

Title: A Doorway to Greener Shipping Means Utilizing Advanced Hybrid Power System

Authors: Yogesh Pratap Singh, Anup Kumar

Institute: Vels University, Dept. of Marine Engg., School of Maritime Studies, Thalambur, Chennai, India.

Abstract: This paper gives a review of the future for a cleaner planet shipping. This presents the design of hybrid solar wind turbine system for the power generation system by utilizing both solar and wind renewable energy to shipping industry. And its part to reduce global carbon dioxide emission by taking advantage of green and renewable energy and finding new and innovative ways to power vessels. The world is facing the challenge of continuously increasing energy consumption. At the same time, the energy resources are getting scarcer. The use of clean and renewable energies, such as solar energy for instance, is proposed as a method to improve the ship efficiency. Ships can get the benefits from solar energy due to the fact that most of their upper decks are always exposed to the Sun, especially in sunny water regions. Future solar cells may produce electricity in all weathers. Thus we will discuss here a cost-effective and high-efficiency graphene based conducting composite tailored all-weather solar cell that can be actuated with raindrops and sunlight. The optimization analysis is conducted for generating most feasible system configuration and determines the quantity of components in the hybrid energy system, in order to meet the load demand of machineries onboard and achieve the autonomy power supply with storing excess power generated in batteries storage for the sustainable energy storage. In this paper, we study the performance comparison of both solar and wind energy system also working together as a hybrid system. In addition, we will propose a major advancement in the hybrid system by incorporating the basic principle of a Semi-PMM (semi perpetual motion machine) to meet the energy demand and provide an efficient rotation at low wind pressure and discontinuous wind flow for a period of time.

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Title: Blockchain in Logistics Management

Authors: Vinay Ranjan Jaiswal, Sanskar Jain, Nirbhay Kumar

Institute: Marine Engineering and Research Institute, Mumbai, Indian Maritime University, Mumbai Port Campus

Abstract: Globalization has opened new trade routes, technology has changed the way we shop and spend, and so naturally, the demand for shipping has reached an all-time high. It’s no wonder that most shipping customers are shocked and dismayed to find their brokers still relying on artifacts like paper records, written manifests and spoken words to get cargo from point to point. It’s time for a breakthrough in how we handle freight. Blockchain technology is often characterized as “disruptive” because it can revolutionize the way we interact as a society. Distributed ledgers are disruptive for ancient business models in the same way email disrupted the mailbox. We will explore the use of blockchain technology in Logistic management in this paper.

Title: Hull Vane: Reducing Total Resistance and Trim by Modifying Ship Design

Author: Snehadri Banik

Institute: Tolani Maritime Institute, Induri, Pune.

Abstract: Hull Vane is a fixed foil located below the waterline, near the stern of the vessel. The lift created by it can be divided into a force in x-direction, reducing the total resistance of the vessel, and in z-direction, influencing the trim and thus the total resistance. Additionally, the Hull Vane reduces the generation of waves and the vessel's motions in waves. Model tests and sea trials have shown significant reduction in resistance. The Hull Vane is especially applicable on ships sailing at moderate to high non-planing speeds, with Froude numbers between 0.2 and 0.7.

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Title: LNG as an Alternative Fuel to Reduce Pollution

Authors: Divakar Trivedi, Abhishek Renukappa, Jashrajsinh Jadeja

Institute:The Great Eastern Institute of Maritime Studies, Lonavala.

Abstract: Among the various challenges faced by the shipping industry from low freight rates to fuel prices, the major obstacle still being to comply with the regulation of MARPOL Annex-6 and decrease the air pollution from shipping industry. The preferred solution of using LNG, as an alternative fuel, is increasingly becoming popular as it eliminates the problem from its root cause i.e. air pollution.

This paper reviews several recent studies on the topic and discusses the suitability of LNG as an alternative fuel in international shipping for regulatory compliance as well as savings in fuel cost that has increased substantially in the last few years and expected to follow the same trend.

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Title: Low Noise Design Technology and Development Trend of Marine Diesel Engine

Author: Avishek Ankit

Institute: Tolani Maritime Institute, Pune.

Abstract: The vibration and noise level of marine diesel has the direct influence on the comfort and acoustic concealment of merchant ships, which has been the important mark of engine performance as well as power density, volume and weight and so on. The development of identification and separation of noise source, the intake and exhaust noise control technique, the modern prediction method of noise and new findings of noise control method are present. Moreover, the future trend of noise control technology of internal combustion engine is proposed. Thus, the guides and basements were provided to assist technology investigation, product developing, and system design.

Title: Navigator/OOW Fatigue Detection and Alarming System

Authors: Kamran Farooq Beigh, Tushar Mehta, Neeraj Tekwani

Institute:Anglo Eastern Maritime Academy, Karjat.

Abstract: This paper is an introduction to our research which aims to develop a navigator/OOW safety assistant system. We proposed an improved strategy and practical system to detect fatigue based on machine vision and OpenCV algorithm. Kinds of face and eye classifiers are well trained by OpenCV algorithm in advance, the proposed strategy firstly detects face efficiently by classifiers of front face and deflected face. Then, candidate region of eye is determined according to geometric distribution of facial organs. Finally, trained classifiers of open eyes and closed eyes are used to detect eyes in the candidate region quickly and accurately. The indexes which consist of PERCLOS and duration of closed-state are extracted in video frames real time. Practical tests demonstrated that the proposed system can detect fatigue with real time and high accuracy.

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TITLE: Potential of Nano Technology in Transportation

Authors: Rahul Kaundilya, Zainul Iftkar, Sayak Dutta

Institute: Euro Tech Maritime Academy, Kochi.

Abstract: Nanotechnology is one of the leading scientific fields today since it combines knowledge from the fields of Physics, Chemistry, Biology, Medicine, Informatics, and Engineering. It is an emerging technological field with great potential to lead in great breakthroughs that can be applied in transportation. The application and use of nanomaterials in electronic and mechanical devices, in optical and magnetic components, quantum computing, and other technologies, with smallest features, are the economically most important parts of the nanotechnology nowadays and presumably in the near future.

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Title: Safety, Security and Reliability Issues in Shipping Industry

Authors: Jayant Gautam, Vijayraj Singh

Institute: MANET, PUNE.

Abstract:Today, safety is a very important factor that affects all elements of Shipping Industry. However, safety management and its implementation in the Maritime Industry are more important than ever. Ship security measures are often the first and only measures preventing criminal act at sea. Ship security management is today prescribed to be risk-based which has two objectives: to effectively reduce the security risk to acceptable levels, and to create a security culture in the organization that supports effective ship operation on an everyday basis. A floating ship has to be reliable in transportation and Automation in order to gain profit and increase the customers.

TITLE: Safety, Security and Reliability Issues in Shipping Industry

Authors: Steve D'Souza, Syed Zafry Zakariah, Adithya Manoj Kumar

Institute: Euro Tech Maritime Academy, Kochi.

Abstract: The maritime industry is still characterized by prescriptive standards and reactive approaches in relation to safety and risk management to a large extent. It does not offer the full potential that concepts of resilience seem to suggest. This is to review the current ideas about safety regulations and risk management in the maritime industry. The concept of resilience engineering with its focus on system performance rather than system failure is a promising concept to be considered in the shipping business, but needs further investigation.

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TITLE: Shipcoin- Blockchain Technology in Shipping Industry

Authors: Ranjith Menon D, Sundhesh M Nagesh, Tanmay C Kalyankar

Institute: The Great Eastern Institute of Maritime Studies, Lonavala.

Abstract: Despite the recent technological revolution, shipping still remains a traditional industry and the processes the parties follow in many cases are almost archaic. Whilst Blockchain Technology in shipping industry can simplify your transactions, data entry, by reducing physical paperwork and reduce communication time delays, added costs, and human error that plague today. Thus by connecting all parties to your company's Blockchain via the Internet of Things (IoT) to make your day-to-day task transparent, scalable and secure.

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TITLE: Twisted Rudder to Make the Ship Energy Efficient

Authors: Ashwini Kumar Jha, Vivek Kumar

Institute: Indian Maritime University-Mumbai Port Campus.

Abstract: Oil prices climb day by day due to which there should be a reduction in fuel consumption which will also lead to less emission of harmful gases, that can be achieved by modified design of rudders because conventional rudders waste a lot of energy due to cavitation and vibration. The present twisted rudder has profiles along its entire span that are aligned with induced flow angles in the rudder plane. The twist angle of one rudder section varies relatively with the twist angle of adjacent rudder sections due to which the rudders experience zero flow angles induced by the propellers. These rudders are designed computationally with fluid characteristics in self propulsion.

TITLE: Vibration Analysis and Vibration Control of Ship Machinery

Authors: A. R. Singh, Aditya R. Singh, A. R. Panigrahi

Institute: Euro Tech Maritime Academy, Kochi.

Abstract: This paper gives a review of the vibration characteristics and its analysis associated with ship machinery and its counteract measures. In this paper, an effort is made to present sufficient information to understand the basis for the generally observed vibration phenomenon and relates to the control and attenuation of those design factors which are built into the ship and which contribute to alternating stresses or a vibratory environment which may prove to be unsatisfactory to the ship's structure, machinery, equipment, or personnel.

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Title: Personal Safety, Related Equipment and Their Advancement for Use On Ships

Author: Siddhant Kumar Srivastava

Institute: Tolani Maritime Institute, Induri, Pune, India

Abstract: Safety is the most primary concern when working on the vessels. Be it personal safety, safety of the property or the safety of the environment, utmost care has to be taken to prevent the losses of any kind. Personal safety is of the primary importance because the damage to a person or the loss of life is what the companies are mostly concerned about.

There are certain most common incidents that may result into harming the person. They range from a minor concussion to the loss of life and damage to property and environment. They are- slips and fall, man overboard, fire, workshop injuries and getting trapped in a confined space.

Over the years, there has been a considerable development to ensure personal safety. PureTech Systems has developed a system to detect man overboard and it effectively differentiates between the normal working and an abnormal incident like man overboard or piracy. SawStop has developed a table saw blade that automatically stops itself whenever there is a human contact with the blade. The principle of work is that the human body conducts electricity and when there is a change of current of operation, the brakes are automatically applied.

Personnel Positioning System is a theoretical concept for now. It is a means to detect the position of the people working on the ships and to point out the location of an accident or any such abnormality taking place. The modulus of operandi is pointing and monitoring the different levels of loading- gradual and impact, and acting accordingly.