

# Prosiding 2

*by* Koespiadi Koespiadi

---

**Submission date:** 02-Jun-2021 02:14AM (UTC-0500)

**Submission ID:** 1598890662

**File name:** Prosiding\_2.pdf (566.04K)

**Word count:** 4877

**Character count:** 33904

# FIRST 2016

Forum In Research, Science, and Technology

ISSN: 2461-0739



Renewable Energy  
for Sustainable Development

## PROCEEDING INTERNATIONAL CONFERENCE

OCTOBER 18-19, 2016



Held by:



SUPPORTED BY:

mandiri

LN  
LUCAS-NÜLLE

BE  
BANK OF ELECTRONICS



BSA



## TECHNOLOGY MODEL PRECAST FOUNDATION FOR ECO-FRIENDLY SOLUTION

Koespiadi<sup>1)</sup>, Fredy Kurniawan<sup>2)</sup>, Gede Arimbawa<sup>3)</sup>, Sri Wiwoho Mudjanarko<sup>4\*)</sup>, Nawir Rasidi<sup>5)</sup>

13

<sup>1)</sup> Civil Engineering, Narotama University, Surabaya, Indonesia  
E-mail: koespiadi@narotama.ac.id

12

<sup>2,3,4)</sup> Narotama University, Arief Rachman Hakim 51 Surabaya, Indonesia  
E-mail: fredy.kurniawan@narotama.ac.id, Gede.Arimbawa@narotama.ac.id, sri.wiwoho@narotama.ac.id

18

<sup>5)</sup> Polinema Malang, Jl. Soekarno Hatta No.9, Malang, Indonesia  
E-mail: abunawir@yahoo.co.uk

**Abstract.** The current usage of foundation stone on some houses in Indonesia are need to be encountered. This usage need to be developed further than the usage of stone foundation. In this research, the foundation made of precast inside is not fully charged but hollowed. Foundation pit portion can be useful as utilized channels and so on. Foundation construction method is very easy to do and practical addition to environmental friendliness. Base models are made in the form of shallow foundation and can be produced outside of the project site is in the fabrication of precast concrete. The purpose of this study was to design a better model foundation to reach the maximum compressive force. The research results in the pressure test of 7 days a foundation capable of receiving compressive load of 8 tons. Based on the results of this research, the foundation model needs to be developed further, so that the foundation can be implemented in a better simple house foundation construction.

Keywords: Precast, Foundation, Eco-friendly

### I. INTRODUCTION

Currently, the foundation using stone in conventional implementation takes a long time, high cost, requires a lot of labors and area. These problems need to be solved, because market needs simple solutions, for example, the foundation model is easy to handle and does not have to be built on the spot. This can be solved with the construction of a practical foundation that is the foundation to have thickening of the dimensions on the corner and a hole on the inside. Besides the benefits of the use of the foundation is workable outside the location of the construction work, thereby reducing labor costs and equipment, especially in the limited job site area. Modification of the foundation model develop the shape of the foundation. The production needs small-scale business opportunities like SMEs in areas which have the potential of natural resources and human resources. Precast foundation expected to be produced by the fabric and could ultimately contribute to fulfilling the needs of low-income housing foundation.

### II. LITERATURE STUDY

#### 2.1 The foundation stone

Various literature review and observation of the use of the foundation stone is often used as the foundation of a small house. Understanding The foundation stone was made whole foundation made of stone material. Stone itself is rock breaks that are often found in Indonesia. The grounds of the ease of use of stone becomes dominant in implementation with establishment of the foundation. (fig.1)

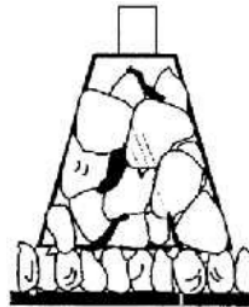


Fig.1 The foundation stone  
Source: Nawir Rasidi, 2008

## 2.2 Precast Concrete Foundation

Precast concrete foundation is a foundation component printing method in mechanization in factory or workshop to give time hardening and gain strength before it is installed. Because the process mixing concrete in a special place (workshop fabrication), the quality can be maintained. But in order to generate profits, the foundation precast concrete will only be produced if the number of typical forms reached a certain minimum, typical form in question is repetitive forms in bulk.

The use of precast foundations advantages compared with conventional structures:

- a) Simplification of the construction.
- b) Fast execution time.
- c) The timing of the structure is a major consideration in development of the project because it is closely associated with Project cost. Structural precast elements can be carried out in the factory Concurrently with the foundation in the field.
- d) The optimum use of material and good quality materials.
- e) One of the reasons why structural precast elements are very economical compared with the structure held in place (Cast in-situ) is the use of concrete molds are not many variations and used repeatedly, the quality of material resulting in generally very good because it was done with Raw standards, monitoring the computer system thorough and rigorous.
- f) Completion finishing easy.
- g) Variation for surface finishing on the structure of precast elements can be easily carried out concurrently with the making The elements in the plant, such as: color and surface models can be formed in accordance with the draft.
- h) Not required extensive project area, reducing noise, cleaner and more environmentally friendly.
- i) With a system of precast elements, in addition to reduce time in terms of implementation, the project also does not require land that is too broad as well as the project's land cleaner for the implementation. The precast element can be done in the factory.
- j) Planning following testing at the factory.
- k) The resulting precast element always through testing laboratory at the factory to get the structure meets requirements, both in terms of strength and in terms of efficiency.
- l) Certification to gain international recognition. If production of precast elements meet standardization has been set, it can be submitted for certification ISO internationally recognized.
- m) This will reduce costs due to reductions in consumption supporting tools, such as scaffolding and others.
- n) The needs of the workforce can be tailored to the needs production.

Limitations of precast foundation is

- a) Not economical when it is done in limited production.

- b) Need a high accuracy in order to avoid large deviations between a single element with other elements, so it is not difficult installation in the field.
- c) The length and shape of the precast elements are limited, according to capacity lifting equipment and means of conveyance.
- d) The maximum distance transportation is economical to use the truck is between 150 to 350 km, but this also depends on the type products. As for sea transport, the maximum distance can transport up to over 1000 km.



16 Fig. 2 Precast foundations

Source: <http://www.vroom.nl/en/products/5-precaster-foundation-beams>

## III. METHODOLOGY

Methodology conducted in this study as follows:

### 3.1 Materials and implementation time

Materials used are cast Ready Mix Concrete K175, concrete compressive test equipment, hydraulic pump tests of concrete, plywood, iron wiremesh, machine mix concrete, material trolleys, trowel, vibrator and hammer. The time needed in the implementation of precast foundation with the pressure test period 7-day concrete is 2 weeks.

Tests conducted in the laboratory precast foundation Polinema Malang and direct loading of the foundations of a concentrated load



Fig. 3 Hydraulics Pumps tests of concrete ex Enerpac

Source: <http://sigma.octopart.com/29552363/image/Enerpac-SCL502H.jpg>

3.2 Implementation methodology as follows:

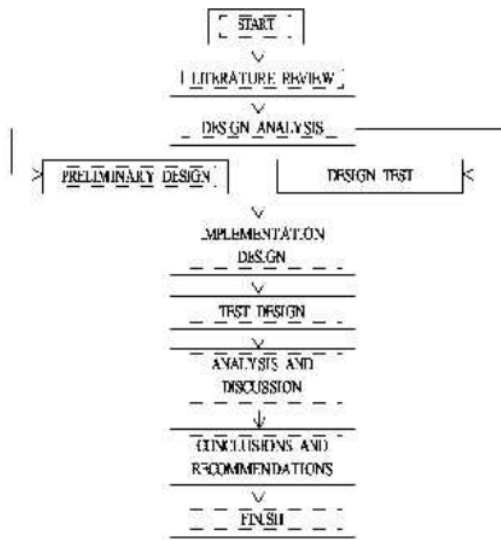


Fig. 4 Flow Chart Methodology

IV. RESULTS AND DISCUSSION

From the result of the design of this model acquired the foundations of today using reinforced concrete with concrete quality K-175, reinforcing rebar diameter 8 mm with quality steel U - 28 (BJTP - 28). Reinforcement is made one double with distances varying between 14-19 cm for vertical and horizontal reinforcement. Precast foundation model including foundation segment lengthwise direction form connection segments foundation width dimension above 30cm, height 80 cm, width tread foundation 80 and 10cm extra wide tread left or the right side. Fig.5

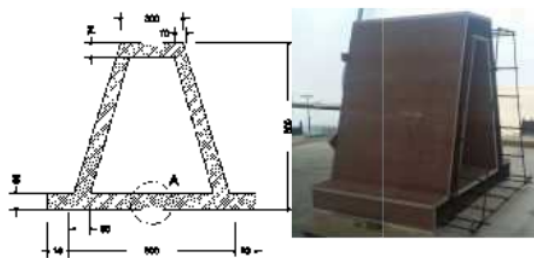


Fig. 5 Design Model Foundation

In Figure 6 visible results precast foundation has been successfully performed and then performed the preparation of the pressure test with the pressure test equipment available in the laboratory Polinema Malang, Figure 7.



Fig 6 foundation Precast



Fig. 7 Prepare Test



Fig. 8 Loading Test

Precast foundation after 7 days are placed in the pressure test tools with hydraulic pump pressure results obtained 8 tons. Fig 8

Seen in the picture 9 precast foundation cracks as a result of centralized prevalent on the side wall of the bottom and the soles of the precast foundation. The maximum crack width of 0.002 centimeters.



Fig. 9 Crack Wall Fondation

## V. CONCLUSION & RECOMMENDATION

### 5.1 CONCLUSION

It can be concluded that the precast concrete foundation model K-175 at 7day test period able to withstand the compressive load of 8 tons. This alternative design of precast foundation has economic value that is less than the foundation stone. On the side of the foundation can be used for other utilities. Foundation precast fabrication can be produced so as to suppress the price per unit foundation especially in terms of labor costs. Labor needs little use craftsman. The use of heavy equipment, enables application of precast foundation.

### 5.2 RECOMMENDATION

Research Foundations precast require further study design, in particular the manufacture of a full scale model. Precast foundation can be modified such that after going through the test results, the vast amount of iron reinforcement is minimized and the shape and size changed in accordance with the designation.

## REFERENCES

- [1] Alesandro,Rangga, Sentosa L., Johanes S.,2013,Sistem interlocking fondasi tapak pada rumah sederhana satu lantai,UK Petra
- [2] Bowles, J.E, (1997). "Analisis dan Desain Fondasi", Ed-4, Cet-3, Jil.-I. Pantur Silaban (Pent.), Erlangga
- [3] Danny Wuisan dan Christian Raharjo. 2012.Sambungan pada Pedestal Fondasi, Kolom, dan Sloof Beton Bertulang untuk Rumah Sederhana Satu Lantai. Surabaya.
- [4] <http://desainomahku.blogspot.com/2010/12/beton-precas.html>
- [5] <http://sigma.octopart.com/29552363/image/Enerpac-SCL502H.jpg>
- [6] <http://www.vroom.nl/en/products/5-precas-foundation-beams>
- [7] Nawir Rasidi, 2008.Fondasi Berongga, Polinema Malang

Note: The article research was conducted as output publication of the acquisition of Commodity Research Grant Universities (PUPT) Fiscal Year 2016 with the title Alternative Models of the Foundation Present And Environmentally Friendly on behalf of lead researcher Dr. Koespiadi

International Conference  
**Forum in Research, Science, and Technology (FIRST) 2016**

October 18 – 19, 2016  
Palembang, Indonesia

Held by:



State Polytechnic of Sriwijaya – Indonesia

## CONTENTS

Contents .....	ii
Editorial Board .....	x
Remark from Director of State Polytechnic of Sriwijaya, .....	xi
Message from Chairman of th Committee .....	xiii
Keynote Speaker .....	xv
Invited Speaker.....	xvi
Scientific Committee.....	xvii
Organizing Committee .....	xviii

### **Sub Theme A – Environment**

The Effect of The Environment on Biodegradation Time of Biodegradable Plastic from Rubber Cassava Starch with Using Sorbital and Glycerol Plasticizer

By: *Sofiah, Martha Aznury, Astria Handayani (Politeknik Negeri Sriwijaya, Palembang, Indonesia)* ..... A1-A4

Treatment of Soil Bearing Capacity Using Bio-Enzyme for The Future

By: *Adi Prawito, Tony Hartono Bagio, Sri Wiwoho Mudjanarko, Makno Basoeki, Nandar Astowo (Universitas Narotama, Surabaya, Indonesia)*..... A5-A9

**1**  
Potentials Energy and Reduction of Carbon Emissions from Crude Palm Oil Production - Case Study in PT Dendy Marker Indah Lestari Sumatera Selatan

By: *Annastassia Ayu Arcitra, Hariyadi, Dwi Setyaningsih, Rio Christiawan (Bogor Agricultural University, Indonesia)* ..... A11-A16

**1**  
Characteristics Composite Results Between Waste Rock and Coal Ash in Prevention Efforts Forming Acid Mine Water in Coal Mines

By: *Aida Syarif, M. Said, A. Halim PKS, Endang Wiwik (Politeknik Negeri Sriwijaya, Indonesia)* ..... A15-A18



The Macroeconomic Model Consequences of Controlling Carbon Dioxide Emissions  
By: *Ida Febriana, Hilwatullisan (Politeknik Negeri Sriwijaya, Indonesia)*..... A19-A23

The Survival Ability of *Najasindica* Against The Heavy Metal of Lead (Pb)  
By: *Fadila Mutmainnah, Arinafril, Suheryanto (Widya Dharma Palembang, Indonesia and Sriwijaya University, Indonesia)*..... A25-A28

1  
Potentiometric Sensor for Endosulfan Pesticide Based on Molecularly Imprinted Polymer  
By: *Yohandri Bow, Hairul, Ibnu Hajar (Politeknik Negeri Sriwijaya, Indonesia)*..... A29-A32

### **Sub Theme B – Biomass to Energy**

Liquid Waste of Palm Oil Plantations as Liquid Fertilizer  
By: *Elfidiah (University of Muhammadiyah Palembang, Indonesia)*..... B1-B4

The Test Performance Filter Straw as Syngas Cleaner Media on The Appliance Biomass Gasification of Updraft Single Gas Electrical System  
By: *Zurohaina, Arizal Aswan, Dwi Arnoldi (Politeknik Negeri Sriwijaya, Palembang, Indonesia)*..... B5-B9

Biomass Gasification of Sugar Cane Single Gas Outlet Updraft System By Straw Filter Cleaning  
By: *Yuniar Zulkarnain, KA Ridwan, Fatria (Politeknik Negeri Sriwijaya, Indonesia)* ..... B11-B14

Preparation and Characterization of Activated Carbon from Palm Shell  
By: *Husaini A, Susila Arita, Yazid M, Novita, R. Junaidi (Sriwijaya University, Indonesia and State of Polytechnic of Sriwijaya, Indonesia)*..... B15-B19

Charcoal Briquettes from Solid Waste of Crudepalm Oil Production as An Alternative Energy  
By: *Fatria, Siti Khodijah, Selastia Yulianti (Politeknik Negeri Sriwijaya, Indonesia)*..... B21-B24

Production of Cork Fish Bone Gelatin with Protein A-Casein Addition  
By: *Endang Supraptiah, Idha Silviyati, Aisyah Suci Ningsih, Masayu Tsuroyaya (Politeknik Negeri Sriwijaya, Palembang, Indonesia)*..... B25-B29

19  
Separation Process Biodiesel from Waste Cooking Oil using  
Ultrafiltration Membranes  
By: Eka Sri Yusmartini, Rusdianasari (Muhammadiyah University,  
Palembang, Indonesia and Politeknik Negeri Sriwijaya, Palembang,  
Indonesia)..... B31-B33

Lipid Extraction From Microalgae Botryococcus Braunii Using  
Maseration, Soxhlet, Percolation, Osmotic and Autoclave Method  
By: Leila Kalsum, Indah Purnama Sari, Mega Silvia (Politeknik Negeri  
Sriwijaya, Palembang, Indonesia) ..... B35-B41

### Sub Theme C – Renewable Energy

A Review on Environmental Impact of Wind Energy  
By: Chan Sovannara, Firdaus, Rusdianasari (Industrial Technical  
Institute of Cambodia and Politeknik Negeri Sriwijaya, Palembang  
Indonesia)..... C1-C6

Hybrid to Support Continuing Energy  
By: Ali Kasim, Nina Paramytha IS (Bina Darma University,  
Indonesia)..... C7-C12

14  
The Effectiveness of Separation Hydrogen by Electromagnetic Forces  
to Efficiency Electrolysis of Water Combustion of Hydrogen  
By: Ahmad Zikri, Lety Trisnaliani, Indah Purnamasari (Politeknik  
Negeri Sriwijaya, Indonesia) ..... C13-C17

1  
A Survey on Solar Cell; the Role of Solar Cell in Robotics and Robotics  
Application in Solar Cell Industry  
By: Tresna Dewi, Pola Risma, Yurni Oktarina, M. Taufik  
Roseno, Hendra Marta Yudha, Ade Silvia Handayani, and Yudi  
Wijanarko (Politeknik Negeri Sriwijaya, Indonesia and Tridinanti  
University Palembang, Indonesia)..... C19-C22

Photovoltaic Module Parameters Estimation using Fuzzy Logic  
Analysis  
By: Helal Al-Hamadi (Computing Sciences and Engineering, Kuwait  
University, Kuwait) ..... C23-C26

The Efficiency Decrement of The Spiral Pump Regarding the Pipe Coil  
Diameter  
By: Darmawi, Riman Sipahutar, Jimmy D Nasution, Akhsani Taqwiyim,  
Nurussama (Sriwijaya University Indonesia, STMIK – MDP Indonesia  
and Politeknik Palcomtech, Indonesia)..... C27-C29

Utilization of Sea Wave As Power Plant with Piston  
By: *Almadora Anwar Sani, Widiyatmoko (Politeknik Negeri Sriwijaya, Indonesia and Polytechnic Sekayu, Indonesia)*..... C31-C39

### **Sub Theme D – Audit Energy**

Performance Coffee Bean Rotary Dryer to Efficiency and Specific Energy  
By: *Zulkarnain, Yuniar, Adi Syakdani (Politeknik Negeri Sriwijaya, Palembang, Indonesia)* ..... D1-D4

Calculation of Labor and Material Needs in Building and Housing Based on SNI 2008 using Microsoft Excel Macros  
By: *Eman Setiawan, Julistyana Tistogondo, Tony Hartono Bagio, Rouil Afaq (Universitas Narotama, Surabaya, Indonesia)*..... D5-D10

**7**  
ICT and Eco Campus, Strategy for Reducing Energy Consumption in The Narotama University  
By: *Iswachyu Dhaniarti, M. Ikhsan Setiawan, Sri Wiwoho Mudjanarko, Ani Wulandari (Narotama University, Surabaya, Indonesia)* ..... D11-D13

Stable Channel of Reclaimed Tidal Lowland on Telang in Banyuasin District  
By: *Henggar Risa Destania, Achmad Syarifudin (Gadjahmada University, Yogyakarta, Indonesia and Bina Darma University, Indonesia)*..... D15-D18

### **Sub Theme E – Technology for Energy**

Renewable Energy: Advantages and Disadvantages  
By: *Reinhard Ploetz, Rusdianasari, and Eviliana (Environmental Ministry of Lower Saxony and the Regional Government of Hanover, Germany and Politeknik Negeri Sriwijaya, Indonesia)* ..... E1-E3

Automatic Irrigation System to See Dry Soil Condition Based Wireless Sensor Network  
By: *Eka Susanti, Rosita Ferbriani (Politeknik Negeri Sriwijaya, Indonesia)*..... E5-E7

Finger Tracking and Recognition using OpenCv Raspberry Pi 3  
By: *Alan Novi Tompunu, Meidyan Permata Putri, Lukmanul Hakim, Bahri Joni, Zamheri, Dedi Rusdiyanto (Politeknik Negeri Sriwijaya, STMIK Palcomtech, and Sriwijaya University, Indonesia)* ..... E9-E12

**1**  
Design Printing Equipment Waste of Plastics Scale Household with  
Molding Injection Methode  
By: *Idha Silviati, Elina Margaretty, Hilwatulisan (Politeknik Negeri  
Sriwijaya, Indonesia)* ..... E13-E16

The Analysis of Coal Liquefaction with the Utilization of Limonite  
Catalyst on Central Banko, Tanjung Enim South Sumatera  
By: *Neny Rochyani, Conan Sumadi (PGRI University and SIGMA  
Informatic and Computer Academy, Palembang, Indonesia)* ..... E17-E20

Design of Induction Heating for Coal Liquefaction  
By: *Nova Rachmadona, Yohandri Bow, Arizal Aswan (Politeknik  
Negeri Sriwijaya, Indonesia)* ..... E21-E25

### **Sub Theme F – Design/Modelling**

Model Pavement Asphalt Roads by Use Waste Spon and Waste Tire  
By: *Dony Ilmy Idoma, Sri Wiwoho Mudjanarko (Narotama University,  
Surabaya, Indonesia)* ..... F1-F4

Hydrograph Performance of Bendung Watersheed in Palembang City  
By: *Achmad Syarifudin, Amirudin Syarif (Bina Darma University,  
Indonesia)* ..... F5-F8

Designing a Sun Tracker on Maximum Energy Point by Fuzzy Logic  
By: *Ahyar Supani, Indarto, Yulian Mirza (Politeknik Negeri Sriwijaya,  
Palembang, Indonesia)* ..... F9-F15

**1**  
Introduction of Interactive Application of Traditional Indonesian  
Musical Multiplatform Based on Smartphone  
By: *Hetty Meileni, Indra Satriadi, Nita Novita (Politeknik Negeri  
Sriwijaya, Palembang, Indonesia)* ..... F17-F20

Unmanned Aerial Vehicles for Pioneer Forest Fire Monitoring  
By: *Nyayu Latifah Husni, Ade Silvia Handayani, Masayu Annisah,  
DewiPermata Sari (Politeknik Negeri Sriwijaya, Indonesia)* ..... F21-F26

Analysis Intrusion Prevention System (IPS) on Computer Networking  
By: *Tamsir Ariyadi, Aan Restu Mukti (Bina Darma University,  
Indonesia)* ..... F27-F31

Automatic Control System Palembang Songket Shawl Based  
ATMega 32  
By: *Sholihin, Siswandi (Politeknik Negeri Sriwijaya, Indonesia)* ..... F33-F37

Application Data Processing Development Facilities and Assets using  
Web Based System Development Life Cycle Method at The State  
Polytechnic of Sriwijaya  
By: *Sony Oktapriandi (Politeknik Negeri Sriwijaya, Indonesia)* ..... F39-F42

6LowPan and IEEE 802.15.4 for Personal Area Network  
By: *Horst Schwetlick, Sopian Soim, Ciksadan (SES formerly HTW-  
Berlin, Germany and Politeknik Negeri Sriwijaya, Palembang,  
Indonesia)*..... F43-F45

Technology Model Precast Foundation for Eco-Friendly Solution  
By: *Koespiadi, Fredy Kurniwan, Gede Arimbawa, Sri Wiwoho  
Mudjanarko, Nawir Rasidi (Narotama University, Surabaya, Indonesia  
and Polinema Malang, Indonesia)* ..... F37-F40

Yagi Antenna Design to Reinforce The 2,4 GHz Wifi Signal Reception  
Using Android  
By: *Suzanzefi, Rapiko Duri (Politeknik Negeri Sriwijaya, Palembang,  
Indonesia)*..... F41-F44

Simulation of Mobile Station Antenna Height Factor Effect Againsts the  
Path Loss in A Variety of Mobile Propagation Models  
By: *Martinus Mujur Rose (Politeknik Negeri Sriwijaya, Palembang,  
Indonesia)*..... F45-F51

Detector Color and Nominal Money System for Blind Based Arduino  
By: *Ibnu Ziad, Widya Hurisantri (Politeknik Negeri Sriwijaya,  
Palembang, Indonesia)* ..... F53-F64

1  
Nazief and Adriani's Stemming Algorithm Implementation on  
Indonesian Scientific Writing Error Identification and Correction  
Software  
By: *Sunda Ariana, Hadi Syaputra, Margareta Andriani, Suheriyatmono  
(Bina Darma University, Indonesia)*..... F65-F68

Design Robot Arm Movement Followers Fingered Man using a Flex  
Sensor with a Microcontroller System ATMega 32  
By: *Oulad Daoud Yousra, Selamat Muslimin, Yudi Wijanarko  
(Universite de Science et Technologie de Houarie Boumediene  
(USTHB), Algeria and Politeknik Negeri Sriwijaya, Indonesia)* ..... F69-F75

Battery Safety System in Energy Load Usage of Electric Car  
By: *Ahmad Hafiz Wijanarko, Selamat Muslimin, Ekawati Prihatini  
(Politeknik Negeri Sriwijaya, Indonesia)*..... F77-F83

### **Sub Theme G – Economic Sustainability**

- 11**  
Analysis of Demand of CPO as Alternative Energy to Employment and Gross Domestic Product in South Sumatra  
By: M. Yusuf (Politeknik Negeri Sriwijaya, Indonesia) ..... G1-G4
- Intellectual Capital and Return on Investment: in Mining Companies  
By: Rita Martini, Sulaiman, L. Vera Riama, Kartika Rachma Sari, Maria, Hanina Sari (Politeknik Negeri Sriwijaya, Palembang, Indonesia)..... G5-G10
- Relative Price in The Demand for Indonesian Narrow Money  
By: Delta Khairunnisa (Politeknik Negeri Sriwijaya, Indonesia) ..... G11-G16
- The Impact of Management Accounting Information System and Environmental Uncertainty on The Quality of Management Accounting Information  
By: Lambok Vera Pangaribuan (Politeknik Negeri Sriwijaya, Palembang, Indonesia) ..... G17-G22

### **Sub Theme H – Management**

- Data Governance in The Renewable Energy Development: Issues and Challenges  
By: Sonny Zuhuda (International Islamic University Malaysia, Kuala Lumpur, Malaysia) ..... H1-H5
- Developing Students' Mathematical Communication Ability Through Performance Assessment on Derrivative Topic  
By: Muhammad Isa, Burhanuddin AG (University of Seramb Miekkaha, Banda Aceh, Indonesia) ..... H7-H13
- 1**  
Household Consumption Patterns of Production Workers, Operators, and Blue-Collar Workers in Palembang, South Sumatera  
By: Neneng Miskiyah, Taufiq, Tatang A.M. Sariman, Rosmiyati Chodijah (Politeknik Negeri Sriwijaya, Indonesia) ..... H15-H21
- Case Study Factors That Influence Children to Workers Kalidoni Village in Palembang  
By: Indri Ariyanti, Rika Sadariawati, M. Noval (Politeknik Negeri Sriwijaya, Indonesia) ..... H23-H26
- The Analysis of Intellectual Capital and Working Environment on Lecturers Work Commitment  
By: L. Suhairi Hazisma, Lambok Vera Riama Pangaribuan (Politeknik Negeri Sriwijaya, Indonesia) ..... H27-H31

<sup>1</sup>  
The Development of Long Apung Airport as The Central of Economic  
in The Border Region with The Support of Regional Renewable Energy  
By: *M. Ikhsan Setiawan, Sri Wiwoho Mudjanarko, Ronny D Nasihien,  
Edy Santosa (Narotama University, Surabaya, Indonesia)* ..... H33-H35

<sup>1</sup>  
The Development of Integrated Maritime Industrial and SME's Area in  
North Madura with The Support of Renewable Energy  
By: *Sri Wiwoho Mudjanarko, Reswanda T. Ade, M. Ikhsan Setiawan,  
Slamet Winardi (Narotama University, Surabaya, Indonesia)* ..... H37-H39

The Role of State Translator in Enhancing the Development of  
Vocational Education to Meet The Global Labour Market  
By: *Eviliana, Ahmad Taqwa, and Zulkarnaini (Politeknik Negeri  
Sriwijaya, Indonesia)* ..... H41-H44

Determinants of Job Satisfaction and Its Implication on The  
Performance of Lecturers in State Universities in South Sumatra  
By: *Periansya (Politeknik Negeri Sriwijaya, Palembang,  
Indonesia)*..... H45-H55

Determinants of The Improvement of Employees' Performance  
By: *Hadi Jauhari and Evada Dewata (Politeknik Negeri Sriwijaya,  
Indonesia)*..... H57-H64

Information System of Urban Public Transport in The City of  
Palembang  
By: *Shafira Rianesti Noor, Leni Novianti, Dedy Rusdyanto, Rika  
Sadariawati (Politeknik Negeri Sriwijaya, Palembang,  
Indonesia)*..... H65-H69

## **EDITORIAL BOARD**

### **Editors:**

**Dr. Rusdianasari (Indonesia)**  
**Dr. Eng. TresnaDewi, M.Eng. (Indonesia)**  
**Prof. Ir. SubriyerNasir, M.Sc., Ph.D (Indonesia)**  
**Prof. Dr. Werner Rammensee (Germany)**  
**Prof. ErryYulianTriblasAdesta, Ph.D (Malaysia)**  
**Dr. Sonny Zulhuda (Malaysia)**



## REMARKS FROM DIRECTOR



2  
AssalamualaikumWaRahmatullahiWaBrakatuh,  
In the Name of Allah, the Most Beneficent, the Most Merciful  
May the peace, the mercy, and the blessing of Allah be upon you.

Distinguished Participants, Ladies and Gentlemen,  
On the behalf of State Polytechnic of Sriwijaya, I would like to welcome you all to the  
International Conference FIRST 2016 on Renewable Energy for Sustainable  
Development

Forum in Research, Science, and Technology(FIRST)is a meeting organised to  
accomodate researchers, academics, businessman, and government to follow up research  
results, to identify industry needs and to keep updated with the government policies. This  
forum has moved from national scale into an international conference which is conducted  
annually by State Polytechnic of Sriwijaya. This year, FIRST brings a theme  
10  
"Renewable Energy for Sustainable Development". It is realised that efforts to solve  
environmental problems that we are facing today need long term potential actions for  
sustainable development; And renewable energy resources is one of the most appropriate  
solutions. Therefore discussing about renewable energy automatically deals with  
sustainable development.

All papers presented in the conference are documented in proceedings. The proceeding  
features 71 papers divided into several fields including Environment, Biomass to Energy,  
Renewable Energy, Audit Energy, Technology for Energy, Design/Modelling, Economic  
Sustainability and Management. In brief, the 4  
relations between renewable energy and  
sustainable development are described with practical cases and several issues relating to  
renewable energy, environment and sustainable development from both current and future  
perspectives.

Our thanks are conveyed 25  
to the Governor of South Sumaterafor providing us direction  
and views related to the importance of renewable energy resources. Also appreciation  
and gratitude to the keynote speakers, H. Alex Nurdin, Governor of South Sumatera  
Province, Prof. TjandraSetiadi, Ph.D., ITB, Indonesia, and Prof. Dr. Werner Rammensee,  
Cologne University, Germany. Also to invited speakers,Prof. Dr.  
ErryYulianTriblasAdesta, International Islamic University, Malaysia, Christian Overfeld,  
Lucas Nuelle, Germany, Dr. Sonny Zuhuda, International Islamic University,  
Malaysia,Ir. Tri Mumpuni, Kementerian ESDM dan IBEKA, Indonesia, Ir. Fahrurrozi,  
M.Si., Business Head Chemicals Group, PT. BASF Indonesia and Head of Business  
Development, FederasiIndustri Kimia Indonesia ontheirpresentation related to renewable  
energy for sustainable development.

Further we extend deepest gratitude and high appreciation to all presenters and contributors to make this conference possible and these proceedings published. It is realised that publication of these proceedings are still far from being perfect; however, hopefully it will be useful for energy scientist, engineers, policy makers and any other readers as references for enriching their knowledge .

2  
May God bless us all with the health to make this event a successful and enjoyable one!

Thank you.

Dr. Ing. Ahmad Taqwa, M.T.  
Director of State Polytechnic of Sriwijaya

## MESSAGE FROM THE CHAIRMAN

BISMILLAHIROHMANIRROHIM,  
ASSALAMUALAIKUM WW.,

15 Good Morning Everyone

May the peace, the mercy, and the blessing of Allah be upon you.

**The honorable governor of South Sumatra Province, Bapak H. Alex Noerdin  
The honorable Director of State Polytechnic of Sriwijaya, Bapak Dr. Ahmad  
Taqwa**

**Distinguishedspeakers, Presenter, Guests, and Participants,**

22  
It is my great pleasure to welcome and thank you very much for your contributions to this renewable energy conference. This conference which will take place on 18 up to 19 of October 2016, is conducted firstly this year through the initiation of Chemical Engineering Department, State Polytechnic of Sriwijaya, aims to exchange the ideas from governments, non-governmental organizations, research and academic institutions, international organizations, and industries, to learn from each other and build on successes that advance renewable energy for sustainable development.

I am very happy to inform that the committee is very lucky to have 3 keynote speakers, i.e Bapak H. Alex Noerdin, the governor of SS province, Prof. Chandra Setiady from ITB Bandung and Prof Werner Ramensee from Cologne University of Germany, who supported us from the very beginning with their capabilities to present, sharing knowledge and experiences with us here as well as the invited speaker i.e Prof. Dr. Erry Yulian Triblas Adesta, International Islamic University, Malaysia, Christian Overfeld, Lucas Nuelle, Germany, Dr. Sonny Zuhuda, International Islamic University, Malaysia, Ir. Tri Mumpuni, Kementerian ESDM dan IBEKA, Indonesia, Ir. Fahrurrozi, M.Si., Business Head Chemicals Group, PT. BASF Indonesia and Head of Business Development, Federasi Industri Kimia Indonesia.

**Distinguished Guests, Presenter, and Participants,**

On this special occasion, I would like to report that the conference manage to successfully attract more than 71 academician to present their abstract, i.e from Kuwait, Germany, Algeria, Malaysia, Cambodia and of course Indonesia. Amongst others there 69 abstract to be presented in this seminar under professional selective review. And for that reason, I personally would congratulate you all as distinguished speaker to this event.

This conference has collaborated with two international journal i.e Journal of Engineering and Technological Science, ITB and Gadjah Mada International Journal of Business. All selected papers are then peer-reviewed<sup>8</sup> to meet the publication standard. The peer reviewer of each manuscript is rigorous and concentrates on objective and technical concern to determine whether the research has been sufficiently well conceived, executed and described.

20  
**Excellencies, Distinguished Guests, Ladies And Gentlemen**

I would also like to give special welcome to Lucas Nuelle, PT. Merck Chemicals and Life Sciences, CV. BestariSetiaAbadi, PT. BangunEnergi, PT. Ditek Jaya, PT. Bank MandiriTbk., PT. Indofood SuksesMakmur and individual who support this conference through sponsorship. I believe that we could never thank you enough for that.

Finally, I expect all participants have memorable moment through this conference and enjoy your stay in Palembang, South Sumatra Province, Indonesia. Thank you.

Sincerely  
Chairman of Organizing Committee  
H. Firdaus

**KEYNOTE SPEAKER**



H. Alex Noerdin  
Governor of South Sumatera



Prof. Tjandra Setiady, Ph.D  
ITB, Indonesia



Prof. Dr. Werner Rammense  
Cologne University, Germany

### INVITED SPEAKER



9  
**Prof. Dr. Erry Yulian Triblas Adesta**

International Islamic University,  
Malaysia



**Christian Overfeld**

Lucas Nuelle, Germany



**Dr. Sonny Zulhuda**

International Islamic University,  
Malaysia



**Ir. Tri Mumpuni**

Kementerian ESDM dan IBEKA,  
Indonesia



**Ir. Fahrurrozi, M.Si.**

Business Head Chemicals Group, PT.  
BASF Indonesia and Head of Business  
Development, Federasi Industri Kimia  
Indonesia

### SCIENTIFIC COMMITTEE

1. Prof. Dr. Erry Yulian Triblas Adesta, IPM., Ceng., MIMechE  
IIUM, Malaysia
2. Prof. Dr. Werner Rammensee  
Cologne University, Germany
3. Dr. Sonny Zuhuda  
IIUM, Malaysia
4. Prof. Ir. Subriyer Nasir, M. Sc., Ph.D.<sup>23</sup>  
Universitas Sriwijaya, Indonesia
5. Prof. Dr. Hj. Badia Perizade, MBA  
Universitas Sriwijaya, Indonesia
6. Dr. Ali Ridho Baragbah  
Politeknik Elektronika Negeri Surabaya, Indonesia
7. Dr. Ismet Ilyas  
Politeknik Manufaktur Negeri Bandung, Indonesia
8. Dr. Ing. Ahmad Taqwa, M.T.<sup>17</sup>  
Politeknik Negeri Sriwijaya Palembang, Indonesia
9. Dr. Eng. Tresna Dewi, S.T., M. Eng.<sup>3</sup>  
Politeknik Negeri Sriwijaya Palembang, Indonesia
10. Dr. Ir. Rusdianasari, M. Si.  
Politeknik Negeri Sriwijaya Palembang, Indonesia
11. Dr. Ir. Abu Hasan, M. Si.  
Politeknik Negeri Sriwijaya Palembang, Indonesia
12. M. Yusuf, S.E., M. Si., Ph.D.<sup>3</sup>  
Politeknik Negeri Sriwijaya Palembang, Indonesia
13. Dr. Ir. Leila Kalsum, M.T.  
Politeknik Negeri Sriwijaya Palembang, Indonesia

## ORGANIZING COMMITTEE

- Advisory Board** : 1. <sup>24</sup> Dr. Ing. Ahmad Taqwa, M.T.  
2. Carlos RS. S.T., M.T.  
3. Ir. IrawanRusnadi, M.T  
4. Drs. Zakaria, M.Pd  
5. Dr. Ir. Leila Kalsum, M.T
- Chairman** : H. Firdaus, S.T., M.T.
- Vice Chairman** : 1. Ir. Jaksen, M.Si  
2. AhyarSupani, S.T., M.T.
- Administrator** : 1. Firdaus, S.E., MM.  
2. HariMulyono, S.E., MM.
- Secretary** : Dr. Ir. Rusdianasari, M.Si
- Vice Secretary** : Eviliana, S.Pd
- Treasurer** : Yuniar, S.T., M.Si.
- Vice Treasurer** : LetyTrisnaliani, S.T., M.T.

### Committee Members

1. Ir. Zulkarnaini., M.T
2. Dr. Martha Aznuri, M.Si
3. Dr. Eng. TresnaDewi, M.Eng
4. M. Yusuf, S.E., M.Si., Ph.D
5. M. Miftakul Amin, S.Kom., M.Eng
6. Drs. MochamadAbsor, M.T
7. Dr. Ir. Abu Hasan, M.Si
8. Ir. SelastiaYuliati, M.Si
9. Zurohaina, S.T., M.T
10. Ir. AisyahSuciNingsih, M.T
11. Indah Purnamasari, S.T., M.Eng.
12. Suyanto
13. BaheramSyah
14. Prandoko
15. Hermanto



# Prosiding 2

---

## ORIGINALITY REPORT

---

16%

SIMILARITY INDEX

13%

INTERNET SOURCES

9%

PUBLICATIONS

2%

STUDENT PAPERS

---

## PRIMARY SOURCES

---

1	<a href="http://eprints.polsri.ac.id">eprints.polsri.ac.id</a> Internet Source	7%
2	"Welcome messages", 2016 12th International Conference on Mathematics, Statistics, and Their Applications (ICMSA), 2016 Publication	1%
3	<a href="http://repository.poliupg.ac.id">repository.poliupg.ac.id</a> Internet Source	1%
4	Submitted to Kolej Universiti Linton Student Paper	1%
5	<a href="http://conference.researchbib.com">conference.researchbib.com</a> Internet Source	1%
6	<a href="http://serisc.org">serisc.org</a> Internet Source	1%
7	<a href="http://repository.unand.ac.id">repository.unand.ac.id</a> Internet Source	<1%
8	Pedro Freitas. "Expression analysis of micrRNAs targeting adhesion complex	<1%

molecules in gastric cancer", Repositório Aberto da Universidade do Porto, 2014.

Publication

---

9	<a href="http://icdecs.mercubuana.ac.id">icdecs.mercubuana.ac.id</a> Internet Source	<1 %
10	Ayhan Demirbaş. "Sustainable Developments of Hydropower Energy in Turkey", Energy Sources, 2002 Publication	<1 %
11	<a href="http://www.semanticscholar.org">www.semanticscholar.org</a> Internet Source	<1 %
12	Al Candra, SW Mudjanarko, YCS Poernomo, P Vitasmoro. "Analysis of the Ratio of Coarse Aggregate to Porous Asphalt Mixture", Journal of Physics: Conference Series, 2020 Publication	<1 %
13	Submitted to Universitas Negeri Jakarta Student Paper	<1 %
14	<a href="http://researchinventy.com">researchinventy.com</a> Internet Source	<1 %
15	<a href="http://posteriori.blogspot.com">posteriori.blogspot.com</a> Internet Source	<1 %
16	<a href="http://eprints.glos.ac.uk">eprints.glos.ac.uk</a> Internet Source	<1 %
17	<a href="http://first.polsri.ac.id">first.polsri.ac.id</a> Internet Source	<1 %

---

18	<a href="http://www.coursehero.com">www.coursehero.com</a> Internet Source	<1 %
19	<a href="http://www.ijfac.unsri.ac.id">www.ijfac.unsri.ac.id</a> Internet Source	<1 %
20	"iCAST 2018 Foreword", 2018 International Conference on Applied Science and Technology (iCAST), 2018 Publication	<1 %
21	Tresna Dewi, Pola Risma, Yurni Oktarina, M. Taufik Roseno. "Neural network controller design for a mobile robot navigation; A case study", 2017 4th International Conference on Electrical Engineering, Computer Science and Informatics (EECSI), 2017 Publication	<1 %
22	"The 2nd International Joint Conference on Science and Technology (IJCST) 2017", Journal of Physics: Conference Series, 2018 Publication	<1 %
23	<a href="http://ocs.usu.ac.id">ocs.usu.ac.id</a> Internet Source	<1 %
24	" 2 Forum in Research, Science, and Technology ", Journal of Physics: Conference Series, 2019 Publication	<1 %
25	Dincer, I.. "Renewable energy and sustainable development: a crucial review", Renewable	<1 %

# and Sustainable Energy Reviews, 200006

Publication

---

Exclude quotes      On

Exclude matches      Off

Exclude bibliography      On