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Magnetic Braking System (MBS) An alternative MBS learning tool developt at Politeknik Kota Bharu via Project Based Learning (PjBL)

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ABSTRACT

This Magnetic Braking Systems (MBS) project summary is written to explain the importance and needs of product development of MBS for vehicle (motorcycle) and MBS Learning tools by utilizing the Project Based Learning (PjBL) via eSOLMS of producing innovative product (automotive). This concept aims to improve the braking system by using magnetic concept. Its focus on 3 aspects; 1) to producing alternative product for vehicle braking system (motocycle brake system), 2) to producing learning tools in advance automotive focus on magnetic braking system, 3) to developt self-regulation of engineering students (automotive) for producing an innovative product (MBS) focus on PjBL:eSOLMS concept. This project was focus on both automotive project development and 21 century e-learning process in nature. The product producing data was analyzed using standard engineeing forms or automotive lab sheet collection data. A total of 2 product; MBS for motocycle and MBS learning tool will intering 18-25 weeks for pilot test. The finding will shows the important and needs of product research and development of MBS in future. On the other hand, the result of lab/workshop measurement and observation on the usage for the MBS on vihacle and using MBS as learning tool hopefully effected on the development of engineering students' self-regulation. It is hoped that the MBS concept can be further developed and implemented in the engineering advance automotive and Outcome Based Education (OBE) system of Malaysia.

Introduction

The Project Based Learning (PjBL) nowdays become new alternative process for project development & engineering product producing (Sytenta 2001,2002 & 2003). The trends in producing an innovative product field engineering automotive braking system more focusing in its effeciancy and ecomonically product (Knoll & Michael, 1997; Barron, 1998; Morsund, 2002: Mat el al., 2010;Dym et al., 2004). This innovative PjBL process for product magnetic braking system producing aims to improve the comman used of braking parts from pneumatic and hidraulic system to magnetic systems (Rooney, 1996;Thomas, 2000;Yang,2001). This an innovative product wil producing by implementation of Project based learning via eSOLMS to generate self-regulation of Mechanical Engineering (automotive) Students in Kota Bharu Polytechnic (PKB), Kelantan (Kamaruzaman et al., 2010; Md Baharuddin et al., 2011,2012). This product also will producing an invention pedagogy (PjBL) instrument of MBS development and evaluation process (Kurubacak & Gulsun, 2007; Nooe Azean Atan el al., 2006). This MBS instrument generate special touch with the needs in engineering automotive knowledge, otherwise this product will generate a collaborative project based development with e-learning among engineering automotive students at PKB.

Project Objectives

- Producing an alternative source in braking system (electical used)
- Save enviromental product (MBS)
- An effective braking systems (MBS)
- Low cost and high impact in automotive industry.
- Future product (motocycle MBS)
- Implementation PjBL:eSOLMS in product development.
- Developt self regulation for automotive student in product (MBS) development.

Problems Statements

- Not yet produce product in motocyle using an alternative source such MBS (electical used)
- Goverment policy, should produce product enviromental friendly such MBS.
- Not yet RnD product in motocycle type MBS implementation at PKB.

The Concept of "Magnetic Brake System" Development

The first procedure will come up with MBS survey data collection as reference for the Project MBS Development. The Final product and concepts of used as per figure below:-

Pedagogy MBS instrument for RnD in product development

Figure 1 : side view

Tele:

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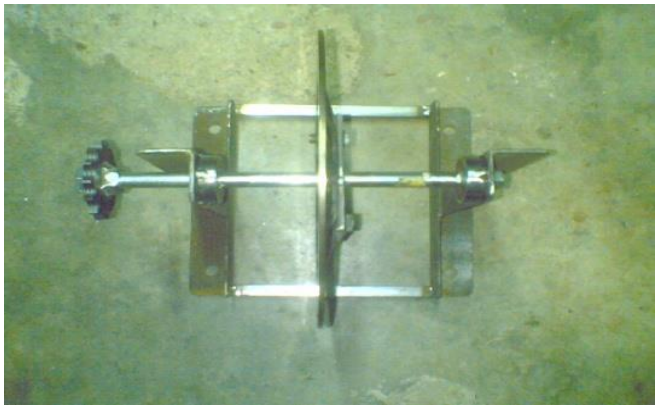

Figure 2 : plan view

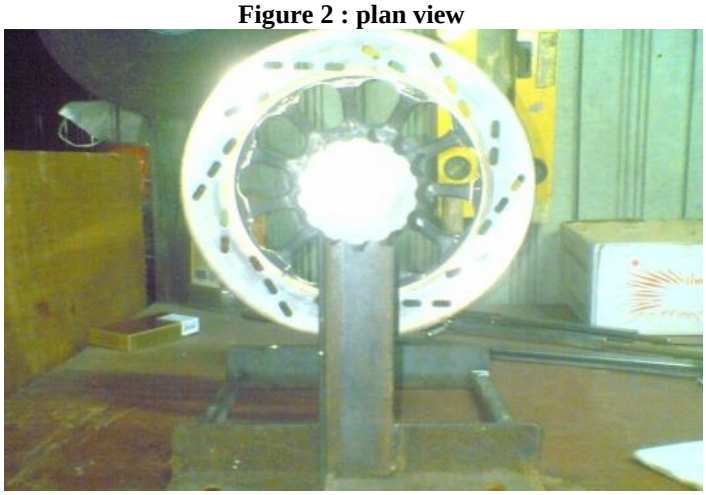

Figure 3: Front view

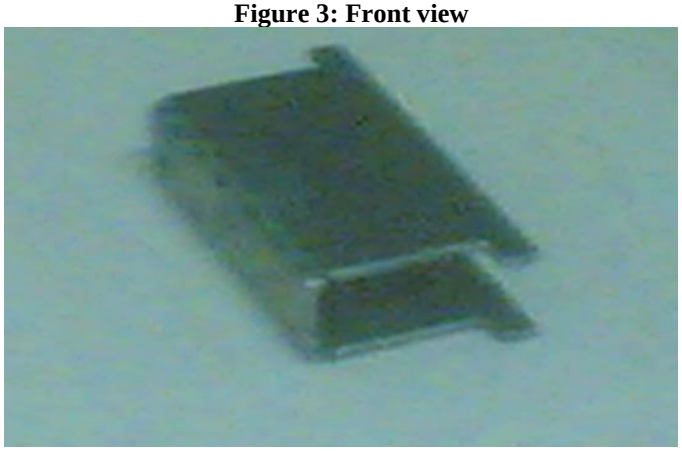

Figure 4: purpose of magnetic brake casing

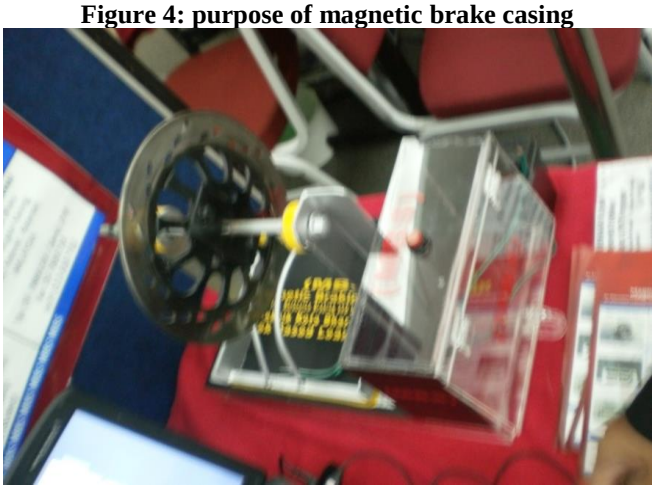

Figure 5: Final prototype

The Ideas for installation of MBS on motocycle Brake Disc

Figure 4 : MBS prototype installation on motocycle brake disc

Figure 5: MBS electical connection from motocycle battery (power supply in transfer magnetic flux to MBS system)

Figure 6: Brake padel in motorcycle for on/off MBS prototype

Above figures shown the combination of two MBS product development (MBS pedagogy insrument for RnD and MBS prototype on motocycle). Hopefully when it's been RnD and pilot test on motocycle, this MBS product become special MBS pendagogy instruments to works as catalyzed in automotive students learning development. This MBS project ooks able to full fill alternative braking system. Its also match with the needs in engineering automotive knowledge development match with KPTM philosophy.

Conclusions

The purpose of this MBS project was to assess the importance and needs of MBS pedagogy instrument and MBS for motocycle development. The benefit of deveopment of MBS focuses on lecturer MBS instruments to fill in advance automotive lab/workshop, othewise the MBS product producing will fill in an innnovative product at local market. The RnD data's also carry on to assess the used of product MBS refer to experts perception for development of next MBS project. While

the prototype of MBS was completed, its will piloting among at advance automotive lab/workshop at PKB with among students to match with 21 century skilled and transfer kowledge. This benefits will growth while MBS was introduced as an alternative braking product in automotive industry. Though it is difficult to generalize the results due to prototype under progress. The exploratory study provides evidence and support for the adoption of MBS match with automotive engineering standard for polytechnic produce high expectation of engineering students needs for 21 century level in Techinical and Vocational education.

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