DESIGN AND FABRICATE ANTHEFT LOCK FOR MOTORCYCLE

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SUPERVISOR'S DECLARATION

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of the diploma of Mechanical Engineering.

Signature : …….
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Date :

STUDENT'S DECLARATION

I declare that this thesis entitled "Design and Fabricate Antitheft lock for motorcycle" is the best result of my own research except as cited in the references. The thesis has not been accepted for any Diploma and is not concurrently submitted in candidature of any other diploma.

Signature : ……..
Name : WAN MOHD HAZWAN BIN WAN ARIFF
Date :

To my beloved parent and friends

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ABSTRACT

Using from the stolen motorcycle problem because did not have more lock security for motorcycle that's really give high protection, a high protection security lock for motorcycle was design and build up. For make sure this product really high protection security antitheft lock, this product was developed after research another lock at the market. This product has two system of lock. First is for the rod as a main lock for this product. This rod will be lock at rim tire to make sure it cannot move. Second is steel cable wire. This cable is a flexible lock system that can lock at anywhere example at another motorcycle or at mast. To make sure this product really strength, welding joint use it to joint each part. This product actually can make another alternative for customer motorcycle to protect their motorcycle from theft. This product actually obtains the objective although it not easy to bring anywhere.

ABSTRAK

Melihat masalah kes kecurian motosikal yang semakin membimbangkan kerana kurangnya kunci yang benar-benar memberikan perlindungan kepada motosikal daripada dicuri, sebuah kunci motosikal yang mampu memberikan perlindungan dengan lebih tinggi dan diyakini telah direka dan dicipta. Untuk memastikan motosikal benar-benar selamat, kunci ini telah diubahsuai daripada kunci motosikal yang sedia ada di pasaran hasil penelitian dan kajian. Kunci ini mempunyai dua kali perlindungan daripada kunci motosikal biasa iaitu dengan diletakkan dua perlindungan kunci. Pertama ialah batang rod yang merupakan kunci utama pada produk ini. Rod ini berfungsi memegang dan mengunci rim tayar daripada bergerak. Kemudian diketakkan pula kunci kedua iaitu kabel besi. Kabel besi ini merupakan kunci kedua dan ia berfungsi secara fleksibel. Maksudnya, kabel ini bole dikuncikan dimana-mana tempat yang diingini seperti pada motosikal lain, dan pada tiang. Dengan menggunakan sambungan kimpalan, ia merupakan kunci yang kukuh dan sukar untuk dibuka atau dirosakkan. Secara keseluruhan projek, produk ini mampu memberikan harapan baru kepada pengguna motosikal daripada ancaman pencuri. Projek ini berjaya mencapai objektifnya walaupun ia agak sukar dibawa kemana-mana.

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INTRODUCTION

1.1 Project background

My project title is Design and fabricates antitheft lock for motorcycle. As the Diploma final year project allocates the duration of 1 semester, this is large main-hour project therefore requires significant number of students to participate.

These projects are supervised by Mr. Mohammad Khalid bin Wahid who give me an advice when problem to occur and about planning of project. The project actually focus on how prevention in motorcycle theft problem. I have 14 weeks to make sure this project was done and after that, it must be tested at motorcycle in order work properly. This project is begin and start with investigation make duration in research literature review via internet, my supervisor, discussion with other friend and other relevant material that related for this project.

Statistic about stolen motorcycle problem in Malaysia was in under control. For example at Perak article from Utusan online date 25 August 2008, statistic motorcycle stolen case was recoding 37 % for 7 month this year. From January until July 2008, 2,648 cases were recoded but in other hand, 2,632 cases were recoded in statistic criminal journey at same time last year. For this example like Perak only, that it can be assumed at another state the stolen motorcycle case is have high statistic case.

That's why my project is to produce an idea on how to solve this problem. Antitheft lock is must be in a high performance and in a high security to make guaranties to people or customer that their motorcycle was not easy to be stolen.

1.2 Project objectives

The objective of my project as bellow:

i) To design and fabricate the new concept of antitheft lock for motorcycle which can give more security.
ii) To make sure this product must be user friendly and portable.

1.3 Project scope

There is several scope of my project:

i) Design the antitheft lock using with sketch and draw by using Solidwork software.
ii) Fabricated and assembled the parts.
iii) Choose the suitable material
iv) Can use any types of motorcycle

1.4 Problem statement

There are several problems why I must design this lock:

i) Difficult to find the best lock motorcycle at market that have high security.
ii) Lock product at the market are not effectiveness.

1.5 Gant Chart

PROJECT ACTIVITIES	W 1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	W 9	W10	W11	W12	W13	W14	W15
Discuss and get the title of project															
Find the information															
Make idea and sketching															
Build in solid work software															
Preparation for mid semester presentation PTA															
Start fabricate the component															
Make the report															
Submit the thesis															

Figure 1.5: Gant Chart

Chapter 2

LITERATURE REVIEW

2.1 Introduction

For this chapter, generally main article or information is about how to joint each part with welding process and what is the procedure or information to be selected material for this project. That's because, main point to make sure this project succeed is about how to joint each part and the selected material that can be this product in a good hardness and good strength.

First method will be used is about welding. Welding is an efficient, dependable, flexible, and economical means of fabrication. Welding is widely used in industry as a principal means of fabricating and repairing metal product. Welding can lower production cost by simplifying design and eliminating costly patterns and machining operations. Welding can also be used in repair operations and adding new metal to worn parts.

Welding is the coalescence or joining together of metal, with or without a filler metal, using heat, and/or pressure. Bonding of metals during welding occurs through localized melting or micro structural changes at the interface between the metals. Welding is used throughout industry in building construction, aircraft manufacturing, and for automobile production.

Second method must be review and study is about the suitable material. As a product for security, the hardness and strength material must be consider in a high

performance. That is a main structure for this product to give answer at the end that it is high security or not.

2.2 History of Lock

Securing one's property has long been a concern of people throughout the world. Beyond hiding the objects or constantly guarding them the most frequently used option is to secure them with a device. Early solutions included knots to either detect, like the Thief knot, or hamper, like the Gordian knot. Locks may be entirely mechanical, or electromechanical. They may be operated by turning some form of removable key, by keying or dialing in a combination which directly or via electromechanical means operates the lock, with some form of magnetic or other card reader, or by moving a part on a safety lock intended to prevent accidental operation rather than to prevent unauthorized access.

Began this modern year, lock more effectiveness to protection some asset from theft to be stolen. For motorcycle, the stolen problem always given people fear and shirk. The engineer always improvement the lock of motorcycle every year to settle down this problem. From the basic lock until the modern lock, the motorcycle stolen problem never settles until now.

Figure 2.2(a): example motorcycle lock

The lock usually uses the high and hardness material. This is because for the good material, it will be some advantages to the lock. For example it will not be easy to be cut or something uses it to break the lock.

Figure 2.2(b): lock

After select the good material, the lock must be joined each part or component using some method. Always to get the good joint, weld method use it because weld process is the best joint method to give high hardness and high strength to the product.

2.3 History of weld

Modern welding process evolved from discoveries and inventions dating back to the year 2000 B.C. when forge welding was first used as a means of joining metal by heating and hammering until the objects where fused together. Today, forge welding is used only limited application.

Acetylene gas was discovered in 1836 by Edmund Davy. When combined with oxygen, acetylene produced a flame suitable for welding and cutting. The application of heat generated from electric arc between carbon electrodes was the basis for the arc welding process. Resistance welding, which also uses electricity, was also developed in the late 1800s and first used in the early 1900s.

One of the most significant developments at the time was the invention of an electrode that is consumed into the weld while providing heat from an arc (the shield metal arc welding process). Modification to the coating applied on the consumable electrode allowed greater applications for arc welding.

Another improvement in the arc welding process was the addition of an inert shielding gas to protect the weld area from atmospheric contamination (the gas tungsten arc welding process). This proved to be an especially important process in welding

magnesium and aluminum on World War II fighter planes. The electrode used was made out of tungsten and was not consumed into the weld. Originally, helium was used as a shielding gas, but was later replaced by the less expensive argon.

New developments in the field continue to address new requirements and applications in industry. Current welding processes are the product of continued refinements and variations of the welding processes discovered in the 1800s.

2.3.1 Welding Processes

The demands of a growing industrial economy during the 1800s spurred the development of modern welding processes. The welding process to be used for a particular job is determined by the following:

- Type of metals to be joined
- Cost involved
- Nature of products to be fabricated
- Production techniques used
- Job location
- Material appearance
- Equipment availability
- Welder experience

Welding processes used today are commonly classified as oxyfuel welding, arc welding, and resistance welding.