

**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : JURNAL ILMIAH INTERNASIONAL BEREPUTASI**

Judul Jurnal Ilmiah (Artikel) : Process optimization of biogas production from palm oil mill effluent a case study of a crude palm oil factory in Muaro Jambi, Indonesia

Jumlah Penulis : Nazaruddin Sinaga*, Syukran Bestari Nasution dan Maizirwan Mel

Status Pengusul : Penulis ke-1

Identitas Jurnal Ilmiah : a. Nama Jurnal : Journal of Advanced Research in Fluid Mechanics and Thermal Sciences
 b. Nomor ISSN : 2289-7879
 c. Volume, nomor, bulan tahun : 49, 2, September 2018
 d. Penerbit : Akademia Baru
 e. DOI artikel (jika ada) : -
 f. Alamat web jurnal : http://www.akademiabaru.com/arfmts.html
 Alamat Artikel : http://www.akademiabaru.com/doc/ARFMTSV49_N2_P155_169.pdf
 g. Terindeks di : My Cite Malaysian citation index, MyJurnal, Scopus Q3, Google scholar, J-Gate, DRJI, Asean Citation Index
 h. Turnitin Similarity : 13%

Kategori Publikasi Jurnal Ilmiah : Jurnal Ilmiah Internasional Bereputasi
 (beri ✓ pada kategori yang tepat) Jurnal Ilmiah Nasional Terakreditasi

Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah		Nilai Akhir yang Diperoleh
	Jurnal Int. Bereputasi <input checked="" type="checkbox"/>	Jurnal Nas. Terakreditasi <input type="checkbox"/>	
a. Kelengkapan unsur isi jurnal (10%)	4		3
b. Ruang lingkup dan kedalaman pembahasan (30%)	12		10
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12		11
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12		12
Total = (100%)	40		36
Nilai Pengusul = 60% x 36 = 21.6			

Catatan Penilaian artikel oleh Reviewer :

1. Kesesuaian dan kelengkapan unsur isi jurnal:

Tulisan sudah lengkap sesuai template Journal of Advanced Research in Fluid Mechanics and Thermal Sciences pada saat itu yaitu terdiri dari judul, abstrak, pendahuluan, metode, pembahasan, kesimpulan, ucapan terima kasih, dan referensi. Artikel telah sesuai bidang ilmu pengusul/anggota penulis. Citasi referensi 1 seharusnya paling awal dicitasi dalam text, citasi gambar dalam text ditulis Figure seharusnya Fig.

2. Ruang lingkup dan kedalaman pembahasan:

Paper ini membahas optimasi design suatu sistem digestasi biogas dari limbah sawit PKS di Muaro Jambi, yaitu POME, menggunakan software Aspen Plus. Tujuannya mencari produksi biogas tertinggi dengan memvariasikan TSS, Temperatur, tekanan, dan jumlah tahapan digestasi. Ruang lingkup, kedalaman bahasan, dan hasilnya sangat baik, dan memberi kontribusi bagi perancangan sistem digestasi biogas secara numerik. Data-data yang ditampilkan cukup banyak, namun kurang dibahas secara panjang lebar dan dalam.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

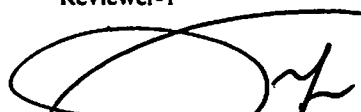
Paper ini merupakan hasil kolaborasi antara dosen Undip dengan IIUM Malaysia. Metode penelitian sangat jelas dan memadai. Kemutakhiran termasuk baik dimana terdapat 29 daftar pustaka dengan 13 diantaranya adalah 10 tahun terakhir. Nilai novelty masih cukup baik.

4. Kelengkapan unsur dan kualitas terbitan:

Penerbit adalah jurnal bereputasi internasional Scopus dengan quartil Q3 pada saat paper diterbitkan, dengan faktor impak SJR 0.253 dan H-index 5. Index similaritas artikel berdasarkan Turnitin 13%, sehingga orisinalitasnya baik.

Semarang, 25 Februari 2020

Reviewer-1


 Prof. Dr. Moh. Djaeni, ST, M.Eng.
 NIP 197102071995121001
 Bidang Ilmu: Teknik Kimia
 Fakultas Teknik Universitas Diponegoro

**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : JURNAL ILMIAH INTERNASIONAL BEREPUTASI**

Judul Jurnal Ilmiah (Artikel) : Process optimization of biogas production from palm oil mill effluent a case study of a crude palm oil factory in Muaro Jambi, Indonesia
 Jumlah Penulis : Nazaruddin Sinaga*, Syukuran Bestari Nasution dan Maizirwan Mel
 Status Pengusul : Penulis ke- 1
 Identitas Jurnal Ilmiah : a. Nama Jurnal : Journal of Advanced Research in Fluid Mechanics and Thermal Sciences
 b. Nomor ISSN : 2289-7879
 c. Volume, nomor, bulan tahun : 49, 2, September 2018
 d. Penerbit : Akademia Baru
 e. DOI artikel (jika ada) : -
 f. Alamat web jurnal : http://www.akademiabaru.com/arfmits.html
 Alamat Artikel : http://www.akademiabaru.com/doc/ARFMITSV49_N2_P155_169.pdf
 g. Terindeks di : My Cite Malaysian citation index, MyJurnal, Scopus Q3, Google scholar, J-Gate, DRJI, Asean Citation Index
 h. Turnitin Similarity : 13%

Kategori Publikasi Jurnal Ilmiah : Jurnal Ilmiah Internasional Bereputasi
 (beri ✓ pada kategori yang tepat) Jurnal Ilmiah Nasional Terakreditasi

Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah		Nilai Akhir yang Diperoleh
	Jurnal Int. Bereputasi	Jurnal Nas. Terakreditasi	
a. Kelengkapan unsur isi jurnal (10%)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4
b. Ruang lingkup dan kedalaman pembahasan (30%)	4	12	11,8
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	12	12	11,6
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12	12	11,8
Total = (100%)	40	39,2	39,2
Nilai Pengusul = 60% x 39,2 =			23,52

Catatan Penilaian artikel oleh Reviewer :

- Kelengkapan unsur artikel baik dan lengkap (→ nilai 10%)
- Topik dan ruang lingkup bahasan cukup menarik. Hasil Penelitian yang diperoleh cukup signifikan, namun pembahasan tidak terlalu mendalam namun disajikan secara baik dengan memperhatikan dan membandingkan dengan para peneliti yang lain. Dilihat dari jumlah *citation in text* nya pada Sub Judul Artikel ini, cukup banyak yaitu 22 sitasi dari 29 sumber pustaka rujukan (atau 75,8 %) . (nilai → 29,5 %)
- Kemutakhiran, referensi 10 tahun terakhir dari Jurnal International cukup, sebanyak 9 dari 29 daftar pustaka, atau 31,03 % . Metode penelitian yang dilakukan jelas. (nilai → 29 %)
- Journal of Advanced Research in Fluid Mechanics and Thermal Sciences, Publisher: Akademia Baru, Malaysia , Indexed by: My Cite Malaysian citation index, MyJurnal, Scopus Q3, Google scholar, J-Gate, DRJI, Asean Citation Index. (nilai → 29,5 %)

Banda Aceh, 22 November 2019
Reviewer-1



Prof. Dr. Ir. Husaini, MT
 NIP 196108081988111000
 Bidang Ilmu: Teknik Mesin
 Fakultas Teknik Universitas Syiah Kuala

Document details

1 of 1

[Export](#) [Download](#) [More... >](#)

Journal of Advanced Research in Fluid Mechanics and Thermal Sciences
Volume 49, Issue 2, 1 September 2018, Pages 155-169

Process optimization of biogas production from palm oil mill effluent: A case study of a crude palm oil factory in Muaro Jambi, Indonesia (Article)

Sinaga, N., Nasution, S.B., Mel, M. 

[View additional authors](#) 

 [Save all to author list](#)

^aDepartment of Mechanical Engineering, Faculty of Engineering, Diponegoro University, Tembalang, Semarang, 50275, Indonesia

^bDepartment of Biotechnology Engineering, Faculty of Engineering, International Islamic University Malaysia, Gombak, Kuala Lumpur, 53100, Malaysia



[View additional affiliations](#) 

Abstract

Palm Oil Mill Effluent (POME) is a liquid waste of oil palm factory that pollutes the environment but is very useful as a raw material for producing biogas. POME processing has advantages to meet environmental requirements and to produce commercialized products. Although there are already enough biogas systems installed in oil palm factories, they are not designed optimally because it involves many parameters and quite complicated process. The purpose of this study is to obtain an anaerobic system utilizing POME at an oil palm plant in Muaro Jambi, Indonesia. The optimization is based on simulation results of some process parameters to produce maximum bio-methane gas discharged at the highest CH₄ concentration. The processes occurring in the digester are stoichiometrically modelled for several variations of TSS (2-4%), temperature (30-60°C), operating pressure (1-2 bar), as well as digesting stages (1 and 2 stages). Pressure in the scrubber was varied between 9 and 12 bar, while the water flow was 1,000-15,000 kg/hour and had 3-12 stages. Calculations were performed using Aspen Plus Software. Based on this research finding, the optimum design and condition is found for 2-stages digestion where TSS = 4% and 1 bar, with temperature at first and second digester is 60°C and 42°C, respectively, which produces 7,725 kg/day biogas. The optimum methane purification is found in 5-stage scrubber at 10 bar, with water discharge of 11,000 kg/hr, which produces 7,627 kg/hour CH₄ with 97.24% methane content. © 2018 Penerbit Akademia Baru.

SciVal Topic Prominence

Topic: [Oil shale](#) | [Effluents](#) | [Oil palm](#)

Prominence percentile: 91.811  

Author keywords

[Biogas](#) [Biomethane](#) [Digester](#) [Optimization](#) [POME](#) [Scrubber](#) [Stoichiometry](#)

Cited by 1 document

Suhaimi, M.S. , Saat, A. , Wahid, M.A.

The effects of CO₂ variation on hydrodynamic and thermal diffusive stability of biogas-air flame

(2018) *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*

[View details of this citation](#)

Inform me when this document is cited in Scopus:

[Set citation alert](#) [Set citation feed](#)
> >

Related documents

Find more related documents in Scopus based on:

[Authors >](#) [Keywords >](#)

ISSN: 22897879
Source Type: Journal
Original language: English

Document Type: Article
Publisher: Penerbit Akademia Baru

👤 Sinaga, N.; Department of Mechanical Engineering, Faculty of Engineering, Diponegoro University, Tembalang, Semarang, Indonesia;

© Copyright 2018 Elsevier B.V., All rights reserved.

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語に切り替える](#)

[切换到简体中文](#)

[切换到繁体中文](#)

[Русский язык](#)

Customer Service

[Help](#)

[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

Copyright © [Elsevier B.V.](#) ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the [use of cookies](#).

RELX

Source details

Feedback > Compare sources >

Journal of Advanced Research in Fluid Mechanics and Thermal Sciences

Scopus coverage years: from 2017 to 2019

Publisher: Penerbit Akademia Baru

ISSN: 2289-7879

Subject area: Chemical Engineering: Fluid Flow and Transfer Processes[View all documents >](#)[Set document alert](#)[Save to source list](#) [Journal Homepage](#)

CiteScore 2018

1.09

[Add CiteScore to your site](#)

SJR 2018

0.233

SNIP 2018

0.064

[CiteScore](#) [CiteScore rank & trend](#) [CiteScore presets](#) [Scopus content coverage](#)

CiteScore 2018

Calculated using data from 30 April, 2019

$$1.09 = \frac{\text{Citation Count 2018}}{\text{Documents 2015 - 2017}^*} = \frac{37 \text{ Citations} >}{34 \text{ Documents} >}$$

*CiteScore includes all available document types

[View CiteScore methodology >](#) [CiteScore FAQ >](#)

CiteScore rank ⓘ

Category	Rank	Percentile
Chemical Engineering		
Fluid Flow and Transfer Processes	#39/80	51st


[View CiteScore trends >](#)

CiteScoreTracker 2019 ⓘ

Last updated on 08 December, 2019

Updated monthly

$$1.32 = \frac{\text{Citation Count 2019}}{\text{Documents 2016 - 2018}} = \frac{324 \text{ Citations to date} >}{246 \text{ Documents to date} >}$$

 Metrics displaying this icon are compiled according to [Snowball Metrics](#), a collaboration between industry and academia.

About Scopus

[What is Scopus](#)
[Content coverage](#)
[Scopus blog](#)
[Scopus API](#)
[Privacy matters](#)

Language

[日本語に切り替える](#)
[切换到简体中文](#)
[切换到繁體中文](#)
[Русский язык](#)

Customer Service

[Help](#)
[Contact us](#)



Advanced Research in Fluid Mechanics and Thermal Sciences



PUBLISHED ARTICLES

Preface

Volume 1 - Volume 5

Volume 6 - Volume 10

Volume 11 - Volume 15

Volume 16 - Volume 20

Volume 21 - Volume 25

Volume 26 - Volume 30

Volume 31 - Volume 35

Volume 36 - Volume 40

Volume 41 - Volume 45

Volume 46 - Volume 50

Volume 51 - Volume 55

Volume 56 - Volume 60

Volume 61 - Volume 65

+ Volume 46, No. 1 (June, 2018)

+ Volume 47, No. 1 (July, 2018)

+ Volume 48, No. 1 (August, 2018)

+ Volume 48, No. 2 (August, 2018)

+ Volume 49, No. 1 (September, 2018)

- Volume 49, No. 2 (September, 2018)

The Effects of Different Carbonization Temperatures on the Properties of Electrospun Carbon Nanofibre from Polyacrylonitrile (PAN)

Precursor

Nurain Abdul Munajat, Abdul Hamid Nurfaizey, Mohd Haizal Mohd Husin, Siti Hajar Sheikh Md. Fadzullah, Ghazali Omar, Mohd Azli Salim
Page 85 – 91

The Application of Calcium Oxide from Waste Cockle for Biodiesel Production from Used Cooking Oil via Microwave Heating System

Mahanum Mohd Zamberi, Farid Nasir Ani, Mohd Fadzli Abdollah
Page 92 – 100

Numerical Simulation on Wind-Driven Cross Ventilation in Square Arrays of Urban Buildings with Different Opening Positions

Sheikh Ahmad Zaki, Nur Farhana Mohamad Kasim, Naoki Ikegaya, Aya Hagishima, Mohamed Sukri Mat Ali
Page 101 – 114

Effect of the Blade Curvature Angle to Power Generation on the Drag Type Horizontal Axis Water Turbine

Muh Alwan Rosyidi, Arif Hidayat Purwono, Dominicus Danardono Dwi Prija Tjahjana, Eko Prasetya Budiana, Syamsul Hadi
Page 115 – 120

Flow Behavior and Injectability of SS17-4PH with PS and PE Binders in Powder Injection Molding

Najla Nazihah Mas'ood, Abu Bakar Sulong, Norhamidi Muhamad, Intan Fadhlina Mohamed, Farhana Mohd Foudzi, Mohd Ikram Ramli, Farrahshaida Mohd Salleh
Page 121 – 125

Correlation of Absorb Energy with PSD Energy and Area under Strain-Time Graph

Nurlaela Muhammad Said, Mohd Basri Ali, Kamarul Ariffin Zakaria
Page 126 – 137

Small Scale Hydro Turbines for Sustainable Rural Electrification Program

Masjuri Musa, Juhari Ab Razak, Musthafah Mohd Tahir, Imran Syakir Mohamad, Md Nazri Othman

Page 138 – 145

Simulation Study on the Effect of Rear-Wing Spoiler on the Open Aerodynamic Performance of Sedan Vehicle

Muhammad Zaid Nawam, Mohd Afzanizam Mohd Rosli, Nor Azwar Syahila Rosli

Page 146 – 154

Process Optimization of Biogas Production from Palm Oil Mill Effluent: A Case Study of a Crude Palm Oil Factory in Muaro Jambi, Indonesia

Nazaruddin Sinaga, Syukran Bestari Nasution, Maizirwan Mel

Page 155 – 169

Impacts of Corrugation Profiles on The Flow and Heat Transfer Characteristics in Trapezoidal Corrugated Channel Using Nanofluids

Raheem Kadhim Ajeel, Wan Saiful-Islam Wan Salim, Khalid Hasnan

Page 170 – 179

+ Volume 50, No. 1 (October, 2018)

+ Volume 50, No. 2 (October, 2018)

JOURNAL OF ADVANCED RESEARCH IN FLUID MECHANICS AND THERMAL SCIENCES EDITORIAL BOARD

ISSN (Online) : 2289-7879

Frequency : Monthly

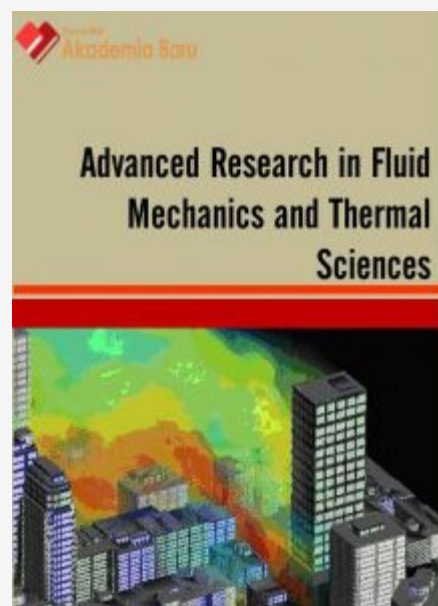
Editor-in-Chief : **Dr. Nor Azwadi Che Sidik** (E-mail)

Aims and Scope : This journal welcomes high-quality original contributions on experimental, computational, and physical aspects of fluid mechanics and thermal sciences relevant to engineering or the environment, multiphase and microscale flows, microscale electronic and mechanical systems; medical and biological systems; and thermal and flow control in both the internal and external environment.

Article of the month

Specific Energy Consumption and Drying Efficiency Analysis
of Commercial Mixed-Flow Batch Type Seed Drying System

Mohamad Zaharan Azmi, Ibni Hajar Rukunudin, Hirun Azaman Ismail, Aimi Athirah Aznan



Editorial Board

Editor-in-Chief

Dr. Nor Azwadi Che Sidik

Department of Mechanical Precision Engineering, Universiti Teknologi Malaysia, Malaysia

Associate Editors

Dr. Muhammad Noor Afiq Witri

Muhammad Yazid (E-mail)

Department of Thermo-fluid, Universiti
Teknologi Malaysia, Malaysia

Dr. Kamarul Arifin AHmad (E-mail)

Department of Aerospace Engineering,
Universiti Putra Malaysia, Malaysia

Mohd Noor Asril Saadun (E-mail)

Department of Thermofluid, Universiti
Teknikal Malaysia Melaka, Malaysia

Dr. Haslinda Mohamed Kamar (E-mail)

Department of Thermo-fluid, Universiti
Teknologi Malaysia, Malaysia

Dr. Fudhail Abdul Munir (E-mail)

Department of Automotive, Universiti
Teknikal Malaysia Melaka, Malaysia

Dr. Shabudin Mat (E-mail)

Department of Aeronautics, Automotive &
Ocean Engineering, Universiti Teknologi
Malaysia, Malaysia

Prof. Dr. Saidur Rahman (E-mail)

Research Centre for Nano-Materials and
Energy Technology, Sunway University,
Malaysia

Tey Wah Yen (E-mail)

Faculty of Engineering, Technology & Built
Environment, UCSI University, Malaysia

Dr. Siti Nurul Akmal Yusof (E-mail)

Malaysia-Japan International Institute of
Technology, Universiti Teknologi Malaysia,
Malaysia

Dr. Syahrullail Samion (E-mail)

Department of Thermo-fluid, Universiti
Teknologi Malaysia, Malaysia

Dr. Mohd Faizal Hasan (E-mail)

Department of Thermo-fluid, Universiti
Teknologi Malaysia, Malaysia

Dr. Natrah Kamaruzaman (E-mail)

Department of Thermo-fluid, Universiti
Teknologi Malaysia, Malaysia

Dr. Azlin Mohd Azmi (E-mail)

Faculty of Mechanical Engineering, Universiti
Teknologi MARA, Malaysia

Mohamad Shukri Zakaria (E-mail)

Department of Thermo-fluid, Universiti
Teknikal Malaysia Melaka, Malaysia

Dr. Maizirwan Mel (E-mail)

Bio process and Molecular Engineering
Research Unit, International Islamic
University Malaysia, Malaysia

Mohammed W. Muhiedeen Al-Gailani (E-mail)

Faculty of Engineering, Technology & Built
Environment, UCSI University, Malaysia

Dr. Mohamad Ridzwan Ishak (E-mail)

Department of Aerospace Engineering,
Universiti Putra Malaysia, Malaysia

Muhammad Asyraf Muhammad Rizal (E-mail)

Department of Aerospace Engineering,
Universiti Putra Malaysia, Malaysia

International Advisory Panel

Dr. Leila Jahanshaloo (E-mail)

Department of Mechanical Engineering,
University of Tabriz, Iran

Dr. Gangtao Liang (E-mail)

School of Energy and Power Engineering,
Dalian University of Technology, China

Dr. Abid Hussanan (E-mail)

College of Mathematics and Statistics,
Shenzhen University, China

Dr. Saeed Jamei

Department of Marine Technology, Persian
Gulf University, Iran

Dr. M'hamed Beriache (E-mail)

Department of Mechanical Engineering,
Université Hassiba Benbouali, Algeria

Alireza Fazeli (E-mail)

Department of Applied Mathematics, Western
University, Canada

Dr. G. Najafi (E-mail)

Department of Mechanical and Biosystems
Engineering, Tarbiat Modares University,
Tehran, Iran

Dr. Mehaboob Basha (E-mail)

Department of Mechanical Engineering, King
Fahd University of Petroleum & Minerals,
Saudi Arabia

Dr. Khalid Saqr (E-mail)

College of Engineering and Technology, Arab
Academy for Science, Technology and
Maritime Transport, Egypt

Dr. Ehsan Kianpour (E-mail)

Department of Mechanical Engineering,
Islamic Azad University of Najaf Abad, Iran

Saidu Bello AbuBakar (E-mail)

Department of Mechanical Engineering, Kano
University of science and Technology,
Nigeria

Dr. Hussein Mohammed (E-mail)

Energy & Chemical Engineering, Curtin
University, Australia

Dr. Hasan KÖTEN (E-mail)

Department of Mechanical Engineering,
Istanbul Medeniyet University, Turkey

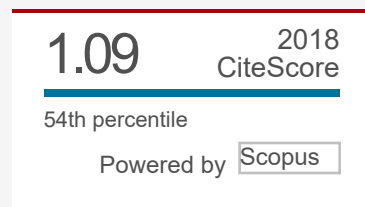
Dr. Raheem Kadhim Ajeel (E-mail)

University of Babylon, Iraq

Dr. Mahdi Moghimi (E-mail)

Iran University of Science and Technology,
Iran

Journal Metrics



Source: www.scopus.com

Types of Manuscript

REVIEW

Critical reviews, roadmaps and literature surveys of the recent advances in the field of fluid mechanics and thermal sciences.

RESEARCH

Research article to describe, analyze and evaluate new findings in the field of fluid mechanics and thermal sciences.

EDITORIALS

Opinions, notes and critical views written by eminent international figures and experts in fluid mechanics and thermal sciences, mainly upon