIE ŞI HIDROGRAFIE

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

1. The Ocean Carbon Cycle

Autor: stud. Narcis Daniel ANIȚEI, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Romeo BOȘNEAGU
Abstract: In this presentation I am going to talk about the importance of the ocean carbon cycle, starting from carbon itself and showing all the states it goes through until it is deposited on the bottom of the sea, as well as its effects on our climate and on life on our planet.

2. Single Band Echo Sounder TELEDYNE ECHO TRAC E20

Autor: stud. Cristian Silviu DERMENGEA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: C.S.3. Dr. ing. Lucian DUMITRACHE
Abstract: The Master Nav in Oceanography and Hydrology would bring for myself more expertise in this field which sounds really interesting, Being a seaman on merchant vessels will add more knowledge and make me understand better the ocean life and all about it in my journey.

3. Influence of Hydrometeorological Factors on a Drifting Object/Contact on the Water Surface

Autor: stud. Miruna-Georgiana ICHIM, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Dinu ATODIRESEI

Abstract: This study investigates how hydrometeorological factors, including wind and surface currents, influence the drifting of objects on water surfaces. Employing hydrodynamic models, meteorological data, and field observations, the research identifies the critical dynamics affecting flotsam movement in both marine and freshwater contexts. Analysis of satellite data and buoy network information highlights the impact of environmental conditions on drift trajectories and speeds. The work sheds light on the interactions between atmospheric and aquatic forces, offering valuable insights for maritime safety, pollution tracking, and search and rescue operations. By understanding these complex relationships, the study contributes to enhanced predictive models of object drift in water environments, aiding in environmental and navigational applications.

4. Sustainable Energy Sources Derived from Seas and Oceans, Focusing on Wave, Current, and Tidal Energies

Autor: stud. Cozmin-Horia ȘORODOC, Academia Navală „Mircea cel Bătrân”, Constanţa
Îndrumător: Conf. univ. Dr. ing. Romeo BOȘNEAGU

Abstract: This paper explores the sustainable energy sources derived from seas and oceans, focusing on wave, current, and tidal energies as integral components for transitioning to a clean energy future. These technologies harness the vast power of the oceans, covering over 70% of the Earth's surface, offering a nearly uninterrupted and widely available energy source. The study delves into the operational principles, utilized technologies, and the ecological and economic impacts of each energy type. It highlights the potential and challenges of harnessing oceanic energy, emphasizing the need for technological advancements and policy support to fully exploit these resources for a sustainable energy future.

5. Laser Fiber Optic Gyrocompass MGCR5 by Kongsberg
Autor: stud. Denis-Ștefan STAN, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: S.L. Dr. ing. Sergiu ȘERBAN
Abstract: This paper presents an in-depth analysis of the cutting-edge laser fiber optic gyrocompass, designated as the MGCR5, developed by Congsberg. The gyrocompass technology plays a crucial role in various applications, including navigation systems for aerospace, maritime, and terrestrial vehicles. The MGCR5 represents a significant advancement in gyrocompass technology, leveraging laser and fiber optic principles to enhance accuracy, reliability, and performance. This paper explores the key design features, operational principles, and performance characteristics of the MGCR5 gyrocompass, highlighting its potential applications and advantages over traditional gyrocompass systems. Furthermore, it discusses the implications of this technology for future developments in navigation and positioning systems. Through a comprehensive review and analysis, this paper aims to provide valuable insights into the capabilities and advancements of the laser fiber optic gyrocompass MGCR5 by Congsberg.

6. Monitoring the Underwater Environment Using Drones
Autor: stud. Cristian-Felician ZAHARIA, Academia Navală „Mircea cel Bătrân", Constanţa
Îndrumător: Conf. univ. Dr. ing. Romeo BOȘNEAGU
Abstract: In the context of the rapid technological progress in recent years and the direction in which the world's armies are moving in terms of the robotization of the armed forces, Romania is in a position to abandon vessels with too much experience and to focus on naval drones that can carry out missions that do not require human presence on board. I therefore propose the concept of a marine drone for

oceanographic research and military purposes, with electric propulsion, powered by solar panels, that has the ability to dive to protect itself from rough seas, can explore the underwater environment, can launch torpedoes, and can identify enemy movements through a radar installed on board quadcopters.

7. Renewable Energy Sources from the Oceans

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Abstract: Contemporary civilization increasingly relies on satisfying energy needs and consumption, with a growing emphasis on unconventional energies, particularly the vast energy potential of seas and oceans. In Europe, research on converting energy from oceans and seas has made significant progress since 1973, triggered by the global energy crisis. The entire world faces the challenge of reconciling energy reserves with the rapid pace of societal development, with ocean-based energy, such as waves and tides, seen as a viable alternative due to its inexhaustible and non-polluting nature. However, challenges include season and location dependency, as well as higher initial costs compared to traditional sources. The scientific community asserts that the use of fossil fuels is unsustainable and polluting, prompting exploration of alternative renewable sources such as solar, wind, waves, tides, geothermal, and nuclear energy. Studies indicate that about 40% of the global population resides near coastlines, making harnessing energy from ocean movements a potentially cost-effective solution, contingent on effectively addressing the actual energy generation.