

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

Judul Jurnal Ilmiah (Artikel) : Performance of a compression ignition engine four strokes four cylinders on dual fuel (diesel-LPG)

Jumlah Penulis : Agung Nugroho, **Nazaruddin Sinaga***, Ismoyo Haryanto

Status Pengusul : Penulis ke-2

Identitas Jurnal Ilmiah :

- a. Nama Jurnal : AIP Conference Proceedings 2014, 020166 (2018)
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- d. Penerbit : AIP Publishing
- e. DOI artikel (jika ada) : 10.1063/1.5054570
- f. Alamat web jurnal : <https://aip.scitation.org/toc/apc/2014/1?size=all&expanded=2014>
- Alamat Artikel : <https://aip.scitation.org/doi/10.1063/1.5054570>
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Prof. Dr. Ir. Husaini, MT
NIP 196108081988111000
Bidang Ilmu: Teknik Mesin
Fakultas Teknik Universitas Syiah Kuala

**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
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Kelengkapan unsur lengkap : title, author name and affiliations, corresponding autor, abstract; article structure : introduction, method and material, result and discussion, conclusions, and references.

2. Ruang lingkup dan kedalaman pembahasan:

Paper ini membahas membahas kinerja mesin ignition kompresi empat stroke, empat silinder pada diesel dan LPG. Ruang lingkup, kedalaman bahasan, dan hasilnya sangat baik.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

Metodologi yang digunakan pada artikel sudah benar dan relevan. Data yang digunakan artikel juga cukup memadai.

4. Kelengkapan unsur dan kualitas terbitan:

Penerbit adalah AIP Publishing, turnitin hanya 12%. Terindeks di Scopus dan Scimagojr. Kualitas penerbit sangat baik pada tingkat internasional.

Banda Aceh, 10 Desember 2019
Reviewer-2

Prof. Dr. Ir. Ahmad Syuhada, MSc.
 NIP 196108201987031000
 Bidang Ilmu: Teknik Mesin
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AIP Conference Proceedings

Volume 2014, 21 September 2018, Article number 020166

International Conference on Science and Applied Science, ICSAS 2018; Solo Paragon HotelSurakarta; Indonesia; 12 May 2018 through ; Code 139930

Performance of a compression ignition engine four strokes four cylinders on dual fuel (diesel-LPG)

(Conference Paper) [Open Access](#)

Nugroho, A., Sinaga, N., Haryanto, I.

[View additional authors](#) [Save all to author list](#)^aMechanical Engineering Department, Engineering Faculty, Wahid Hasyim University, Jl. Menoreh Tengah X/22, Sampangan, Semarang, 50232, Indonesia^bMechanical Engineering Department, Engineering Faculty, Diponegoro University, Jl. Prof. Soedarto, SH, Tembalang, Semarang, 50275, Indonesia[View additional affiliations](#)

Abstract

The needs of energy in Indonesia show significant increase every year especially are non-renewable energy. Fossil fuel are non-renewable energy resources that usually used in the combustion engine. The limited resource of fossil fuels means reducing fuels consumption has been vital in case of engine development. There are two type of combustion engine that widely used i.e. compress ignition and spark ignition engine. Compress ignition engine usually has better thermal efficiency than spark ignition engine. Compress ignition engine usually used diesel fuel which are fossil fuel as primary fuel. Dual fuel method has been used to improve fuel consumption in diesel engine. Dual fuel has advantages in better thermal efficiency, power, and CO emission. In this research, dual fuel is used in C223 diesel engine with Liquid Petroleum Gas (LPG) as secondary fuels. Dual fuel mode is tested by varying LPG concentration at 35%, 45%, and 75% with various speed at 1500,1800,2100, and 2700 rpm. Engine performance such as fuel consumption, thermal efficiency, and power are being investigated. The results show that brake thermal efficiency (BTE), brake specific fuel consumption (BSFC), and power with dual fuel engine better than single fuel (diesel only). The improvement of BTE are appear with LPG 45% concentration or denoted as G45. © 2018 Author(s).

SciVal Topic Prominence

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*International Conference on Science
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Surakarta, Indonesia

12 May 2018

Editors

A. Suparmi and Dewanta Arya Nugraha

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Important Dates

Deadline for extended abstract submission Batch I:	3 March 2018
Deadline for extended abstract submission Batch II:	18 March 2018
Announcement of abstract acceptance:	21 March 2018
Deadline for paper submission:	31 March 2018
Announcement of paper acceptance:	23-30 April 2018
Deadline for early bird payment:	3 May 2018
Deadline for camera ready paper submission:	6 May 2018
Deadline for final payment:	8 May 2018
Conference	12 May 2018

Keynote Speakers

The Scientific Program of ICSAS 2018 will include plenary talks given by the following invited speakers:

1. Assoc. Prof., Dr. Eng. Muhammad Aziz, Advanced Energy Systems for Sustainability Center (AES Center), Tokyo Institute of Technology
2. Dr. Alexander Khmaladze, Assistant Professor, Physics Department, University at Albany SUNY
3. Dr. Eng. Nugroho Agung Pambudi, Geothermal, Mechanical Engineering Education, Teacher Training and Education Faculty, Sebelas Maret University (Geothermal power generation in Indonesia, a country within the ring of fire: Current status and future development)
4. Associate Professor Dr Ahmad Fauzi Mohd Ayub, Mathematics Education and ICT, Faculty of Educational Studies, Universiti Putra Malaysia

Announcements

Dateline Extended

Dateline has been extended as:

Abstract Submission : November 15th, 2016

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Preface: International Conference on Science and Applied Science (ICSAS) 2018

AIP Conference Proceedings 2014, 010001 (2018); <https://doi.org/10.1063/1.5054403>



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M. Aziz

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Efficiency of dye-sensitized solar cell (DSSC) improvement as a light party TiO₂-nano particle with extract pigment mangosteen peel (*Garcinia mangostana*)

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Evaluating the linear regression of Kalman filter model on elbow joint angle estimation using electromyography signal

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Effect of season on semen production and quality parameter in Indonesian Bali cattle (*Bos javanicus*)

Sigit Prastowo, Myristica Sucedona Trisna Kusuma, Nuzul Widyas, Adi Ratriyanto, Ahmad Pramono and Indra Adie Setyawan

AIP Conference Proceedings 2014, 020005 (2018); <https://doi.org/10.1063/1.5054409>

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Follicular characteristics of quails fed diets containing different nutrient contents

Adi Ratriyanto, Sigit Prastowo and Nuzul Widias

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Repeatability estimate as the upper bound of genetics and permanent environmental effect in quails' egg production

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Exploration of pedagogical content knowledge preservice teacher for analyzing mathematics understanding in elementary school

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Biomechanics of kicking ball by using aid tool “Parabolic Miraculous Legs”

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The formation of diamond like carbon on carbon steel using plasma of argon-liquified petroleum gas mixing

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Combination effect of nisin and red ginger essential oil (*Zingiber officinale var. rubrum*) against foodborne pathogens and food spoilage microorganisms

A. Nissa, R. Utami, A. M. Sari and A. Nursiwi

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The application of problem based learning to improve students' self-efficacy

Dita Nur Syarafina, Jailani and Ririn Winarni

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Bioremediation of paddy field contaminated by liquid waste from textile industry in order to reduce chromium in soil and rice plant

Ahmad Johanto, Vita Ratri Cahyani and Retno Rosariastuti

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Effect of guided inquiry learning model with virtual and real learning media on the improvement of learning result viewed from cooperation skills of the students in grade VIII of state junior secondary school 1 of Karanganyar

Emi Wijayanti, Ashadi and Widha Sunarno

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The role of flowering plants, *Hibiscus sabdariffa* and *Crotalaria juncea* in coffee ecosystem to diversity of insect pollinators and coffee fruit set

Annisa Indah Setyawati, Supriyadi, Pardono, Retno Wijayanti and Retno Bandriyati Arni Putri

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Lesson design on the relationship between radian and degree

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Population of brown planthopper in local rice varieties

R. Wijayanti, Sholahuddin, Supriyadi and S. H. Poromarto

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Rebecca Vanessa, Sigit Prastowo, Trisianto Nugroho, Nuzul Widayas, Ari Susilowati and Sutarno

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Calculation of ^{134}Cs , ^{137}Cs , and ^{154}Eu activity as the high temperature engineering test reactor (HTTR) burn-up parameter using Monte Carlo vector processor (MVP)

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Slamet Rahman Raharjo, Mamok Suprpto and Cahyono Ikhsan

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Candidacy of microsatellite associated with body conformation for Indonesian Friesian Holstein dairy cattle genetic selection

Septiana Widayanti, Sigit Prastowo, Trisianto Nugroho, Nuzul Widyas, Ari Susilowati and Sutarno

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***In-silico* identification of microRNAs potentially targeting the PGC1 α gene that regulates bovine mitochondrial biogenesis**

Sigit Prastowo^{1, a)}, Nuzul Widyas¹, Adi Ratriyanto¹, Md Mahmudul Hasan Sohel²

¹*Department of Animal Science, Universitas Sebelas Maret, Surakarta Indonesia*

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Abstract. Post-transcriptional gene regulation in eukaryotic cells is mediated through several molecules including noncoding RNAs. Among the noncoding RNAs, microRNAs (miRNAs) are the master regulator of gene expression and therefore control various biological processes in living cells. Mitochondrial biogenesis is a biological process by which cell increases the number of the active mitochondrion to produce more ATP. The presence of peroxisome proliferator-activated receptor γ coactivator-1 α (PGC1 α) protein determines mitochondrial biogenesis to enhance cellular energy production in cells. Using *in-silico* approach, this study aims to identify the miRNAs that could potentially target PGC1 α gene to regulate mitochondrial biogenesis. For this, four miRNA target prediction databases were employed to identify the potential miRNAs which may target PGC1 α gene. The prediction results showed that a total of 27, 47, 77 and 79 miRNAs were predicted by MirTarget2, PicTar, TargetScan, and miRanda, respectively. Following the clustering process, we found seven miRNAs were identified as potential candidates by all four databases. Out of seven miRNAs, three miRNAs namely miR-323, miR-222, and miR-137 were found to have 100% sequence similarity between human (hsa) and bovine (bta) miRNAs. miRNA binding site analysis showed that miR-323, miR-222, and miR-137 have five, two and three seeding regions, respectively, in the PGC1 α 3'UTR. Our study identified three miRNAs that have multiple binding sites at the PGC1 α 3'UTR and could potentially modulate mitochondrial biogenesis. However, a validation study experiment needs to be performed to validate the interaction of these miRNAs with PGC1 α gene.

INTRODUCTION

Peroxisome proliferator-activated receptor- γ (gamma) coactivator-1 α (alpha) (PPARGC1A), also known as PGC1 α , is a gene which play a central role in mitochondrial biogenesis [1,2]. Therefore, mitochondrial activity such as cellular energy production and reactive oxygen species (ROS) scavenging were largely depended on the presence of this protein. A previous study has demonstrated that there is a positive interaction between PGC1 α and AMPKA1 gene in regulating mitochondrial activity and lipid metabolism in bovine embryos [3]. Low expression of PGC1 α tends to reduce the mitochondrial activity and AMPKA1 expression that could lead to the higher ROS as well as higher lipid accumulation. Moreover, a specific link between ROS, oxidative stress, antioxidant genes and mitochondrial activity has been demonstrated in bovine embryos [4]. Therefore, restoring/increasing the mitochondrial activity through enhancing mitochondrial biogenesis protein function could be a logical way in the treatment of specific diseases linked to mitochondrial metabolism such as diabetic [5], obesity [6], cancer [7] and probably could control the aging process [8]. In this regard, the role of miRNAs, master regulators of gene function, cannot be overruled.

miRNAs are tiny (18-22 nt long), noncoding RNA molecules that post-transcriptionally regulate the expression of genes [9]. The gene expression regulation is accomplished by an imperfect base-pairing with the target mRNAs and

Rapid Identification of Elements in Liquid by Using Pulse Carbon Dioxide Laser-Induced Plasma Spectroscopy

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Abstract. Identification of major elements in milk liquid has been rapidly carried out by using pulse carbon dioxide (CO₂) laser. Experimentally, a milk liquid was poured on a Cu metal plate to make a thin film on the metal surface. The liquid was then dried at 100°C for 5 minute. A thin film of milk liquid was produced with a thickness of around 0.1 mm. The Cu plate only functions as a metal subtarget. A pulse CO₂ laser was irradiated on a metal surface to induce a luminous plasma. The atomization of liquid and excitation processes of atoms from the film sample happen in the plasma region. Various major elements in milk liquid, namely Ca, Mg, Na, and K can successfully be detected. Therefore, the method has high-prospect for major elemental analysis in liquid sample target.

INTRODUCTION

Identification of elements in liquid is needed in some scientific fields such as industrial field, medical and biomedical fields [1-3]. In food industry, identification of elements in liquid is very useful to know the ingredient of material products including major, minor, and impurity elements. In medical applications, elements in liquid such as a sputum can be used as a fingerprint to identify the disease in the human being. Thus, a rapid identification of elements is urgently necessary.

Some conventional spectroscopical techniques used for elemental analysis in liquid are X-ray fluorescence spectroscopy (XRF) and inductively coupled plasma (ICP) technique [4,5]. The techniques are very sensitive for identifying the elements, but they need tedious sample pretreatment. The other technique, which recently grows very rapidly for elemental analysis, is spectroscopy based on laser plasma (LIPS), which people call laser-induced breakdown spectroscopy (LIBS) [6,7]. In this setup, an Nd:YAG laser is commonly used as an ablation source to create a plasma on/in the material target. However, for liquid analysis, the technique still has some drawbacks. Some scientists used liquid jet pretreatment for performing direct analysis of elements in liquid. However, the detection sensitivity is still quite low for analysis of trace elements.

Identification of elements using LIBS technique utilizing a pulse carbon dioxide laser (CO₂) has been demonstrated for various applications [8,9]. Compared to Nd:YAG laser, the pulse CO₂ laser has specific characteristics including longer in laser wavelength of around 10 times longer and wider in a pulse duration of around 20 times. With those properties, pulse CO₂ laser has high absorbance in the plasma region, producing in large diameter and high temperature plasma.

In this study, unique sampling technique of LIBS utilizing a pulse carbon dioxide laser (CO₂) was developed for rapid analysis of liquid without tedious sample pretreatment. Namely, the liquid was poured as a thin film with a thickness of around 0.1 mm on a copper metal subtarget surface. A pulse carbon dioxide laser was then irradiated on the surface of subtarget to initiate a plume. The plume contains excited atoms, electrons, and ions from the liquid material. The liquid sample used in this study was commercial milk liquid.

Exploring Ecosystem Problems: A Way to Analyze A Profile of Creative Thinking Skills in Upper and Lower Academic Students in Senior High School in Klaten Regency

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Abstract. This aims of this research to analyze a profile of creative thinking skills of upper and lower academic students in Senior High School in Klaten Regency. This research used quantitative descriptive method. The population in this research was 19 Senior High Schools in Klaten Regency. The sample in this research was 29 students of State Senior High School 1 Cawas and 23 students of State Senior High School 1 Polanharjo, XI Natural Science Class, academic year of 2017/2018. The researcher used random sampling stratification technique. Instrument in this research used descriptive test which has been analyzed its validity and reliability. The results were analyzed by using descriptive percentage analysis, indicating that there were significant differences in each indicator of creative thinking skills between upper and lower academic students. In conclusion, the creative thinking skills of upper and lower academic students were still low because of the lack of knowledge that students have.

INTRODUCTION

Creative thinking skill is one of thinking skills in 21st century. Creative thinking skills can be trained by learning process [1]. Creative thinking skills are high-level thinking skills that train students' thinking patterns. Creative thinking skills become the basis for developing all the skills that students have [2]. Creative thinking skills are important to develop because through creative thinking students can develop ideas that exist in their mind by combining multiple approaches through the students' imagination in solving a problem [3,4]. Through the creative thinking skills, we are able to know about the level of student understanding and student personality in solving a problem. Problems generally occur quickly and require creative thinking with new ideas to solve them [5]. The solution to a problem trains students' thinking in analyzing the root of the problem and gives new ideas about the right solutions to solve the problem.

Each student has different creativity in generating ideas to solve a problem [6]. Differences in the creativity of each student are caused by different patterns of thought [7]. Creativity as a cognitive ability aims to train students to generate new ideas with their own thoughts in solving a problem [8]. The solving of a problem is a cognitive activity that serves to develop creativity and train students' creative thinking skills. One of the things that makes student creativity becomes different is caused by the gap of learning achievement that results in the academic variation among students.

In general, students' creative thinking skills are said to be low on a national and international level. The low level of creative thinking skills at the national level is because students cannot develop ideas [9,10,11]. At the international level, students' creative thinking skills are low because students are not able to use various approaches in

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