UNIVERSITI TEKNOLOGI MARA

CAWANGAN TERENGGANU

MEC299

Development and Kinematic Analysis of Crank Slider Mechanism

(Without Crank Wheel)

MUHAMMAD MUIZZUDDIN MARWAN BIN ZALEY

2020818716

SUPERVISOR:

SIR HAIZUAN BIN ABD. RAHMAN

ABSTRACT

Application are widely used in most mechanical machines.The aim of this study is to design and fabricate a well-functioning Crank Slider Mechanism. A relative motion analysis (kinematic analysis) will be conducted to design a well-functioning mechanism.the purpose of this final year project is focusing on how the crank slider work and make a kinematic analysis of the crank slider that simulate the kinematic analysis. The problem statement for this final year project is about the concept that have to learn in dynamics which is the concept of crank slider (without crank wheel). the design of the crank slider without crank wheel will be fabricate using the suitable material. This crank slider without crank wheel will be combine with the crimping tool

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.0 Introduction

(Prof.(Dr.) Santosh Mukkawar, 2018) state that the crank slider mechanisms is mechanical mechanisms that convert rotational motion to linear motion and vice versa.[1][7] Application are widely used in most mechanical machines.The aim of this study is to design and fabricate a well-functioning Crank Slider Mechanism. A relative motion analysis (kinematic analysis) will be conducted to design a well-functioning mechanism. Then, the procedure of this study will be extended to experimental use one the fabrication of the mechanism is completed.

1.1 Background of Study

The crank slider mechanism is widely use. The most common thing that use crank slider mechanism is in combustion engine. So, the purpose of this final year project is focusing on how the crank slider work and make a kinematic analysis of the crank slider that simulate the kinematic analysis. The parameter that will be found is velocity and the angular velocity OA had been assumed as a $\omega_{OA} = \frac{2\pi}{60}\ rad/s$.

1.2 Problem Statement

The problem statement for this final year project is about the concept that have to learn in dynamics which is the concept of crank slider (without crank wheel). The problem is we have to understanding the concept by only learn the theory. Some student cannot understand the concept clearly if they not learn the concept using the physical model. In order to make all the student understand the concept of crank slider, I create a model of crank slider (without a crank wheel) using the suitable material with the nice price.

1.3 Objectives

The main objectives of this project are:

1. To design a crank slider (without crank wheel) using CAD software which is Solidworks.
2. To fabricate and make a kinematic analysis about the crank slider (without crank wheel)

1.4 Scope of Work

The scope of work for this final year project is to design the crank slider without crank wheel. Then, the design of the crank slider without crank wheel will be fabricate using the suitable material. This crank slider without crank wheel will be combine with the crimping tool. So, this design not only show the motion of crank slider but also show us a application of the crank slider. Lastly, the scope of work for this project is making the kinematic analysis of the crank slider.