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2ND INTERNATIONAL CONFERENCE ON

TECHNOLOGY AND INNOVATION MANAGEMENT
IN CONJUNCTION WITH
CONFERENCE ON FUTURE READY LEARNING AND EDUCATION:
THE USE OF TECHNOLOGY IN TEACHING AND LEARNING

WORLD CONFEERNCE ON

APPLIED SCIENCES, ENGINEERING AND TECHNOLOGY:
CLEAN ENERGY AND SUSTAINABLE ENVIRONMENT

17 & 18 DECEMBER 2022
EVERLY HOTEL, PUTRAJAYA

CONFERENCE PROGRAM

Day 1: 17 December 2022

8 – 9 am	: Registration
9 – 9.30 am	: National Anthem
	: Doa Recitation
	: Corporate video
	: Welcoming Remarks by Conference Chair
	: Announcement of **BEST PAPER AWARDS**
9.30 – 10 am	: Keynote Speech
10 – 10.15 am	: Break and **PHOTO SESSION**
10.15 – 1 pm	: Research presentation parallel session 1 & 2
1 – 2.30 pm	: **LUNCH**
2.30 – 5.30 pm	: Research presentation parallel session 3 & 4

Day 2: 18 December 2022

9 am – 1.30pm: Visit to Intelligent Garden City of Putrajaya, Malaysia

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Research Presentation Session 1 (10.15 a.m. - 11.30 a.m.) -**Room: Irama 5**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
1	WCASET2022: 002-001	Techniques and Methods for Forecasting and Modelling Solar Radiation: A Review, A Case Study, and Applications	El Mghouchi Youness	10.15-10.30	Chair: Tey Wah Yen
2	WCASET2022: 003-002	Characterization of Carbon Fibre Reinforced Polyphenylene Sulfide Composite Under Interlaminar Shear Strength	Nadlene Razali	10.30-10.45	
3	WCASET2022: 004-003	The Best Refrigerant for Any Modern Vapor Compression Refrigeration System: Rational Comparison & Environmental Impact	Abdelsalam Al-Sarkhi	10.45-11.00	
4	WCASET2022: 005-005	Energy Profiling and Potential Energy Saving of a Keropok Lekor Small Industry	Azian Hariri	11.00-11.15	
5	WCASET2022: 009-007	Performance of Savonius Turbines with Tubercles Inspired by Humpback Whales	Sohib Abdelsattar	11.15-11.30	

Research Presentation Session 2 (11.30 a.m. – 1.00 p.m.) -**Room: Irama 5**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
6					Chair: Tajuddin
7	WCASET2022: 015-010	Comparative Investigation of MDRZ and RZ Modulation Techniques at 40Gbps x 32 Channels in DWDM Communication System	Dharmendra Dhadhal	11.45-12.00	
8	WCASET2022: 017-011	Design of a Haptic Hand to Stimulate by Vibration The Human Nervous System	Juan Alejandro Vazquez Feijoo	12.00-12.15	
9	WCASET2022: 019-013	Numerical Modeling of Cuttings Volume Fraction in an Annular Geometry for Various Drilling Conditions	Hicham Ferroudji	12.15-12.30	
10	WCASET2022: 020-014	Effect of Growth Temperature Process on	Saedah Munirah	12.30-12.45	

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
		Optical Properties of ZnO Embedded with Graphene Oxide as Photoanode Function			
11	WCASET2022: 020-016	Structural and Optical Properties of Zinc Oxide Altering with Graphene Oxide on Different Substrate	N.N. Syakira	12.45-1.00	

Research Presentation Session 3 (2.30 p.m. – 3.45 p.m.) -**Room: Irama 5**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
					Chair: Dr Nor Azwadi
13	WCASET2022: 028-022	Numerical Investigation of Interceptor Influenced on The Step Planing Hull	Serliana Yulianti	2.45-3.00	
14	WCASET2022: 071-050	Economical Aspect Of Truss Design Through Geometry Configuration	Tan Hean Seong	3.00-3.15	
15	WCASET2022: 071-051	Parametric Study on Built-up Plate Girder to Eurocode 3 with Various Beam Span and Steel Grade	Tan Hean Seong	3.15-3.30	
16	WCASET2022: 076-056	The Effect of Different Waste Material Binders in Relation to Khaya Senegalensis Solid Fuel Pellet Quality	Ras Izzati Ismail	3.30-3.45	

Research Presentation Session 4 (3.45 p.m. – 5.15 p.m.) -**Room: Irama 5 (ONLINE PRESENTATION)** meet.google.com/ssj-obfs-zri

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
17	WCASET2022: 029-023	Predicting Top Five Cryptocurrency Prices via Linear Structural Time Series (STS) Approach	Nurazlina Abdul Rashid	3.45-4.00	Chair: Mohd Arif
18	WCASET2022: 035-026	Water Quality Assessment of Urban River in Kota Kinabalu Sabah, Malaysia.	Fera Cleophas	4.00-4.15	
19	WCASET2022: 047-037	Drivers, Enablers, Barriers, and Technologies (DEBT) For Low-Energy Public Housing Delivery in Nigeria	Yusuf, A. and Akande, O.K.	4.15-4.30	
20	WCASET2022: 054-041	Investigation Volumetric Characteristic on Skid	Atica Chairun Nissa	4.30-4.45	

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
		Number with Difference Gradation of Aggregate			
21	WCASET2022: 036-042	Indoor Environmental Quality in Micro & Nanoelectronics Laboratories at IMEN Research Complex, UKM	Mohd Hannas Bin Hosnon	4.45-5.00	
22	WCASET2022: 061-048	Coronavirus (Covid-19) Impacts On Malaysian Fisheries Sectors: Lesson Learned From The Movement Control Order (MCO)	Ameer Farhan Mohd Arzaman	5.00-5.15	
22a	WCASET2022: 027-021	Design of Portable Vortex Bladeless Wind Turbine: The Preliminary Study	Sharul Sham Dol	5.15-5.30	

Research Presentation Session 1 (10.15 a.m. – 11.30 a.m.) -**Room: Irama 6**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
23	WCASET2022: 081-064	Global research hotspots and trends in halal research: A scientometric review based on CiteSpace analysis	Mohd Nizam Lani	10.15-10.30	
24	WCASET2022: 022-034	Effect of Graded Mesh Number on the Solution of Convection-Diffusion Flow Problem with Quadratic Source	Aslam Abdullah	10.30-10.45	
25	WCASET2022: 046-035	Imrpoved Waste Heat Recovery and Performance of Organic Rankine Cycle Analysis for Exhaust Gas From a Marine Diesel Engine using Biofuel from Algae	Zalina Mat Nawi	10.45-11.00	Chair: Dr Wan Mohd Arif
26	WCASET2022: 045-036	Monitoring Elastic Wave-based Enhanced Oil Recovery using Seismic Waves	Mohammed Bashir Abdullahi	11.00-11.15	
27	WCASET2022: 048-038	Tribological Characterisation Of Biofluid Using Fourball Experiment	Mohamad Mazwan Bin Mahat	11.15-11.30	

Research Presentation Session 2 (11.30 a.m. – 1.00 p.m.) -**Room: Irama 6**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
28	WCASET2022: 049-039	On LSTM Inefficiency in Long-Term Dependencies Regression Problems	Safwan Mahmood Al-selwi	11.30-11.45	Chair: Mohd Arif
29	WCASET2022: 053-040	The Economic Assessment of Homes Rooftop Pv Installations In Malaysia	Ramlan Zailani	11.45-12.00	
30	WCASET2022: 050-043	Photodegradation Mechanism Of Biopolymer Blended With High Density Polyethylene (HDPE)	Nurulsaidatulsyida Sulong	12.00-12.15	
31	WCASET2022: 057-045	Investigation on Fouling Mechanism on Graphene Oxide Nanocomposite Adsorptive Membrane	Nik Rashida binti Nik Abdul Ghani	12.15-12.30	
32	WCASET2022: 059-046	Analytical Hierarchy Process and Failure Mode and Effect Analysis on HVAC Semi-Hermetic Compressor Maintenance Strategy	Mohd Azhar Shah Rizam, Ahmad Fuad Ab Ghani	12.30-12.45	
33	WCASET2022: 072-053	Evaluation of Water Rivers Quality in Terenganu State, Malaysia	Ahmed H. A. Dabwan	12.45-1.00	

Research Presentation Session 3 (2.30 p.m. – 3.45 p.m.) -**Room: Irama 6**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
34	ICTIM & ICFRLE 2022: 003-003	GeometryAR: Learning 2D and 3D shapes using Mobile Augmented Reality	Noor Anida Zaria Mohd Noor	2.30-2.45	Chair: Dr Wan Mohd Arif
35	ICTIM & ICFRLE 2022: 004-004	Energy Measurement and Potential Energy Conservation Measures in Five Healthcare Buildings in Malaysia	Nurfatihah Rahim	2.45-3.00	
36	ICTIM & ICFRLE 2022: 006-005	The Research of the Evolution and Development Direction on Chinese Innovation Policy Management under	Jiao Yuchao	3.00-3.15	

		the New Economic Momentum			
37	ICTIM & ICFRLE 2022: 010-006	Evaluating The Use of Multi-Sided Platforms on The Brand Performance of Malaysian Sme Food Outlets	Bryan Teoh Phern Chern	3.15-3.30	
38	ICTIM & ICFRLE 2022: 010-007	Assessing The General Sentiment of Malaysian Manufacturers in Adopting Blockchain Technology to Improve Suppy Chain Processess	Bryan Teoh Phern Chern	3.30-3.45	

Research Presentation Session 4 (3.45 p.m. – 5.00 p.m.) -**Room: Irama 6 (ONLINE PRESENTATION)** meet.google.com/bzg-vygx-uqk

39	WCASET2022: 073-054	Properties Test on B20 Palm-Methyl Ester Biodiesel Added with Oxide Nanoparticle Towards Green Marine Fuels	Che Wan Mohd Noor	3.45-4.00	
40	WCASET2022: 051-055	Experimental estimation of temperature recovery factor of turbulent gas flow in microtubes	Haruki Sasae	4.00-4.15	
41	WCASET2022: 048-057	Application Of Response Surface Methodology Experimental Design to Optimize Tribological Lubrication Characteristics	Farah Nabillah Binti Kazwa	4.15-4.30	
42	WCASET2022: 052-059	Estimation of surface roughness from friction loss of turbulent gas flow in stainless steel microtubes	Ryo Ishimura	4.30-4.45	Chair: Tajuddin
43	WCASET2022: 069-049	Resistance Evaluation for the Submerged Glider System using CFD Modelling	Aladdin Ahmed	4.45-5.00	
43a	WCASET2022: 012-008	Human Visual System Algorithm for Medical Images Recovery	Ali Abdulkadhum Ruhaima	5.00-5.15	
43b	ICTIM & ICFRLE 2022: 018-014	Technology and Performance of Maritime Industry in Malaysia	Ummu Ajirah Abdul Rauf	5.15-5.30	

Research Presentation Session 1 (10.15 a.m. – 11.30 a.m.) -**Room: Irama 7**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
44	WCASET2022: 084-068	Potential Probiotic of Lactobacillus from Fermented Dairy and Non-Dairy Food as Antibacterial Agent Against Antibiotic Resistance Bacteria (ARB)	Rozila Alias	10.15-10.30	
45	WCASET2022: 091-074	Production of Washed Bottom Ash as Sand Replacement Material in Concrete Paving Block	Mohd Syahrul Hisyam Mohd Sani	10.30-10.45	
46	WCASET2022: 085-069	Production of Refused Derived Fuel from Food Waste Employing Hydrothermal Treatment	Mochamad Syamsiro	10.45-11.00	Chair: Dr Nor Azwadi
47	WCASET2022: 077-060	Development of Agricultural Waste Adsorbent for of Cadmium (II) and Lead (II)	Faizuan Abdullah	11.00-11.15	
48	WCASET2022: 078-061	Numerical Simulation of Drying Process within a Novel Rotary Drying Machine for Palm Oil Sludge	Ahmad Adzlan Fadzli Bin Khairi	11.15-11.30	

Research Presentation Session 2 (11.30 a.m. – 1.00 p.m.) -**Room: Irama 7**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
49	WCASET2022: 031-024	Numerical analysis of the residual stresses distribution induced by single shock-laser impact in aluminum alloys 2024-T351	Fekirini Hamida	11.30-11.45	
50	WCASET2022: 038-028	Willingness to Donate Smartphone for Education: An Indonesian Context	Shu-San Gan	11.45-12.00	
51	WCASET2022: 044-032	Investigation of Production Performance of a Shale Gas Horizontal Well Using a Fully Coupled Flow and Geomechanics Modeling	Tareq Mohammed Al-Shami	12.00-12.15	Chair: Dr. Norazlianie

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	
52	WCASET2022: 040-030	Evaluation of HACCP Implementation in Food Manufacturing Companies in the Middle Eastern Region.	Abdul Azeez	12.15-12.30	
53	WCASET2022: 032-033	A Robust Location Model Framework For Mixed Variables Classification With Outliers	Kartini Kasim	12.30-12.45	
54	WCASET2022: 026-029	Carbon Nanotubes (CNTs) Nanofluids Flow and Heat Transfer under MHD Effect over a Moving Surface	Nazrul Azlan Abdul Samat	12.45-1.00	

Research Presentation Session 3 (2.30 p.m. – 3.30 p.m.) -**Room: Irama 7**

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
55	ICTIM & ICFRLE 2022: 011-008	Conference management system: A Comparative Study	Wan Hussain Wan Ishak	2.30-2.45	
56	ICTIM & ICFRLE 2022: 013-009	Comparison of MCDM Methods for Priorities in Selecting Patent	Syarifah Zyurina Nordin	2.45-3.00	
57	ICTIM & ICFRLE 2022: 016-010	Maximizing Energy Efficiency on 5GmmWave O2I Propagation Deployment through massive MIMO	Robert Joseph M. Licup	3.00-3.15	Chair: Tey Wah Yen
58	ICTIM & ICFRLE 2022: 016-011	5G Propagation Model Tuning Theories, Concepts, and Scenarios towards O2I Solutions	Robert Joseph M. Licup	3.15-3.30	
58a	ICTIM & ICFRLE 2022: 014-013	Identification of Trends in Automotive Industries based on Text Mining	Hafizah Farhah Saipan @ Saipol	3.30-3.45	

Research Presentation Session 4 (3.30 p.m. – 5.00 p.m.) -**Room: Irama 7 (ONLINE PRESENTATION)** meet.google.com/djt-bfzj-utr

NO	PAPER ID	PAPER TITLE	PRESENTER	TIME	SESSION CHAIR
59	WCASET2022: 079-062	Preliminary Modelling Of Hydrological Performance For Green Roof Drainage Layer Using Response Surface Methodology	Salinah Dullah	3.30-3.45	
60	WCASET2022: 090-072	Compat High Gain Microstrip Array Antenna For 5G Applications	Hesham Emara	3.45-4.00	Chair: Dr Norazlianie

61	WCASET2022: 083-076	Electronic and Topological Properties of UIO66-IL Interaction through Computational Study	Nor Ain Fathihah Abdullah	4.00-4.15	
62	WCASET2022: 094-077	An Experimental and DFT Study on Bio-oil Derived from Catalytic Pyrolysis of Torrefied EFB with Cobalt Alumina Using Furfural as Model Compound	Nooraihan Abdullah	4.15-4.30	
63	WCASET2022: 080-063	Screening and Benchmarking of Commercial Corrosion Inhibitors for Organic Acids Corrosion Mitigations	Almila Hassan	4.30-4.45	
64	WCASET2022: 098-081	Characterization of Aluminium-Magnesium Alloy Reinforced with Strontium (Sr) by Casting Techniques	Rosmamuhamadani Ramli	4.45-5.00	

Research Article for publication only

NO	PAPER ID	PAPER TITLE	CORRESPONDING AUTHOR
1	WCASET2022: 034-025	Numerical Study Of Heat Transfer and Fluid Flow over Circular Cylinder in 2D Cross Flow	Haiyder M. Hmood
2	WCASET2022: 037-027	Rich Dad And Poor Dad: Biomass Circularity Science Empathizing Rubber Smallholders	Arniza Ghazali
3	WCASET2022: 042-031	Design of Smart Walking Shoe for Visually Impaired People	Shelena Soosay Nathan
4	WCASET2022: 056-044	Approximate Analytical Solution for Time-Fractional Nonlinear Telegraph Equations with Source Term	Che Haziqah Che Hussin
5	WCASET2022: 062-047	Early Warning System For Fire Catcher In Rain Forest Of Sumatera Using Thermal Spots	Diena Noviarini
6	WCASET2022: 075-058	Best Practice of Striving Energy Sustainability in A Hot Press Machine for Clutch Facing Manufacture	Ekadewi A. Handoyo
7	WCASET2022: 082-066	Enhancing Meta Slot Space Space Wavelength to Solve Blocking Case in Elastic Optical Networks	Mustafa Taha Hussein Al-Musawi
8	WCASET2022: 086-070	Estimate The Economic Value of The Ecosystem Services: The Case of Forest	Mohd Parid Mamat

		Landscape Conservation in Janda Baik, Pahang, Malaysia	
9	WCASET2022: 089-071	Factors Influencing Perceived Stress And Its Impact Towards Food Consumption Pattern During Covid-19 Pandemic.	Sarveena Gopal Samy
10	WCASET2022: 093-075	Development A New System Of Exterior Insulation For The Building Based On Recycled Materials In Arid Areas.	Benoudjafer Imane
11	WCASET2022: 087-078	The Extended Blade Element Momentum Theory for the Design of Small-Scale Wind Turbines	Siti Amni Husna Roslan
12	WCASET2022: 096-079	Investigation the Influence of Inclination Angle and Air Gap for Flat Plate Solar Air Collector through Experiment and Simulation	Wong Sin Yee
13	WCASET2022: 097-080	Experimental Study of Comparison of Thermal Comfort and Air Age Between Two Combined Ventilation Systems with Chilled Ceiling Considering Occupant Density	Dhuha Radhi
14	WCASET2022: 100-083	Numerical Study of Thermal Comfort Parameters and Air Age for Mixing Ventilation with Chilled Ceiling Considering Occupant Density in a Meeting Room	Dhuha Radhi
15	WCASET2022: 023-017	A Comprehensive Study on Adjustable Height Stand for Temperature Scanner	Mohammad Shahrul Nizam Amin Nuddin
16	WCASET2022: 023-018	A Comprehensive Study on IoT Based Energy Monitoring System	Siti Aisyah Mohd Khalid
17	WCASET2022: 023-019	Investigation on Water Quality for Farmed Aquatic Species by IoT Monitoring System	Syazwan Izharuddin Mohamad Sabri

2nd International Conference on Technology and Innovation Management In Conjunction with 2nd International Conference on Future Ready Learning and Education: The use of technology in teaching and learning (ICTIM & ICFRLE 2022)

PAPER ID: ICTIM & ICFRLE 2022: 003-003
TITLE: GeometryAR: Learning 2D and 3D shapes using Mobile Augmented Reality
ABSTRACT:

Augmented Reality (AR) is a technology that has change the way of teaching and learning process where its providing students with effective and powerful learning experience. Furthermore, Covid-19 has transformed dramatically from physical classroom learning to e-learning and AR is a promising solution that has turned to be one of interesting learning approach because it has several dynamic features that would enhance teachers and learners' attention to learns. The purpose of this study is to develop Geometry Augmented Reality application that will become a tool to help students learn 2D and 3D shapes and to evaluate the effectiveness of learning based on AR application. ADDIE model has been adopted for this study, where few software such as Unity, Blender, Adobe Illustrator and Vuforia has been used during the application development and the followed by the evaluation of the application by 18 respondents using questionaire, they are school teachers who taught Mathematics subject in Maran, Pahang, Malaysia. The collected quantitative data is analyzed using SPSS version 27 software. The result shows that the teachers give positive view about this application as a valuable learning tool for students to learn 2D and 3D shapes. In addition, the result suggests that the use of AR technology leads to a significant enhancement of understanding key concepts related to AR and Mathematics. As a conclusion, AR technology has provided breakthrough for country educational institution and improve the quality of 21st century learning, however there are still few limitations and challenges that hinder AR technology to the education-related research that has led to the direction for future research.

PAPER ID: ICTIM & ICFRLE 2022: 004-004
TITLE: ENERGY MEASUREMENT AND POTENTIAL ENERGY CONSERVATION MEASURES IN FIVE HEALTHCARE BUILDINGS IN MALAYSIA
ABSTRACT:

Carbon emissions and energy consumption are increasing across the board in the global economy. If energy demand can be managed or industrial development can be delayed, energy consumption will be reduced. The healthcare facility is well-known for being one of the most energy-intensive structures. As a result, energy-saving strategies that analyze building energy performance and apply energy-saving procedures must be devised. The most common technique for increasing building energy efficiency is to do a comprehensive energy audit. The Healthcare Building Energy Index (HBEI) is the current technique for analyzing building energy performance. A healthcare facility's operation hours are longer than those of a commercial establishment. The problem arises when there is no specific standard for determining whether or not a healthcare facility is energy efficient. The ideal Building Energy Index (BEI) is less than 135 kWh/meter square/year, according to MS1525:2019. To determine the actual onsite energy use in the healthcare building, a

detailed energy audit (DEA) is performed. At the conclusion of the research, the BEI from the DEA and the actual bill for each site were determined. According to DEA statistics, Hospital Permai has the lowest HBEI value of 98.01 kWh/meter square/year. Meanwhile, the highest HBEI computed from DEA data is 276.36 kWh/meter square/year at Hospital Putrajaya. Meanwhile, according to utility figures, the greatest HBEI in 2018 is 444.00 kWh/meter square/year for UTHM Health Centre, while the lowest HBEI is 101.14 kWh/meter square/year for Hospital Permai. Technically, numerous savings potential might be proposed based on the audit and analysis results.

PAPER ID: ICTIM & ICFRLE 2022: 006-005
TITLE: The Research of the Evolution and Development Direction on Chinese Innovation Policy Management under the New Economic Momentum
ABSTRACT:

The Chinese government has been pursing upgrading its position in global industrial chain and supply chain system to enter a higher stage since the opening policy, even though the external environment is deteriorating constantly. And this intention is more obvious and accelerating without any stop in recent years. Objectively say this is one of the most exact and direct reasons why relationship of China-US is falling and is fulling of conflicts. Since March 2018, the US government has successively initiated and signed trade sanctions against China, what is indifferent from the past, those sanctions which essence is to suppress the ambition and plan of China's at the high-end manufacturing industry through trade and investment barriers, to curb China's rise. Meanwhile, various risks are emerging in the world, and the uncertainty factors brought about by the war are rising significantly, and public health security is still a potential threat to the world economy in the post epidemic era. In this context, in the face of the constant conflict between China and the United States in trade, Chinese enterprises can only transform and upgrade their innovation capabilities to become the best way to escape from vicious competition. Therefore, this paper through conducts a horizontal comparative study of China's innovation policy system since the reform and opening by using the trichotomy method, with reference to the research on the development process of innovation policy systems of major innovation countries in the world. At the same time, it objectively analyzes and evaluates the achievements and problems of China's current independent innovation policy in practice. Furthermore, when China's economic momentum entered the critical period of transformation, that is, under the background that China will leap over the middle-income trap and enter the ranks of moderately developed countries, the paper analyzed and concluded the core position of innovation in China's future economic momentum transformation and development, thus making a rational prediction of China's future economic development trend from the analysis of international economic trends against the critical moments of increasing global instability.

PAPER ID: ICTIM & ICFRLE 2022: 010-006
TITLE: EVALUATING THE USE OF MULTI-SIDED PLATFORMS ON THE BRAND PERFORMANCE OF MALAYSIAN SME FOOD OUTLETS
ABSTRACT:

The Malaysian food industry has been increasingly using the services of multi-sided platforms (MSPs) to offer online food delivery services, especially in urban cities such as Kuala Lumpur and Penang. Various global research have also found consistent indications

that this trend will continue to grow over the next few years. This service involves the active collaboration between MSPs such as GrabFood and Foodpanda, delivery riders, end consumers, and food outlets. While there are many studies that evaluate the MSP business model and consumer behavior in this industry, there are limited studies that focus on the perspective of the food outlets. This study will address this research gap while focusing specifically on Malaysian SME food outlets to see if using MSPs to offer online food delivery services can improve their brand performance, both in terms of financial performance and brand equity. In addition, the study evaluates the effect that a food outlet's intellectual capital has on the decision to use MSPs. The study also includes perceived environmental turbulence as a moderating variable on the relationship between MSPs and brand performance. In summary, the result of the study shows that using MSPs does improve the brand performance of Malaysian SME food outlets.

PAPER ID: ICTIM & ICFRLE 2022: 010-007
TITLE: ASSESSING THE GENERAL SENTIMENT OF MALAYSIAN MANUFACTURERS IN ADOPTING BLOCKCHAIN TECHNOLOGY TO IMPROVE SUPPY CHAIN PROCESSESS
ABSTRACT:
The popularity of blockchain technology has seen a dramatic increase throughout the year of 2021 and 2022, with numerous use cases in various global industries. This includes the use of cryptocurrencies, non-fungible tokens, decentralized autonomous organizations, and others. In Malaysia, there is also an apparent increase in general awareness towards the technology, with Bank Negara Malaysia and Securities Commission actively participating in the Committee for Blockchain and Distributed Ledger Technology. This study specifically examined at the Malaysian manufacturing industry, attempting to assess their general sentiments towards blockchain technology and how it could help to improve various supply chain processes. The quantitative study received 114 valid responses from management level employees with Malaysian manufacturers, enabling the researchers to assess the task technology fit, perceived ease of use (PEOU), perceived usefulness (PUSE), and technology readiness index (TRI). The analysis indicated that there is indeed a high task technology fit in the Malaysian manufacturing sector. In addition, this industry showed a positive sentiment towards blockchain technology, with high scores in PEOU, PUSE, and TRI. The high TRI numbers also had a positive significant relationship on the decision to adopt this technology within the manufacturing companies to improve various supply chain processes.

PAPER ID: ICTIM & ICFRLE 2022: 011-008
TITLE: Conference management system: A Comparative Study
ABSTRACT:
A web-based programme called Conference Management System can be used to facilitate conference management. The system's main components are the paper submission, review, and registration functions. The conference organizer can use the system to simplify conference arrangement. Many conference management systems have been created and are currently accessible online. In addition to the fundamental features, these systems include many additional functionalities. A survey of a number of well-known conference management systems was conducted for this study. To determine the system's features, analysis is conducted. These attributes are compared and explored in terms of how relevant and pertinent they are to the management of conferences. The results of this study can serve as a benchmark for the conference management system's future development.

PAPER ID: ICTIM & ICFRLE 2022: 013-009
TITLE: Comparison of MCDM Methods for Priorities in Selecting Patent
ABSTRACT:

A patent is an intellectual property (IP) right granted for an invention. The patent can help to increase the technology and hence higher the economic value. Our focus is on the sustainability of the industrial revolution and the innovation strategic planning. Our objective is to find the most valuable patent that meet both technology value index (TVI) and technology commercial index (TCI). In order to rate the patent according to the index, a comparative performance of the five methods of multi-criteria decision making (MCDM) is investigated. We conduct a computational testing on Technique for Order Preference by Similarity to the Ideal Solution (TOPSIS), Simple Additive Weighting (SAW), Analytical Hierarchy Process (AHP), Multi-Attribute Utility Method Theory (MAUT) and Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE) to analyze the comparison among the MCDM methods for priorities in selecting patent. We discuss on the similarities and the contrast of the ranking results for the patents.

PAPER ID: ICTIM & ICFRLE 2022: 016-010
TITLE: Maximizing Energy Efficiency on 5GmmWave O2I Propagation Deployment through massive MIMO
ABSTRACT:

Due to the current pandemic, previous mobile technologies can no longer meet the high speed, and bandwidth requirement needed, given the drastic shift of transactions to the home. Most mobile users have already changed their usage patterns and moved towards either the Work from Home or Online classes. The enabling technologies explored to deploy and utilize the fifth-generation (5G) mobile system using mmWave frequencies are possible solutions to meet customer requirements. The millimeter-wave (mmWave) underutilized frequency is utilized by the fifth-generation (5G) cellular networks that support multi-gigabit-per-second (Gbps) transmission.

Different design considerations are available to address different needs and technical requirements to deploy 5G Solutions efficiently. The focus of the study of Dr. Björnson simulated the correlation between maximal energy efficiency (EE) concerning the active users, the optimal number of antennas, and transmit power. The study aims to arrive at a model for power consumption that can affect energy efficiency based on different parameters, including a massive MIMO setup.

The study and model were used to assess the impact on outdoor to indoor coverage by simulating the path loss exponent behavior concerning the energy efficiency and other available parameters using MatLab. The mmWave signal transmissions suffer multiple challenges even with the enormous available bandwidth it offers. Due to its short wavelengths, the technical challenges include high path loss, directivity, blockage sensitivity, and narrow beamwidth. Different tools, technologies, and scenarios are explored to effectively support network design, accurate channel modeling, implementation, and deployment. However, propagation models vary depending on the actual application and environment. The paper provides a comprehensive overview of the theories and simulations to lay down indoor application scenarios which will serve as fundamentals that can be applied in the system design, primarily focusing on the impact of massive MIMO concerning path loss exponent in an Outdoor to Indoor scenario.

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PAPER ID: ICTIM & ICFRLE 2022: 016-012
TITLE: Intelligent Proactive Maintenance Framework: Application of Anylogic Simulation to measure MTTR and Service Availability improvements
ABSTRACT:

Intelligent Proactive Maintenance Framework:
Application of Anylogic Simulation to measure MTTR and Service Availability improvements
Information and communication technology development helped improve maintenance activities from the conventional process to a more data-driven approach[1]. Many applications are implemented in different industry types, such as machine maintenance, which transitioned from conventional time-based maintenance to condition-based maintenance driven by collected data. The knowledge-based method is a data-driven fault diagnosis process that utilizes extensive historical data to establish baseline information without prior known models or data patterns[2]. The application of such a method has increased over time, aiming to improve process reliability through machine learning through sensors and monitoring systems to predict potential complex system issues. FTTH is an example of a complex system that supports point-to-multipoint configuration through a passive optical networks (PON) architecture. The deployment of the FTTH is supported by a network monitoring system (NMS) which aims to provide remote visibility of the system performance, potential network failure, and customer service status. The availability of the NMS increases network reliability, reducing downtime and identifying a potential issue or giving visibility of the current network status [3]. The integration of a monitoring system, fault diagnosis, and model simulation has improved the capability of each operator to shift from the traditional preventive maintenance activity to predictive maintenance, which monitors actual network conditions and provides an advance alert of any degradation or outage while providing recommendations if corrective maintenance is required. The availability of the NMS potentially prevents possible prolonged downtime and equipment failures through anomaly detection, sensor parameter measurements, and identification of abnormal patterns that can trigger early alarms before complaints or during customer calls. The importance of NMS plays a significant role in ensuring the proper resolution of each identified issue. It helps technical individuals and management understand the organizational position, convert these into possible policies, and maximize technological process improvements to enhance customer experience. The study focused on measuring, predicting, and simulating fault management of FTTH in-premise network to manage capacity planning and identify proactive maintenance activities that will affect the Mean Time To Restore by implementing necessary repairs or restoration activities. A theoretical model for broadband service Mean Time to Restore and Service Availability was created as an initial roadmap and further developed through an intelligent-based simulation via AnyLogic software. The formulated simulation tool through AnyLogic has quantified outcomes that can predict the impact of proactive and predictive maintenance to help the Philippine telecommunications sector attain short repair time driven by capacity and improved service availability brought by maintenance initiatives.

PAPER ID: ICTIM & ICFRLE 2022: 014-013
TITLE: Identification of Trends in Automotive Industries based on Text Mining
ABSTRACT:

Understanding the trends of evolution in a technology is essential to make appropriate decisions. This paper aimed at mapping the technological evolution in automotive industries and understanding the main trends through patent data. Thus, the objective of this paper is to provide a structured overview for identifying the trend of patent in four automotive companies by employing text mining techniques. In natural language processing (NLP), text mining is used to determine several features such as segmentations and attributes of data. To achieve the objective, the abstract of patent documents in the period of the last two decades are mined from the DWPI database. To demonstrate the behaviour of selected patent documents, word cloud, co-occurrence networks and correspondence analysis are presented.

PAPER ID: ICTIM & ICFRLE 2022: 018-014
TITLE: Technology and Performance of Maritime Industry in Malaysia
ABSTRACT:
This paper examines the link between technology and the performance of the maritime industry in Malaysia. The paper finds four distinct factors under technology that may influence the performance of the maritime industry, which are management information system functionality, intranet quality, information system integration, and network capability. The methodology of this paper is a discussion of the issues from several past literature reviews. The link between the technology and the performance of the maritime industry discussed in this paper will contribute to the knowledge that is certainly limited in the literature, and the maritime industry will better understand how to improve its technology, thus improving its performance. This paper adapts the Open System Theory (OST) by Bertalanffy (1956) and Katz and Kahn (1978) and will be proposed in the context of the maritime industry in Malaysia. This proposed framework can be used as a benchmark for quality accreditation in the future.

World Conference on Applied Sciences, Engineering and Technology: Clean Energy and Sustainable Environment (WCASET2022)

PAPER ID: WCASET2022: 002-001
TITLE: Techniques and methods for forecasting and modelling solar radiation: a review, a case study, and applications
ABSTRACT:

In this work, several methods/techniques of Artificial Intelligence (AI) -known as data-driven models and Machine Learning (ML) models- from literature have been reviewed and presented. These methods/techniques, which were served to forecast or predict the solar radiation intensity, were used, and applied at many locations worldwide. In these methods/techniques, there are several variables that have been used as inputs, e.g., geographical coordinates, meteorological & climatological variables, and astronomical parameters. These inputs have been used in many cases for deducting which one among them may be more accurate predictors. In addition, for enhancing the quality of AI methods/techniques, several researchers proposed to combine them with methods of Feature Selection (FS) -known also as methods of Input Variable Selection (IVS)-. The hybrid models were constituted, generally, by feature selection method + AI technique + modelling technique. For feature selection techniques, several algorithms are presented, reviewed, and applied to some provided data, e.g., Particle swarm optimization, Genetic algorithm, Discrete Symbiotic Optimization Search, Ant Colony Optimization, Heat Transfer Optimization, Cuckoo algorithm, League Championship Algorithm, Forest Optimization Algorithm, Imperialist Competitive Algorithm, Learning Automata, World Competitive Contest Algorithm, and Intelligent Input Variable Selection. For the modelling techniques, two are reviewed and presented: Least Square Regression method and Gradient descent method. Moreover, a review on most common statistical analysis adopted worldwide by researchers was also done.

PAPER ID: WCASET2022: 003-002
TITLE: Characterization of Carbon Fibre Reinforced Polyphenylene Sulfide Composite Under Interlaminar Shear Strength
ABSTRACT:

The aerospace industry is seeking thermoplastic composites materials due to several advantages over thermoset material and one of them is mechanical properties . Mechanical properties of thermoplastic composite materials are found to be superior compared to thermoset materials. High strength fibre composites parts are made of several plies with different fibre orientation with a designed balanced of lay-up sequence. It is essential to find the strength of the composite to test the laminates and analyze the properties of it to understand whether the failure is the material or the adhesion between plies of the layer in the material. This study provides the understanding of the Interlaminar Shear Strength (ILSS) test of 2 different thickness of 6 and 8 plies Carbon Fibre Reinforced Polyphenylene Sulfide (CF/PPS) according to the testing standard of EN 2563. The results show that 8 plies have higher ILSS properties compared to 6 plies. The fractography of the CF/PPS composite under Scanning Electron Microscope (SEM) shows good agreement with the experimental values which is 8 plies can withstand to shear strength of 79 MPa with maximum load applied was 2.738kN while, 6 plies recorded 75 MPa on shear strength with load of 1.971kN. More damage/cracks on 6 plies specimen compared to 8 plies.

PAPER ID: WCASET2022: 004-003
TITLE: The Best Refrigerant for Any Modern Vapor Compression Refrigeration System: Rational Comparison & Environmental Impact

ABSTRACT:

This paper presents a rational comparative study of different refrigerants commonly used in vapor compression refrigeration systems. The influence of each refrigerant on the performance of the vapor compression cycle, the overall footprint of refrigeration equipment, the refrigeration unit's initial and annual maintenance, cost, and environmental impact will be investigated. The refrigerants investigated in this research are the most used in the refrigeration industry during the past decades and the differences between them have always been the subject of debate and discussion between scientists and refrigeration system experts. This research provides a solid basis for distinguishing between different refrigerants that may lead to the design of the best refrigeration system with the highest efficiency and least environmental impact. This paper has a unique feature where a comparison between four different refrigerants (R22, R134a, R407C and R410A) under the same conditions in the same refrigeration system has been carried out experimentally. Moreover, climate change issues and carbon footprint, the initial and annual maintenance cost of refrigeration system has been investigated. R410A is the most recommended refrigerant for modern refrigeration systems due to its excellent energy performance, high refrigeration effect, low environmental impact with relatively low initial investment and maintenance cost.

PAPER ID: WCASET2022: 005-005
TITLE: Energy Profiling and Potential Energy Saving of a Keropok Lekor Small Industry

ABSTRACT:

Malaysia Statistical Business Register (MSBR) released by the Department of Statistics Malaysia (DOSM) highlighted that the total number of SMEs in Malaysia was 97.2% of the total business establishment in 2020. Keropok lekor is a favorite snack in Malaysia and this small industry blossomed in the area near the ocean fishing industry. This study aimed to conduct an energy profiling study to identify the energy consumption profile, electricity usage analysis, and propose cost-benefit energy conservation measures (ECMs) for a selected keropok lekor small industry in Terengganu, Malaysia. The energy audit starts with a preliminary energy usage analysis by reviewing three years of electricity bills from 2019 to 2021. Then, the field data collection was conducted by measuring the illuminance level, air velocity, and air temperature at the shop area and two manufacturing (manufacturing 1 and 2) spaces. Results of the analysis showed that the freezers and chillers consumed the highest 71.3% of overall electrical usage. Applicable Energy Counter Measures (ECMs) were proposed to the small industry management from no cost to high-cost investment such as energy-saving training programs for the workers, organized and efficient usage of the freezers and chillers, replacing electrical appliances with efficient-energy appliances, retrofitting LED lamps, and installation of solar panels. The cost analysis showed 0.73 years of the pay-back period for LED tubes retrofitting and 6 years for solar panel installation. Overall, the energy profiling study was successfully conducted and applicable ECMs with cost-benefit analysis were also had been proposed to the small industry for effective energy management.

PAPER ID: WCASET2022: 009-007
TITLE: Performance of Savonius turbines with tubercles inspired by humpback whales
ABSTRACT:
Recent studies found that tubercles had been integrated into various applications beyond nature to enhance performance. Therefore, the present work investigates the performance of a Savonius turbine with various tubercle configurations at a wind speed of 7 m/s, which corresponds to a Reynolds number of 148000. The Savonius turbines with tubercle features were initially designed and inspired by the distribution of tubercles on the flippers of humpback whales. However, only the models with the best performance were chosen for fabrication and tested in the wind tunnel. The new turbine designs have 33% of the blade without tubercles, with turbine model 1 having a large tubercle beginning in the midspan and tapering towards the endplates, while turbine model 2 applies the 33% without tubercles in the midspan of the blade. The results demonstrated that turbine model 1 had the highest maximum Cp of 0.19 at the tip speed ratio of 0.78 and indicated that the spanwise location of tubercles in which it is integrated into the turbine is a significant geometric arrangement to improve the performance. The new turbine models designed with tubercles performed significantly better than the baseline model, with 46.15% and 23.08% improvement, respectively. The results provide insights into the implementation of the tubercles concept on a Savonius turbine with a low aspect ratio.

PAPER ID: WCASET2022: 012-008
TITLE: Human Visual System Algorithm for Medical Images Recovery
ABSTRACT:
The human body is such a complicated structure full of fine details, small and big details, some diseases affect the small parts of the body, so a doctor has to use every tool has to diagnose the disease like Lab testing and imaging (Imaging means sending the patient to do X-Ray, MRI, CT scan, etc.). So, it is important to receive a clear image with no noise to reach a clear diagnosis rather than a different diagnosis. Thus, finding a program to find the lost data due to noise is the dream of every physician.

PAPER ID: WCASET2022: 015-010
TITLE: Comparative investigation of MDRZ and RZ modulation techniques at 40Gbps x 32 channels in DWDM communication system
ABSTRACT:
In DWDM Communication system we need to more data rate to transmit one end to another end and more channel multiplex together and transmit via one single mode fiber. In that current scenario of the world to reach high data rate need high efficiency also.

PAPER ID: WCASET2022: 017-011
TITLE: Design of a haptic hand to stimulate by vibration the human nervous system
ABSTRACT:
Mechanical vibration signals are designed. Managing different frequencies seeks to induce predefined virtual sensations in the human being. Five coin vibrators are fixed on each finger and the generated vibration is controlled by one of ARDUINO. A group of programs is developed to create the appropriate signal for a predefined perception. The device is tested on 20 people.

PAPER ID: WCASET2022: 019-013

TITLE: Numerical modeling of cuttings volume fraction in an annular geometry for various drilling conditions

ABSTRACT:

Accumulation of cuttings in the annular geometry of a drilled well may result in an important pressure drop during the circulation of drilling fluid. For that, it is necessary to evaluate the behavior of cuttings volume fraction for various operation conditions that can be encountered in a drilling field to avoid high values of cuttings volume fraction. In this study, the Eulerian model is utilized where a non-Newtonian fluid (power-law model) in a turbulent regime is considered as a primary phase and cuttings, which modeled as solid spheres are considered as a secondary phase. In addition, different parameters were studied for various angular speeds of drill pipe. On the other side, before carrying out simulations, numerical outputs were validated against experimental measurements obtained from a flow loop system. For instance, the results showed that rotation of drill pipe has an essential role in hole cleaning, especially in the lower side of the annulus, however, increasing in rate of penetration (volume fraction of secondary phase injection) has a sight effect on cuttings concentration at an angular speed of 120 rpm.

PAPER ID: WCASET2022: 020-014

TITLE: Effect of Growth Temperature Process on Optical Properties of ZnO Embedded With Graphene Oxide as Photoanode Function

ABSTRACT:

The purpose of this study is to determine the effect of growth temperature on the optical and electrical properties of zinc oxide (ZnO) embedded with graphene oxide (GO) prepared using the simple immersion method. The ZnO/GO were grown at five different temperature (75, 80, 85, 90, 95 oC). The structural properties of the films were investigated using x-ray diffraction (XRD), and the recorded patterns revealed that all of the films had a preferred orientation along the (002) plane, and the crystallinity were enhanced with increasing growth temperature. The UV- visible spectroscopy was used to examine the optical properties, which revealed that the highest transmittance was obtained by the highest growth temperature at 95℃. The electrical properties of ZnO/GO sample were measured using current- voltage (I–V) measurement. As a result, the ZnO/GO sample with a growth temperature of 95°C has higher electrical conductivity, which is around 2.033x10-3 S.cm-1 than other samples that are equally appropriate for use in DSSC.

PAPER ID: WCASET2022: 020-016

TITLE: Structural and Optical Properties of Zinc Oxide Altering With Graphene Oxide on Different Substrate

ABSTRACT:

This study was done to investigate the structural and optical properties of zinc oxide (ZnO) that alter with graphene oxide (GO) deposited on various substrates; glass, silicon, indium tin oxide (ITO) and polyethylene terephthalate (PET) by solution immersion method. The structural properties were studied using x-ray diffraction (XRD) and fourier-transform infrared (FTIR). The optical properties of samples were determined using ultraviolet-visible (UV-VIS) spectroscopy and Raman spectroscopy. The XRD result revealed that all ZnO-GO samples have polycrystalline structure while FTIR showed the presence of C-O, C=O and C-H compounds on all substrates. The highest absorbance showed by ZnO-GO sample which grown on ITO

substrate while the lowest absorbance of ZnO-GO sample that grown on PET substrate. Based on Raman spectrum all samples showed variety in phonon energy when ZnO grown on different substrate.

PAPER ID: WCASET2022: 023-017
TITLE: A Comprehensive Study on Adjustable Height Stand for Temperature Scanner
ABSTRACT:
This project is an innovation from a common stand holder temperature scanner to a user-friendly adjustable stand holder temperature scanner. Thus, this project was innovated to adjustable stand holder temperature scanner that can automatically adjust according to the user's height. This adjustable stand holder temperature scanner uses Ultrasonic sensor to detect the user in front of the adjustable stand holder temperature scanner and detect the maximum height of those users that does not use direct contact to reduce the risk of contact infection. In this study, testing and functionality of this product in real life are the aim of project to complete for better device especially in tool hospitalist.

PAPER ID: WCASET2022: 023-018
TITLE: A Comprehensive Study on IoT Based Energy Monitoring System
ABSTRACT:
The aim of this project is to develop an Internet of Things (IoT) based Energy Monitoring System. Energy consumption has increased drastically around the world. Nowadays, some of the energy management of corporations confront a few circumstances to manage the consumption of energy use in their company. Therefore, it needs a system that can manage energy consumption with good. For the starting of designing an IoT-based Energy Monitoring System, different sensor and calculated AC measurement methods are studied. The development of this system is to integrate each of the sensor, energy measuring device and IoT system into one complete module. The concept of Wireless Sensor Network (WSN) is implemented in this project. The WSN will obtain data information from sensor and send them to the cloud through the IoT network for cloud storage of the ThingSpeak platform. The system contains two input signal which is voltage and current. The device that will transfer the data or information from the energy monitoring device to the cloud storage is the ESP8266 Wi-Fi module. Then, the output will be the energy consumption that has been used according to the real-time data measurement. Lastly, the data that is transmitted to the cloud can be monitored through the mobile application ThingView©. A product features a low-cost energy monitoring system with the Internet of Things (IoT) will be carried out in this project. In conclusion, this system is needed because it can control and manage energy consumption to avoid wastage and can save energy.

PAPER ID: WCASET2022: 023-019
TITLE: Investigation on Water Quality for Farmed Aquatic Species by IoT Monitoring System
ABSTRACT:
The most important medium for optimize fish growth is by using super-intensive aquaculture system is good for water quality. Any changes in water parameters will have an impact on fish growth and will cause death. For the solution to avoid this problem is water quality parameters should be monitored in real time and automatically transmitted to the entrepreneur based on the internet of things (IoT). So that the owner has real-time access to all data. Owner doesn't have to located at the fish cage to monitor the quality of water. The

owner can simply monitor the data at the smartphone and time become more efficient. In this project, water quality monitoring system has been developed that includes temperature, pH, ESP32 and the parameter value display using the Blynk platform. This system can measure real-time water conditions and display parameter values on a smartphone. The test results show that this system can receive and send data to the Blynk application.

PAPER ID: WCASET2022: 027-021
TITLE: DESIGN OF PORTABLE VORTEX BLADELESS WIND TURBINE: THE PRELIMINARY STUDY
ABSTRACT:
The objective of the work is to design an environmentally friendly vortex bladeless wind turbine for residential areas and buildings to aid in the production of a systematic and clean energy supply. The study largely centered on the extensive conception of the vortex technology incorporated with the vortex bladeless wind turbine design. Moreover, it has the ability to accomplish two motions (oscillation and vibration) rather than one single motion found in traditional wind turbines. All designs were taken under the assessment of performance, cost, and portability offered in the functional decomposition and decision matrix leading to the type of generator that should be installed. Through certain filtering stages, two different designs of the bladeless wind turbine were deduced. Each of them has different specifications and features that make it distinct from the other. The first allows two types of movement, which are rotational and vibration whilst the other contains a vortex generator. It is also cheaper than ordinary turbines and has a lower maintenance cost. The generator, battery, and spring affect the performance of the vortex bladeless wind turbine. From the study, it was observed that portability, ease of maintenance, and simple installation are the key advantages that bring vortex bladeless wind turbines to the top.

PAPER ID: WCASET2022: 028-022
TITLE: Numerical Investigation of Interceptor Influenced on The Step Planing Hull
ABSTRACT:
Several studies show that step modification support to high acceleration of the planing hull but created excessive drag dan extremely trim at hump region. To make better performance of step hull is to engage integrated with interceptor. Interceptors are situated at the transom stern of planing hull to control the trim angle and minimize wave-induced motions. This research focuses on the impact of the influence caused by step hull with interceptor on the pressure distribution and influenced to drag, heave and trim of the planing hull. The environment was modelled in the two-degree of freedom condition to simulate trim and heave measurement. This research has been analyzed with Finite Volume Method (FVM) based on RANS (Reynolds-Averaged Navier-Stokes) equation using overset mesh. The turbulent K-ε and VOF (Volume of Fluid) models are used to model the water and air phases. Grid convergence study has been used to estimate the uncertainties caused by grid-spacing and time-step. The numerical approach was verified with the experimental test of Park et al to ensure the accuracy of the CFD in the bare hull condition. The result of drag, trim and heave were calculated and it has been proved that the added interceptor into step hull are very useful in drag reduction and trim control.

PAPER ID: WCASET2022: 029-023

TITLE: Predicting Top Five Cryptocurrency Prices via Linear Structural Time Series (STS) Approach

ABSTRACT:

Predicting cryptocurrency prices are difficult due to dynamic data. At the same time, the hidden market behavior of trend and seasonal components in the history data is also critical as it provides an idea of what the price pattern will be in the future. Hence, this research proposes to model the hidden pattern behavior in terms of component time series instead of removing it via the linear structural time series (STS) model approach. This study focuses on the top five cryptocurrencies relying on the highest market capitalization. From the results obtained, the top five cryptocurrencies have a different trend model, either deterministic or stochastic, which relies on the behavior of data. The linear STS is the best model for predicting three cryptocurrencies' prices for nonstationary and time-varying volatility data behavior. Since the linear STS model can indirectly retain the information of data, it will assist investors and traders in accurately predicting cryptocurrency prices.

PAPER ID: WCASET2022: 031-024

TITLE: Numerical analysis of the residual stresses distribution induced by single shock-laser impact in aluminum alloys 2024-T351

ABSTRACT:

Laser shock peening (LSP) is a new alternative prestressing treatment distinct from conventional shot peening. It generates a surface hardening by the propagation of a shock wave induced by a laser plasma in the surface layer of the material to be treated with the aim of improving the fatigue properties, surface anti-wear or anti-corrosion properties. Currently, the process is the subject of new interest on the part of manufacturers (GE Cie in the USA, Toshiba in Japan), favored by the improvement of laser sources, and the reduction of their cost. The major interest of the numerical simulation of the LSP is to bring a predictive approach allowing the users to optimize the conditions of treatment without going through a long and expensive systematic experimental characterization. In addition, the deterministic character of the processing makes mandatory the use of 3D models to correctly represent the heterogeneity of the residual stress field. This work addresses this issue. We are therefore interested in the problem of determining the gradient and the distribution of residual stresses by the finite element method. First, we introduce the parameters required for the numerical simulation based on the finite element method. As a result, a specimen representative of the structure of the aircraft fuselage based on Aluminum AA2024-T351 was modeled. This thin specimen (of the order of 2 mm) is treated by applying only circular laser impact. One of our main objectives was to describe the fluctuations (or heterogeneities) of the residual stress field induced by a single laser impact. The residual stress profiles obtained numerically show a good agreement with the experimental results. The LSP generates on the part a layer of residual compressive stresses with a thickness that can exceed one millimeter. The stresses are generally maximum at the surface and gradually decrease in depth.

PAPER ID: WCASET2022: 034-025
TITLE: Numerical study of Heat transfer and fluid flow over circular cylinder in 2D cross flow
ABSTRACT:

Among the many experiments which deals with the study of the characteristics of flow. a numerical investigation of air flow cross a circular cylinder is conducted. Variations in flow and thermal characteristics such as the average Nusselt number, local pressure coefficient and drag coefficient are presented around the cylinders for Reynold numbers changing from 100 to 5,000. The tests performed by several steps of solving the incompressible two-dimensional unsteady Navier- Stokes and energy equations. Commercial software package FLUENT is applied to solve the equations. The diameter of the circle is D = 20 mm; the width is 20 times the diameter of the cylinder. The results obtained are compared with data of previous study for Nusselt Number values showed acceptable agreement. The results of the drag coefficient confirm a noticeable decrease in the transition from low values of Reynolds numbers to the high values. also, the pressure effect on the circle during the flow has been displayed and describe.

PAPER ID: WCASET2022: 035-026
TITLE: Water Quality Assessment of Urban River in Kota Kinabalu Sabah, Malaysia.
ABSTRACT:

A study on the river water quality status was conducted along the Inanam River, Kota Kinabalu, Sabah, Malaysia. Sampling stations were selected along the river representing the upstream (S1), the middle stream (S2), and the downstream (S3 and S4) of the Inanam River. This paper aims to investigate the current water quality status through several physicochemical parameters that may significantly impact the water quality of the river. In this study, in-situ and ex-situ analyses were conducted to determine the water quality of the river. Physicochemical parameters included biochemical oxygen demand (BOD), chemical oxygen demand (COD), ammoniacal nitrogen (AN), total suspended solids (TSS), dissolved oxygen (DO), pH, temperature, total suspended solids (TDS), salinity, and conductivity (EC). According to the result obtained from this study, this is classified under Class II and Class III based on the water quality index (WQI). The results revealed that the overall water quality in this river had been impacted by various pollutants, as evidenced by levels of DO, COD, and AN in the water that were significantly within or exceeded category III of the National Water Quality Standard (NWQS) standard, particularly in the downstream section of the river. The river segments near the urban area have the most obvious declines in water quality.

PAPER ID: WCASET2022: 037-027
TITLE: RICH DAD AND POOR DAD: BIOMASS CIRCULARITY SCIENCE EMPATHIZING RUBBER SMALLHOLDERS
ABSTRACT:

Analysis of rubber and rubberwood biomass management revealed an actualized twin-loop circularity arising from the multibillion-dollar export revenue downstream and upstream segments. Despite resembling zero-waste and resource-efficient system, the revenue from natural rubber exports does not translate as the wealth of rubber smallholders, pressing them as the persistent 'poor dad' in the rubber value chain. This study dwells on how to empower the smallholders through high-quality rubber production efficiency to compensate for the nose-diving rubber price. Analysis of the challenges facing the seemingly forced labor

recognized operational costs as the main hindrance to productivity. Mapping the challenges to solutions identified the need for immediate actions and the transformative actionable educational approach for deploying an efficient upstream segment. Access to productive clones, government stringent taxation policy on imported rubber feedstock, and a shift to machine-tapper and portable rubber processors are the immediately actionable solutions. Availing expandable rubber-related education programs for youths in smallholder families is critical to actualize technology-driven, and high-productivity farming for the segment to build back better. Continuous learning is mandatory to innovate, engage in the value chain, and multiply the current twin-loop circularity for the succession of dignified smallholders in sustaining the rubber industry.

PAPER ID: WCASET2022: 038-028
TITLE: Willingness to Donate Smartphone for Education: An Indonesian Context
ABSTRACT:

The increasing number of smartphone users in Indonesia, coupled with the short average usage time of smartphones, has posed a sustainability problem. Smartphone production requires natural resources including rare earth materials and energy, that need to be preserved due to their limited availability and depletion. Circular economy initiatives have become important in the last few decades, and one of them is extending product life by reusing discarded products. On the other hand, triggered by the Covid-19 pandemic, online learning has become an essential part of education. In Indonesia, marginalized communities or low-income societies have limitations in providing online learning tools such as desktop or laptop computers, including smartphones. Therefore, smartphone donation is considered a suitable initiative to help students who need a smartphone to join online learning while at the same time extending the useful life of a smartphone. Using decision tree techniques, we investigate the willingness to donate used smartphones for education in the Indonesian context. The results show that the respondents' willingness-to-donate was influenced by several considerations, which are performance, value (price), type, obsolescence of the used smartphone, and the donators' age. The resulting parameters and predictions could enhance the effectiveness of the donation mechanism.

PAPER ID: WCASET2022: 026-029
TITLE: Carbon Nanotubes (CNTs) Nanofluids Flow and Heat Transfer under MHD Effect over a Moving Surface
ABSTRACT:

The 2D steady flow of CNTs nanofluids and heat transfer over the moving plate through a uniform free stream under the effect of magnetohydrodynamics (MHD) is studied. The movement of plate is presumed in the opposite or same direction. A mathematical modelling that is governed by a set of partial differential equations (PDEs) system subjected to boundary conditions is transformed into a system of nonlinear ordinary equations (ODEs). An attempt at finding the expected outcomes is successfully executed by solving ODEs system using MATLAB bvp4c solver. The effect of various parameters such as magnetic field, CNTs volume friction and moving parameter on velocity and temperature profile, skin friction, Nusselt number and heat transfer rate are investigated numerically. The results are illustrated using graphical and tabular approaches. From the results, the increment of magnetic field into the flow will decrease the skin friction and increase the rate of heat

transfer. Besides that, non-unique solutions are obtained when the plate move in opposite direction.

PAPER ID: WCASET2022: 040-030
TITLE: Evaluation of HACCP Implementation in Food Manufacturing Companies in the Middle Eastern Region.

ABSTRACT:
Introduction: The way that food is produced and distributed has undergone fundamental changes in recent decades particularly in Dubai and Middle Eastern region. The food safety area has become more complex, driven by widespread changes in methods of food production and processing, coupled with rapid increases in global food trade and increased tourism. Consumers today are demanding more meaningful information about food safety and quality. To meet this demand, some companies are engaging third-party audit bodies to provide greater assurance that their products meet quality and safety requirements.
Purpose: The purpose of the study was to evaluate the level of implementation and operation of hazard analysis critical control points (HACCP) and PRPs(Prerequisite Programme) as per the codex alementarious commission protocol of 12 logical steps and codex GHP(Good Hygiene Practices)
Methods: Both qualitative and quantitative analysis techniques of in-depth interviews, observations and review of documents were used in this study to complement each other The triangulation method used in this research was to look at the problems from different angles, Five cluster random samples were collected from the sampling frame of 112 food manufacturing companies of DM FCD(Dubai Municipality Food Control Department) list.
Results: Research identified lower compliance rates of Good Hygiene practices (PRPs) which compromise 37.4%for the sampled factories and31.8% compliance rate for HACCP protocol logical step. A number of barriers to the successful implementation and operation of HACCP and also perceived benefits. Barriers included various aspects like difficulties in identifying hazards, an inadequacy of knowledge.

PAPER ID: WCASET2022: 042-031
TITLE: Design of Smart Walking Shoe for Visually Impaired People

ABSTRACT:
Technology helps disabled people to get things done easier and in the case of visually impaired people, technology surely enables them to communicate to the surrounding environment independently. The purpose of this study is to propose design of smart walking shoe for the visually impaired people that incorporated with multi sensors. The main purpose of the proposed smart walking shoe is to guide the visually impaired people in a smarter way rather than using traditional method of walking stick. The smart walking shoe is proposed to be integrated with components such as moisture sensor, ultrasonic sensors, button, DF Player and speaker and Agile method will be used in the development process that involves Brainstorm, Design, Development, Quality Assurance and Deployment phase. The pre-evaluation testing shows that the smart walking shoe is shown to be effective as guiding tool to the visually impaired people to navigate independently. The future studies will be conducted by development and tested in actual environments.

PAPER ID: WCASET2022: 044-032
TITLE: Investigation of Production Performance of a Shale Gas Horizontal Well Using a Fully Coupled Flow and Geomechanics Modeling
ABSTRACT:

Shale formations are well-known for being sensitive to any in-situ stress changes. Therefore, such formations cannot be numerically studied using conventional petroleum reservoir simulators, which work under the assumption of constant rock compressibility. Due to the stress-sensitive nature of the shale formations, using constant rock compressibility in reservoir simulators will not accurately capture the pressure diffusion in the reservoir; hence the production profile would have a higher error margin. In order to accurately account for such a phenomenon numerically, the mechanical rock properties must be included in the reservoir flow model. Consequently, fluid flow coupling with geomechanics has shown rapid attention with the increased interest in hydrocarbon recovery from shale formations. Such an approach is important for shale numerical studies and any type of energy storage modeling (i.e., CO_2 and hydrogen storage). Usually, when flow coupling with geomechanics is studied for shale formations that require hydraulic fracturing stimulation, the fluid, and the stimulated reservoir petrophysical properties are overlooked. This paper aims to present an investigation of the effect of the fluid and reservoir petrophysical properties effect on the performance of a gas-producing well. In addition, the results from the cases when geomechanics is coupled and decoupled with the reservoir flow simulation are compared. The modeling was conducted using the Finite Element Method, and FEniCS Project was used to implement the set of partial differential governing equations. First, the model was validated against Terzaghi's consolidation theory analytical solution. After that, a history matching for the production rate was performed using field production rate data from Barnett Shale. Then a sensitivity analysis was carried out for the Stimulated Reservoir Volume (SRV) Permeability, Fracture conductivity, SRV porosity, and gas viscosity. Next, the sensitivity analysis was conducted for both the coupled and decoupled cases. Finally, the sensitivity analysis results were compared between the coupled and decoupled cases. The coupled modeling seems to provide a more accurate and realistic approximation of the gas production profile.

PAPER ID: WCASET2022: 032-033
TITLE: A Robust Location Model Framework For Mixed Variables Classification With Outliers
ABSTRACT:

Location model (LM) is purposely designed to deal with mixtures of binary and continuous variables simultaneously. The LM acts as a rule to distinguish groups of objects based on information obtained from the continuous variables, subjected to multinomial cells created by the binary variables. The drawback of the LM is that, it fails to classify objects correctly when data are contaminated with outliers. This will lead to high misclassification rate. Therefore, this study intends to develop a robust statistical framework to tackle outliers in classification problems of mixed variables. The newly developed framework is based on median estimator, which is paired with robust covariance matrix, producing a robust LM known as median LM (LMmed). The new framework of the LM is expected to produce better approach compared to the existing models when data consist of mixed variables with outliers.

PAPER ID: WCASET2022: 022-034

TITLE: Effect of Graded Mesh Number on the Solution of Convection-Diffusion Flow Problem with Quadratic Source

ABSTRACT:

Convection-diffusion phenomena are fundamentally modeled in a variety of engineering fields and physical sciences. A suitable meshing strategy is needed in computational fluid dynamics to solve model problems numerically. Unintentional implementation of the approach could lead to subpar solutions such as erroneous oscillations, over- or under-predictions, and excessive computing time. This paper highlights the significance of the influence of mesh structure on the solution of convection-diffusion flow problem with quadratic source for flow parameters of interest. Particularly, it presents the accuracy of the solution of the flow problem at low Peclet number with respect to graded mesh number, where the expansion factor used is based on an established linear logarithmic model involving Peclet number derived in previous works. The problem is solved by assigning several mesh intervals to graded mesh against each Peclet number of interest. Based on the values of the interval and Peclet number, 16 test cases are considered. Quantitative results lead to orders of accuracy of the solution of the flow problem. The effect of graded mesh number on the accuracy thus serves as a reference for a more structured decision-making and improves the heuristic process in choosing the computational domain mesh with expected order of accuracy for the numerical solution of the problem particularly in the calculation of scalar concentration. The orders of accuracy confirm the profiles of concentration.

PAPER ID: WCASET2022: 046-035

TITLE: IMPROVED WASTE HEAT RECOVERY AND PERFORMANCE OF ORGANIC RANKINE CYCLE ANALYSIS FOR EXHAUST GAS FROM A MARINE DIESEL ENGINE USING BIOFUEL FROM ALGAE

ABSTRACT:

Introduction-Marine diesel engines are commonly used as a propulsion system in ships. The waste heat generated from marine diesel engines is one of the key disadvantages of this system. Objectives- This study aims to improve the recovery of waste heat generation. It presents the performance analysis of Organic Rankine Cycle (ORC) for exhaust gas in a marine diesel engine using different types of biofuels production methods from selected microalgae via mathematical modelling. Method-The microalgae are from species of Synechococcus PCC 7002, Nannochloropsis oculata sp, Chlorella protothecoides, and Dunaliella sp. A marine engine with an exhaust gas of 9086.61 kg-h-1 is taken as a case study. Results-While the conventional diesel engine has a performance efficiency of 30-40% with a power output of 35-200K, this study has indicated that the marine diesel engine in the ORC via biofuel from algae shows higher performance at approximately 51% with a net power output of approximately 160kW obtained for each biofuel. Later, the thermal efficiency of the ORC system with exhaust gas from the marine diesel engine as waste heat recovery is improved to 61% with a net power output of approximately 353kW after the heat integration. Biodiesel presents the highest mass flow rate (1.12 kg-s-1) compared to others. Conclusion-This study proved that biofuel from microalgae can achieve the highest performance in the ORC system with the lowest mass flow rate of biofuel compared to those in conventional fuel.

PAPER ID: WCASET2022: 045-036
TITLE: Monitoring Elastic Wave-based Enhanced Oil Recovery using Seismic Waves
ABSTRACT:

Increasing water volumes in matured oil reservoirs are highly difficult and can drastically reduce total oil recovery due to reservoir formation heterogeneity. In comparison to conventional EOR methods, the usage of seismic waves can be considered as a low-cost and environmentally friendly EOR approach. The purpose of this research is to investigate the potential of seismic displacement to generate an optimum driving energy for moving the residual oil in a matured oil reservoir. In order to explore this EOR and assess the impact of both rock parameters and wave conditions on the final recovery, a computational simulator has been developed. The validity of the governing models was tested after they were numerically evaluated via the finite difference (FE) method. The findings are quite positive and demonstrate that using seismic waves significantly improves oil recovery. Additionally, our research indicates that this stimulation technique is more effective at lower frequencies and in heterogeneous oil reservoirs.

PAPER ID: WCASET2022: 047-037
TITLE: Drivers, Enablers, Barriers, and Technologies (DEBT) For Low-Energy Public Housing Delivery in Nigeria
ABSTRACT:

Nigeria, as a developing country, has vast and varied energy resources, both renewable and non-renewable. In spite of these resources, an estimated 75% of her population of close to 200 million faces serious energy poverty problems due to shortfalls in energy supply compared to its energy demand. Consequently, a large portion of the population lives without access to adequate electricity. Hence, the country encounters unprecedented struggles with incessant power outages, unemployment, a low human development index (HDI), and poverty. This paper examines the drivers, enablers, barriers, and technological considerations for low-energy integration in the provision of housing for Nigeria's huge population. The objective is to harness the varied energy resources to aid in the delivery of environmentally friendly and sustainable housing in a developing economy such as Nigeria. This is critical in light of rising energy costs, environmental degradation, global warming, greenhouse gas emissions, and energy consumption. Reduced energy use in housing is highlighted as a critical issue in environmental management. The paper highlighted several factors that need to be appropriately addressed for a paradigm shift to low-energy integration to achieve sustainable housing delivery in Nigeria. It recommends the application of energy conservation measures in mass housing construction, the full exploitation and promotion of renewable energy resources, and energy efficiency practices in housing provision, among others. The paper concludes that these should be given adequate attention during planning, designing, and delivering sustainable housing.

PAPER ID: WCASET2022: 048-038
TITLE: Tribological Characterisation Of Biofluid Using Fourball Experiment
ABSTRACT:

This paper study about the tribological characterisation of biofluid that used plant-based oil which namely sunflower oil and olive oil that been blends with hyaluronic acid as an additive. Plant-based oil is a type fluid that not be harmful to human and the hyaluronic acid helps the based fluid in absorption shock and distribution of forces. This project aims to measure the performance of this biofluid acts as an artificial synovial fluid in term of its coefficient of friction, frictional torque and the wear scar diameter produced. There are three different composition volumes of hyaluronic acid going to be used which are 0%, 5% and 10% in the fluid sample. This sample of biofluid going to be tested by using four ball tribological testing under one of the conditions which was wear preventive condition to obtain the coefficient of friction and frictional torque for the biofluid while by using the 3D Surface Measurement Systems was to measure the wear scar diameter produced at the ball bearings. The result that been acquired for this study which are the average coefficient of friction and frictional torque were directly proportional to the volume composition of additives. However, for the average wear scar diameter, it depends on the suitability of volume additives been added. Pure Sunflower oil has lowest coefficient of friction which is 0.065940. While, for average wear scar diameter, Olive oil with 10% hyaluronic acid recorded the lowest value which is 0.64828mm. It shows that pure plant-based oil having the best lubricant ability which is producing lower coefficient of friction and frictional torque compared to it going to be blend with hyaluronic acid. This result of this project might give benefits to the medical engineering nowadays that related to the case that need the usage of artificial synovial fluid.

PAPER ID: WCASET2022: 049-039
TITLE: On LSTM Inefficiency in Long-Term Dependencies Regression Problems
ABSTRACT:

Recurrent neural networks (RNNs) are an excellent fit for regression problems where sequential data are the norm due to the fact that their recurrent internal structure can analyze and process this data for a long time. However, RNNs are prone to the phenomenal vanishing gradient problem that causes the network to stop learning and give poor prediction accuracy, especially in long-term dependencies. Originally, gated units such as long short-term memory (LSTM) and gated recurrent unit (GRU) were created to address this problem. However, the vanishing gradient was and still is an unsolved problem, even in gated units. The vanishing gradient problem occurs during the backpropagation process when the recurrent network weights tend to be vanishingly smaller and smaller and hinder the network from learning the correlation between temporally distant events (long-term dependencies), which results in slow or no network convergence. This study aims to provide a comprehensive analysis of LSTM networks with a particular emphasis on the inefficiency in long-term dependencies convergence because of the vanishing gradient problem. A case study of NASA's turbofan engine degradation will be examined, and the survived LSTM techniques will be critically analyzed.

PAPER ID: WCASET2022: 053-040
TITLE: THE ECONOMIC ASSESSMENT OF HOMES ROOFTOP PV INSTALLATIONS IN MALAYSIA
ABSTRACT:

The Feed-in-Tariff (FiT) programme was launched under the Malaysian Renewable Energy Act in 2011, followed by the implementation of Net Energy Metering in (NEM) 2016 by the Sustainable Energy Development Authority (SEDA) to accelerate investment in solar photovoltaic (PV) installations in Malaysia, including to individual homeowners. Under the NEM2.0 Scheme, introduced in January 2019, followed by NEM 3.0 in January 2021, homeowners could benefit more economically by installing solar photovoltaic on home rooftops where the energy generated by the PV systems can be sold to the electricity grid on one-on-one offset basis, significantly reducing the return-on-investment (ROI) period. Proper strategies and suitable approaches are necessary to extract the best economic return which include the selection of optimum system power capacity which match the power consumption of various types of households in Malaysia inline with the energy tariff provided by Tenaga Nasional Berhad (TNB). The techno-economic analysis using PVsyst software to estimate the energy generation based on the parameters proposed which include the geographical location. was conducted. The ROI payback period of between 6 to 7 years could be realized with the correct sizing of the PV systems. This information could inspire homeowners to install a rooftop PV system under the currently available NEM 3.0, where the roll-over of credit will not be allowed after 10 years upon solar PV installation, first to reduce their electricity bills and to contribute to the Nation's inspiration of the Net Carbon Zero target by 2050.

PAPER ID: WCASET2022: 054-041
TITLE: Investigation Volumetric Characteristic on Skid Number with Difference Gradation of Aggregate
ABSTRACT:

The condition of the road surface is one of the most important aspects of the pavement surface that can affect the condition of its skid resistance. The analysis is sourced from secondary data and primary data. Secondary data were obtained from previous studies with different mixed variations but had a continuous gradation. In comparison, the primary data is obtained with a mixture of different gradations, namely gap, and continuous gradations. Data were taken at low and high temperatures. Analysis was carried out on each volumetric and stability value against skid resistance, namely on the effect of the gradation arrangement on the value of skid resistance at low and high temperatures, the effect of volumetric value on the value of skid resistance which is influenced by aggregate gradation at low and high temperatures and the effect of stability on skid resistance which is affected by differences in aggregate gradation at low and high temperatures.

PAPER ID: WCASET2022: 036-042
TITLE: Indoor Environmental Quality in Micro & Nanoelectronics Laboratories at IMEN Research Complex, UKM
ABSTRACT:

Indoor air quality studies in universities are very importance especially for those who work in laboratories. The study was performed to determine the comforts conditions of Micro & Nanoelectronics laboratories in National University of Malaysia (UKM). Eight laboratories were selected as investigations sites The purpose of this study is to measure CO_2,

formaldehyde CH2O, total volatile organic compound TVOC, PM2.5, indoor temperature, and relative humidity were conducted at six points indoor air quality. Thermal comfort evaluation for lab 1,2,3,4,5 and 7 show the average temperature reading below the range of DOSH and Ashrae with an average reading from 20.45 to 22.47 °C. While lab 6 and 8 show an average reading in the acceptable range of 23.21 °C and 23.75 °C, respectively. Five laboratories were exceeding the upper limit of RH (30–60%) but only three laboratories still within the maximum level mentioned by Ashrae standard. RH exceeded the ICOP limit (60%) at 70.3 %, 63.7%, 75.4%, 60.6 %, 62.8% and 65.5%, at Lab 1, 2,3,6,7 and 8, respectively, whereas temperature exceeded it (22.5- 26 °C) at 20.45, 22.2, 21.9, 22.43, 21.58 and 22.47 at Lab 1, 2, 3, 4, 5, 7 and 8, respectively. While the average air velocities for all laboratories is 0.17, 0.13, 0.10, 0.16, 0.12, 0.14, 0.15 and 0.09 ms-1, respectively. All the data that has been measured is found to be below the maximum level as recommended by the ASHRAE Standard 55 (2004) of 0.25 ms-1. The indoor air contaminants (CO, CHOH, TVOC, PM2.5, and PM10) met the standard level of ICOP and DOSH except for CHOH approaches ICOP (0.1ppm) at 0.1 and 0.09, at Point 9 and Point 10 for laboratory 3 compared to other laboratories where the concentration obtained is lower. The highest laboratories average concentration of PM2.5 was 13 μg/m3 determined in Lab 3, which was the most actively utilized one because the research activity in this laboratory was working more intensively than the others. As in the study of PM2.5, the highest average PM10 concentration was evaluated in Lab 3 as 36 μg/m3. Based on observations and studies, we find that fresh outdoor air with a complete and good purifier/filter should be used to reduce the concentration of indoor pollutants

PAPER ID: WCASET2022: 050-043
TITLE: PHOTODEGRADATION MECHANISM OF BIOPOLYMER BLENDED WITH HIGH DENSITY POLYETHYLENE (HDPE)

ABSTRACT:
Synthetic polymer such as polyethylene is used widely in industry, agricultures and daily life owing to its relatively low price and good mechanical and processing properties. These synthetic polymers are, however, often not environmentally friendly because they typically do not undergo the process of biodegradation and, of course, are dependent on a limited petroleum resource. Therefore, concerns on environmental problems caused using of non-degradable petrochemical polymers have caused an increasing interest in degradable polymers especially biopolymers from crop plants. Biopolymers have much potential and several advantages, but they possess some drawbacks as well. Despite increasing production capacity, they are still quite expensive compared to commodity polymers and their properties are also often inferior, or at least do not correspond to the expectation of converters or users. This concept has led to the development blending of biopolymer and High-Density Polyethylene (HDPE). In this study, 30% Biopolymer (BP) was blended with HDPE known as BPL30 were prepared by melt-mixing process by using Brabender Plastograph® EC machine. BPL30 then were exposed in UV weatherometer by using UV Lamp Test Chamber Model HD-703 at different UV exposure, which is 250h, 500h, 750h,1000h, 2000h, and 3000h. Physical properties and photodegradation mechanism development of BPL30 was examined by means of Fourier Transform Infrared (FTIR) at different UV exposure. The photodegradation mechanism of BPL30 shows relationship with the Norrish type I and Norrish type II reaction as indicated the possibilities of blended polymer degradation process was occurred.

PAPER ID: WCASET2022: 056-044
TITLE: Approximate Analytical Solution for Time-Fractional Nonlinear Telegraph Equations with Source Term
ABSTRACT:

In this research, the time-fractional nonlinear telegraph equations (TFNLTEs) have been considered, and a method called Multistep Modified Reduced Differential Transform Method (MMRDTM) is proposed to solve the equation. The nonlinear term in TFNLTEs is substituted with corresponding Adomian polynomials before applying the multistep technique. As a result, we offer methods for solving TFNLTEs in a more simple and easy manner. Furthermore, the solution can be approximated more correctly over an extended period. To demonstrate the MMRDTM's capabilities and accuracies, we analyzed some TFNLTEs and presented the features of the solutions in graphs and tabular representations. From the findings, the MMRDTM shows highly accurate or precise solutions for these types of equations.

PAPER ID: WCASET2022: 059-046
TITLE: Analytical Hierarchy Process and Failure Mode and Effect Analysis on HVAC Semi-Hermetic Compressor Maintenance Strategy
ABSTRACT:

The article paper presents a strategic tool used in maintenance strategy deployment using failure mode and effect analysis method in oil and gas semi hermetic compressor perspective. This research aims to study and formulate framework of maintenance strategy using Analytical Hierarchical Process and Failure Mode and Effect Analysis of HVAC semi hermetic compressor used at the offshore oil platform. The case study has been conducted systematically at a company involved in maintenance activities at regular basis servicing HVAC equipment and parts which in this case focusing on Semi Hermetic Compressors at case studies taken from two companies, both involved in oil and gas production. The ranking of severity associated with Risk Priority Number in Failure Mode Effect Analysis table for this case study is obtained from assessment on maintenance history report lodged on Semi Hermetic Compressor serviced by the company. The severity assessment also studied based on Pareto Analysis on occurrence from maintenance history report. Based on the Failure Mode and Effect Analysis (FMEA) analysis, recommendations are made for semi hermetic compressor for maintenance strategy propositions to improve lifetime and reliability as FMEA output being used as input for synthesize using multi criteria method Analytical Hierarchical Process.

PAPER ID: WCASET2022: 062-047
TITLE: EARLY WARNING SYSTEM FOR FIRE CATCHER IN RAIN FOREST OF SUMATERA USING THERMAL SPOTS
ABSTRACT:

In order to clear agricultural land in large tropical forests, it is usually very difficult to control because it requires no small amount of money for farmers. The burning method of tropical forest land is a cheap way for farmers to start farming and saves energy. Unfortunately, this method can increase the impact on health and environmental damage. There are several researches on burning forest land for agriculture but there are still many weaknesses and shortcomings in the application of the applied method. Therefore, a model was designed to

detect and reduce the weaknesses and shortcomings of each method applied in optimizing the detection and reduction of error rates in forest burning that can cause forest fires using the 4.0 technology method.In designing of the Early Warning System Model for Fire Catcher in the Rain forest of Jambi, Sumatra, the methods used are literature study, analysis method with hotspots information system (hotspots) and Earth data, NASA. The analytical method in the form of action research is intended to examine the problems faced by the Forestry Service of the Province of Sumatra and the tropical forests of Sumatra. Forestry Service Unit in Sumatra Province as a sample. The design method is used to design a new application system based on data taken from interviews with the forestry service in the form of Intellectual Property Rights that can provide solutions to problem identification.

In designing the Early Warning System Model for Fire Catcher in the Rain forest of Jambi, Sumatra as the outcome of the first year research that the methods used are literature study, analysis method with hotspot information system and Earth data, NASA. The design of the Intellectual Property Rights Model uses PHP, MySQL. The result to be achieved is the success of the early warning system model to detect forest fires and also the widespread publication in Indonesia in the first year of this research.

PAPER ID: WCASET2022: 061-048
TITLE: CORONAVIRUS (COVID-19) IMPACTS ON MALAYSIAN FISHERIES SECTORS: LESSON LEARNED FROM THE MOVEMENT CONTROL ORDER (MCO)
ABSTRACT:
COVID-19 has a significant impact on the fishery industry, economy, and food supply. The government of Malaysia imposes a Movement Control Order (MCO) to curb the spread of COVID-19 infection. Although the MCO implementation has benefits in terms of public health, it has affected the fishery industry and the livelihood of coastal communities in Malaysia. This study aimed to identify the impact of the COVID-19 pandemic on the fishery industry and their livelihoods during that period of pain. Qualitative research and thematic analysis were employed to seek deeper information on the real situation that retards the fishing activities to the opt stage. COVID-19 has already revealed gaps in health care, the economy, and food systems. The findings obtained can provide recommendations to the government to provide initiatives to fishermen to help them maintain and improve their livelihood. However, this study has limitations as the number of respondents is relatively small due to the restrictions of movement allowed by the government. Future studies could be further enhanced in terms of the impact of COVID-19 after movement restrictions have been loosened and could use a quantitative approach to obtain significant data.

PAPER ID: WCASET2022: 069-049
TITLE: Resistance Evaluation for the Submerged Glider System using CFD Modelling
ABSTRACT:
The underwater gliders are type of autonomous underwater vehicles which are in their way to be used instead of traditional propellers or thrusters. They are used as submerged gliders or as a part connected to floating hull which is propelled by it. The underwater system depends on different number of hydrofoils (underwater wings) that allow it to glide forward while descending through the water. In this paper, a method is focused on the mesh generation to predict calm water resistance for the submerged glider system while considering the profile and the maximum rotating angle of the wings and rudder.

Flow around submerged wing system model has been calculated at different Froude numbers ranging from 0.1 to 0.4. The grid generator GAMBIT is established for meshing the computational domain with structured hexahedral and unstructured tetrahedral grid. Simulations are carried out using commercial CFD code ANSYS Fluent 19 to calculate calm water resistance of the submerged glider system with different number of hydrofoils. The results conclude that the cambered plate and the hydrofoil NACA0012 can be practically applied in the design of the rudder and the wings at 15o AOA from the resistance point of view. Also, this investigation introduces a new application for CFD calculations in estimating the resistance of the submerged glider system

PAPER ID: WCASET2022: 071-050
TITLE: ECONOMICAL ASPECT OF TRUSS DESIGN THROUGH GEOMETRY CONFIGURATION
ABSTRACT:

Truss structures are exceedingly common in engineering applications, including bridges, tower, in building, and numerous mechanical applications. Various studies concluded that truss frame uses the least steel weight compared to other structural system. Most studies on truss frame design optimization focused mainly on minimal weight design and other factors such as constructability, ease of fabrication, steel wastages, and optimal geometry design parameter was not considered during the design optimization. There is no clear guidance on the aspect of determining the economical concept of truss frame geometry as the recommended value range such as the span to depth ratio, truss frame typology and diagonal angle is wide. Parametric studies were conducted to investigate the truss frame economical aspect by taking into consideration the truss frame typology, truss frame span to depth ratio and diagonal angle to determine the optimal geometry configuration of truss frame. The outcome of the study is to the provide a structured framework to determine the optimal truss frame geometry. Based on the results obtained in this study, the differences in the chords members internal forces generated between the various truss typology was not significant that may cause significant weight difference. Warren truss provide a better option if taking into consideration constructability factor. The truss span to depth ratio proposed was much narrower as compared to the proposal by various literature The study also indicated that at certain range of span to depth ratio, the member weight is the same and no significant increase in member weight.

PAPER ID: WCASET2022: 071-051
TITLE: Parametric Study on Built-up Plate Girder to Eurocode 3 with Various Beam Span and Steel Grade
ABSTRACT:

This paper presents a research study about the parametric study on built-up plate girders with various steel grades and beam spans and studies the economic aspect of built-up plate girders with truss girders. This is because commonly the plate girder is designed to carry heavy load over 20 m span length and different span lengths of the girders will influence the design of plate girders and their self-weight based on the steel grades and span lengths. Therefore, the research study is carried out and the results are obtained by utilizing Microsoft Excel Spreadsheet to determine the final detail dimensions and the self-weight of the plate girder structure which is based on the constant uniformly distributed loading acting on the variations of span length and steel grades in order to choose the cost-saving structure. Plate girders are I-shaped cross sections with symmetrical flanges. However, the

depth of the plate girder is fixed as one-twentieth of the span length and allocated to the design requirements. Bending moment resistance, shear buckling resistance for the flanges and web and the torsional buckling and buckling capacity of the stiffeners are checked through Eurocode 3. In order to evaluate the economic aspect based on the girders' weight, parametric studies were carried out and the results obtained were compared with the truss girder. After that, the comparative studies of the self-weight of the plate girders and the truss girder are carried out in order to study the more economical girder structure in terms of the weight only.

PAPER ID: WCASET2022: 072-052
TITLE: HYDROGEN PRODUCTION PHOTOCATALICALLY BY PD-SUPPORTED TIO2 IN THE PRESENCE OF AQUEOUS OXALIC ACID
ABSTRACT:

Palladium nanoparticles were supported on mixed mixture of 75 wt % anatase and 25 wt % rutile titanium oxide to create holes on the surface of titanium oxide and electrons on the surface of metal electrodes. The effects of different parameters were investigated namely, oxalic acid wt %, pH, Temperature, Irradiation time, and NaCl wt %. The formed particles were characterized by X-ray diffraction, high resolution transmission electron microscopy (TEM), scanning electron microscopy (SEM), X-ray photoelectron spectroscopy and diffuse reflectance UV-V is spectroscopy and nitrogen adsorption–desorption isotherms (BET). Hydrogen evolution was monitored by sampling at different intervals and measured using gas chromatography. Optimum conditions to obtain the highest hydrogen yields were; oxalic acid 2 wt % (2229 μmol g-1), pH 2.2 (2229 μmol g-1), Temperature 50 oC (2180 μmol g-1) and NaCl 1 wt % (3530 μmol g-1). No decreasing was observed when long term experiment was evaluated (154 hrs). This could be attributed to the fact when TiO_2 is irradiated with light having a wavelength of 380 nm or less, a pair of electron holes is formed. Using the electrons, Pd ions are reduced and precipitated on TiO_2. At this time, if Pd is reduced and precipitated on TiO_2, it is considered that the electrons photogenerated by TiO_2 move onto Pd, suppress the recombination of electrons and holes, and promote the hydrogen production reaction in other words photogeneration can proceed as long as there is irradiation.

PAPER ID: WCASET2022: 072-053
TITLE: EVALUATION OF WATER RIVERS QUALITY IN TERENGANU STATE, MALAYSIA
ABSTRACT:

Terengganu especially in Kemaman, Dungun areas has recently seen tremendous and growing growth especially in the industrial sector and other areas such as; aquaculture and agriculture. Due to this rapid growth, significant impacts of heavy metals and other contaminants such as hydrocarbons, nitrogen compounds and phosphorus can occur as these pollutants represent pollutants. major anthropogenic contamination of estuarine and coastal marine ecosystems. To highlight this issue, it is well known that most living organisms require small amounts of essential metals such as Fe, Mn, Cu and Zn for essential processes such as growth. However, all of these metals will cause harm if the standard limit is exceeded. Non-essential metals such as Cd, Pb, Ni and Cr are toxic even at relatively low concentrations and are not essential for metabolic activities. Cd can be carcinogenic to humans, Pb can damage blood circulation, and too much Zn absorption can cause electrolyte imbalance and coma. Therefore, studying the water quality of the rivers available

in Terengganu will help society to ensure safe and prosperous use of water resources. Based on the mentioned issue, the analysis of rivers in Terengganu state has become very important to know whether these rivers are safe or polluted. In case of contamination, treatment methods can be suggested. One of the proposed solutions is to use fly ash from the palm oil industry, which can be used as an adsorbent after treatment. Based on the zero-emissions concept, this will help utilize the huge amount of fly ash generated by the palm oil industry while addressing river pollution. Sampling was carried out from four different locations in Terengganu as will be discussed where different industries are located. Results and findings will be discussed during this conference.

PAPER ID: WCASET2022: 073-054
TITLE: Properties Test on B20 Palm-Methyl Ester Biodiesel Added with Oxide Nanoparticle Towards Green Marine Fuels
ABSTRACT:

Demand for low carbon emissions in the shipping sector has prompted alternative energy sources to reduce dependence on diesel petroleum for day-to-day operations. Biodiesel fuel has been identified as one of the alternative energy sources that can be used in marine engines. Biodiesel is a plant-based fuel, environmentally friendly, renewable, non-toxic and oxygenated. Despite having many advantages, it nevertheless contributes to a slight reduction in engine power due to its low energy content compared to diesel fuel. Therefore, this study aims to improve the characteristics of biodiesel fuel by using three different types of nanoparticle additives. Nine test samples were prepared by blending B20 palm biodiesel fuel with aluminum oxide (Al_2O_3), silicon dioxide (SiO_2) and titanium dioxide (TiO_2) nanoparticle by different concentrations of 50ppm, 100ppm and 150ppm. Several series of fuel property tests were performed on the samples including density, viscosity, calorific value, scanning electron microscope (SEM) and X-ray diffraction (XRD). The test results showed that, the caloric value of B20 biodiesel fuel was increased from 44747 J/g to 45122 J/g, 45090 J/g and 45110 J/g with the addition of nanoparticle Al_2O_3, SiO_2 and TiO_2 respectively. The viscosity and density properties have also improved with the highest values found on the SiO_2 blend of 3.7792 mm2/s and 820.36 kg/m3. The morphology study revealed that the structure of nanoparticles is in an amorphous state which is expected to contribute a large contact area, good stability, good catalytic and high combustion rate of blend fuel. All these advantages are expected to improve the combustion of marine diesel engines and further reduce the emission of harmful gases. In further studies, these samples will be tested in marine engines to determine their effect on engine performance, emission and combustion characteristics.

PAPER ID: WCASET2022: 051-055
TITLE: Experimental estimation of temperature recovery factor of turbulent gas flow in microtubes
ABSTRACT:

Development of a non-invasive prediction method of gas temperature and velocity in a microdevice is expected. In this paper, a temperature recovery factor defined as the ratio of the actual temperature rise at the wall to the maximum possible temperature rise were estimated from experimentally measured wall temperatures and pressures to determine the velocity and temperature of gas in thermally insulated microtube. The experiments were carried out using two pairs of two stainless steel microtubes with D=528.4 and 754.2

m. One was tested for measurements of local pressures to obtain local Mach numbers and bulk temperatures. And the other was tested for measurements of local wall temperatures and was through in a vacuum chamber kept at below 5kPa to prevent heat transfer from the surroundings. The heat transfer coefficients on the microtube wall in the chamber were also obtained. The stagnation pressure with the atmospheric back pressure was chosen in such a way that the outlet flow reached sufficiently choked. Local total and bulk temperatures were obtained with total and static enthalpies determined with the measured stagnation & local pressures, stagnation temperatures, mass flow rates by real gas manner. To estimate the temperature recovery factor, the measured wall temperature and the obtained total temperature were normalized by bulk temperature and represented as Mach numbers. The present estimated temperature recovery factor was compared with numerical and experimental ones obtained with the assumption of an ideal gas. The effect of small changes in the value of the temperature recovery factor on predicted bulk and wall temperatures was also quantitatively discussed.

PAPER ID: WCASET2022: 076-056
TITLE: The Effect of Different Waste Material Binders in Relation to Khaya Senegalensis Solid Fuel Pellet Quality
ABSTRACT:
Fuel pellets are an attractive renewable energy sources derived from biomass sources thanks to the uniformity and ease of handling. However, raw biomass and waste material binders has several drawbacks which include poor physical properties, particularly low density and compositional heterogeneity, which restrict their wider use as a general source of energy. Besides, attributable to the low energy density, low bulk density and uneven shape and size of raw biomass, it is very difficult to store and transport biomass in its original form, which decreases transport efficiency. This study investigated the effect of waste material binders (rice husk, corn cob, and sugarcane bagasse) on the mechanical and thermal properties of Khaya Senagalensis pellets. The mechanical and thermal properties were performed according to ASTM standard. Waste material binders have affected pellet quality such density, bulk density, moisture content, durability, compressive strength, shatter index, water resistance, ash content, volatile matter, fixed carbon and calorific value. From the analysis, sugarcane bagasse as a binder shows the most quality pellet in mechanical properties. Sugarcane bagasse produce the highest density ($0.967g/cm^3$), bulk density (0.4094), durability (99.71%), shatter index (98.85%), water resistance (98.35%) including thermal properties which are the highest volatile matter (94.71%) and the lowest ash content (1.71%). In a nutshell, sugarcane bagasse is a good binder that give positive impact to the K.senegalensis pellets in term of storage and transportation compared to corn cob and rice husk binder.

PAPER ID: WCASET2022: 048-057
TITLE: Application Of Response Surface Methodology Experimental Design to Optimize Tribological Lubrication Characteristics
ABSTRACT:
Total Knee Replacement (TKR) has become a standard operation for patients with joint disorders. Despite the fact that the number of procedures is increasing all the time, the short service life of implants remains a persistent concern for researchers. Understanding lubrication may aid in explaining tribological processes that lead to replacements that last

well into the third decade of service. Likewise, wear and friction in total knee replacement (TKR) components are among the most common causes of implant failure. As a result, this study will evaluate the feasibility of using the polymer Poly Lactic Acid (PLA) for cartilage replacement in Total Knee Replacement (TKR) using plant-based oils as lubricants. Furthermore, the modifier will be added to plant-based oils as an additive to make them analogous to human bodily fluids. The present paper is applying the Box-Behnken design to optimize the performance and mechanical responses of bio-lubricants toward Poly Lactic Acid (PLA) as a tibial insert for cartilage replacement in Total Knee Replacement (TKR). The main objective of this paper is to develop an optimized method for the selection of plant-based oil parameters using Response Surface Methodology (RSM). A three-level three-factor Box-Behnken design (BBD) was used to investigate the interactions between the essential factors comprising load (45 kg to 90 kg), speed (60 rpm, 90 rpm and 360 rpm), and concentration (0ml, 5ml and 10ml) of bio-lubricants to accomplish the indicated prospect of using polymer for cartilage replacement. Canola oil, castor oil, and sunflower seed oil are considered vegetable oils, whereas Hyaluronic Acid (HA) is the friction modifier. The parameters are used to create a Box-Behnken design for predicting lubricant anti-wear qualities stated in terms of coefficient of friction, wear rate and frictional force as determined by the pin-on-disk experimental procedure. As a result, the optimization using RSM successfully interpreted the experimental data, according to the analysis of variance, with coefficients of determination of $R2 = 0.91$ and adjusted $R2 = 0.77$. The Coefficient of Friction (CoF) and wear rate were investigated following tribological testing. Castor oil had a lower coefficient of friction than canola and sunflower seed oil, according to the findings. In terms of friction reduction, castor oil surpasses canola and sunflower seed oil.

PAPER ID: WCASET2022: 075-058
TITLE: Best Practice of Striving Energy Sustainability in A Hot Press Machine for Clutch Facing Manufacture
ABSTRACT:

One of many automotive parts is the clutch. The clutch is an essential component of the vehicle. The clutch will smoothly transmit the motion of two separate elements rotating at different speeds on the same axis. One of the components of the clutch disk is the clutch facing, the part that experiences friction. The clutch facing is formed by the compression molding process in a hot press machine. During the compression process, heat will transfer from the upper and bottom plates to the product in the mold.

There is a facing-clutch industry in Surabaya, Indonesia, that uses oil as media to heat the plates in their twenty hot press machines. The oil is heated in a heat transfer oil (HTO) that uses natural gas as the heat source. The heat required in the hot press machine ranges from 135-175°C, depending on the product. Yet, the HTO operates at a much higher temperature, i.e., 220°C. It is crucial to evaluate whether the temperature setting in HTO can be lowered. If the setting can be lowered, energy consumption can be reduced. Thus, we can strive for energy sustainability.

The first thing to evaluate is the oil piping installation from HTO to all hot press machines. The piping is well-designed and well-insulated. The oil goes to the inlet header before flowing to each bed to heat the plates in each hot press machine. From the measurements, the surface temperature at the inlet pipe from the header to the bed was at least 209°C. The temperature of the oil inside the pipe must be higher than 209°C. Then, the evaluation was carried out at the four rows on each hot press machine. It was found that the temperature

of the bottom plate at the lower row is the lowest. Furthermore, the heat from the oil is transmitted not only to the product only but also to the surroundings and the hydraulic press machine under the lower row. In the system, thermal insulation, i.e., asbestos, is already inserted between the lower row and the hydraulic press, but it is only 3 mm thick. To prevent more heat loss, thicker asbestos is inserted. In this case, the 3-mm asbestos is replaced with 18-mm asbestos. The replacement shows that the temperature at the mold surface at the lower row increased from 162.6°C to 170.9°C on average for MC02 and from 166.7°C to 173.1°C on average for MC03. Another important finding is that gas consumption can be reduced by around 12 MMBTU in a month.

PAPER ID: WCASET2022: 052-059
TITLE: Estimation of surface roughness from friction loss of turbulent gas flow in stainless steel microtubes
ABSTRACT:

Effects of surface roughness on microtube gas flow are significant since the surface roughness of a microtube is relatively large compared to conventional size tubes. However, it is limited to measure inner surface roughness in microtubes. Therefore, in this study how to estimate surface roughness using a correlation between the arithmetic mean height of the surface (Ra) of microtubes and the equivalent sand grain surface roughness (Ks) obtained with friction loss and Colebrook-White correlation was investigated. The experiments were carried out with six different diameters stainless steel microtubes whose diameters range from 256 to 867 μm under atmospheric back pressure and variable inlet pressure. The average values of Mach number and Fanning & Darcy friction factors between the inlet and outlet considering decrease in gas temperature were obtained from measured stagnation temperatures & pressures and mass flow rates. The effects of surface roughness on the compressibility effect were described with Fanning and Darcy friction factor correlations as a function of Mach number. The Ra of the microtube was also measured with a 3D laser scanning confocal microscope for profilometry. Comparing the measured Ra and the Ks determined from Colebrook-White correlation, a correlation between Ra and Ks was obtained.

PAPER ID: WCASET2022: 077-060
TITLE: Development of Agricultural Waste Adsorbent for of Cadmium (II) and Lead (II)
ABSTRACT:

Vast numbers of agricultural waste are disposed of in agricultural areas after harvest which the idea of producing value-added products from them is appealing. In this study, pineapple leaf fibers and cockle shells cast with chitosan for adsorption of cadmium (II) and lead (II). The presence of high levels of hazardous metals may offer a long-term health risk to people. The adsorption process is chosen as one of the more accessible methods for removing heavy metals from wastewater utilizing this agricultural waste. Pineapple leaf fibers and cockle shells were cleaned properly to remove impurities and contaminants which were then being cast with chitosan. All materials were characterized with FTIR: ATR, TGA-DTG, N2 adsorption, XRD, AFM, and FESEM. The PALF-CaO-Ch composite was optimized by using Box-Wilson central composite design (CCD) which is response surface methodology (RSM) to elicit maximum responses from Pb (II) and Cd (II) in simulated Pb (II) and Cd (II) wastewater. FTIR spectroscopy was used to record the infrared spectra absorbed by the sample's vibration frequencies to identify the functional groups contained in the PALF-CaO-Ch

composite samples. Aliphatic C-H groups were allocated to the peak at 2,918 cm as well as the C–O bond of the carboxylic group caused by the strong peak at 1,593 cm-1 for pineapple leaf fibers. While for cockle shells, the presence of calcium carbonate phase stretches at a distinctive peak at 699, 712, 765, 861, and 1470 cm-1, indicating the carbonate group. This research will look at whether pineapple leaf fibers (PALF) and aragonite from cockle shells (CaO) as well as chitosan (Ch), have the potential of being effective sorbent materials for cadmium and lead from wastewater.

PAPER ID: WCASET2022: 078-061
TITLE: Numerical Simulation of Drying Process within a Novel Rotary Drying Machine for Palm Oil Sludge
ABSTRACT:
Malaysia's contribution to fulfil the world demand for oils and fats is none other than the palm oil industry. Approximately 18.3% of world palm oil exports is from Malaysia, outputting 19.14 million tonnes of crude palm oil in 2020, with Sarawak contributing one-fifth of this sum. At the same time, 80% of industrial pollution from crude palm oil production is the palm oil mill effluent – which is turned into palm oil mill sludge once dried – conventionally repurposed as an affordable organic fertiliser. This study aims to improve the drying process in the manufacturing of fertiliser. This is done to cut down the cost of operation and maintenance of existing methods of POMS fertiliser production through the development of a rotary drying machine for the POMS to reduce the moisture content before further processing into fertiliser. As such, the objectives of this study are threefold. To compare the efficiency of the rotary drying process between several geometric designs of the rotary drying chamber, e.g., concentric annular chamber, off-centric annular chamber of varying sizes. To propose an efficiency curve for the rotary drying machine being developed against varying rotary speeds and temperatures, and to appraise the recommended amount of POMS volume in the rotary chamber in one drying cycle. A CFD study to improve the current iteration of the rotary dryer can reduce the environmental impact due to palm oil production, in line with the drive towards nationwide Malaysian Sustainable Palm Oil (MSPO) certification. Computer fluid dynamics (CFD) allows for automated parametric studies of rotary chamber designs and the thermodynamic and mechanical variables influencing the efficiency of the drying process. This research is expected to output a recommended design of the rotary dryer, along with its efficiency curves for the efficient operation of the machine.

PAPER ID: WCASET2022: 079-062
TITLE: Preliminary Modelling Of Hydrological Performance For Green Roof Drainage Layer Using Response Surface Methodology
ABSTRACT:
Response Surface Methodology modelling is used in this study to investigate experimental result for waterproofing and drainage layers with slope; 0, 2 and 6% test beds for three different types of drainage layers, rubber crumbs, oil palm shells and polyform. The aim of this study is to determine the accuracy and effectiveness of RSM through investigating the hydrological performance of green roofs. Nine sets of experimental data were used to analyse and the input parameters include type of material drainage layer, slopes and water absorption of the materials. The output variables were hydrograph and peak runoff, peak attenuation and water retention for each material. It was proven that the mathematical

equations developed by the RSM model are capable of predicting the output response, with ANOVA analysis being used to determine the level of significant effect of the input parameters on the green roof hydrological performance. RSM model's 2D contour plot and 3D surface plot expecting to revealed slope and water absorption. This modelling showed significant effect on peak runoff, peak attenuation, and water retention. It is proven that the RSM can be used to investigate various factors affecting green roof hydrological performance.

PAPER ID: WCASET2022: 080-063
TITLE: Screening and Benchmarking of Commercial Corrosion Inhibitors for Organic Acids Corrosion Mitigations
ABSTRACT:
More aggressive reservoir conditions, such as higher concentrations of CO_2 corrosive gases, have a massive effect on corrosion. Moreover, additional aqueous species, such as organic acids, have complicated the conditions and enhanced corrosion to the maximum rate. This study investigates and screens three commercial corrosion inhibitors on their performance in mitigating corrosion in high CO_2 conditions with the presence of organic acids. These investigations were conducted via chemical elucidations to study the functional groups present in the compounds that affect the inhibition performance and the electrochemical measurements to evaluate the inhibition activities and efficiency of these commercial inhibitors under extreme conditions of high CO_2 and organic acids. The results indicated that only two of these three inhibitors gave a high inhibition efficiency of 90% in the absence and presence of organic acid, while the other gave the worst inhibition performance under these conditions. The elucidation of these inhibitors also found that specific functional groups such as hydroxy, carboxylic acid, alkyl and alkene presence in the structure were believed to affect the inhibition performance of these commercial inhibitors in mitigating corrosion. These could be used as a future reference for the new development of corrosion inhibitors in similar conditions.

PAPER ID: WCASET2022: 081-064
TITLE: Global research hotspots and trends in halal research: A scientometric review based on CiteSpace analysis
ABSTRACT:
Halal is a growing business sector that is gaining reputation among academics, practitioners and industry players. It is important for the halal research to be developed sustainably involving all stakeholders, manufacturers, sellers, scientists, technologists and consumers. Issues on halal authentications, halal fraudulences, halal certifications, halal technologies, sustainability, regulations and social impacts have brought greater intentions for global research hotspots and trends in halal research. However, to the best of our knowledge, there are no scientometric studies using CiteSpace analysis. In the present study, we inquired the Web of Science Core Collection (WOSCC) databases to selectively identify the scope of halal publications. Citespace was used as a tool for the co-citation analysis and Microsoft Excel software for the handling of descriptive analysis. A total of 1139 papers available from WOSCC between 1987 and 2021 were extracted and analysed. Our data indicated that the number of publications increased fifteen-fold between 2010 (10) and 2021 (150). Our study also revealed that almost 52% of the publications were published by countries of Malaysia (37%) and Indonesia (15%). In the cluster analysis of literature co-

citations, 11 clusters were generated, and five clusters, halal tourism, halal certification, pork adulteration, halal logistics and purchasing halal food products, which have high rates of citation, are discussed in this paper. These clusters reflect the hot spots and frontiers of halal research to a certain extent. On this basis, this study clearly provides latest trends, valuable theoretical and practical references for future research directions and opportunity for collaborations.

PAPER ID: WCASET2022: 082-066
TITLE: Enhancing meta slot space space wavelength to solve blocking case in elastic optical networks
ABSTRACT:
Elastic optical networks (EONs) are a promising technology for the development of flexible and wideband communication systems. The (FSU) frequency slot unit concept is used in this technology to define the bandwidth unit in the frequency domain. The use of a specified number of consecutive FSUs allows bandwidth to be assigned to a data stream in a flexible manner. Nonblocking optical switching networks are required for a successful elastic optical network operation. This article concentrates on the Wavelength Space Wavelength ,Space Space Wavelength switching network topologies that were previously presented. In comparison to the other architectures, the SSW switching fabric requires fewer Spectrum converters (SCs). n relation to Wavelength Space Wavelength, a prior study clarified that using the meta-slot approach reduces hardware complexity, which is measured by the number of frequency slot unit. A frequency range with one or more (FSUs) is called a meta-slot. The previous study did not discuss how to optimize the meta-slot class sizes, despite the fact that its effectiveness depends on the sizes of the meta-slot classes. Additionally, the use of meta-slots for Space Space Wavelength was not taken into account in the earlier analysis. The optimization of meta-slot class sizes is looked into in this study, and it is shown that this optimization may be modeled as the shortest path issue. For Wavelength Space Wavelength , the previously reported nonblocking conditions are contrasted with the meta-slot scheme optimized using the shortest path model. The outcome attests to the optimized meta-slot scheme's superiority. The distribution of meta-slots among S-switches is also crucial for Space Space Wavelength . The assignment of meta-slots is modeled as a bin-packing problem in the study. Thus, a well-known bin-packing heuristic can be used to find the assignment that is close to ideal. The number of S-switches is calculated for using the optimized meta-slot scheme and previously known nonblocking conditions. The outcome confirms that the meta-slot scheme benefits both Space Space Wavelength and Wavelength Space Wavelength .

PAPER ID: WCASET2022: 083-067
TITLE: Electronic and Topological Properties of UIO66-IL Interaction through Computational Study
ABSTRACT:
Utilizing high surface area adsorbents such as MOFs is an appealing choice for the evacuation of heavy metals from wastewater. However, the stability and selectivity of MOFs for wastewater treatment are still a questionable challenge as the structure MOF may collapse upon exposure to the water. The consolidation of IL interior MOF has been demonstrated could enhance the performance of pristine MOF in terms of stability and reusability depending on its application, however, the studies of the interaction between

MOF framework and IL at the molecular level are still scarce. The fundamental interactions between the MOFs and ILs moiety (cation and anion molecules), especially the types of interaction play an important role in determining the stability, compatibility, and selectivity of this hybrid material. In this research, molecular docking calculation was carried out to identify the binding energy (ΔG_{bind}) and binding affinity between UIO66 with TFSI-imidazole (EMIM, PMIM, BMIM) and TFSI-pyridinium ILs (BPYDM, EMPYDM, PMPYDM, BMPYDM). The binding energies were calculated using AutoDock software to find specific binding sites of IL toward MOF. The initial 3D structures were prepared using the default parameter in Autodock software. The IL was docked consecutively into the MOF cavity inside the gridbox (x, y, z) dimension to identify binding sites of MOF. From the output, the electrostatic potential map surface, bond critical point, and aromaticity of structures were analyzed using GaussView and Multiwfn software. From the results, both TFSI-imidazole and TFSI-pyridinium IL exhibited good interaction with MOF with the binding energy of -4.12 to -8.60 kcal mol-1. Docking molecular structures show both anion and cation preferred to bind at the corner of the MOF pore which is in accordance with the previous study. Abbreviations—1-ethyl-3-methylimidazolium [EMIM], 1- propyl-3-methylimidazolium [PMIM], 1-butyl-3-methylimidazolium [BMIM], 1-butylpyridinium [Bpydm], 1-ethyl-4-methylpyridinium [EMPYDM], 1-propyl-4-methylpyridinium [PMPYDM], 1-butyl-4-methylpyridinium [BMPYDM], bis((trifluoro)sulfonyl)imide [TFSI],

PAPER ID: WCASET2022: 084-068
TITLE: Potential Probiotic of Lactobacillus from Fermented Dairy and Non-Dairy Food as Antibacterial Agent Against Antibiotic Resistance Bacteria (ARB)
ABSTRACT:

Lactobacillus species are the most commonly used microorganisms as good probiotics because of the perception that they are desirable members of the intestinal micro-flora and are also recognized as "Generally Recognized as Safe" (GRAS) status. Probiotics play a specific role as growth promoters or as therapeutic agents which gave health benefits to their host. The mechanism by which Lactobacillus species can kill bacterial pathogens could be multi-factorial and the production of antimicrobial compounds such as lactic acid, diacetyl acetaldehyde, hydrogen peroxide, peptide, and bacteriocin. These compounds could inhibit the growth of harmful pathogens, especially antibiotic resistance bacteria (ARB) such as Vancomycin Resistant of Enterococcus (VRE) and Methylene Resistance of Staphylococcus aureus (MRSA). The objectives of this study are to evaluate the potential of Lactobacillus species isolated from fermented dairy and non-dairy food sources which could inhibit pathogens and ARB. In this study, 240 of Lactobacillus isolates were investigated for their antibacterial activities using the well-diffusion method. Then, the diameter of the inhibition zone was measured in millimeters (mm). The results showed that only 65 isolates of Lactobacillus inhibited the pathogens in the range between 9.03 to 22.0 mm. However, only 15 isolates of Lactobacillus could inhibit the ARB such as VRE and MRSA in the range between 10.0 to 12.4 mm. This study also suggests that the antibacterial activities of Lactobacillus isolated are influenced by different strains and sources.

PAPER ID: WCASET2022: 085-069
TITLE: Production of Refused Derived Fuel from Food Waste Employing Hydrothermal Treatment
ABSTRACT:

Hydrothermal treatment is a method of improving the quality of biomass by means of carbonization. The purpose of this study was to determine the effect of the hydrothermal process on the increase in calorific value and the proximate value of food waste on the effect of temperature, time and water composition for each variation. This research was carried out with various variations, namely variations in temperature, time and water composition. With temperature variations of $170℃$, $190℃$ and $210℃$ with a residence time of 50 minutes, with variations in time of 40 minutes, 50 minutes and 60 minutes with a temperature of $170℃$, with variations in water composition of 800 grams, 1200 grams and 1600 grams, with a temperature of $170℃$. The results show that the higher the hydrothermal temperature and residence time, the higher the calorific value of food waste produced with greater mass loss. The best condition is shown at a temperature of $210℃$ with a residence time of 50 minutes for a water composition of 1200 grams. Under these conditions, the calorific value was 5543.750 cal/g and the amount of mass lost was about 91.93%. Likewise with the results of variations in residence time of 60 minutes with a temperature of $170℃$ with a composition of 1200 grams of water, the heating value is 5533.464 cal/g, and the amount of mass lost is about 92.55%.

PAPER ID: WCASET2022: 086-070
TITLE: ESTIMATE THE ECONOMIC VALUE OF THE ECOSYSTEM SERVICES: THE CASE OF FOREST LANDSCAPE CONSERVATION IN JANDA BAIK, PAHANG, MALAYSIA
ABSTRACT:

Janda Baik, Bentong, Pahang is one of the popular recreation and ecotourism sites in Malaysia. Apart from being surrounded by forest reserves, Janda Baik possesses a beautiful forest landscape and forest ecosystems. With the increasing demands for other forms of forest land use, multiple efforts are imperative to support forest management and sustain the forest resources without compromising the livelihoods of the local communities. Therefore, this study aimed to estimate the economic value of environmental services and to establish the Payment for Ecosystem Services (PES) scheme for the local communities in Janda Baik as financial incentives to be involved in environmental conservation. The contingent evaluation method (CVM) that involved double-bounded dichotomous choice was used in this study. A face-to-face interview which involved 322 visitors, was conducted in 2018. The estimated mean of WTP for conservation from various models ranged from RM 22 to RM 30. The results possibly can be used in developing the community-based PES scheme in the future.

PAPER ID: WCASET2022: 089-071
TITLE: FACTORS INFLUENCING PERCEIVED STRESS AND ITS IMPACT TOWARDS FOOD CONSUMPTION PATTERN DURING COVID-19 PANDEMIC.
ABSTRACT:

The food consumption pattern changes in young working adults has altered their lifestyle, leading to higher risk of them being obese. The changes of food consumption pattern are due to the experience of high level of perceived stress. Perceived stress is known to affect young working adults' mental health and lifestyle which causes difficulty in balancing

changes in their living situation. Hence, this study aims to identify factors that could influence perceived stress and in what way perceived stress may impact food consumption pattern. Self-administrated questionnaire was developed for collection of data. 350 young working adults aged between 18 to 35 years old were given the online survey and are identified through the snowball sampling technique. The data will be analyzed using frequency and descriptive analysis, reliability, correlation and regression analyzes.

PAPER ID: WCASET2022: 091-074
TITLE: Production of Washed Bottom Ash as Sand Replacement Material in Concrete Paving Block
ABSTRACT:

Concrete Paving Block (CPB) is made by mixing between the sand, gravel, cement and water and used as non-traffic and traffic area. The CPB is proposed in a variety of shape, size, colour and material. The demand of the CPB is increased with in line by increasing of residential house and building construction, and infrastructure activity. The advantages of CPB when compared with rigid and flexible pavement is more beautiful and interactive surface, fast-paced production without high technology equipment or skilled worker, and also creating a balanced humidity. Nowadays, the concrete by using waste material as cement, sand or gravel replacement becomes more popular which supported the sustainable development requirement. The replacement activity of concrete ingredients for promoting low carbon material in CPB is also part of the sustainable development programme which reduced the environmental impact of the waste material or production of natural concrete ingredients and cost production. With the intention of the issue, the CPB using bottom ash (BA) which treated to reduce the carbon content is produced and tested for mechanical and physical behaviour. The physical behaviour of WBA is shown the suitability to replace sand in concrete. The mechanical behaviour of WBA CPB illustrates the compressive strength approximately 33.5 MPa and appropriate used for paving block.

PAPER ID: WCASET2022: 093-075
TITLE: Development a new system of exterior insulation for the building based on recycled materials in arid areas.
ABSTRACT:

External Thermal Insulation (ITE) is becoming a global trend as a strategy to reduce overall the energy use and minimize carbon footprint. In order to achieve sustainable building design in hot and arid climates, this present work presents an investigation of the experimental tests of the different thermal insulation systems applied to the exterior of the vertical walls of existing buildings, located in a hot and dry climate. The objective is to have a high-performance insulator by ensuring energy savings and eliminating thermal bridges. To do this, the systems studied, attached to a simple concrete block wall, under cladding (dry process). Temperature and hygrometry monitoring experiments coupled with a thermometer instrument made it possible to understand the hydrothermal behavior of the solutions tested during installation, and after drying of the ETI solutions, in real conditions, for three months studied. The results showed the important role of insulation with recycled materials such as wood fiber on the outside. These results allow the potential impact of ETI based on recycled and natural materials in extreme conditions, highlighting the interest of maintaining the comfort of summers. On the other hand, the technical-economic analysis

can be revealed, the technical feasibility of the systems studied and the economic impact of natural and recycled insulating materials compared to conventional polystyrene insulation.

PAPER ID: WCASET2022: 083-076
TITLE: Electronic and Topological Properties of UIO66-IL Interaction through Computational Study

ABSTRACT:
A high surface area adsorbent, such as MOFs, is an attractive option to evacuate heavy metals from wastewater. However, due to the possibility of the MOF structure collapsing when exposed to water, the stability and selectivity of MOFs for wastewater treatment remain a debatable task. Depending on the application, it has been shown that the consolidation of IL into MOF could improve the stability and reusability of pure MOF; nevertheless, research on the molecular interactions between the MOF framework and IL is still lacking. The stability, compatibility, and selectivity of this hybrid material are significantly influenced by the fundamental interactions between the MOFs and ILs moieties (cation and anion molecules), particularly the sorts of interactions. In this investigation, molecular docking calculations were utilized to assess the binding energy (ΔGbind) and binding affinity between UIO66 with TFSI-imidazole and TFSI-pyridinium Ils studied. The binding energies were computed using the AutoDock software to identify particular binding sites for IL toward MOF. The Autodock software's default setting was used to prepare all of the structures. To determine the binding locations of MOF, the IL was successively incorporated into the MOF pores inside the grid box's (x, y, and z) dimensions. GaussView and Multiwfn software were used to examine the structures' aromaticity, bond critical point, and electrostatic potential map surface from the output. The results showed that both ILs; TFSI-imidazole, and TFSI-pyridinium IL, interacted favorably with the MOFs, having binding energies varying from -4.12 to -8.60 kcal mol-1. According to docking molecular structures, both cation and anion tend to bind in the corner of the MOF pore, which is in line with the previous work.

PAPER ID: WCASET2022: 094-077
TITLE: An Experimental and DFT Study on Bio-oil Derived from Catalytic Pyrolysis of Torrefied EFB with Cobalt Alumina Using Furfural as Model Compound

ABSTRACT:
Pyrolysis is emerging as a promising route for the production of liquid fuels from biomass. However, pyrolysis derived bio-oil needs to be upgraded prior to its utilization as fuel and hydrodeoxygenation (HDO) is an important catalytic step in it. Furfural has been considered as one of the most promising platform molecules directly derived from biomass. The hydrogenation of furfural is one of the most versatile reactions to upgrade furanic components to biofuels. For instance, it can lead to plenty of downstream products, such as tetrahydrofurfuryl alcohol, 2-methyltetrahydro furan, lactones, levulinates, cyclopentanone, or diols. The design of suitable catalysts with high activity and selectivity for the HDO process would require a detailed understanding of the underlying analytic reaction mechanism. Since cobalt alumina-based catalysts have been proposed to be the most effective HDO catalysts, the complete reaction network for HDO of furfural, a representative of furanic compounds present in bio-oil, is elucidated in this study on cobalt alumina surface, using Density Functional Theory calculations. Reaction pathways for the formation of Furfuryl alcohol (FA), Tetrahydrofurfuryl alcohol (THFA), Methyltetrahydrofuran(MTHF),

Methylfuran (MF), Cyclopentanol, 1,2 and 1,5 pentane diols, Furan and Pentanes are established. Furan ring opening is facile on cobalt alumina surfaces and our calculations predict pentane formation to be thermodynamically and kinetically favoured in the vapour phase hydrodeoxygenation of furfural on cobalt alumina surfaces.

PAPER ID: WCASET2022: 087-078
TITLE: The Extended Blade Element Momentum Theory for the Design of Small-Scale Wind Turbines
ABSTRACT:

The blade element momentum theory (BEMT) has been widely used in the design of the small scale wind turbine (SSWT). However, the original BEMT has weaknesses in providing the final design values of the wind turbine blade partly due to inaccurate assumptions of infinite number of blades made in deriving the theory. As such, the theory has to be amended in certain areas to form the so called the extended BEMT. In this study, a SSWT blade is designed using the extended BEMT method considering 3 factors: tip loss, low thrust at high axial induction factor, a and high angle of attack in post-stall region where 5 a correction models applying also the tip loss correction factor have been compared to the original BEMT model. The SSWT rotor has a diameter of 3m. An airfoil, SG6043 known for its suitability for SSWTs is used in this study. Furthermore, the blade geometry prior to the conduct of the shape optimization process are calculated using polynomial obtained from experimental procedures. The effect of infinite number of blades can be seen here to change the axial induction factor, a especially at the tip of the blade and as a result increases the lift coefficient, C_L and overpredicts the overall power coefficient and power of the wind turbine. With the Prandtl's tip loss factor along with the a correction model, the corrected final values of aerodynamic performances have been determined.

PAPER ID: WCASET2022: 096-079
TITLE: Investigation the Influence of Inclination Angle and Air Gap for Flat Plate Solar Air Collector through Experiment and Simulation
ABSTRACT:

The thermal performance of flat plate solar collector under natural convection air flow was analysed by experimentally and simulation. Both convection and radiation heat exchanges are considered heat transfer mechanisms as the thermal energy is transferred into the air. The measurements were carried out for the solar collector with inclinations (5°, 10°, 15°, 30°, 45° and 60°) and air gaps (5cm, 10cm, 15cm and 20cm). The collector is unglazed, and the insulation is present at the bottom plate and on both of the sides. In the experiment, the incident solar radiation is absorbed by the top plate. The present investigation showed the temperature rises with increasing solar radiation. The heat transfer via the air channel of the solar collector decreases when inclinations increase to 60°. The numerical model was simulated by using the Computational Fluid Dynamics (CFD) method. The numerical modelling of flat plate solar collector working under steady-state condition. The numerical results have good agreement with the experimental measurements. As a result, the numerical model with various design parameters, including (i) inclination angles and (ii) air gaps were used to predict the thermal performance of flat plate solar collectors.

PAPER ID: WCASET2022: 097-080
TITLE: Experimental Study of Comparison of Thermal Comfort and Air Age Between Two Combined Ventilation Systems with Chilled Ceiling Considering Occupant Density
ABSTRACT:

The capacity of the chilled ceiling combined with mixing ventilation and personal ventilation system (CC/MVPV) has been studied and compared to chilled ceiling with mixing ventilation (CCMV) in terms of mean air age, temperature distribution, CO2 concentration, thermal efficiency, with the best flow rate of the proposed system considering the occupied density in a thermally insulated office room experimentally in the climate of Iraq - Hilla (hot climate) and dry). twelve tests were conducted for four different cooling loads treated with a cooled ceiling (0,25, 50, 80%). The surface temperature of the chilled ceiling ranged between (0,23, 21.39, 19) °C and the mixing vent air temperature was (17,19, 21, 23) °C at a constant supply air flow rate (46 l/s) with two PV airflow modifiers (5 l/s, 7.5 l/s) for three cases (I,II and II). It was discovered that in all cases, as the cooling load treated by chilled ceiling (η) increases, the average air age increases with height. The lowest values of average air age appeared in the occupied area in the case of (CCMV). This study shows that the proposed system (CCMV/PV system) with a flow rate (7.5 l/s) that provides thermal comfort and higher air quality in the occupied area. Based on the values of air exchange efficiency and occupants air exchange efficiency (η_a, η_D) by (70 to 67.5%),(99 to 90.25%) respectively at (η = 0 to 80%) . As a result, flow rate (7.5 l/s) is the best option for protecting occupants from direct pollution in the breathing zone (BZ) and in the surrounding micro-climate., as we note that the longer the stay, the less air change for occupants due to the lower ventilation rate.

PAPER ID: WCASET2022: 098-081
CHARACTERIZATION OF ALUMINIUM- MAGNESIUM ALLOY REINFORCED WITH STRONTIUM (Sr) BY CASTING TECHNIQUES
ABSTRACT:

Aluminium metal matrix composites (Al-MMCs) composite alloys are quite attractive due to their low density, their capability to be strengthened by precipitation, their good corrosion resistance, high thermal and electrical conductivity, and their high damping capacity. In this research, aluminium-magnesium (Al-Mg) master alloy was reinforced with 0.5 to 1.0 wt.% strontium (Sr) by casting technique. Then the Al-Mg-Sr composite alloy was characterized by its mechanical properties and microstructure characterization. Instron Tensile machine and hardness Vickers tester were used to characterize the tensile and hardness of Al-Mg-Sr composite alloy. The Gamry-potentiometer electrode was used to determine the corrosion rate of this composite alloy. From the results obtained, when increased Sr contents will increase the value of tensile and hardness properties of Al-Mg alloy. Results from Scanning Electron Microscope show the composite alloys that are synthesized exhibit the presence of a uniform distribution of reinforcement that tends to be fine and associated with a clean interface with the metallic matrix. XRD analysis confirms that only the elements Al, Mg, and Sr were detected in characterization. Morphology observed seen that the particles of the Sr phase show a dendritic structure. In the corrosion test done by Gamry potentiometer electrode, Al-Mg with the composition of 1.0 wt% Sr gave the best results for corrosion rate compared to cast Al-Mg with 0.5 wt% and Al-Mg alloy itself. All summarized results obtained shows that in-situ Al-Mg alloy composites containing the different weight of Sr phase were successfully fabricated and the particles were distributed evenly in the matrix of the composites.

PAPER ID: WCASET2022: 099-082
TITLE: Field enhanced sedimentation operations for solid-liquid separation in water treatment: A review

ABSTRACT:
Sludge dewatering is a crucial separation process in wastewater treatment plant as it largely contributes to water content reduction in sludge, helping to reduce transportation costs, pollution and energy requirements. Numerous studies have been conducted exploring the effect of different fields to enhance the sludge solid-liquid separation, tackling the slow gravity based sedimentation. This paper reviews the effect of field enhanced sedimentation for sludge dewatering. Other than progressive mechanical, magnetic, ultrasonic and electrokinetic field enhanced separations, the role of dewatering aids has been reviewed in this paper. The approach of incorporating renewable dewatering aid, such as in electrokinetic sedimentation depicts a promising, sustainable and economic sludge dewatering alternative as a greener future of sludge treatment operations. It is expected that this developmental review will provide an insight into the current trends on field enhanced sedimentation along with potential enhancements of the technology towards sustainability.