THE DEVELOPMENT OF LATCH-TYPE LOCKING MECHANISM

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ABSTARCT

This thesis describes the development of a simple and low cost latch-type locking mechanism that can be applied to an automatic door. The system is an add-on gadget for the existing door lock. A microcontroller, PIC16F84A from Microchip Technology Inc. was used to control a stepper motor which was connected to a latch-type locking mechanism. When a button is pressed, it will feed a signal to the microcontroller, which will move the latch.

There are two types of rotation options provided: Clockwise rotation and Counter clockwise rotation. The clockwise rotation will moves the latch to unlock the door lock where as the counter clockwise rotation will moves the latch to lock position.

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INTRODUCTION

1.1 INTRODUCTION

Locks come in all shapes and sizes, with many innovative design variations. Most locks are based on fairly similar concepts. In a normal door system, when a key is inserted and the plug is turned one way, the cam pulls in on the bolt and the door can be opened. When the plug turns the other way, the cam releases the bolt and the spring snaps it into place so the door cannot be opened. In a deadbolt lock, there is no spring mechanism. The turning cylinder slides the bolt forward and backward [8].

An electromagnet-type locking mechanism needs constant supply of electricity in order to work properly. If there is a power blackout, it temporarily kills power to the magnetic lock. The door will not lock if the system doesn't have any backup battery. On the other hand, the latch-type mechanism described for this work only needs current to move the latch to lock position. If there is a power blackout, there is an optional key that can be used to unlock the door manually.

1.2 PROJECT OVERVIEW

Many researches have been done in recent years to the development of locking mechanism system especially for an automatic door system. Most of the systems that have been design were very expensive and complex therefore not commercially suitable for an automatic door. As a solution, this project has been created by developing a simple and low cost system for locking mechanism.