

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

Judul Jurnal Ilmiah (Artikel) : Performance and exhaust gas emission of gasoline engine fueled by gasoline, acetone and wet methanol blends  
 Jumlah Penulis : Y Prayogi, Syaiful dan N Sinaga\*  
 Status Pengusul : Penulis ke-3  
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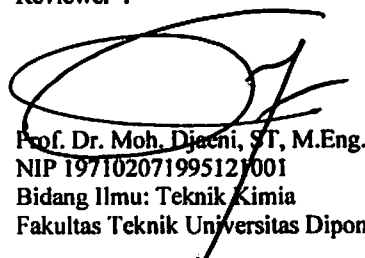
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**LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW  
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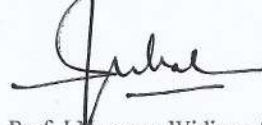
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2nd International Conference on Technology and Vocational Teachers, ICTVT 2018; Yogyakarta; Indonesia; 15 November 2018 through ; Code 148795

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Prayogi, Y., Syaiful, Sinaga, N.

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Mechanical Engineering Department Diponegoro University Semarang, Indonesia

[View additional affiliations](#) **Abstract**

Increased motor vehicles have resulted in increased fuel consumption and emissions. Premium fuel has an octane value of 88. Acetone 110 octane value and wet methanol 113 octane value. Mixing of premium acetone and wet methanol is expected to improve engine performance and reduce emissions. Research using gasoline engines with electronic fuel injection (EFI) systems. The results of the testing, there was a 12.62% increase in brake power. Brake specific fuel consumption (BSFC) has increased by 4.35% compared to P100. The increase in BSFC was due to the calorific value of acetone and wet methanol which was lower than the premium. The resulting CO and HC emissions have decreased. The decrease in CO emissions reached 87.5%. The lowest level of HC produced reaches 46 ppm. Mixing acetone and wet methanol into the premium can improve engine performance. It can be seen from the increase in brake power produced. Exhaust emissions are produced better. CO and HC levels have decreased. © Published under licence by IOP Publishing Ltd.

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Organized by:  
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# Analysis of bamboo mechanical properties as construction eco-friendly materials to minimizing global warming effect

I Yasin<sup>1</sup> and A Priyanto<sup>2</sup>

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**Abstract.** Burning fossil fuels increases the amount of carbon dioxide in the atmosphere. Carbon dioxide is the main cause of the greenhouse effect and global warming. Climate change causes an increase in the number of human deaths due to diseases and natural disasters. In general, in the past decade there has been deforestation of 13 million ha / year. The highest deforestation rates (> 3.4 million ha / year) occur in South America and Africa while in Asia also experience deforestation in many places. Bamboo forests are very important especially in East and Southeast Asia as well as in Africa. The potential of bamboo is very large in controlling soil erosion, water conservation, land rehabilitation and carbon sequestration. In carbon sequestration bamboo contributes very significantly. The use of bamboo as an environmentally friendly construction material is very important to do. Testing of bamboo mechanical properties based on ISO 3129-1975 standards, which includes testing of fiber parallel compressive strength, parallel fiber shear strength, fiber parallel tensile strength and straight fiber tagak flexural strength. Setting-up testing is carried out after each specimen in the condition of the kiln dry water content is in the range 12-13% according to the requirements of the ISO 3129-1975 standard. Analysis of variants (Anova) of pressure treatment on bamboo material has an effect on some of the mechanical properties of bamboo. Pressure treatments up to 2.5 MPa have a significant effect on the elastic modulus, tensile strength and shear strength of bamboo while the compressive strength is not significantly affected by the pressure treatment of bamboo material. Bamboo forests have a big influence in reducing the impact of global warming and climate change.

## 1. Introduction

As a result of the use of fossil fuels and nuclear power, the temperature of the heat generated flows into the atmosphere. Since 1880 global warming has accumulated in air, water and land. In general, thermal pollution contributes significantly to 55% of global warming [1]. In the last 100 years, the surface of the earth has risen to an average temperature of 1 degree Celsius or 1.3 degrees Fahrenheit. Burning fossil fuels increases the amount of carbon dioxide in the atmosphere. Carbon dioxide is the main cause of the greenhouse effect and global warming. Climate change causes an increase in the number of human deaths due to diseases and natural disasters [2]. From the June 1972 environmental conference in Stockholm to the June 1992 Earth Summit in Rio de Janeiro and other international conferences on the environment, polemic for environmental sustainability increased significantly and decided on international actions to reduce carbon dioxide and global warming in earth. There are three carbon stocks on earth, namely the oceans, the atmosphere and terrestrial ecosystems. Forests are able to store the largest carbon in terrestrial ecosystems, namely 1146 x 10<sup>15</sup> g carbon or 56% of total carbon in



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P Utami<sup>1</sup>, FR Pahlevi<sup>2</sup>, D Santoso<sup>3</sup>, N Fajaryati<sup>4</sup>, B Destiana<sup>5</sup> and ME Ismail<sup>6</sup>

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**Abstract.** Teaching skills learned in micro-teaching are important competencies in the learning management. Dependence of other parties, both lecturers and colleagues teaching during the assessment process of teaching practice and lack of media that integrates the concept of material, examples, and practices are obstacles in mastering teaching skills. This article describes the specifications needed of an Android-based learning tool (media) for microteaching (“Microteaching”) courses and analyzes the performance of these learning media. The development phase begins with Analysis, Design, Development, and Evaluation. The results of the analysis referring to TPACK and the design showed that the specifications of the Android-based media consisted of two main menus namely material (containing various multimedia elements) and assessment (besides text-based assessment also contained speech recognition elements). The performance of “Microteaching” in functionality is 100% successful, while the feasibility test at the evaluation stage not only for media experts, but material experts and users indicates that the media is suitable for use. Furthermore, results of the assessment show that the media is able to depend on the assessment, except from the aspect of verbal aspects. Integration of learning concept material through mind maps, technical examples related to verbal teaching skills and videos to provide concrete description of how to teach (both verbal and non-verbal).

## 1. Introduction

In the education study program, micro teaching is a course that must be followed by students to get information and experience in ways to teach technically in the classroom. Micro-teaching is an early stage training in the formation of teaching competencies for prospective teacher [1]. Micro-Teaching is a course that has a very important role to equip prospective teacher with teaching skills[2]. To learn teaching skills, the teacher training techniques is microteaching[3]. Especially, it is a technique to train the prospective teachers[4]. Micro-teaching is a powerful way in teacher training to improve the instructional experience of prospective teachers and has been adopted in a number of teacher education institutions that are committed to producing qualified future teacher candidates[5]. In a limited time, especially students of technical education study program get teaching experience in front of the class to apply pedagogical theory and engineering practice. Next, through the teaching practice program at school, students can implement the teaching skills learned in micro-teaching courses. Micro-teaching is an efficient technique that has a positive impact on the competence of teaching students when the student practices teaching in a real class (school)[5]. Mastery of teaching skills is important to be achieved before the implementation of teaching practice in schools. Therefore, micro-teaching learning plays an important role in preparing future teachers, especially in preparing mastery of teaching skills.



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## An analysis of changes in flange surface roughness after being used to tighten a corrugated metal gasket

D Nurhadiyanto<sup>1</sup>, S Haruyama<sup>2</sup>, Mujiyono<sup>3</sup>, and Sutopo<sup>4</sup>

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**Abstract.** A corrugated metal gasket is not reusable once the plastic deformation has occurred. Meanwhile, flange might be reusable if it has not corroded. This research aimed to find out the surface roughness and contour shape of the flange after being used to tighten the gasket. This study employed a method of measuring the surface roughness before and after the first, second, third, and fourth tightening. The flange used had a surface roughness of Ra 3.5 $\mu$ m, Ra 2.5  $\mu$ m and Ra 1.5  $\mu$ m. The measurement of surface roughness was based on the standard of JISB0601-2001. The findings show that no significant change occurred on the flange surface roughness. However, the corrugated contour shape did occur in the surface roughness after use.

### 1. Introduction

The use of gasket materials has been terminated following a ban on producing and using asbestos worldwide. A replacement for asbestos materials, therefore, is necessary. Asbestos are used in gasket to prevent leakage in pipes. Gasket is placed between two flanges connected to pipes. To date, the development of gasket materials from metal, i.e. the corrugated metal gasket, has taken place. The function of the corrugated gasket is to decrease the clamping force and produce a spring effect to create a sealing line on the flange.

Research on corrugated metal gasket has been carried out by many scholars. Saeed et al. (2008) initiated the development of the corrugated metal gasket. The gasket had a spring effect and produced a high local stress contact that created a sealing line on the flange [1]. Afterwards, Haruyama et al. (2009) studied the minimum contact width on a gasket using simulation [2]. They found the most optimum contact width in their study. The contact width can be used as the design parameter of the corrugated metal gasket. Through an experiment, it was found that the leakage can be minimized by increasing the contact width. Nurhadiyanto et al. (2012) searched for the most optimum dimension of metal gasket to prevent leakage using a simulation analysis of Finite Element Method (FEM) [3]. Then, the simulation and experiment results were compared. The comparison showed that both results matched each other. With regards to the experiment, the helium leak test indicated that the leakage was not found. Haruyama et al. (2013) studied the force per unit length, contact width, and contact stress for gasket in contact with the flanges with different surface roughness by using FEM [4]. The result of FEM analysis was compared with that of the experiment. The softer the flange surface roughness, the smaller the leakage created using helium leak test will be. The contact between a rough flange surface and a very soft gasket resulted in the rough gasket. Nurhadiyanto et al. (2018) studied the corrugated metal gasket coated with copper [5]. The coating was aimed at softening the gasket surface without changing its stiffness so that the contact stress remains the same. The result of the



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