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CONFERENCE PROCEEDINGS

ABSTRACTS

ICSGT 2018

STATE POLYTECHNIC OF MALANG

Malang, 27 August, 2018

Organized by:

In Association with:

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Malang, 27 August, 2018

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ORGANIZING COMMITTEE
INTERNATIONAL CONFERENCE ON SMART GREEN TECHNOLOGY (ICSGT) 2018

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PREFACE
CONFERENCE CHAIR OF ICSGT 2018
STATE POLYTECHNIC OF MALANG

It is a big pleasure to me on behalf of the Organizing Committee of a two-day International Conference of Smart Green Technology (ICSGT) to welcome all the delegates and participants of this conference held in Malang city – the flower city.

As stated in the title, the scope of the cenference covers about developing technologies for the smart living, which are in a fact, requires many diciplines that constitute engineering as a whole and united field.

We are whole-heartedly knowledgeable that differs from academic fields and industry professionals, this conference may also give opportunities to under and post graduate students and research scholars alike to take an active part and present research papers.

By doing so, they will not only gain greater insight into their discipline, but also contribute to the existing body of knowledge in that domain.

I am certain that the conference will prove to be a healthy point of academic interaction and so the students and faculty members as well will not only give but also benefit and draw inspiration from the talks and presentations from the distinguished guests.

Malang, August 27, 2018

Bambang Sugiyono Agus Purwono

FOREWORD
DIRECTOR OF STATE POLYTECHNIC OF MALANG

It is our great pleasure to welcome all participants, guests, keynote speakers, and presenters at this conference which is organized by the State Polytechnic of Malang.

The International Conference of Smart Green Technology 2018 (ICSGT 2018) provides a setting for discussing recent developments in a wide variety of topics of green technologies.

The conference particularly encouraged the interaction of research students and scholars with the more established academic community to present and to discuss new and current works. I believe that this conference will be a momentum to stimulate further study and research in all topics related to the green technology developments.

I would like to express my deep appreciation to keynote speakers for the efforts to present the ideas and methods in a lively and accessible way.

I would like to thank those who have responded to our call to take part and to contribute to this conference. We have a big hope that all of you enjoy, and get more knowledge and fruitful experience through the conference.

Finally, but not least, support and efforts from the conference organizing committee were absolutely essential to this conference. Therefore, I would like to acknowledge my sincere thanks to the conference organizing committee.

Malang, August 27, 2018

Awan Setiawan

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[ABS-4]

Welding Characteristics of Titanium Alloys

Tim Pasang, Mana Aziziderouei, Yuan Tao

Auckland University of Technology

Abstract

Characteristics and mechanical properties of titanium alloys may be different depending on their category, such as (i) CP Ti and alpha alloys, (ii) near alpha (iii) alpha + beta alloys, and (iv) beta alloys. Some alloys may show low hardness in the fusion zone (FZ) as in the beta alloys while others may exhibit the opposite such as those in the alpha + beta, near alpha alloys, alpha alloys and possibly some CP Ti. Consequently, these variations in hardness, hence, strength affects the ability of the weld to sustain a load. To overcome this issue, Post-Welding Heat Treatment (PWHT) is commonly performed to obtain a uniform hardness/strength across the weld. However, this treatment is not practical for large-size components. This paper introduces a new practical method to obtain a uniform strength across the weld without the need of PWHT.

Keywords: Welding, titanium, strength

Topic: Engineering

[ABS-11]

Innovative Approaches to Marine Antifouling

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Abstract

Marine biofouling is a term describing an accumulation of living organisms on artificial surfaces submerged in water. Biofouling organisms, for example adhere to underwater pipelines, fishing nets, submerged surfaces of power plants and are especially problematic for ship industry. Biofouling on ship hulls results in increased fuel consumption, dry docking maintenance costs and hull corrosion. Moreover, it poses also environmental risks due to the introduction of alien species into new environments. For that reason, the antifouling protection is essential. There are several antifouling methods that have been adopted in order to control the biofouling. One of the most widely used approaches is the application of the antifouling paints, which containing biocides that are toxic to fouling organisms. The advanced coatings are in a form of self-polishing polymers. After the ban of tributyl tin self-polishing polymers due to its high toxicity, new ones have been introduced, which are usually copper based with the addition of one or more booster biocide. However, the negative effects to non-target species remain unavoidable. For that reason, the research is focused on development of non-toxic antifouling materials such are non-stick or low-energy surface coatings and the use of other biological and physical antifouling methods. In the presentation different antifouling approaches will be introduced, discussed and compared.

Keywords: Biofouling organisms, antifouling protection, coating, low-energy surface

Topic: Energy Management

[ABS-53]

Zinc Ferrite-Based Nanocomposites and their Photocatalytic Applications

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Abstract

Studies on the properties and applications of the traditional spinel zinc ferrite (ZnFe2O4) and its composites have been gaining attention recently. Zinc ferrite is characterized by its narrow optical band gap of 1.9 eV, photochemical stability, low toxicity, ferromagnetic properties, natural abundance, and environment-friendliness. The chemical and structural properties of ZnFe2O4 and its composites are affected by their synthesis methods. This report deals with zinc ferrite-based composites which were synthesized by various synthesis routes, such as hydrothermal and solvothermal methods. The resulting nanocomposite materials were characterized using different analytical techniques, and their photocatalytic performance in the degradation of organic compounds under UV- and visible light irradiation was investigated.

Keywords: zinc ferrite, nanocomposites, photocatalysis, hydrothermal and solvothermal methods

Topic: Technology

[ABS-47]

Nano-enabled Membranes Technology: The Way Forward for Sustainable Water Treatment Solution

Ahmad Fauzi Ismail

Distinguished Fellow Advanced Membrane Technology Research Center (AMTEC)
Faculty of Petroleum & Renewable Energy Engineering, Universiti Teknologi Malaysia (UTM)

Abstract

The presence of water is a fundamental requirement and great priority for life on our planet. As the consequences of natural and human factors in the context of the unequal level of economic development, technological capacity and excessive water pollution, our blue planet is rapidly running out of clean fresh water. With the current state of affairs, counter measures have been taken in various strategic manners to prevent the worsening of this topsy-turvy. Membrane-based water treatment processes have emerged as engineering solutions to provide immediate solutions to this growing crisis. In the last decade, a steep rise in the level of nanotechnology research efforts has been observed worldwide. Science-based technology, particularly nanotechnology, has unquestionably offered a great extent in material improvements. In this context, the integration of nanomaterials in membrane-based water treatment processes in terms of materials and systems enhancement has been acknowledged as synonymous with the passwords to overwhelm the barriers and limitations that are facing current membrane technology. The innovative research progresses prompt a wide range of engineered nanomaterials to hold vast potential in advancing membrane-based separation to improve the overall efficiency as well as to reduce environmental footprint. The advances driven by the newly available nanotechnology tools enable the fabrication of nano-enabled membranes in which the membrane structures can be carefully tailored and controlled through the incorporation of engineered nanomaterials. The main highlight of this presentation is to portray the way forward of nano-enabled membrane-based separation technology that is expected to shape future trends in water treatment application. Although considerable effort is still needed to fill the gaps and reduce disparities between the pipe-dream and the reality, with the accelerating knowledge and technological transfer from academic to industries, it is envisaged that in the next five to ten years, the fundamental science and applied engineering knowledge in nanotechnology R&D and infrastructure development will serve as an important tool to develop and commercialize the next generation of sustainable nano-enable membranes.

Keywords: Nano-enabled Membranes Technology, Sustainable Water Treatment Solution

Topic: Water Treatment Plants

[ABS-99]

Elastic WLAN System - Challenge for Energy-Saving and High-Performance Wireless Networks -

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Abstract

Recently, the wireless Local-Area Network (WLAN) has been extensively deployed around the world as a cost-efficient and flexible access network to the Internet. Because the WLAN does not need a wired cable to connect a host or PC with an Access-Point (AP), it has advantages over a wired LAN such as low installation and management costs, easy host relocations, and flexible service areas. An AP acts as a connection hub to a wired network in the WLAN. However, WLANs can have drawbacks of performance degradations and energy wastes due to over-deployments of APs in a network field. A host often detects plural signals from multiple APs for different WLANs, which can cause radio interferences among them to degrade communication performances. Ideally, only one AP should be activated to allow a host to access to the Internet without interferences from other APs, if it provides the sufficiently strong signal to the host. Other APs may consume the energy uselessly. Particularly, in developing countries, the energy must be used efficiently and properly, because the supply is not stable, and electricity blackouts can often happen due to supply shortages. Thus, the energy saving has become the important issue even for WLANs. To solve these problems in WLANs, we have studied the design and the implementation of the elastic WLAN system. It dynamically activates and deactivates APs depending on network situations including device failures and energy shortages, and traffic demands from hosts in WLANs. By optimizing AP activations and host associations to the APs dynamically, the elastic WLAN system can minimize energy consumptions while ensuring required minimum throughput performances. To optimize the configuration of the elastic WLAN system, we have studied the throughput estimation model for both outdoor and indoor environments. Using this model, we have proposed the active AP aggregation algorithm to aggregate the deployed APs in the network field into the minimal number of active APs with the maximal total throughput. Then, we have proposed the mobile router introduction scheme to make up the insufficiency of the available bandwidth due to user increases, device failures, and/or power blackouts. Mobile routers can flexibly offer additional bandwidths for the Internet connections using cellular networks. We have verified their effectiveness through simulations using the WIMNET simulator that has been developed in our group. Furthermore, we have designed and implemented the small testbed for the elastic WLAN system using Raspberry Pi and Linux PCs. Through experiments, we have confirmed the active AP minimization and evaluated the throughput performance.

Keywords: Elastic WLAN System, energy-saving, high-performance wireless, networks

Topic: Technology

[ABS-2]

Effect of Heat Treatment on Drillability of Titanium Alloy 6Al-2Sn-4Zr-6Mo

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Abstract

This paper highlights the result of a preliminary study on the effect of heat treatment on drillability of titanium alloy 6Al-2Sn-4Zr-6Mo (Ti-6246). Drillability is machinability in drilling. The drillability was observed from perspective of chips formation. Different heat treatments were carried out to find the softest material and a preferable microstructure in advance of drilling and compared to the as-received one. The heat treatment at 985oC for three hours followed by furnace cooling (FC) resulted in the biggest grain the boundary and the highest degree of segmentation value compared to other heat treatments. The microstructure resulted was similar to that of annealed Ti-6Al-4V. In drilling (or any machining), the tool movement plough the material, which is microstructurally slides the dislocations along the slip plane. If the grain boundary is extremely big, the number of boundary is less. Then, reducing the cutting forces. Therefore, this heat treatment potentially results in the best drillability for Ti-6246.

Keywords: Ti-6246, heat treatment, drillability, chips

Topic: Engineering

[ABS-7]

Analysis Stress and Displacement Cement Composites of 3-Axial Force Effect On Turning Process Alumunium 6061

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Abstract

This study discusses the amount of force acting on cement composites for turning vibration absorbers. The main force of concern is cutting force (F1), feeding force (F2) and axial force (F3). In the design of cement composites and the amount of force charged must pay attention to the strength of the material. Strengths that must be considered include the dimensions, material, and structure of the workpiece. This study will discuss the analysis of test specimens of tool specimen stress test with cement composites with finite element method. The finite element method is a numerical method that is used to solve technical problems and meteoric physical symptoms which include stress, strain, strength, and vibration analysis. From this study, the largest and smallest stresses on the tool with composite cement are 1.31 x 107 N/m2 and 1.31 x 106 N/m2. While the displacements for the tool test with cement composites are: 0.096 mm.

Keywords: cement composite, stress and displacement

Topic: Engineering

[ABS-9]

Development of Slope Handling Guidelines in Arjasa, Jember Regency

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Abstract

Handling of landslide slopes, currently impressed only when landslides occur, there is no prevention effort by identifying the data and location as a whole, so that slope handling efforts have not been taken into account the risk of subsequent landslide disaster reduction. Proper slope handling following slope handling guidelines is needed to reduce the potential risk of landslides. This study aims to determine the condition of the slope, the cause of landslides and determine the determination of the method of selecting slope handling of landslide events in Arjasa District, Jember Regency. Research Methodology to determine slope conditions and the causes of landslides by implementing the development of slope handling guidelines from the technical guidelines for handling slopes of the Department of Public Works in 2005 and using the AHP method to determine slope handling selection methods. The results of the study based on the identification of the slope conditions showed the type of rotational slippage motion, fast movement speed, geological structure and volcanic breccia tuff Soil yellowing weathering soil, structure of hilly area morphology with steep slopes 41, land use upper part of settlements / villas and parts under agricultural land. The causes of landslides are experiencing weathering, steep slope, high rainfall and land use that are not suitable for the allocation of settlements / villas. The results of the determination of the slope handling selection method with the Analytical Hierarchy Process (AHP) method produced the highest criteria, namely the criteria for the cause of landslides with a weight of 0.48. Determination of alternative selection of slope handling methods produces a mooring method which is the main priority in slope handling with a weight of 0.452, methods of handling surface water management, seepage water control and method of cutting slope geometry.

Keywords: slope handling, slope handling guidelines, slope conditions, AHP, priority order for slope handling

Topic: Engineering

[ABS-16]

Maintenance of Centrifugal Pump with Reliability, Availability, Maintainability and Safety (RAMS) Method and Simulating Operating Characteristic Curve

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Abstract

Centrifugal pump is a type of pump that is often found in every building and industry. In the use of a tool, thorough attention sauth big event operation and maintenance are needed to be noticed very much. Maintenance is one of important factors that must be done to maintain the reliability and maintainability of tools or machines. The effective and efficient maintenance method will affect on increasing productivity of the production system. Reliability, Availability, Maintainability dan Safety (RAMS) are development methods of Preventive Maintenance for analyzing overall-attribute value function to maximize effectiveness and efficiency of the maintenance. This study is to make Fault Tree Analysis (FTA), Failure Mode Effect and Critical Analysis (FMECA), calculating the value of reliability, availability, maintainability, and making the safety assessment. This study also accommodates making operating characteristic curve simulation to understand the characteristic of the tested pump by calculating all obstacles in the pipeline and pressure generated. The result of preventive maintenance by RAMS method, based on FTA 4 basic events have been identified as the cause of pump damage is shaft damage, leakage, impeller damage and cavitation. Based on FMECA, critical components in the pump are wearing ring, shaft, wearing ring casing, shaft sleeve dan stuffing box. Based on the calculation of RAM from maintenance that has been running for one year, the reliability value obtained is for 93.2%, the availability for 93.2% and maintainability for 86.8%. And based on the results of the simulation: operating characteristic curve null rejected hypothesis, which proves that the influence of discharge and piping path to the total head maximum produced by centrifugal pumps tested.

Keywords: Centrifugal Pump, Preventive Maintenance, RAMS, Operating Characteristic Curve

Topic: Engineering

[ABS-22]

Optimization of Hybrid Powered Refrigerator System (Solar Cell Plus Diesel Engine) For Traditional Fishing Vessels in Makassar

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Abstract

This paper deals with explaining the importance of higher education research grant directed to the design of a hybrid-powered refrigerator system (solar cell + diesel engine) in future fishing vessels. The principal aim of this research is the utilization of renewable energy with the use of solar cell technology as a driver of cooling system on fishing vessels plus diesel engine. This research was a panel solar cell yields, its power is 500 Watts. It is applied to implement refrigerator with its power 100 Watts, it may be around -2 degree C until - 6 degree C so that fish obtained of at fisherman vessel Poetere in Makassar can be kept fresh. It is expected to encourage and motivate the fisherman in developing and apply this technology, which causes the increasing quality of fish and at the same time increases the fisherman's economics value without using the ice blocks anymore.

Keywords: Hybrid power, solar cell, diesel engine, refrigerator, economic value.

Topic: Engineering

[ABS-28]

Effect Frequency Ultrasonic Vibration on Double Pipe Heat Exchanger at Cooling Process

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Abstract

This paper discusses the effects of ultrasonic vibration on heat transfer in the parallel flow configuration of a concentric heat exchanger with 500 mm long a cooling process investigated by experimentally. The inner diameter of a heat exchanger using brass with 4 mm and 32.5 mm of the outer diameter from PVC. The ultrasound was applied and controlled in the range of 20, 30 and 40 kHz in frequency and power of 35 W in power. Both the radiator-coolant and the aquades as fluids which flow in the inner tube, while the cold fluid (tap water) flows in the outer tube. Investigation of the overall heat transfer coefficient with and without the influence of ultrasound vibrations. This study found that the faster fluid flow rate, the higher the overall heat transfer coefficient. The higher overall heat transfer coefficient enhancement about 44 % and 31% with ultrasonic vibration for radiator-coolant and aquades fluids at the frequency for 20 kHz, respectively.

Keywords: heat transfer, ultrasonic vibration, aquades, radiator-coolant, double pipe heat exchanger

Topic: Engineering

[ABS-29]

Analysis and Design of Bus Chair for Economic Class Using Ergonomic Function Deployment (EFD) Method

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Abstract

Bus is one of favourite transportation used in Indonesia. The comfort aspect of passenger seat of the economy class bus is still not of a top priority in the bus transportation services. The design of economy class bus seats is still based on experimental results, so that the design does not match the body shape (anthropometry) of Indonesian people. Based on a survey conducted by the research team found that the design of the economy class bus seat is not comfortable for the posture of the people of Indonesia. This research has designed a design of bus seat ergonomically using Ergonomic Function Deployment (EFD) method. By using Ergonomic Function Deployment (EFD) method, the design of ergonomic economy class bus passenger seat is obtained. The design of the ergonomic chair is given in the following dimensions: the height of the backrest is 956 mm, the holder length is 370 mm, the width of the holder is 457 mm, the length of the armrest is 267 mm, the height of armrest is 89 mm, seat height is 349 mm. The research result used in this research are in 5th, 50th, and 95th percentile data.

Keywords: Anthropometry, bus, chairs, ergonomics.

Topic: Engineering

[ABS-32]

Monitoring System and Control of Electric Vehicle of Jember University Based on Radio Frequency

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Abstract

Electric vehicle is one choice to develop clean pollution in ountries. In this research a electric vehicle monitors and controls to get best performance of electric vehicle. The voltage sensor, current sensor, speed sensor, and dynamic characteristic testing with control mode and driver mode. In the control mode test, there are four road condition namely straight road, turn road, down road, and ramp. In these test, the high current value happen in 7.93 A. In the speed control mode, the electric vehicle runs well on the road condition straight value reference at speed of 250 RPM. In the condition of the turning road with the speed of reference 250 RPM, the average velocity value is of 245.79 RPM, and in the decrease elevation of road, the velocity value is 206.55 rpm, and finally for increase elevation of road, the speed is 99.63 rpm. All of this numerical can be shown on master control, because all of parameter are sent by radio frequency of the system. These results have low error and have high accuracy

Keywords: electric vehicle, monitoring, control, radio frequency

Topic: Engineering

[ABS-36]

Object Tracking on Semi-Automatic Surveillance Camera Using Image Processing Based on Mean-Shift Method

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Abstract

Closed Circuit Television (CCTV) is a closed system using camera device to capture and save the image in specific time in where this device is installed. Surveillance is more needed, in some places, there are installed more cameras for surveillance. But, fixed camera installation is not effective because the range for surveillance still limited by frame area. To expand the range of monitor we need methods and object tracking is a solution that can be chosen. Object tracking is a process to find object position from a video for each frame in that video. Object tracking is a process performed by computer vision that need an algorithm to analyze every frame difference in the video to know the object movement at the location. Mean-shift is non-parametric space algorithm or feature space analysis based on non-parametric. The test on that device including the effect from variable associated with method used and device robust as it produces noises. The tested variable are number of iterations, target model size and increment area values. After testing the device, mean-shift method can be implemented in semi-automatic surveillance cameras by considering the variable value of the iterations, the size of the target template model, and then increment area values.

Keywords: Object Tracking, Mean-shift, Image Processing

Topic: Engineering

[ABS-37]

Analysis of Power Transformer Conditions using Adaptive Neuro Fuzzy Inference System Based on Dissolved Gas Analysis Method

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Abstract

One way to maintain the transformer is to detect the fault that occurs early with the method of DGA (Dissolved Gas Analysis). However, this DGA method still raises ambiguous interpretations in detecting transformer conditions. Therefore, this study proposed an artificial intelligent method such as ANFIS (Adaptive Neuro Fuzzy Inference System). This research applies ANFIS logic combination on DGA method with ratio of key gas to improve accuracy in detecting transformer condition. The results of ANFIS were tested on 120 data on actual transformer conditions obtained from international journals and 17 DGA data obtained from PT. PLN TJBTB. The result is proved that with the application of ANFIS logic combinations can detect the condition of transformer on Substation PT. PLN TJBTB up to 100% and can improve the accuracy of DGA up to 86,67%.

Keywords: ANFIS, DGA, transformer

Topic: Engineering

[ABS-41]

Boost Converter as Voltage Regulator for the DC Electric Motor Permanent

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Abstract

Boost converter circuit is used to raise the voltage source where the output voltage will have a higher voltage value. Output voltage converter can be maintained at a certain value by setting the PWM duty cycle used for the process of switching mosfet converter when voltage is decreased it will automatically be read by the Arduino Uno microcontroller using the controller Proportional Integral Derivative (PID) through reading the voltage sensor. The magnitude of changes in the voltage value of the generated to the set point voltage value will be the reference value of the duty cycle will be raised. For testing without a load, the current PWM value given 50, 100 and 150 then output voltage the resulting is 23.5 V, 31.5 V and 43.7 V to the input voltage of 24 V. While in the testing using control is given a load of 4.9 N, 14.7 N, 24.5 N, the microcontroller generates a PWM at 153, 167, 182 which generate the motor speed is stable at 324 rpm, with a constant output voltage at 36 V, the output current of 0.62 A, 0.69 A, 0.85 A of the greatest power is 30.8 W

Keywords: Boost Converter, Duty cycle, Pulse With Modulation, Arduino Uno

Topic: Engineering

[ABS-49]

Metal Additive Manufacturing: A General Review

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Abstract

Smart manufacturing covers a wide range of areas such as Internet of Things (IoT), Big Data and Advanced Analytics, Security Technologies, advances in Additive Manufacturing (AM) processes, etc. This presentation focuses on AM of metals which show a tremendous advancement in the past 5-10 years particularly on alloys such as Ti6Al4V, Stainless Steels 316, Co-Cr, Inconel 718 and Al-Si. The capability of AM is not limited to manufacturing new components, but also repair and re-manufacturing. A few successful stories and applications have been reported, ranging from aerospace, automotive, biomedical and personalised items. Some AM processes such as direct metal laser sintering (DMLS), electron beam melting (EBM), selective laser melting (SLM) and selective laser sintering (SLS) are fairly mature, and readily used for production (if not already at that stage). Reducing the cost as well as finding new alloys or machinery with multiple-materials-processing capabilities are, arguably, some of the challenges that AM is facing. In this presentation, various activities in AM are highlighted particularly at AUT.

Keywords: Metal Additive, Additive Manufacturing

Topic: Engineering

[ABS-50]

Utilization of Cylindrical Concrete Wastes as a Gravity Retaining Wall

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Abstract

This paper aim to explain the utilization of cylindrical concrete wastes as an alternative system for a gravity retaining wall. The method of study was to compare the method of installation, stability factors (sliding, overturning and bearing capacity), and cost per unit cubic meter between a prototype of conventional boulder masonry and cylindrical concrete waste. Step by step construction method of the proposed gravity retaining wall system were also described as a basic standard construction procedure as it might be built in a real construction site. The results of this study showed that the installation method of the proposed retaining system worked properly, and if it was compared to the conventional method in the same stability safety factors, the construction time is faster and the cost was cheaper up to 10% and 30% respectively.

Keywords: concrete waste, gravity wall, construction method.

Topic: Engineering

[ABS-52]

The Impact of Stratified Shade Trees Arrangement along the Toll Road in Micro Climate

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Abstract

Shade trees are trees that are on the side of the road. The arrangement shade trees in stratum with the composition of trees, shrubs and bushes, will help to control the climate. Micro climate is climate within a specifically larger area, in this case is a location near the ground or around the plant. Usually micro climate is affected by temperature, humidity, air pressure and wind speed. The role of stratified shade trees is to control the climate. This research is conducted along Waru Sidoarjo toll road at km 23, km 27, km 31 and km 33 which have different arrangement of stratified shade trees. The purpose of this research to calculate the microclimate changes variables for composition of each strata that the most microclimate creates. The method used is a field survey method based on microclimate variables i.e: temperature, air pressure, air humidity and wind speed, for each strata. The survey results were tested by paired T difference test. The result of equation can be concluded that composition of vegetation with complete strata: tree, shrubs and bushes, resulting in temperature decrease 4,53 degree C, increase in air humidity 4,13 % and increase in wind speed 0,53 m/s. Composition without vegetation produce an increase of temperature rising degree C, air humidity 0.89% and the increase in wind speed 0.06 m/s. The vegetation composition of trees produce a decrease of temperature rising degree C, air humidity 1.21% and the increase in wind speed 0.26 m/s, and vegetation composition of the of trees and shrubs produce a decrease of temperature 2. degree C, increase of air humidity 3.34% and increase of wind speeds 0.31 m/s. The composition with complete vegetation strata: trees, shrubs and bushes is the most micro-climate change producer vegetation composition.

Keywords: shade trees, strata, toll road, the micro-climate

Topic: Engineering

[ABS-56]

A Deep Learning Approach For Business Process Prediction

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Abstract

The advances in computing have allowed humans to create a variety of tools for various purposes. Hardware technology coupled with artificial intelligence and machine learning provides many conveniences in various fields. This convenience can be utilized in business processes. This study uses a deep learning approach to help provide business process solutions, especially in the field of marketing. Vehicle marketing data in a district are analyzed to get models for further predictions. Primary data are obtained directly from business actors. This raw data through the pre-processing stage before the modelling stage is good. The performance of Deep Learning Algorithm gives satisfying result that is 97% in this research.

Keywords: Deep Learning, Business Process

Topic: Engineering

[ABS-61]

Measurement Potential Value of Reinforced Concrete Protection Using Cu/CuSO4 Reference Electrode

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Abstract

Sea water consists of 89% chloride and 11% other elements. The salinity of sea water in the world ranges from 3,2 to 3,7%. Salinity is one of the highest causes of corrosion. Therefore, it needs protection to keep the quality of the building, protection for large structures by connecting the anode with the structure to be protected and then passing the electric current so that all areas of the protected structure become cathodic (ICCP). The protection process can be monitored by measuring potential value using half cell potential Cu/CuSO4 reference electrode. Cu/CuSO4 reference electrode is used to measure potential value of three types conditions reinforced concrete, i.e: 3,2%, 3,4% and 3,6% NaCl with protection potential standard of -350mV according to ASTM C 876-91 standard. The result show that potential value for reinforced concrete at 3,2% NaCl reached the protection level of -320 mV to -226 mV, and higher for both other conditions (-342 mV at 3,4% NaCl and -258 mV at 3,6% NaCl). Potentio-dynamic polarization test give results of corrosion rate which is relatively low 3,25 to 6,47 mpy.

Keywords: Cu/CuSO4 reference electrode; ICCP; Potential Protection; Reinforced Concrete; Salinity

Topic: Engineering

[ABS-64]

EEG Pattern Recognition for Hand Movement: A Review

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Abstract

The most advanced hand prosthetic robot can assist the amputees to recover their motor function using myoelectric control system. Also, the myoelectric signal is very dynamic and easy to change due to electrode shift, the skin humidity, and fatigue. As a result, the intention to utilize another bio signal i.e. electroencephalography (EEG) have emerged in several years. The researcher employs EEG signal to identify the user intention as the main source to the move of some equipment such as wheelchair, game computer and so on. Many success stories can be found in the literature. However, the implementation of EEG for moving hand prosthetic is rare and challenging. This article presents a review on the implementation of EEG signal for driving hand prosthetic robot in order to help the amputee recovering their motor functionality. The paper discusses this topic from three points of view: devices used, task type, and pattern recognition method. We present some challenges existed in this area of research and some potencies that can be developed for further research.

Keywords: electroencephalography (EEG), pattern recognition, amputee

Topic: Engineering

[ABS-67]

Analysis Absorbent from Fly Ash to Absorb Exhaust Emissions of Motorcycle

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Abstract

The experimental study aims to determine the effect of fly ash absorption on exhaust emissions on motorcycles. Equipment used by motorbikes, fly ash and readers of exhaust emissions. Fly ash comes from coal combustion effluent activated by using NaOH, then fly ash is pressed so solid then put into the middle of the muffler. The independent variables are engine speed, fly ash mass and surface area, while the dependent variables are CO2, CO, HC and O2. The test results show that the effect of fly ash on the mass of any CO and HC gas output will be lower when compared with the standard without absorbent, and the lowest yield with fly ash 45 gram. Engine speed affects CO and HC exhaust emissions, the lowest gas yield is at 4500 rpm engine speed and this applies to all mass variations and area variations. For CO2 and O2 levels increased.

Keywords: emission; fly ash; absorber; activation

Topic: Engineering

[ABS-68]

Analysis of Absorbent Made from Charcoal Sawdust to Absorb Emissions Motor Vehicle

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Abstract

The experimental study aims to determine the effect of activated charcoal absorption made from sawdust on exhaust emissions on motorcycles. Equipment used motorcycle, activated charcoal, and exhaust gas emission reader. Charcoal is made from the "sengon" sawdust waste activated by using NaOH, then the charcoal is pressed to solid and then put into the middle of the muffler. The independent variables are engine rotation, charcoal mass and surface area, while the dependent variables are CO2, CO, HC and O2. The test results indicate that the effect of activated charcoal on the charcoal mass of whatever CO and HC gas yield will be lowed when it is compared with the standard without absorbent, and the lowest yield with a charcoal mass of 20 grams. The engine rotation affects CO and HC exhaust emissions, this gas yield is lowest at engine speeds between 3000 rpm to 4500 rpm and they apply to all variations of mass and area. And for CO2 and O2 levels increase.

Keywords: emissions; charcoal; absorber; activation

Topic: Engineering

[ABS-69]

The Use of the Semanding Tuban Limestone as a Partial Replacement of Coarse Aggregate in Concrete Mixes

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Abstract

Concrete is the most widely used material in the world. Expensive construction can be caused by increasing cost of concrete. In recent years, concrete production has increased which means consumption of coarse aggregate also increases. Natural coarse aggregate is gravel. Due to the growth in the construction industry, the demand for gravel is increasing rapidly, therefore gravel is expensive. In Semanding Tuban, there is limestone which is greater available than gravel in order to reduce concrete cost. In this case there is a need to study the concrete with limestones from Semanding Tuban as coarse aggregate in order to get better using limestone in concrete mixes. The aim of this research is to investigate the compressive strength of the concrete, in which limestone from Semanding Tuban was used as coarse aggregate as partially or completely replacement. The coarse aggregate was replaced with 0%, 25%, 50%, 75% , 100% by limestone from Semanding Tuban, respectively. The compressive strengths of concrete specimens for respective mix proportions were tested at 14 and 28 days of water curing. In addition the source of aggregate properties were considered in this research : Los Angeles abrasion, absorption and specific gravity for coarse aggregates and fine aggregate. The result of the compressive strength concrete of limestone from Semanding Tuban as addition showed that increased at 0% to 50%, but it decreased at 50% to 100%.

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Keywords: concrete, coarse aggregate, limestone, compressive strength

Topic: Engineering

[ABS-72]

Manufacturing Spar I Beam of UAV Wing Structure Made of Composite Material

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Abstract

This research is about the manufacturing process of the spar I beam profile using composite material conducted. The design of the spar I beam profile is using the 45 degree and UD of carbon fiber. The process itself used a hand lay-up prepreg dan vacuum bagging method. It was found that for the manufacturing process by using hand lay-up prepreg and vacuum bagging gave a good result on the spar I beam made of composite material. Finally there are several considerations of its manufacturing process to be concerned to give a good properties of composite structure.

Keywords: UAV; spar; composite; hand lay-up; vacuum bagging;

Topic: Engineering

[ABS-73]

Udiebot: Design, Analysis and Fabrication of a Quadruped as Observer Robot

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Abstract

Indonesia is one of the countries that has many mountains and it has become a special attraction for many tourists both local and international. Increasing number of climbing activities is also followed by mountaineers lost incidents in the mountain area. The most frequent incident are the mountaineers fall in a cliff, get lost in a mountain area, enter a low-oxygen cave, or slipped down in a poisonous gas crater. In addition, wide area, difficult and dangerous terrain become major obstacle for the rescue team. While the faster lost mountaineer is found, it will further increase the percentage of survivors. Therefore, we propose an observer robot that will help to speed up the evacuation time and minimized rescue teams to get accident during evacuation. In this paper, we present design, analysis and fabrication of a 1.56 Kg quadruped robot. This robot is equipped with gas sensors, proximity sensors, GPS, camera and audio built-in that help to perform its job. It has 4 legs with 12 DOF total while kinematic modelling is done using inverse kinematic approach. Using quadruped/four-legged design makes this robot easier to pass rocky area and uneven mountainous terrain than a wheeled robot.

Keywords: Observer Robot; Quadruped; Uneven Terrain; Inverse Kinematic

Topic: Engineering

[ABS-74]

The Effect of Addition Copper Fins to the Performance of Cooling Vehicle

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Abstract

The study is to determine the effect of the addition of outside fin made of copper mounted on the surface of the radiator on the performance of the motor vehicle cooling. This experiment study uses a gasoline engine stand of 4 stroke 1500 cc. The independent variables are the area copper fins 44 cm2 to 84,8 cm2 and the thickness copper fins 0,2 mm and 0,3 mm and the engine rotation 750 rpm to 2000 rpm. The dependent variable is air and water temperature as well as air and water discharge. The test results show that the effect of adding copper fins has a significant effect on cooling efficiency. The rotation of the engine gives a significant effect on the radiator cooling efficiency. The effect of engine speed and the addition of copper fins has a significant effect on the cooling efficiency of the radiator. The best addition of copper fins in 84.8 cm2 per fin and 0.2 mm thick.

Keywords: copper fins, performance, radiator, efficiency.

Topic: Engineering

[ABS-80]

Audio Steganography Using Lifting Wavelet Transform and Dynamic Key

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Abstract

Steganography is an art and techniques to hide data within data that can be applied to images, video files or audio files. Along with the Internet growth, threats to confidential information security needed is greater. Various threats in the Internet such as hackers and crackers that makes people worry about the security of information that will be sent. This study aims to develop the steganography inside audio files as a cover using the Lifting Wavelet Transform (LWT) and Dynamic Key techniques coupled with AES encryption. This technique marks a frame that will be the Dynamic Key and then the confidential data are AES encrypted using the already Dynamic Key, and then the encrypted data embedded in the audio cover frame using the LWT. The confidential data can be decrypted vice versa by using the already marked frame without having to enter the key manually. The technique used is still under development stage in the Android SDK and still runs simulated inside the Android Emulator. With the development of this steganography application, this application is expected to run well on Android-based devices and can provide convenience, confidentiality and security in the delivery and reception of information anytime anywhere.

Keywords: Lifting Wavelet Transform, Dynamic Key, Audio Steganography

Topic: Engineering

[ABS-81]

Simulation by Mathematical Model of CO2 Gas Stripping in Promoted MDEA Solution Using Packed Column

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Abstract

Currently the importance of separation process is the processing of natural gas and petrochemical industry. In the process of processing requires separation of CO2 gas where this gas is a corrosive gas (acid gas) that is corrosive so that it can damage the piping system. To overcome this problem various absorption methods are developed, both physically and chemically absorbed. Many materials are often used as absorbents such as carbonate solutions with various promoters. In addition, the most widely used absorbent material is Methyldiethanolamine (MDEA) with Piperazine (PZ) promoter. But in industry the absorption process can not operate alone, there should be a process of regeneration of solvents or commonly called the stripping process. Because without the stripping process, absorption becomes ineffective in the solvent recovery, so the solvent must be provided in large quantities. However, studies on the modeLling and simulation of CO2 stripping from MDEA absorption results have not been widely encountered. For this purpose, this research intends to make a mathematical model of CO2 stripping from MDEA solution of PZ promoted in packed column. Then validate the mathematical model made with field data, and see the effect of operating variables on stripping efficiency. The mathematical model was developed based on mass transfer on film theory and it was assumed a first order pseudo reaction. The numerical solution used in this study is the Orthogonal Collocation method. The efficiency of stripping will be higher along with the increase in rich solution temperature or increase in steam temperature, because there is an increase in the reaction kinetics constant value. Increased pressure column does not significantly affect stripping efficiency because the dissolved gas fraction is in a fairly small solution. From program simulation result after validated with factory data got error of stripping efficiency 14,04%

Keywords: Stripping, Packed Column, Methyldiethanolamine, Mass & Heat Transfer, Modelling

Topic: Engineering

[ABS-82]

Study on Effect of Heat Treatment on Chips Formation and Forces in Drilling Titanium Alloy 6Al-2Sn-4Zr-6Mo

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Abstract

This paper focus on effect of heat treatment on chips formation and forces resulted during drilling titanium 6246. Aim of the research to improve this drillability of material. The heat treatment steps were heating at a certain temperature for three hours followed by different cooling methods. Three heat treatments were chosen out of several trials: (i) at 595 degrees C, (ii) at 870 degrees C and (iii) at 985 degrees C. Optic microscope and scanning electron microscope (SEM) were employed for observing the microstructure of the chips after drilling. Quantitative analysis of chips is based on degree of serration measurement. The Kistler dynamometer was used for recording the forces during drilling. It was proofed that heat treatment at 985 degrees C followed by furnace cooling resulted in the highest degree of serration which indicate that chips easier to broke. This heat treatment also resulted in the lowest thrust force and torque. It may be related to extremely bigger grain boundary compared to other heat treatments and the as received one.

Keywords: Ti-6246, heat treatment, microstructure, chips, forces

Topic: Engineering

[ABS-97]

Effect of Feed-rate and Chisel Shape of SCM440 Material Surface Hardness in CNC Milling Machine

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Abstract

Milling process is the process of forming a material by way of workpiece by using a rotary chisel to rotate so that there is slicing by chisel. The workbench of the milling machine moves to the right and to the left to reach the dimensions of the material in order to shape and quality of the material as expected. One of the parameters of the quality of a product on the machining process is the surface hardness of the resulting product. The hardness of a material (steel) can be determined by hardness test using hardness tester using three methods or common techniques: Brinell, Rockwell and Vickers. The purpose of the research is to analyse the effect of feed rate and the shape of chisel carbide to hardness of workpiece surface. In this research the process of SCM440 at some level of parameter level that is feed rate with variation (vf) 100 m/rev, 200 m/rev, and 300 m/rev and shape of chisel 3, 4 and 8 flute cemented carbide. After the CNC Milling process finishes the material is continued with the Micro-Vickers hardness testing process to obtain the highest level of hardness. The method of this study using one way classification with null hypothesis is there is no effect of feed rate on hardness of workpiece surface and shape chisel to hardness of workpiece surface. The result of the research is rejected the null hypothesis, which means that there is an effect between the feed rate and the shape of the cemented carbide chisel to the hardness of the workpiece surface with the highest value of 474.7 HRV on the feed rate variation of 300 mm/rev and the shape chisel 8 flute cemented carbide. And the lowest value of 305.9 HRV on the variation of feed rate 100 mm/rev and shape of 3 flute cemented carbide.

Keywords: Milling, feed rate, chisel shape, micro-vicker, hardness, SCM440

Topic: Engineering

[ABS-96]

Influence Variation of The Cooling Water Flow System to The Cooling Water Temperature and The Machine Temperature on Farfly Fwe30 Machine

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Abstract

Overheat problem often occurs in industrial machinery and must be avoided because it can interfere with the production process. The cooling system is a system that plays an important role in the cooling process of the machine to prevent overheating. One way to cooling the machine is to use a cooling water flow system where the water flow functions as the machine coolant. There are various types of water flow systems but it needs an appropriate water flow system to get maximum results. This study used the experimental method and factorial ANOVA analysis by using Minitab 17 application with a null hypothesis that there is no effect of variations in the cooling water flow system on cooling water temperature and Farfly FWE-30 machine temperature. This research aim is to analyze the effect of variations in the cooling water flow system on the cooling water temperature and Farfly FWE-30 machine temperature. The results of this research are there is an effect between the variation of the cooling water flow system with the cooling water temperature and Farfly FWE-30 machine temperature. With the variation in the cooling water flow system, the temperature of the cooling water becomes cooler than before, and the Farfly FWE-30 machine does not overheat.

Keywords: Overheat, cooling system, temperature, production, Farfly FWE30 machine.

Topic: Engineering

[ABS-23]

Utilization of Wireless Sensor Networks and Real-Time Remote Monitoring Stations in Protecting Marine Ecosystem

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Abstract

Water quality perturbations related to anthropogenic disturbances and industry pressures continue to increase in marine ecosystems. Therefore, effective water quality monitoring programs have become critical for the protection of our water resources. However, without accurate, intensive and long-term data acquisition, the health of the water resources cannot be adequately assessed, effective preservation and remediation programs cannot be run, and program success cannot be properly evaluated. Herein, this research utilized the recent advances in communication and wireless sensors for the purpose of real time remote monitoring (RTRM) of dynamic marine water quality parameters at various spatial and temporal scales. A platform consists of a robust dynamic integration of three different types of sensors; namely biosensors, physical sensors, and chemical sensors were installed at a selected site at the Red Sea Coast (Gulf of Aqaba, near Haqel City). Biological sensor measures dissolved oxygen (DO) which tracks the upwelling of hypoxic bottom water that cause localized fish kills. Physical and chemical sensors measure various water quality parameters such as pH, conductivity, turbidity, and sediment concentration near river bed. The station was linked with advanced software applications and hardware components that enable wireless, mobile and Internet computing. A two-way transfer and display of data using RTRM technologies was utilized for data processing via specialized web-based visualization software packages. This setup establishes integrated methodology for mapping and assessing negative environmental externalities provides a useful tool for the design/development/ implementation of an environmental network for the monitoring of a variety of pollutants over time and space and the assessment of environmental quality of ecosystem. Ultimately, such system improves statistical and mechanistic modelling in monitoring of water quality trends at local, watershed and regional scales for freshwater, estuarine and marine ecosystems. In addition, it enhances rapid (e.g., real-time) detection of hydrologic variability, recognized as a critical need for early warning systems and rapid response to any harmful events.

Keywords: Real-time monitoring, water quality parameters, sensors, cellular networks

Topic: Management of Technology

[ABS-71]

Management Study of Disaster Mitigation for Potential of Big Earthquake that Threatening Jakarta in Matraman District, East Jakarta

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Abstract

Jakarta as the capital of Indonesia is one of the most populated cities. The city also functions as the center of economic and government activities. Therefore, it has plenty of office buildings and densely populated areas. The problem of this condition if there is a disaster happening in Jakarta, it will cost lives, social and economic. To reduce the impact of losses due to disasters, a good disaster mitigation management is needed to assist in the process of mitigating the disaster. The issue of the earthquake with the magnitude 8 SR is one of the major disaster threatening Jakarta, in addition to flood and fire that have become the annual disaster in this city. One district with high population is Matraman District in East Jakarta. This mitigation management study is based on the level of knowledge and information of local citizens about the disaster in their area using questioners. The following step is to contact meteorological, climatological, and geophysical agency (BMKG), regional disaster management agency (BPBD) DKI Jakarta, department of fire and rescue agency DKI Jakarta, and Head of Matraman District that will produce SOP (standard operation procedure) for disaster management in Matraman District. This study resulted as a precautionary measure against the threat of disaster covering Matraman District. Several obstacles were found during the process, so it takes longer than expected. The results of this study can be a reference for other regions as anticipatory measures in disaster management.

Keywords: Disaster mitigation management, Earthquake, Flood, Fire, Matraman, Evacuation Zone

Topic: Management of Technology

[ABS-89]

Design of Fiber Optic Project Management Using PERT

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Abstract

The process of planning to control the project during the implementation of the Fiber Optic Network work is an important activity of a project. The success or failure of a project can be caused by immature planning and ineffective control, which results in inefficient project activities. This will result in delays, declining quality, and increased implementation costs. Project management work time must be limited by the specified schedule, so that the leaders involved in the project can anticipate changes in conditions that occur. This study aims to reduce the impact of delays and project cost overruns through the crashing process with three alternative controls; (i) additional labor, (ii) overtime work, and (iii) subcontracting. Therefore, PERT method can be used to manage project completion time more efficiently and effectively. The results obtained through this study is the creation of optimization on the critical path resulting in shortening duration in each job.

Keywords: Project Management, PERT, Fiber Optic

Topic: Management of Technology

[ABS-1]

Strategy of Simulation of Vertical Axis Wind Turbine (VAWT) using Turbine Blades NACA 4412 Type

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Abstract

Wind energy potential in Indonesia is more than 90 GB and the production electric energy using wind energy has not been explored optimally. The main problem is the optimalization of wind energy utilization has not been explored yet and the demand of the electric energy is increasing faster. The objective of this research is to analyze the alternative strategy using Vertical Axis Wind Turbine (VAWT) using turbine blades NACA 4412. VAWT used 4 till 6 unit turbine blades and the variation wind speed is 3.2 till 6.0 m per second. The research variables are variation of wind speed and variation of turbine blades, and the electric power is generated by VAWT. This research applies quantitative method that is experimental design using two way classification and data simulation. The finding of this research reveals the increasing of wind speed and the number turbine blades, the higher power generated. The null hypothesis is rejected, it means that there is a difference between variation of wind speed and variation of turbine blades to the electric generated power by VAWT.

Keywords: VAWT, Simulation, Energy, wind speed, strategic, turbine blades

Topic: Renewable Energy

[ABS-3]

Analysis of Liquid Fuel from Plastic Waste Using Refinery Distillation Bubble Cap Plate Column with Integrated Thermal Cracking Method

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Abstract

The objective of this paper is to analyze fuel oil component from thermal cracking pyrolysis with refinery of 4-tray distillation bubble cap plate column. This study used a fixed bed type reactor from stainless steel, while the heating process of the electrical reactor reaches a maximum temperature of 750 degrees C with a heating rate of 15.46 K/min. The process condition used in this research was 500 to 650 degrees C. The results of pyrolysis experiments showed, at 500 to 600 degrees C and below, the main products of pyrolysis were oily liquids in trays I, II, III and IV or viscous liquids at temperatures above 620 degrees C in trays I and II and oil fluids in trays III and IV. The obtained liquid fraction of 500-650 degrees C was analyzed by composition using GC/MS, containing carbon chain C4-C26. FTIR identified fuel in tray I, at 500 and 580 degrees C, tray II, at 620 degrees C, tray III, at 600 degrees C and tray IV, at 650 degrees C with a dominant functional group composed of alkanes, alkyl aryl ether, primary alcohol and phenol. The liquid fraction obtained in the case of this study is enriched with naphtha in the range of gasoline and kerosene.

Keywords: Bubble Cap Distillation, FTIR, GC-MS, Plastic waste, Polypropylene, Pyrolysis

Topic: Renewable Energy

[ABS-8]

Experimental Study of Combined Two-Blade Darrieus and Two-Bucket Savonius Wind Turbine at Low Wind Speed

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Abstract

The effectiveness of wind energy usage is highly dependent on turbine design the wind used. Wind turbines are capable of generating energy from blowing wind optimally if the turbine design used is correct. Therefore, in this research will be developed vertical axis turbine type design Darrieus-Savonius optimal and analyzed its performance experimentally. Experimental tests were carried out in the form of prototype turbine 2- Blade Darrieus and 2- Bucket Savonius which ingrafted into one type of new turbine design. Turbine design has a size of 600 mm diameter and 1700 mm turbine height. The purpose of this research is to improve performance turbine design of the new type. With the increased performance of turbine design if is expected to be one option as one source of energy, a cheap and environmentally friendly alternative.

Keywords: combined Darrieus-Savonius, power coefficient, torque coefficient

Topic: Renewable Energy

[ABS-15]

The Simulation of the Effect of The Variation Micro Hydro Power Turbine and Variation of the Water Flow Rate to the Power Generated by Micro Hydro Power Turbine

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Abstract

The increasing demand of electrical energy and the depletion of non-renewable resources will require alternatives to prevent future scarcity of resources. One alternative used is to utilize water energy. Water is one of the most popular renewable energy, environmentally, and less pollution energies, so it has the potential to reduce dependence on current energy use (e.g. petroleum, natural gas and coal). The purpose of this research is to simulate the effect of variation of micro hydro power turbine and variation of water flow rate to the power generated by micro hydro power turbine. The research method uses experimental design with null hypothesis if there is no effect of variation of micro hydro power turbine to the power generated by micro hydro power turbine and there is no effect of variation of water flow rate to the power generated by micro hydro power turbine. The research result is rejected null hypothesis, it means there is no differences between variation of micro hydro power turbine to the power generated by hydro power turbine and there is no differences between variation of water flow rate to the power generated by micro hydro power turbine at significance level 5%.

Keywords: Turbine Type, Water Flow rate, Micro Hydro Power Turbine, Water Energy.

Topic: Renewable Energy

[ABS-18]

The Simulation of the Effect of Shape of Blade and Water Discharge to the Generated Power by Water Turbine

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Abstract

As the population increases each year, energy consumption will increase as well. Meanwhile, the amount of energy produced by the amount of energy consumption is unbalanced resulting in energy becoming scarce. Many countries are beginning to look for alternative energy to overcome the scarcity of energy. Alternative energy used is renewable energy. Many have begun to shift from initially using non-renewable energy now using renewable energy. The Indonesian government is starting to look for renewable energy which is widely available one of them is water. In Indonesia, water energy is very abundant but still not utilized optimally. Water energy is one energy that is environmentally friendly, cheap and widely available in Indonesia. The purpose of this research is to simulate water turbine by considering the shape of blade and water discharge to the generated power by water turbine. The method of this research using one way classification with null hypothesis is there is no effect of the shape of blades to the power generated by the water turbine and there is no effect of the water discharge to the power generated by the water turbine. The result of this research is to reject the null hypothesis, which means there is effect between the shape of blades and the water discharge to the power generated by water turbine.

Keywords: water energy, shape of blade, water discharge, power

Topic: Renewable Energy

[ABS-19]

Simulation of the Effect of Variation of the Water Discharge and Variation of the Nozzle Dimension to the Power Generated by Crossflow Micro Hydro Power Turbine

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Abstract

The increasing need for electrical energy is not balanced with existing energy production capacity, this makes a lot of research on alternative energy to overcome the scarcity of energy. The government through the ministry of Energy and Human Resources (ESDM) continues to seek solutions to this energy problem, one alternative energy is renewable energy using hydropower which has great potential but its utilization still needs to be improved. The purpose of this research is to simulate effect of variation of water discharge and nozzle dimension to the power generated by water turbine. The research method uses experimental design with null hypothesis and there is no effect of water discharge to the power generated by crossflow micro hydro power turbine and there is no effect of variation of nozzle dimension to the power generated by crossflow micro hydro power turbine. The result of this research is: rejected null hypothesis, it means there is an effect of variation of water discharge and variation of nozzle dimension to the power generated by crossflow micro hydro power turbine at significance level 5%.

Keywords: Water Energy, Water Flow Rate, Nozzle Dimension, Micro Hydro Power Turbine

Topic: Renewable Energy

[ABS-20]

Utilization of Traditional Stove as a Power Generator using Thermoelectric Generator for Electrification Solution of the Pre Prosperous Region People in Indonesia

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Abstract

Traditional stove as a power generator is a tool in the field of energy conversion that has been tried to be developed in order to answer the problem of electrification for the poor people in Indonesia. How it works is to utilize the unused heat from traditional stove that is still rife used by rural communities and those in other remote areas in Indonesia. In order to generate electrical energy, the traditional stove will be modified by adding thermoelectric as a heat absorber device, battery controller as control for charging, battery (accumulator) as a container for storing electrical power, and DC to AC inverter to convert DC electrical signals from battery into AC electrical. The design of this tool is expected to be implemented at an affordable price so it can be mass produced so that in the future it can be an alternative source of alternative electrical energy for the whole society and can meet the electricity supply in non-electrification areas. The process of making this tool starts from a literature study that includes the thermoelectric specifications, the temperature required to obtain optimal charging power, as well as the specifications of other materials to be used. Then through construction and materials studies can be made initial design tool followed by assembling the tool. The assembled tool then tested and checked for quality by measuring the thermoelectric heat absorption capacity of traditional stove and how much power it can produce.

Keywords: traditional stove, energy conversion tool, thermoelectric, heat, electrification

Topic: Renewable Energy

[ABS-30]

Design of Solar Thermal Power Plant Using Open Loop Parabolic Trough

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Abstract

Concentrated Solar Power is a system that leverages the technologies with the basic principle is to collect light from the Sun in a media which further modified form or converted into other forms, namely heat energy and enter into a system that generates electrical energy. In this research, Concentrated Solar Power designed by using parabolic trough type. The rays or solar energy collected or concentrated on a spot focus that is located on the central part and along the parabolic trough. This solar energy that focused will be used as an energy to modify water form fluid to gas in copper pipe and the pressurized increase and then can spin the turbine. The influence of the intensity of the solar radiation against environmental temperature, the temperature of the water in the copper pipe, the pressure generated either by the intensity of the solar radiation or with the heater are the main problem to discuss. From experiment measurement, the solar thermal power plants of open loop type parabolic trough collector with a post 2.12 m, a width of 1.0 m and an area of 2.12 m2 produce a heat output of 1696 Watts. The highest temperature of water collector 61.44 degree C on the intensity of the Suns 879.27W/m2 energy is absorbed 10293.82 joules.

Keywords: solar thermal, Concentrated Solar Power, parabolic trough

Topic: Renewable Energy

[ABS-38]

Wind Power Generation Performance Based on Potential of Wind in Puger Beach Area of Jember

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Abstract

Many things to be examined further in the performance of wind power system in the area of Puger Beach. In the performance of a first wind turbine we consider the wind power in an area where there is a wind power plant, then the blade model used, the generator specification used, to the generator relationship with the windmill blade. The topic of the generator relationship with the wind turbine blades is deemed necessary to be discussed because of the mall functions of PLT wind such as over voltage generator due to over speed, the frequency is changed due to over speed, then also under voltage because the rotation of the generator is below the nominal rotation, thus reducing the effectiveness of the generator performance . The problem can be caused by error or mal function on the blade that is not in accordance with the character of the wind in the Puger Beach area, for it needs a research study about it such as the model of the blade slope, then the model generator with how many pairs of poles suitable for average conditions wind speed captured by windmill blades in the Puger Beach area.

Keywords: over voltage generator, over speed, under voltage, slope angle, number of generator poles

Topic: Renewable Energy

[ABS-39]

Performance Wind Turbine Stabilizer using MPPT System

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Abstract

The main problem in Renewable Energy especially Wind Turbine is the uncertain wind conditions. Weather, soil altitude, temperature, season, and some other factors can affect changes in wind speed which is a major source for Wind Turbine. This makes the system flexible to optimize a turbine in the wind conditions blowing hard, or the wind blows weak. MPPT-based fuzzy logic system is proposed in the hope of being able to track and determine the maximum power point value in maximizing turbine performance in varying wind field conditions before power is stored into a battery bank. The method used in this paper is simulated using simulink in Matlab.

Keywords: wind turbine, MPPT, Fuzzy

Topic: Renewable Energy

[ABS-40]

Analysis Performance of Hybrid Savonius-Darrieus Wind Turbine

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Abstract

Electrical energy is one energy generated from the conversion of various types of primary energy, one of which is wind energy. The potential of wind energy is always available despite its low speed. The low wind speed must be converted into electrical energy with a generator that matches the wind speed characteristics. Low wind speed does not mean that the energy potential contained in it can not be utilized or converted into electrical energy, it can still be utilized but it needs a generator that suits the characteristics of wind speed. This study includes the design of the Savonius Modified turbine with Darrieus turbine consisting of three variations of turbine angle with the same height, turbine manufacture, device set up, and retrieval measurement. The generator can work well on the changing wind characteristics so it can be utilized as one component of wind power plant.

Keywords: Savonius, Darrieus, turbine, wind

Topic: Renewable Energy

[ABS-46]

The Analysis of Use of Mixed Premium with Bioethanol from Banana Peel Waste to Increase Engine Power of Four-Stroke, and One Cylinder

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Abstract

Many things have been done to improve engine performance, among others, by the use of fuel heaters and the addition of alcohol/ethanol in gasoline. Various studies on the addition of ethanol to fuel have been done by previous researchers who examined that the addition of ethanol to the fuel can reduce exhaust emissions and improve fuel efficiency. The problem is that the studies have not examined on the influence of the use of premium with ethanol on engine power, and the ethanol being used was pure ethanol which is expensive and the quantity is limited. The purpose of the study is to examine the effect of premium usage with bioethanol from banana peel waste on engine power. The method used is mixing bioethanol 5%, 10%, and 15% in fuel of Honda Tiger 2011 motor and test its power in dynamometer. Data collection is used One Factor Experiment method and data analysis using Multiple Regression method to know whether there is influence or not of two or more independent variables (X) on the dependent variable (Y). The results showed that the addition of bioethanol in premium fuel can increase the power and torque of motorcycle engine with the highest value achieved at 10,000 rpm engine speeds, with consecutive values; power: 15.99 HP (standard), 16.99 (5% bioethanol blend), 16.94 (10% bioethanol mixture), and 16.92 (bioethanol mixture 15%); Torque: 8.83 Nm (standard), 8.92 Nm (5% bioethanol mixture), 8.89 Nm (bioethanol mixture 10%), and 8.88 Nm (bioethanol mixture 15%).

Keywords: premium, bioethanol, banana peel, power, torque

Topic: Renewable Energy

[ABS-54]

Modelling of Solar Assisted Heat Pump

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Abstract

Heat pump is energy conversion system that offers the technology to utilize the available heat in the environment such as air, soil, water, sun and other sources into useful heat. By using less energy input, heat pumps can increase the temperature of the room or water. This research uses the vapour compression heat pump. The system is divided into two sub-systems: the solar energy sub-system and the second is a heat pump sub-system. Solar energy Sub-system using CPC solar collector type and thermal storage. The heat pump sub-system consists of a vertical steam generator, double-pipe internal heat exchanger, preheater, compressor, expansion valve, and evaporator. The model of solar assisted high temperature heat pump was made by using WinDali Programs. Mathematical equations are generated for three subroutines: solar collectors, thermal storage and heat pump. The results of this simulation model are presented in the form of the relationship between radiation intensity to the performance coefficient (COP) of heat pumps, and temperature of heat pump. The results showed the maximum COP of the system can reach 2.8

Keywords: Modelling; solar energy; heat pump; WinDali

Topic: Renewable Energy

[ABS-57]

Recovery Bitumen from Asbuton in Laboratory-Scale Mixing Tank Using Sodium Tripolyphospate and SDBS Surfactant

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Abstract

The objective of this research is to separate the Asbuton asphalt in the agitation tank that is equipped with a heater with three stages, namely premixing, digestion, separation of three phases and analysis of the bitumen content in DEX. The purpose of the premixing stage is to reduce the viscosity of Asbuton by adding DEX up to 60 percent of the total mass of Asbuton and DEX and then mixing it for 30 minutes. The digestion step is carried out by adding a mixture of DEX Asbuton with a wetting agent. The wetting agent is a solution of sodium dodecylbenzene sulfonate surfactant (SDBS) and Na3P5O10. This mixture is stirred at 1500 rpm and the process temperature of 60, 70, 80 C for 30 minutes. The concentration of SDBS surfactant solution to be used is 0,125 ; 0.25 ; 0,37;0,5 percent and the concentration of Na5P3O10 is 0,125 ; 0.25 ; 0,375; 0,5 percent . Three-phase separation is done by adding water to form three layers. The top layer, which is a solar bitumen solution, weighed in weight and measured its density to know the% recovery of bitumen. It can be concluded that the highest percentage of bitumen recovery is 74.63 at 80 C of temperature, the SDBS concentration of 0.125 percent and the Na5P3O10 concentration of 0.25 percent.

Keywords: Asbuton; % recovery; bitumen; Na3P5O10;DEX

Topic: Renewable Energy

[ABS-66]

The Influence of Bioethanol and Gasoline Mixture to Exhaust Emission and Power on Motor Vehicles

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Abstract

The purpose of this experimental study is to determine the effect of bioethanol and gasoline blend on motorcycle exhaust gas emissions and power. The equipment are motorcycle, bioethanol, gasoline, exhaust gas emission, and power readers. Bioethanol is made from black glutinous rice fermented for 4 weeks using yeast, then black glutinous rice is on press and then distilled to separate water from bioethanol. The independent variables are engine rotation, fermentation duration, and bioethanol mixture with gasoline, the dependent variables are CO, HC, and power. The test results show that the effect of bioethanol and gasoline blend produces lower CO, HC emissions and higher power, when compared to standard without the addition of bioethanol, and the best results with mixed variation of E 40%.

Keywords: emission; power; bioethanol; gasoline; black glutinous rice.

Topic: Renewable Energy

[ABS-77]

Design Generator for Horizontal Axis Wind Turbine using Permanent Magnet

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Abstract

Horizontal Axis Wind Turbine (HAWT) is a type of wind turbine that has a horizontal axis. The plant is particularly suitable for areas with considerable wind speed. HAWT requires a generator with a low rotation specification that can be designed using a permanent magnet. In this paper, we analyze the generator with stator 12 copper wire coils arranged to form 3 phases, and the rotor portion consists of 24 Neodymium permanent magnets (NdFeB) with the different number of windings. Testing is done with generator rotation range from 100rpm up to 1000rpm. The number of windings according to the calculation of 34 loops later by adding 3x winding and 6x coil. The test results show that the coil with a 6x calculation of 204 turns produces a greater voltage when compared to the 3x coil calculation of 102 loops. This prototype is ready to be marketed, of course, by fixing the packaging to make it more attractive and look neat.

Keywords: HAWT, generator, wind turbine, permanent magnet, renewable energy

Topic: Renewable Energy

[ABS-79]

Still Nadir Focus For Concentrated Solar Power

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Abstract

The sun is one of the most potential renewable energy development to be utilized, one of its utilization is for solar thermal concentrators, CSP (Concentrated Solar Power). In CSP energy conversion, the concentrator is as moving object by tracking the sunlight to reach the focus point. This method needs a lot of quite energy consumption, because the unit of the concentrators has considerable heavy, and uses large CSP. It means the existence of the usage unit will be appeared to be wider and heavier. The addition of weight and width of the unit will increase the torque to drive the concentrator and hold the wind gusts. One method to reduce energy consumption is direct the sunlight by reflective array to nadir (direction pointing directly below a particular location) trough CSP with Reflective Fresnel Lens concentrator. The focus will be bellow the nadir direction, and the position of concentrator will be fixed position even if the angle of the sun elevation changes. so, the energy concentrated maximally, because it has been protected from wind gust. And then, the possibility of damage and changes in focus construction will not occur. This research is studying, designing, implementing, and analyzing empirical data. This experiment using 1m2 fresnel lens, and the efficiency of solar energy is xx%. With xx KW power and intensity of the suns light is xx Lux. In restriction, the intensity of sunlight at the tropical circles 1 KW/peak, from 6 am to 6 pm.

Keywords: Concentrated Solar Power; Reflective Array; Solar Tracking

Topic: Renewable Energy

[ABS-5]

Identifying Pneumonia Disease Based on Rontgen Images through Power-Law Trans Method

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Abstract

This paper proposes a system for pneumonia disease classification using X-rays images. This research explores various steps of image processing namely Power-Law Trans, Gabor Wavelet and Boundary. The main aim of this step is to identify infiltrate of human lungs X-Ray images and quantify the infiltration. The result indicates the classification of pneumonia disease into normal, mild pneumonia, and chronic pneumonia.

Keywords: Power-law Trans, Pneumonia, Gabor Wavelet and Boundary.

Topic: Technology

[ABS-21]

Waste of Mangosteen Peel Extract as Antitoxoplasmosis on Biochemical of Blood and Hystopatologycal Tissue in Mice

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Abstract

The study investigated the treatment waste of mangosteen peel extract as anti toxoplasmosis in mice infected with Toxoplasma gondii. Method: treatment of mice was divided into healthy control group (P0), group P1 negative control, group P2 positive control was given Cotrimoxazole dose 60mg/kg, group P3 and P4 given mangosteen peel extract dose 200mg and 400 mg/ kg BW.day a twice day perorally. After injection of T.gondii phase takizoit dose 102 intraperitonial and 5-day Treatment we took blood samples from cardiac veins for measurement of BUN and creatinine also from kidney organ samples to know the organ damage and expression of IFN and IL-12. Result .The results indicate that the probit analysis shows a probit value of 0.5 (ED 50%) estimated effective extract of mangosteen peel dose of 60mg/kgBW/day. Extract Waste of mangosteen peel extract dose of 200mg/kgBW/day (P3) significantly different with group P1 (p> 0,05), can increaseng the number of parasite Toxoplasma gondii in peritoneal fluid, decrease levels BUN and creatinine, reduce damage also increase sitokin IFN and IL-12 in the kidney organ. Conclusion waste of mangosteen peel extract dose of 200mg /kgBW/day (P3) is capable of as antitoxoplasmosis in mice.

Keywords: antitoxoplasmosis, biochemical blood, waste of mangosteen peel extract, hystopatologycal tissue

Topic: Technology

[ABS-24]

Ecological Vulnerability Assessment of Afram Headwaters Forest Reserve in Ghana

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Abstract

Forest-fringed communities derive livelihood benefits from the forest through the provision of ecosystem services. The sustainable management of a forest is about the maintenance of forest standing and the development of alternative livelihoods for the forest dwellers. Therefore, a vulnerable forest ecosystem impacts both the ecological function and human wellbeing. This calls for a better understanding of the factors that influence the vulnerability of the forest. The aim of this research was to determine the environmental vulnerability index of the Afram Headwaters Forest Reserve using a multi-criteria decision-making tool, the Analytic Hierarchy Process (AHP). This tool offered the possibility for integration of several factors under three criteria: environmental (rainfall and temperature), physical (slope and elevation) and anthropogenic (population density, land use and wild fire). The results were treated with GIS tools to generate a vulnerability map for the area. Wild fires, land use options and population density influence the ecosystem vulnerability by 44%, 19% and 17% respectively. The combined contribution of anthropogenic factors is 80%. The Environmental Vulnerability Index (EVI) of the forest is 2.46 which is interpreted by the natural breaks classification as moderately vulnerable. The vulnerability map demonstrated low to high vulnerability according to the extent of cover change. As policy makers move to restore the forest to its fit, wildfire management must be in the spotlight.

Keywords: Headwater, Forest Reserve, vulnerability

Topic: Technology

[ABS-33]

Technology-Based Fish Cultivation to Produce Healthy Water Pond Conditions

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Abstract

Health condition and mortality of fish depends on healthy condition of pond water. Four parameters of pond water quality include water temperature, acidity and alkalinity, oxygen content, and salt content. Water temperature can affect the growth of water vegetation and oxygen demand in the pond. The acidity or basicity of fish ponds generally require a degree of acidity of 6.9-8. The oxygen content is related to water temperature, so if there is an increase in water temperature, the oxygen content will decrease, and vice versa. The salt content serves to neutralize the ammonia and nitrate substances. Ammonia is a waste generated through the decay of fish waste. The objective of the research is to apply technology based fish culture tools to produce healthy water pond conditions. The research was conducted by experimental method covering the composition of water quality parameters of ponds including water temperature, acidity and alkalinity, oxygen content, and a balanced salt content to maintain fish health. The result of the research is to produce the equipment to manage the health condition of the pond in the framework of fish breeding cultivation in an effort to increase the number of production with better quality.

Keywords: Healthy Conditions of Water; Mortality of Fish; Acidity; Alkalinity; Oxygen Content

Topic: Technology

[ABS-34]

South Africa Heatwave Trends and Underlying Physical Processes in the Looming Climate Change

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Abstract

It is envisaged that under the influence of climate change, more intense heat waves will be experienced in the future. In South Africa there is already significant realisation of this prediction, showing a marked increase in the frequency and duration of heat waves. The most remarkable duration of the heat wave in recent times, was the 7 days consecutive event during the 2015 austral summer season. Return periods of heatwaves occurrence was obtained using spectral analysis and showed a 12- year period, 4.8 years and 2.1 years which concurred with sunspot activity, El Nino-Southern Oscillation (ENSO), and quasi-biennial oscillation (QBO) respectively. There has been an increase in the frequency, intensity and duration of heatwave events and the North West Province (NWP) of South Africa was hit hard in recent years. It experienced the devastating mortality and morbidity of recent heatwave events. NWP temperature records were analysed to develop a time-series of 2 m air temperature for the maximum of 57 years. From NOAA-CIRES Climate Diagnostics Centre, Boulder, Colorado, USA, website at http://www.cdc.noaa.gov/, atmospheric flow anomalies in the Southern Hemisphere were analysed during the occurrence of heatwaves. Throughout heatwave episode, the large-scale atmospheric circulation sustained the dominance of the exceptionally high temperatures over NWP and maintained clear skies that increasingly dried the air.

Keywords: Heatwave, Physical Processes, Climate Change.

Topic: Technology

[ABS-43]

Combined Methods of Filtration and Absorption to Clarify Glycerol from Waste Frying Oil

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Abstract

Glycerol is a by product compound of frying oil conversion into biodiesel using transesterification process. Due to impurities, the color of glycerol produced is usually black. This type of glycerol is generally used as a fuel at low cost for external combustion. However, in order to increase its economic value, glycerol can be treated either by filtration or absoption process with a result of clearer glycerol which can be used as antifreeze agent or additive for internal combustion engine. Combination of stated methods increases quality of glycerol clarity. Paper filter and activated charcoal were used for filtration and absorption respectively. The best result was produced using 20 micro-meter filter paper and charcoal of 200 mesh which producing glycerol with UVV is Spectrophotometry absorbance at 0.308.

Keywords: Glycerol, filtration, absorption, spectrophotometry, absorbance

Topic: Technology

[ABS-59]

Design of Automatic Speedy Composter Machine

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Abstract

Waste is a very big problem in this entire world, especially in Indonesia. The Government and so many environmental organization already give their innovative solution to solve waste problem, but in fact there is no big impact to reducing waste problem. As we know in fact composting process in Indonesia is just manual composting by human that need a very long time to producing high quality of compost. This country needs technology implementation for composting process. Designing automatic speedy composter machine is needed for more faster, effective, efficient, and better composting process to give the real impact reducing organic waste. Automatic Speedy Composter Machine is designed with four sensors and five actuators that is controlled by PLC and Arduino. The first actuator is one phase AC Motor for Shredder process, the second one is Motor DC for mixing process in Composting Tank, two motor servo for opening the output line, and the last one is motor DC for carrying the compost into output line. In this automatic machine there are two important parameters that must be considered in composting process. This machine using two sensor namely humidity sensor, and temperature sensor to help maintaining the two important parameters. The humidity sensor is used to detect the humidity inside composting tank because humidity has an important role in the growing of microbes. The ideal point of humidity for composting process are 40% - 60%. If the humidity is below 40% then it will cause reducing the activity of microbes, and if the humidity is above 60% then the air volume will reduce and will cause anaerobic fermentation that will produce bad smell. Temperature sensor will sense temperature inside composting tank, higher temperature in composting process will make a composting process faster where there will be more oxygen consumption, and it will cause decomposition process faster. Temperature between 30 - 60 degree C, showing fast activity of composting process. For maintaining this two important parameters there are four ceramic heaters that will heat up the composting tank. There is one proximity sensor also that will sense the volume of composting tank. With humidity and temperature match setpoint, it will cause a very fast, effective, and efficient composting process and it will produce a good quality compost just within 24 hours until 48 hours.

Keywords: Composting Process, Compost, Actuators, Sensors

Topic: Technology

[ABS-62]

Braille Characters Recognition System Using Naive Bayes Method

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Abstract

Nowadays, many people have a problem to understand braille characters. Thus many works of blind people cannot be understood by people in general. To solve the problem, we offer a smart intelligence system by using pattern recognition to recognize braille characters. Firstly, we capture braille character using camera and store it in database. Then we process the image using image processing steps, such as grayscale, filtering, and segmentation. Here we apply also feature extraction method to identify the characteristic of braille characters. These features are further learned using the naive Bayes method. Our proposed method has an accuracy of 88.172 % to predict braille characters.

Keywords: Blind people, Braille Characters, Naive Bayes, Image Processing, Histogram Feature

Topic: Technology

[ABS-63]

Expert System for Predicting of Stress Levels in Diabetes Millitus Patients Using Mobile Application

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Abstract

Diabetes Mellitus (DM) is a metabolic disorders with low insulin absorption. The impact of disease is the increasing glucose concentration (hyperglycemia) in the body, and most importantly disturb the psychological sufferers, namely stress effect. Stress effects of diabetes mellitus patients have a bad impact for them, such as decreasing endocrine system which can increase blood levels. In addition, the patient can behave negatively. Therefore we propose an expert system to solve the problem of diabetes mellitus patient. Thus the patient can analyze and observe stress levels immediately. Our proposed method use a questionnaire of DASS (Depression Anxiety Stress Scales) form to monitor the level of stress (normal, light, moderate, heavy, very heavy) using mobile applications. Based on our experiment with 30 sample patients in Cerme South Village Clinic, Gresik, East Java, Indonesia, the level of diabetes patients are about 97% normal and 3% light stress.

Keywords: diabetes mellitus, mobile application, expert system, level of stress, Cerme South Village Clinic

Topic: Technology

[ABS-65]

The Application Recommendation of Policy Distribution and Supervision of Subsidized Fertilizer with Model V Method

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Politeknik Negeri Madiun

Abstract

Subsidized fertilizer is the government policy for farmers in Indonesia to prosper their lives. Government Regulation Number 77 of 2005 is the basis for determining whether or not subsidized fertilizers are the goods that should be included under supervision and refinement of Government Regulation No. 15 of 2011, which contains about the need for regulations to stipulate the procurement and distribution of subsidized fertilizer. It was done so because irresponsible parties violated the distribution of fertilizers. Despite such regulation, abuses are still found anywhere; therefore strict supervision is necessary for the distribution of subsidized fertilizer. One of the alternative solutions to the abuses is the application that handles the distribution of subsidized fertilizer according to the policy up to the reporting process. The objective of this research was intended for equitable distribution of subsidized fertilizers and for minimizing the scarcity of subsidized fertilizers. The method used in this research was Model, which was the development of the waterfall method with advantages used to represent the concept of V model, using formal language. The programming language developed in this research was Object Oriented Programming (OOP) with the design of Unified Modelling Language (UML). The result of this research was the application that can be used for policy recommendation in the distribution of subsidized fertilizers, thus minimizing its fraudulent impacts

Keywords: Application, Policy, Subsidized fertilizer

Topic: Technology

[ABS-76]

Modelling Water Flow Hydraulic in Open Channels with Green Drainage Facility

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Abstract

High increasing of urban area in greater Malang Indonesia has been raising the water availability issues in surrounding river basins. Providing the green drainage system in residential area would be expected to contribute to the water sustainability in the sub-basin where the area is located. This study aims to design sustainable drainage channels and structures in a housing area in Malang Regency with area of 75,000 m2. The green drainage facilities includes pervious channel, permeable pavement, and retention pond. The data required are topographical map with 0.25 m interval, daily maximum rainfall rate from Lawang, Singosari, and Tumpang rain gauges, and soil properties. The design rainfall is analysed by Gumbel frequency distribution with ten years return period. Rational method is applied to calculate the design flood in conjunction with Kirpich and Mononobe method to analyse concentration time and rainfall intensity. Manning formula is used to design the channel dimension based on open channel hydraulic and uniform flow theories. The retention pond is planned by analysing the design capacity from the flood inflow and designed outflow hydrograph of the pond. The complexity of the hydraulic analysis considering the unsteady flow motivates the application of HEC-RAS one-dimensional hydraulic software. The analysis shows that the flood discharge in the primary channel is 5.007 m3/s using concrete lining and 4.560 m3/s using pervious surface. The dimension of the primary channel is designed as typical channel with 1.4 m width and 1.4 m height. Should the concrete channel is applied, the retention pond is designed to extend the flood timing of 3.578 minute and reduce the primary channel discharge of 0.070 m3/s. The analysis reveals that the adequate pond dimension is 30 m width, 20 m length, and 0.61 m depth. The pond could retain the water of 368.252 m3 volume, infiltrate the water of 26.280 lt/year to the ground water, and reduce the peak flood in the channel from 5.007 m3/s to 4.328 m3/s. The water level profile of steady flow is evaluated through HEC-RAS simulation. This analysis is important to assess the flow velocity, energy, and regime of the continuous channel in steady manner, which cannot be obtained directly from the initial Manning calculation. In addition, the unsteady flow caused by the existence of pond is simulated by HEC-RAS. The results demonstrate that the water stage and energy variation could be accommodated in the designated channels. This research is expected to provide benefit as consideration of the utilization of sustainable drainage facilities in development of urban area.

Keywords: Sustainable drainage, flood discharge, retention pond, HEC-RAS

Topic: Technology

[ABS-85]

Wireless Monitoring System for Body Temperature and Heartbeat

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Abstract

The implementation of wireless-based monitoring systems such as military operations, flood detection, earthquake detection, and health services have been widely studied. One of the health services applications that is developed and exciting to be considered today is wireless vital sign monitoring system. Temperature and heart rate is one of the Vital Signs that require severe handling in controlling one's health. Health services play an essential role in maintaining the condition and safety of the patient soul. However, the problem that occurs today is that medical personnel need a long time to provide diagnosis results due to checking the patient in each room, the number of patients is increasing every time, and the distance of the patient room with the doctor room is far enough. To overcome the problem of health services, the authors propose the design of a monitoring system for body temperature and heartbeat based on wireless. This study aims to reduce misdiagnosis, reduce the burden on the duty of medical staff in controlling the patients health condition, and shorten the service time of patient's data administration. The results of the proposed design work well with the accuracy level in detecting the body temperature 99.72% and heart rate of 98.41%

Keywords: health monitoring, heartbeat, body temperature, arduino, raspberry pi

Topic: Technology

[ABS-91]

Analysis of the Effect of Variation Temperature of Drying and Time to the Water Content of Soursop Leaves on Rotary Drying Process

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Abstract

One of the important steps in quality testing of processed soursop leaves is the drying process. Processed soursop leaves can be stored for a long time due to the drying process water content reducer. Besides as a water content reducer, drying process also stops enzyme activity gradually which degrades the quality of soursop leaves. Natural drying process method of soursop leaves done by sun dryings, whereas artificial method is done by the drying machine. One of the drying machines is rotary type dryer. Several factors that affect the water content of soursop leaf are drying temperature and drying time. The purpose of this study is to analysis the effect of drying temperature and drying time to the water content of soursop leaf using rotary type dryer. The temperature for water content test of soursop leaves sets at 40, 50, and 60 degrees C with duration time on 30, 60, and 90 minutes. Cylinder rotation of dryer is set at 15 RPM and 1,5 metre per second for air flow rate. The method of this research is experimental method with soursop leaf as the research object and digital scales as wet base water content measuring instrument. The smallest mean value of soursop leafs water content reduction is 33,97804 %, which is obtained at 40 degrees C for 30 minutes, and the largest value of soursop leafs water content reduction is 80,75926 % obtained at 90 degrees C for 90 minutes. Therefore, the higher the temperature and the longer the duration time for drying process, the percentage of water content reduction value will also be higher.

Keywords: water content, drying temperature, time, soursop leaf

Topic: Technology

[ABS-102]

The Impacts of Timber Harvesting Scenarios on Tree Biomass and Bioenergy Potential in a Dry Forest Ecosystem

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Abstract

This study examines the potential to tree component biomass, biomass for bioenergy product and sequester carbon of forest area. In order to know about these value, we used CO2FIX program. Thinning harvesting scenario were analyzed, involving the establishment of short rotation harvesting (each 10 years) and long rotation plantations (200 year). Research results showed an overall tree biomass components (stem, foliage, branch and root) were respectively as follow: 2.49 ton/ha plus minus 0.67, 0.14 ton/ha plus minus 0.03, 0.35 ton/ha plus minus 0.09 and 0.65 ton/ha plus minus 0.18. The potential of biomass for bioenergy product and sequester carbon was increase until the end of project simulation. The increase average biomass of bioenergy was 25.96 Mg/ha plus minus 13.46 and the average of net sequestered carbon increase about 16.6 plus minus 35.9 MgCO2equiv/ha. This study for all research variables is highest at each 40 year periods because at this age, the rate of increment in the biomass of the tree is maximized. The implications of the results are that tree species in this study actually enhance carbon sequestration, are carbon sinks and store more carbon. The findings endorse the significance of thinning harvesting to increase carbon sinks and this role will broaden in the future.

Keywords: Bioenergy, CO2FIX, thinning harvesting, short rotation, long rotation

Topic: Technology

[ABS-103]

Thermal Characterization of Mixing Extracted Fe2O3.H2O from Iron Sand and Limestone Precipitated - CaCO3 by DTA-TGA

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Abstract

Iron sand contains a lot of Fe3O4 from which Fe2O3 and limestone can be produced which contain CaCO3. Both of these materials are very plentiful in Indonesia. Because of the plentiful of these two materials, research was carried out for the management and development of products with the initial step of analyzing the thermal characterization of mixing of these two materials, namely Calcium Ferrite. Mixing Extracted Fe2O3.H2O from Iron sand and limestone precipitated using solution mixing method has been conducted. Extraction of limestone as the raw material of precipitated calcium carbonate (PCC) and iron sands as that of Fe2O3xH2O was prepared. The PCC and Fe2O3xH2O each are dissolved in 1 M HNO3 and mixed to be most homogeneous with mole ratio of Ca / Fe is 1/4, 1/8 and 1/12. The results of the mixing are characterized by DTA/TGA. The test results showed that there was a drastic decrease in mass to a temperature of 500 degrees C and decreased slowly. In this case it can be said that there are a process of dehydration and calcination before the temperature of 500 degrees C and the subsequent diffusion process occurs.

Keywords: Fe2O3xH2O, PCC, solution mixing, DTA-TGA

Topic: Technology

[ABS-105]

Multi-Door Lock System Using Arduino R3

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Abstract

The current door lock system is one of the fastest growing things, ranging from door lock using RFID (Radio Frequency Identification) to integrated door lock with the internet. The current technological developments make the door lock system no longer use conventional keys. Remote door lock technology is integrated with IoT (Internet of Things). Other technologies that are being developed are technologies that aim to open or lock doors, in pursuit of time-efficient directly. The Internet of Things is defined as the interconnection of embedded computing devices uniquely identified in the presence of internet infrastructure. The control system in this study was designed using Arduino Mega with MEGA2560 microcontroller as the control center of the system, ESP8266 Wi-Fi fiber module to communicate with the controller to internet by media wifi. The interface itself is Android-based.

Keywords: Multi-Door Lock System, Microcontroller Arduino R3, Selenoid Door Lock

Topic: Technology

[ABS-55]

Developing Vernacular Architecture Learning Tools using 3D Virtual Reality

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Abstract

The learning process can use a variety of existing tools. There are various technologies for learning, 3D virtual reality is one of them. This technology is widely used in various ﬁelds. Several examples are in the ﬁeld of health, aviation, marine up to the design of basement. Buildings with vernacular architecture are not easy to ﬁnd in modern urban areas. Even if there is, the form is a cultural heritage that has limited access. This research attempts to bridge the limitations through a design of 3D virtual relativity application prototype. The development to accomplish this task is using the software prototyping model. A reconstructed virtual architecture object is placed in a 3D stereoscopic environment. Users can explore it freely. This will give an immerse impression to its users. However, there are limitations in exploring virtual space. The speed of browsing in the 3D environment space requires a detailed setting. Some limitations such as cameras speed and turns should be adjusted to avoid eyestrain and nausea. The result is quite interesting for a new alternative as a learning tool

Keywords: Vernacular Architecture, 3D Virtual Reality, Stereoscopic, Cultural Heritage, Immersive Exploration

Topic: Technology

[ABS-108]

APATIK (Pneumatic Flip Flops)

Moch. Zaenal Fanani, Muhammad Arif Nur Huda, Muchlis Dwi Ardiansyah, Aditya Wahyu Satria Yulianto, Kurnia Tri Cahyani

State Polytechnic of Malang

Abstract

Malang is a city that is very potential, both in the fields of industry, education and tourism. Toyomarto Village, Singosari Subdistrict, for example, which is one of the contributors to tourism and industry in the city of Malang. This village presents tours in the form of famous temples and home industries, namely the production of “klompen” sandals and sandal sponges. In the process of producing flip-flops, minimal and conventional technology is still used. The craftsmen only rely on hand skills without modern technology. In small scale industry (UKM) CV. Sinar Sejati for example, the installation of “japit” sandals is still done manually. This causes the lack of maximum productivity and efficiency of the production process. Therefore, this study aims to overcome the problems in UKM CV. Sinar Sejati. An idea emerged to answer the dilemma faced by the home industry with APATIK (Pneumatic Flip Flops). The application of APATIK technology is intended for sandals home industry partners, namely CV Sinar Sejati. This tool uses a pneumatic system with an actuator in the form of a double action cylinder whose piston is designed to resemble “japit.” This tool can pull the sandal strap firmly so that the three buttons of the sandals can fit into the hole. APATIK is able to attach a flip-flop strap two times faster than conventional methods. In one minute, APATIK is able to attach 5 straps to flip-flops. Whereas in the conventional way, the installation of 5 straps into the sandals takes more than 2 minutes. Therefore APATIK is a tool that can increase the productivity of flip-flops products and increase profits in UKM CV. Sinar Sejati.

Keywords: APATIK, UKM CV. Sinar Sejati, home industry, conventional, pneumatic

Topic: Technology

[ABS-110]

The KUKA Robotic Technology and Robot Future Trends

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Abstract

The KUKA (Keller und Knappich Augsburg) robotic technology and robot future trends is a transformation of automation. This robot functions developed at KUKA AG Germany. The worlds first robot to have seven electromechanically driven axes. Worlds first industrial lightweight robot (sensitive robot) with integrated sensors in every axis. This KUKA robot has 7 axes for optimal accessibility, 7 kg -14kg payload, 1,100 mm reach, weight 23.3 - 29.5 kg, integrated sensors in every axis, structural components made of aluminum. Mounting positions: floor, wall, ceiling and position, force and compliance control. KUKA includes more than 40 functions, spanning operations such as forward and inverse kinematics computation, point-to-point joint and Cartesian control, trajectory generation, graphical display, 3-D animation and diagnostics. Applicative examples show the flexibility of KUKA and its easy interfacing with other toolboxes and external devices.

Keywords: KUKA, robotic technology, robot future trends

Topic: Technology

[ABS-112]

Analysis of Data Delivery from Speech Recognition System through Web Server Technology

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Abstract

Speech Recognition is a system to recognize word commands from a human voice and then translate data into the computer. The advantages of Speech Recognition include speed and ease of use. In this research will be analyzed the Speech Recognition technology is done by converting voice data into text, the type of sound inputted is text and numbers using android smartphone media and how the speed of data transmission from Smartphone to Web Server. Test results send Data to Server can be concluded that the average data transmission to the server at a distance of 20 to 80 cm is 0.09 seconds. The Web Server testing to be concluded that the average reception of data from an Android smartphone is 16.47 seconds and the speed of receiving data to the web server is still stable.

Keywords: Speech Recognition, Android Application, Web Server

Topic: Technology

[ABS-113]

Cooperative Control System to Move Objects with Multiple Mobile Robots Using Particle Swarm Optimization

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Abstract

This paper proposes a cooperative control system method to move passive object with multiple mobile robots in unknown environment on the basis of a particle swarm optimization (PSO). Each mobile robot can reach the object and move the object to the target together with information about best position of each robot and its neighbors. The proposed control method to adjust left and right wheels speed of the mobile robot to move towards the target. The simulation results demonstrate the validity of the proposed cooperative control system to move objects with multiple mobile robots Using Particle Swarm Optimization.

Keywords: Multiple mobile robots, Move objects, Particle swarm optimization

Topic: Technology

[ABS-114]

Chlorophyl Photosensitizer of Pterocarpus Indicus for Photodynamic Inactivation

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Abstract

PDI is therapy using light and Light-sensitive molecules that produce toxic molecules to reduce bacteria colony. Light-sensitive molecules is called photosensitizer, the peak spectra of photosensitizer must be in the range of light sources. The photo-physical process was ensued when the light energy is absorbed by the photosensitizer. This process caused photosensitizer in ground singlet state to excitation singlet state through vibration or internal conversion. But if it has enough energy, it could cross to triplet state by intersystem crossing (ISC) process. It can produce toxic molecules through photochemical process called reactive oxygen species (ROS). The important factors for PDI are compatibility between absorbance spectra of photosensitizer with light sources wavelength, the value of photosensitizer and ROS. This could be happen if energy dose of photodynamic is fulfilled. The addition of oxygen will be obtained to increase the production of ROS during the photochemical process. Chlorophyll is pigment from green plant which activated by light energy. Photosensitizer used in this research is chlorophyll obtained by leaf extract of angsana (Pterocarpus indicus). This leaf was filtrated and washed by 99% acetone. Adding dioxane (C4H8O2) and pure water formed precipitate of solution. This was strain to get precipitate and washed by 99% acetone. This precipitate was diluted using diethyl ether (‎C4H10O) and added silica gel. The Absorbance peak of chlorophyll was in 435 nm and 471nm. Percentage of efficiency absorbance using absorbance spectroscopy equation showed 95,37%.

Keywords: Photosensitizer, Chlorophyll PterocarpusIndicus, Photodynamic Inactivation.

Topic: Technology

[ABS-115]

Open Source Network Site Elgg Based Learning Innovation at the Community College Semen Indonesian

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Abstract

The internet is the only fastest and easiest technology to meet the need to communicate with humanity. the internet is able to produce new networks known as social media. Many applications are developed and web based. Social media is built on the foundations of ideology and Web 2.0 technology for the creation and exchange of fellow users. Social media is a system of disseminating information and two-way communication to others. Methods in research on the development of open source social network sites to improve student academic performance and increase institutional income. The object of research is the first semester students who take courses in information systems and technology. the purpose of getting conclusions and recommendations for adopting Elgg as a substitute for the learning management system. The results of the study that open source Elgg proved to be effective in the learning process with an effective feature package facilitating online communication between lecturers and students. Elgg can improve student social learning and lecturer satisfaction. In the end, Community College Semen Indonesian had to adopt Elgg as a management system in its learning.

Keywords: Elgg, social media, open source, User Acceptance Test

Topic: Technology

[ABS-13]

Implementation of The Entrepreneurship Learning Model Based on Business Projects for the Development of the Technopreneurship Spirit Among Students of the State Polytechnic of Malang

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Abstract

The learning approach for entrepreneurship based on business projects is more appropriate for current times because students can practice business according to their interests and will lead to the three domains of learning: cognitive, affective, and psychomotor. The aim of learning entrepreneurship based on business projects is to instill entrepreneurial attitudes and motivations, and for students to be able to understand the focus of the material being discussed, because the learning materials are more easily followed. This research is a descriptive research. The research population is the entity of students of the State Polytechnic of Malang, while the sample is composed of 50 people, which is determined through purposive sampling. Data was collected by questionnaire, interview, and observation, using comparative analysis. Research results showed that the entrepreneurship learning model based on business projects have a greater learning objective achievement compared to the conventional entrepreneurship learning model. As such, the application of the entrepreneurship learning model based on business projects can be made to be more effective in the future

Keywords: entrepreneurship, technopreneurship, project-based learning model

Topic: Technopreneurship

[ABS-100]

The Green Marketing Strategy and Its Impact on Customers Satisfaction

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Abstract

Nowadays in the global market, people care more about the environment-friendly products. The changing business environment causes many companies to develop good quality products which can meet consumers needs and wants by focusing on the innovation in technologies used in the design of green products. In this matter the companies have been forced to implement green marketing strategies in developing products and services and promoting them to increase customers satisfaction. This paper will analyse the impact of marketing strategies on customer satisfaction and to explore the influence of the constructs of green marketing strategies on customers satisfaction. The sample size of research was 254 people who purchased green products. Data were analysed by using correlation and multiple regression analysis. Findings of the study show that there was a significant positive effect of green marketing strategies on customers satisfaction. In addition, a green product innovation was the most influential factor of marketing strategies that affected customers satisfaction. The results also confirm that more customers preferred to buy green products with a good quality, environment-friendly, and recyclable at affordable cost. Thus, the companies should make product innovation and should develop green packaging and advertising to fulfill customers satisfaction and needs.

Keywords: green marketing strategy, technology, green products, customers satisfaction

Topic: Technopreneurship

[ABS-25]

Implementation Green Technology for Water Treatment Plant in Paper Small Scale Industry

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State Polytechnic of Malang

Abstract

Indonesia faces serious problems regarding Municipal Solid Waste (MSW). MSW estimates increase 2 to 4% per year. Each region in Indonesia produces 0.76 kg per day of MSW and in 2010, the total MSW produced is about 65.9 million tons. Indonesia has only about five hundred main landfills with a total daily capacity of about 23,204 tons. In 2010-2014, the Directorate General of Human Settlements said the budget for waste management is US $ 0.48 billion. The Government through Law 18/2008 states that the new objective for waste management policy is in the form of solid waste management. So, the purpose of this research is to discharge the amount of pollution, especially pollution in water.

Keywords: Water Treatment, Paper Mills, MSW

Topic: Water Treatment Plants

[ABS-27]

Pilot Plant of Water Treatment Unit for Flood Water becomes Clean Water with Pneumatic Flash Mix

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Universitas Muhammadiah Jember

Abstract

Water is primary need for human beings in any condition such as in disaster condition. More specifically in floods where water condition is abundant but cannot be consumed because it does not comply the existing quality standards. This pilot plant is based on the condition where the location of flood is quite difficult to be accessed and the energy resources are limited. In principle, this water treatment unit in the future is only intended to treat flood water. The process that occurs in this reactor was the coagulation and flocculation process which were done by batch system. Flash mix process using a pneumatic system and slow mix process using pedals were applied in this reactor. All process was done without involving the electrical energy, this was due to limited access to disaster conditions. At this stage, this pilot plant was proved to be effective for decreasing TDS and turbidity in flood water. The turbidity parameter showed the quality of raw water was 14.5 NTU and the treated water turbidity value was 6.51 NTU. Thus, the percentage of removal for turbidity parameter was 55,1%. The decline of turbidity affects the decrease of TDS value. The value of TDS in raw water was 135 mg/L while in the treated water was 1.27 mg/L. As a result, the percentage of TDS removal was 99.06%.

Keywords: Water Treatment disaster Flood

Topic: Water Treatment Plants

[ABS-95]

System Design and Analysis of Nozzle Aerator Effect on Water Treatment Plant Water-Based Industry

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State Polytechnic of Malang

Abstract

Aerator is a tool/machine that produces air bubbles that serves to increase the oxygen content in water. The working principle of this tool is to make the surface of water as much as possible in contact with air by means of air pushed into the water (tank). Waste Water Treatment Plant PT. Super Indonesia packaging has been in operation since 1998. Wastewater treatment runs using an activated sludge extended aeration system. During operation there are problems with processing such as effluent characteristics that do not meet the standard of quality. So that evaluation should be done to improve the processing efficiency. This evaluation is done by changing the existing method into a new treatment method that is coagulation and aeration without using active sludge. The purpose of this research is to meet the water quality standards established by the government before discharge into the river. The results of this research obtained quality water quality standards that meet the criteria requirements of the government that is pH 6 - 7, BOD 18.14 mg/L, COD 74.60mg/L, TSS 4.0 mg/L and the absence of Lead (Pb) and Chromium Cr). So that waste water that has been processed can be discharged into rivers or water channels around the company environment.

Keywords: aeration, waste water, efficiency, water treatment.

Topic: Water Treatment Plants

[ABS-87]

The Effect of Organizational Support Toward Organizational Pride Along with the Implications on Organizational Citizenship Behavior

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Abstract

Educators are an important component of a college that can lead the organization to achieve competitive advantage, therefore colleges need to have an educator who are proud with their organization and have a citizenship attitude. This study aims to determine the effect of organizational support toward organizational pride and organizational citizenship behavior. This research was conducted at Polytechnic of Malang with 567 people as research population and 235 samples consist of 163 lecturers and 72 educational staff. the sampling technique used is proportionate random sampling. Data analysis method used is PLS. The conclusion of this study is that organizational support has significant effect on Organizational Pride and organizational citizenship behavior. Organizational Pride significantly influence Organizational Citizenship Behavior. Based on the research result, the suggestion given is that the leader of Polinema can increase the employees role in having the willingness and the real action in working beyond the working standard. The next researchers could develop antecedent factors from organizational support that have implications for employees awareness to have organizational citizenship behavior.

Keywords: organizational support, organizational pride, organizational citizenship behavior.

Topic: Business management

[ABS-93]

The Impact of Organizational Culture on Organizational Learning and Organizational Performance

Halid Hasan, Farika Nikmah, Erlangga Andi Sukma, Rizky Kurniawan Murtiyanto

State Polytechnic of Malang

Abstract

The purpose of the present study was to investigate the mediating organizational learning on the relationship between organizational culture and organizational performance. This study was descriptive and correlational research that was conducted through the survey method. The study population consisted of all employees in PT BNI Persero, Tbk of Malang, 70 persons were selected as volume of sample by using Slovins formula. The data gathering tools were organizational culture, organizational learning, and organizational performance questionnaires. Descriptive and inferential statistics (structural equation modelling through path analysis) were used to analyze the data. The data was analyzed using SPSS and AMOS software. The findings of the research indicated that suggested model had appropriate fit and organizational culture beyond its direct impact exerted indirect impact on organizational performance through the mediation of organizational learning that the extent of indirect impact was significantly higher than direct impact.

Keywords: organizational culture, organizational learning, organizational performance

Topic: Business management

[ABS-107]

Web-Based Accounting: Learning in Making Financial Statements for Students

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Abstract

Financial statements constitute one of the most important aspects for a company. Every company is required to report such financial statements for both investor and stakeholders for the sustainability of their business. Accordingly, this study aims at investigating the interest of undergraduate students taking accounting major at Accounting Faculty in Surabaya. Likewise, the investigation is focused on the learning process of accounting by using a website i.e. Edmodo. The sample used in this study were students majoring at Accounting Faculty in Surabaya. The method of analysis in this study using multiple regression statistical analysis. The conclusion that can be obtained from this study is the learning process of accounting through Edmodo and students understanding of the technology significant effect on students interest in learning accounting by using Edmodo

Keywords: Web-Based Accounting, Learning, Financial Statements

Topic: Business management

[ABS-111]

The Influence of Selling Behavior on Customer Trust and Customer Retention: An Empirical Study of the Financial Industries in Indonesia

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Malangkuseswara School of Economics

Abstract

Selling behaviors of salesmen are often regarded as a major element of company success. The behavior of salesman also has important role in maintaining customers trust. In intense competition, companies pay more attention to the salesmen behavior for creating customer trust because salesmen are presenting their company image in their behavior and interactions with customers. This research aims to examine the effect of selling behavior on customer trust and customer retention. The analysis was carried out on the financial industries (insurance and banking) in Indonesia with an analysis unit of insurance customers and banks totaling 450 respondents. The analytical method used path analysis with SPSS. This study found that selling behavior has a direct impact on consumer trust and also has an indirect effect on customer retention. Therefore, the companies should have good relationship with the salesmen in order to maintain customer trust and customer retention.

Keywords: selling behavior, customer trust, customer retention, financial industry

Topic: Business management

[ABS-45]

Energy Management Practice for Profitable Small Broiler Poultry Farming Based on Green Technology in Malang Regency Indonesia

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Politeknik Negeri Malang - Indonesia

Abstract

In order to achieve sustainable development in agriculture, it is necessary to quantify and compare the energy, economic, and environmental aspects of products. This paper studied the energy and economic in broiler poultry farm in Malang Regency Indonesia. The effect of the broiler farm energy management before and after were observed on the energy, economic, and environmental indices. The research method was designing and implementing an electric power utilization management equipped with cage monitoring system and a backup power source safety system that works when PLNs electricity dies to keep the chicken stay healthy. The system was designed based on the green energy management system. Before the implementation of the system designed from this research the energy used for raising the 3300 broiler poultry with 35 days production cycle was 343 KWH electric power and 150 kg propane gas to produce 6.076 kg chicken meat. After the implementation of the system, the number of broiler poultry raised in the cage increased to 3500 with 35 days care using 308 KWH electric power, 135 kg propane gas, and 12 litre petroleum to produce 6,780 kg chicken meat. The numbers indicate that energy used for raising the broiler poultry has been down and the chicken meat production has been increased.

Keywords: energy management, broiler farming, green technology

Topic: Energy Management

[ABS-51]

Monitoring System Design Using Real Time Electrical Energy in Building of Scada-Based Office

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Abstract

The development in the automation system as a means to facilitate human work began to grow rapidly. SCADA has a function as a telemetry which SCADA system has advantages in being able to supervise and control a plant that is located far apart. The SCADA system consists of three main parts: Master (MTU, Master Terminal Unit), Slave (RTU, Remote Terminal Unit) and communication media. Master is used as a communication controller while Slave is used as a print run from Master while for communication from Master and Slave use Modbus protocol which in SCADA media can use ethernet or serial cable. In this research, a SCADA system model is developed by applying a supervisory function that is to monitor the use of electrical energy in real time, where the system combines several sensors on a microcontroller as Slave (RTU, Remote Terminal Unit). Installed on each line and Master (MTU, Master Terminal Unit) using Personal Computer (PC) as supervisor and RS 485 serial as Modbus communication protocol medium with monitoring system. The results of this analysis can be used to analyze and monitor in case of electrical disruption in office buildings in real time.

Keywords: Modubus, Real Time Monitoring, SCADA , Serial RS 485

Topic: Energy Management

[ABS-78]

Study of Management Energy Consumption Intensity Value in Politeknik Negeri Madiun Building as Effort to Increase Productivity of Work Environment

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Politeknik Negeri Malang
Politeknik Negeri Madiun

Abstract

Politeknik Negeri Madiun (PNM) is a new vocational higher education institution in Indonesia that has an office building which was established at the end of 2014 and is the first building owned by PNM where at the beginning of establishment did not conduct energy audit. As an effort to improve the productivity of the working environment in PNM then we conducted a study on the value of the intensity of energy consumption in PNM office building. From the results of audits that have been done, the value of Energy Consumption Intensity in PNM is classified not efficient enough in an effort to increase productivity of a comfortable working environment, so that the results of this energy audit is recommended to renovate some buildings so as to achieve the ideal energy intensity value.

Keywords: management energy, consumption intensity, productivity, work environment

Topic: Energy Management

[ABS-70]

Variability of Climatic Conditions During the Last Three Millennia at Sebkha Mhabeul in South-Eastern Tunisia

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Abstract

This work aimed to study the cyclicity of the geochemical parameters (sodium and potassium) and the climatic variability during the last three millennia within the Sebkha of Mhabeul (South-Eastern Tunisia). The variation in the grey scale along a 91.5 cm core shows six climatic stages. In fact, the WP stretching along the uppermost 3 cm shows a high grey scale indicating dry climatic conditions. The Late LIA is located between 3 cm and 12 cm, and the ELIA between 12 cm and 22 cm. These stages are characterized by an intermediate values for grey scale indicating a moderate climate. The MCA spanning from 22 cm to 35 cm is marked by an intense decrease of the grey scale revealing a wet period. The DA appears along the part between 35 cm and 52 cm. The RWP spanning from 52 cm to 91.5 cm. Based on the geochemical distribution and according to the age model of Marquer et al. (2008), the spectral analysis of the sodium and potassium data visualized 3 cycles of 793 year, 576 yearr and 453 year. The 700-800 year cycle is possibly related to the oceanic thermohaline circulation, namely in the North Atlantic Ocean. Other oceanographic and atmospheric factors could generate the cycles of 576 yr and 453 yr. These cycles were worldwide recorded as interplay between the solar and the oceanography forcing.

Keywords: Sebkha Mhabeul, Spectral analysis, Climatic variability, grey scale, geochemical parameters.

Topic: Others relevant topics

[ABS-75]

The Evaluation of Implementation in Developing Earthquake Resistant House of The Subsidized Housings in Serang, Banten (Case Study Typical of Masonry)

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Abstract

Generally, a subsidized house is kind of masonry house that becomes more popular. A masonry house is susceptible to get loss and damages caused by earthquake, moreover if it was not constructed due to the standard of earthquake resistant house. An earthquake does not cause casualty but a collapsed building does it. The purpose of this study is to evaluate how far the implementation in developing earthquake resistant house case study typical of masonry, in the subsidized housings in Serang Banten. The object is masonry building with type of less than 36 of the 20 subsidized housings in Serang Banten. It is used purposive sampling method in taking samples and it did visual inspection to check structural and non structural components of the building, interview, survey and observation as data collective methods. The result shows there is only 15 percent of subsidized housings on this study which was built considering the criteria of an earthquake resistant building, 45 percent of them was less constructed and 40 percent of subsidized housing was not built appropriately to a minimum requirements in the standard of earthquake resistant building. Based on the evaluation results, it can be said that in the building construction needs more attention and control from the government, developers and the owner of building to reduce loss and house damages caused by earthquake in the future.

Keywords: development, earthquake, evaluation, masonry, subsidized housing

Topic: Technology

[ABS-83]

Effects of Settlement Development and Green Drainage Facility to Surface Runoff in Bodo River Basin Malang

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Abstract

The rapid urban development in Malang, a sub-urban area in Indonesia has increased the vulnerability of river basins to water-related disasters. Water sustainability in Malang, which is located in upper Brantas River Basin, becomes an important issue as the river serves as the most important source of water supply in East Java Province. The objective of this study is to evaluate the impact of a housing area (69.000 m2) and the green drainage facility in Malang Regency to the hydrological characteristic in Bodo River (493.7000 m2), a tributary of Brantas River. The sustainable drainage system applied in this study is detention pond. This study requires land terrain data, daily rainfall data from Karangploso, Dau, and Singosari rain gauges, hourly rainfall data from JAXA global dataset, soil bore log and cone penetration data, and land use data. The designed rainfall is analysed by Log-Pearson Type III frequency distribution with ten years return period. SCS hydrograph method from HEC-HMS software is applied to analyse the surface runoff and infiltration. Curve number is spatially analysed based on the soil properties and land use data, which has value of 83.37 and 96.9 for Bodo river and housing area respectively. The hourly rainfall is assumed to have triangular distribution with seven hours duration within a day. The analysis revealed that the existence of housing area increases the runoff of 0.46 m3/s. The designed flood in Bodo River for ten years return period is 26.243 m3/s with 14 hours duration, while the runoff with contribution from housing area is 26.244 m3/s. In order to reduce the peak flood and extend the flood lag time as well travel time, the detention pond is designed in the housing area based on the land availability. The pond dimension is 67.25 m width, 205.83 m length, and 0.8 m depth. The pond could retain the water of 685.705 m3 volume and reduce the peak flood in the river 0.0013 m3/s. The results demonstrate the benefit of constructing green drainage facilities to complement urban development aggregately.

Keywords: Sustainable drainage, flood discharge, detention pond, HEC-HMS

Topic: Technology

[ABS-84]

The Effect of Marketing, Ease of Access and Household Income towards the Domestics Tourist Visit to Object of Attractions in Sidoarjo Regency

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Universiti Putra Malaysia, Selangor, Malaysia

Abstract

Departing from the issue that there is still a low number of domestic tourists visiting attractions in Sidoarjo Regency, the present study aimed to investigate the influence of marketing, ease of access, and household income on the decisions of domestic tourists visited attractions in Sidoarjo Regency. The research design was quantitative in the form of explanation and survey format. Data were collected by administering questionnaires to 100 respondents using random sampling technique. Multiple linear regression analysis with the help from SPSS program (version 19) for Windows was employed as the analytical tools. The analytical tools were using multiple linear regression analysis with the help from SPSS program (version 19) for Windows. The results showed that marketing, ease of access, and household income had influenced partially and simultaneously on the decision to visit. In addition, the variable of accessibility had the most influence on the visitation decision.

Keywords: marketing, accessibility, household income, decision to visit

Topic: Others relevant topics

[ABS-88]

Comparison of Roberts and Prewitt Edge Detection Method for Malaria Parasite Detection on Thick Blood Film

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Abstract

Malaria is a disease which still widely found in eastern Indonesia, especially in Papua. Main cause of this disease is malaria parasites which transmitted by mosquito Anopheles spp. To diagnose the parasites in human blood, doctors usually do the clinical diagnosis and laboratory examination from blood sample taken from the infected patients. The image of the parasites found in laboratory examination can also be detected automatically using computer algorithm. In this research we use images of parasites on thick blood film and use Roberts edge detection and Prewitt edge detection method for detecting malaria parasites on thick blood film. The parasites image on thick blood film has varieties of color tendencies, they are blue, yellow, green and purple. The four tendencies of image color then processed with Roberts edge detection and Prewitt edge detection. From the results of research that has been carried out on the image of thick blood preparations, malaria parasites are more clearly seen on Prewitt edge detection than Roberts edge detection. The sequence of best results from the tendency of the color of the image of the malaria parasite using Prewitt edge detection is blue, yellow, purple, and the last one is green.

Keywords: Malaria Parasites, thick blood film, Roberts edge detection, Prewitt edge detection

Topic: Others relevant topics

[ABS-26]

Design Smart Green City and the Right to the Healthy Environment

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Abstract

The right to a good and healthy environment in practice are often to be overlooked by some countries. The world's recommendations for environmental destruction due to development and pursuing business must be taken seriously. The conditions will be severe as this condition continues to be an abandonment of the right to a healthy environment not only that it affects the adverse environmental effects, low health levels and high mortality rates due to environmental degradation for it to require a right kind of environmental rights step by way of conduct Smart Green-based development to fulfill and realize the right for a good and healthy environment. From this basis, this research focuses on how the design of smart green development as an effort to fulfill the right to good and healthy environment. The method used in this research are using normative juridical method and sociological jurisdiction. The findings show that Smart Green Design can be an element, so that the rights to a good and healthy environment can be fulfilled.

Key word: Design Development, Smart green, Environment Good, Healthy

Topic: Technopreneurship

[ABS-12]

Multiple Role Conflict and Work Stress: The Evidence to Achievement and Affective Commitment of Career Women on Islamic University

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Abstract

This study proves that multiple role conflict and work stress in career women have an influence on achievement and affective commitment, especially female lecturer of structural official at Islam University in Malang. Hypothesis test result was assessed using gender and feminism theory, multiple role conflict, work motivation and organizational commitment. Multiple role conflict is measured from dimension of time base conflict, strain based conflict and behavior based conflict. Work stress is measured from role overload, role conflict, role ambiguity, and responsibility for people. Work motivation is measured by the need for achievement, power and affiliation, while organizational commitment is measured by affective commitment, sustainability, and normative. Type of research is hypothesis testing with quantitative descriptive approach with SEM. The subject of research is 60 female lecturers of structural officials. Method of collecting is principal data questionnaire with data analysis of SEM. The path coefficient of 0.810 (CR = 31.54) of multiple role conflict to work stress is significant. The contribution of multiple role conflict in explaining the diversity of work stress is 68.9%. Work stress is dominated by excessive workload pressure. The combined contribution of multiple role conflict and work stress to explain the diversity of work motivation is 80.7%. The path coefficient - 0.218 (CR = 2.93) of multiple role conflict on work motivation is significant. The path coefficient of -0.715 (CR = 10.43) of work stress on work motivation is significant. The combined contribution of multiple role conflict, work stress, and work motivation to organizational commitment is 67.0%. Motivation of work decreased due to high of multiple role conflict and work stress. However, high work stress is still able to increase affective commitment

Keywords: dual role conflict, work stress, achievement motivation, affective commitment and career woman

Topic: Others relevant topics

[ABS-92]

Referential and Attributive Using Found in English-Indonesian Technological Terms of Urban Living

Elsha Astika Ayu

Universitas Brawijaya

Abstract

Technology helps human being from every country, occurring more simple, faster, easier and efficient working facilities, including in Indonesia. By the rising era of smart mobile phone or computer, Indonesians from all of its provinces are unconciously compete to one another to be the top of their world. Urban living nowadays, lately has become the social standard. All the city glam, supporting by smart technologies, rout out the citizens creativity not only to make a movement in techno-inventing, but also in techno-using. Many various terms emerge along with the development of techno-using, for example: Googling. As in Indonesia, the mix-using of English language and local language has delivered other new terms too, such as in: “nge-Grab” (online transportation) or hunting (act for taking photos). The writer conducted a study about referential and attributive uses in English use by Indonesian which shows the impacts given by urban and technology living to language application. There are two problems to be solved the study, (1) what technological terms found in English-Indonesian urban living and (2) what type of referential and attributive using occurs to the terms. This study uses qualitative approach in relation to the use of clear and systematic description about the phenomena being studied. Descriptive study in textual analysis is applied to analyze and explain the terms using that has been found.

Keywords: Referential use, attributive use, English-Indonesian term, technology, urban living

Topic: Others relevant topics

[ABS-106]

Integration of Character Education in Developing English Syllabus and Lesson Plan of Vocational Education

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Abstract

Integrating the character education in the English course syllabus and lesson plan is considered important for the vocational school students. Character education is crucial to be taught in this level of education in order to build the character of the students before they enter the work life. Thus, describing the process of integrating character education into the English course became the objective of this research. This research was a descriptive qualitative by using an interview. The subject of this research was the teachers of English at a vocational school in Indonesia. The results of this research showed that the syllabus and the lesson plan were developed following the characteristics of a particular major. Meanwhile, the syllabus and the lesson plan were made considering the criteria set by English teacher network so called "Musyawarah Guru Mata Pelajaran (MGMP)." These criteria refer to the 2013 National Curriculum. However, EFL teachers had their freedom in integrating the character education into their lesson plan as well as accommodating the demands of industry. The characteristics of a particular major appeared under this condition. These developed syllabus and lesson plan enabled the students to develop good characters in relation to daily life norms and values, especially in the use of English for daily communication. In conclusion, the integration of character education has been immersed not only in the cognitive domain but also in the affective domain of the students.

Keywords: character education, syllabus, lesson plan, EFL teaching

Topic: Others relevant topics

[ABS-48]

A Conceptual Design of Water Conservation System for Residential Housing

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Abstract

A transition toward green infrastructure policy has been widely implemented for high-rise official and commercial buildings. However, a practical design to put green building standards into residential housings is still being questioned. This paper introduces a conceptual design of water efficiency and conservation in single family homes by reclaiming roof runoff and storm water for non-potable reuse. The processing unit is proposed by designing a series of compartment box that allows the water to flow and being filtered by using porous media filter. Adaptation of this water conservation system would bring an enormous impact in reducing water demand as well as increasing water security as a part of an individual initiative to improve urban liveability.

Keywords: green building, rainwater harvesting, residential housing, water conservation

Topic: Others relevant topics

[ABS-109]

Innovation of Visual and Simulation Based-Teaching Technology to Increase the Effectiveness and Efficiency of Financial Accounting Learning Processes

Endah Suwarni, Bambang Budiprayitno, Ahmad Jarnusi

State Polytechnic of Malang

Abstract

The teaching and learning process of elementary accounting is not effective and efficient, because it used conventional method, without visualisation and simulation. This research aims is to improve the effectiveness and efficiency of teaching learning process of elementary accounting by applying visualisation and simulation approach. This research used experiment laboratory approach by involving 156 students, that consist of 3 classes of the second semester D (Diploma) III and D IV students of accounting study program. The students composition in every class used matching group based on the grade point average in the first semester. The research method is experimental design used 2x3 factorial (classes of DIII and D IV) and (learning and teaching process without visualisation and simulation, learning and teaching with visualisation and learning teaching with visualisation and simulation). The effective improvement of learning and teaching process used one way classification to analysis the effect of treatment of every class by using post hoc test with Scheffe method. The result of the experiment showed that learning and teaching process with visualisation and simulation is more efficient and effective than teaching and learning process without visualisation and simulation method. The improvement of effectiveness of learning and teaching process showed the mean of test score increased significantly.

Keywords: effectivity, teaching, learning, media, conventional, visual, simulation

Topic: Others relevant topics

[ABS-116]

Comparison of Zeolite, Alginate, Polyurethane Foam as Carries For Lipase Mucor miehei Immobilization to Bio-Ester Production

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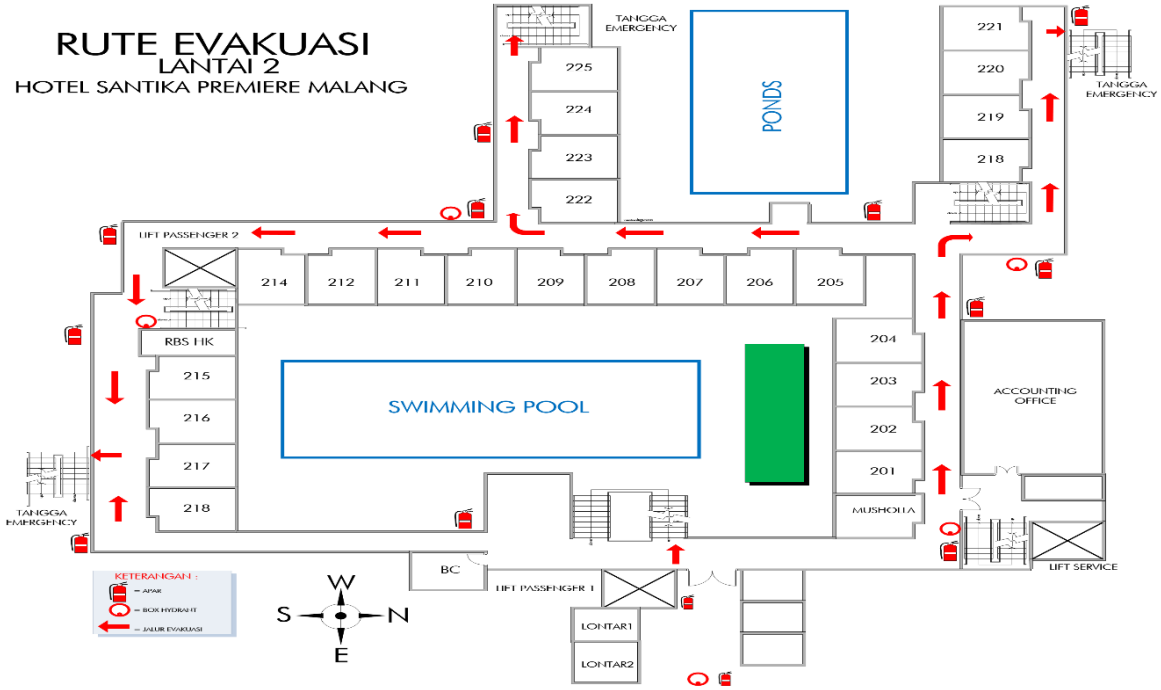
Abstract

Bio-ester as natural flavor is made from natural products through the esterification process from lauric acid which is obtained from coconut oil (free fatty acid (FFA)) and citronellol from citronella oil using lipase from M miehei as biocatalyst. Since the use of free lipase enzyme is quite expensive and unstable, because of the effects from pH, temperature and solvent. Immobilization of lipase provides more stability and efficiency because of its reuse ability. The aim of this research is to compare the immobilization technique of Mmiehei's lipase using different carriers, that are zeolite, alginate and polyurethane foam (PUF) to produce bio-ester at mild condition. Each of that was through the mechanism of adsorption, entrapment and covalent binding process. The research was done in specific condition and all of the carriers has gone through the esterification process using different mole ratio of FFA and citronellol. Optimum result of bio-ester conversion was obtained at the temperature of 400 degree C, highest thermal stability of 90% and the ability for reuse four (4) times on PUF carrier. This results has proven to be cheaper on cost and environmentally friendly because of its ability for waste-free process.

Keywords: Zeolite, Alginate, Polyurethane Foam, lipase, esterification.

Topic: Technology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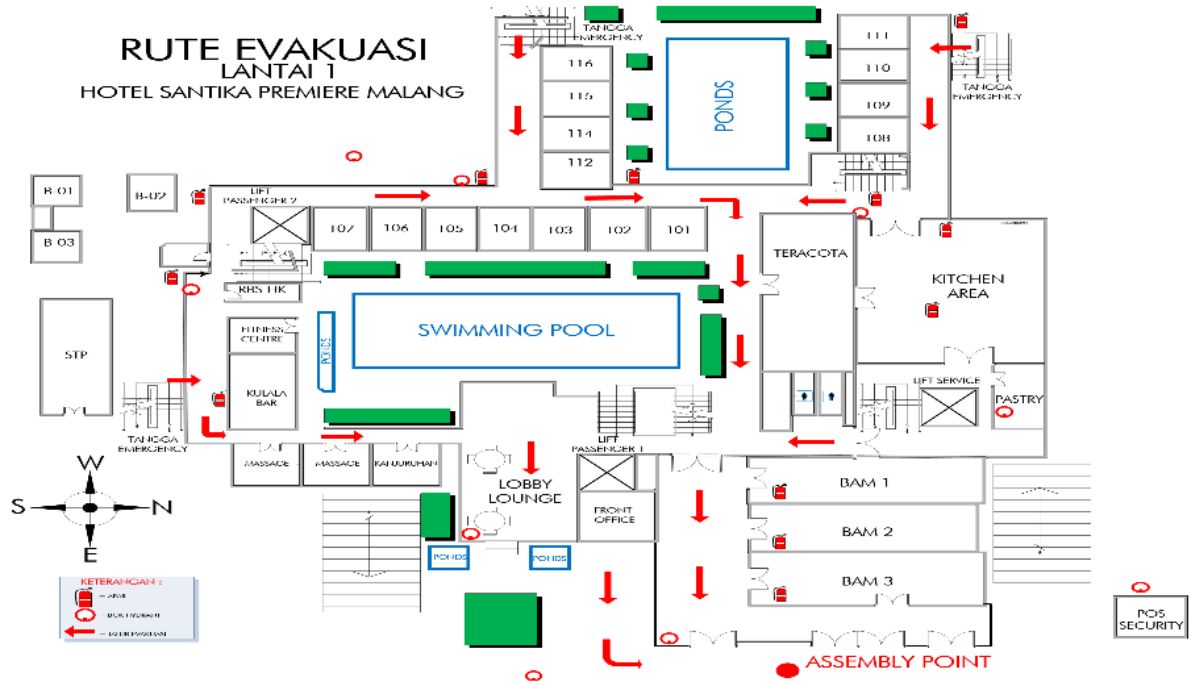
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CONFERENCE AGENDA

PLENARY (09.00-10.00)

Keynote Speaker I: **Dr. Totok Prasetyo, B Eng, MT (Ministry of Research, Technology, and Higher Education)** MC: Dr. Hilda Cahyani and Dr. Setiawan **Venue: Santika Premiere Hotel - Majapahit Hall**

COFFEE BREAK (10.00-10.30) and MOU SIGNATURE

PARALLEL SESSIONS I (10.30-11.00) (Keynote speakers)

Room	**Majapahit I**	**Majapahit II**	**Majapahit III**	**Lontar I**	**Lontar II**
Keynote Speaker	Prof. Nobuo Funabiki	Timotius Pasang, PhD	Vesna Lavtizar, Ph.D	Marjorie L. Baynosa	Prof. A Fauzi I
Moderator	Indrazno Siradjuddin, ST, MT, Ph D	Dr. Siti Rohani	Ahmad Suyono, MPd	Dr. Sugeng Heriyanto	Dr. Hilda Cahyani
Secretary	Fia M. Khoirul Umam AS	Islamiyah Alfan Sasongko G	Rifky Rendi Rainardi	Deni Imam Agus Fatoni	Dani Tri Suharno

PARALLEL SESSIONS II (11.00-12.00) (4x5 Presenters) @ 15 minutes

Room	**Majapahit I**	**Majapahit II**	**Majapahit III**	**Lontar I**	**Lontar II**
Presenter	**ABS-2** **ABS-4** **ABS-7** **ABS-9**	**ABS-99** **ABS-100** **ABS-72** **ABS-39**	**ABS-32** **ABS-37** **ABS-36** **ABS-41**	**ABS-111** **ABS-93** **ABS-38** **ABS-30**	**ABS-71** **ABS-75** **ABS-82** **ABS-40**
Moderator	Indrazno Siradjuddin, ST, MT, Ph D	Siti Rohani	Ahmad Suyono	Sugeng H.	Dr. Hilda Cahyani

COFFEE BREAK (12.00-13.00) – ISHOMA (LUNCH BREAK)

PARALLEL SESSIONS III (13.00-17.00) (16x5 Presenters) @ 15 minutes

Room	Majapahit I	Majapahit II	Majapahit III	Lontar I	Lontar II
Presenter	**ABS-61** **ABS-64** **ABS-67** **ABS-68** **ABS-69** **ABS-28** **ABS-73** **ABS-97** **ABS-80** **ABS-81** **ABS-52** **ABS-86** **ABS-112** **ABS-105** **ABS-108** **ABS-110**	**ABS-13** **ABS-96** **ABS-1** **ABS-3** **ABS-8** **ABS-15** **ABS-18** **ABS-74** **ABS-20** **ABS-22** **ABS-107** **ABS-29** **ABS-113** **ABS-95** **ABS-11** **ABS-45** **ABS-116**	**ABS-56** **ABS-46** **ABS-54** **ABS-57** **ABS-66** **ABS-77** **ABS-79** **ABS-5** **ABS-21** **ABS-24** **ABS-33** **ABS-34** **ABS-114** **ABS-25** **ABS-27** **ABS-47**	**ABS-51** **ABS-78** **ABS-12** **ABS-26** **ABS-48** **ABS-53** **ABS-19** **ABS-50** **ABS-83** **ABS-84** **ABS-88** **ABS-87** **ABS-92** **ABS-106** **ABS-109** **ABS-70**	**ABS-43** **ABS-55** **ABS-59** **ABS-62** **ABS-63** **ABS-65** **ABS-76** **ABS-85** **ABS-91** **ABS-16** **ABS-102** **ABS-103** **ABS-115** **ABS-23** **ABS-49** **ABS-89**
Moderator	Indrazno Siradjuddin, ST, MT, Ph D	Siti Rohani	Ahmad Suyono	Sugeng H.	Dr. Hilda Cahyani

PLENARY (17.00-17.45): CLOSING CEREMONY

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