CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Automated guided conveyors (AGC) are commonly used in facilities such as manufacturing plants, house, distribution centres and transhipment terminals. AGC can be referred as a common piece of mechanical handling equipment that moves materials from one location to another. A variety of technology is currently available moves materials from one location to another location in the warehouses and other facilities. AGC also allow quick and efficient transportation for a wide variety of materials, which make them very popular in handling and packaging industries. It also involved the movement of tools, raw material and work in process between or into the storage.

The development of conveyor system is needed to achieve the highest efficiency so the warehouse will more profit from the development. The purpose of AGC is to help reduce the time cost of manufacturing process and increase in manufacturing system.

This project is the development of previous project that is about Automated Guided Vehicle System (AGV) to transport the acralyte during laser cutting process. The essential capability of this AGV is ability transfer loads to location through path under computer control by programming. The loading and unloading mechanism for this AGV includes the vacuum sucking unit for lifting the acralyte by vacuum sucking the corresponding to a position of working place, a loading mechanism for moving, move the sucking unit which has vacuum sucked the acralyte to the laser cut machine and an unload mechanism for carrying another acralyte.
This project is to design and development AGC involving a Robotic Arm Mechanism to transport an item. The essential capabilities of Robotic Arm is slightly same as Vacuum sucking unit which are ability to transfer load and unload an item to specific location through path under computer control by programming.

The loading and unloading mechanism of the Robotic Arm includes the arm mechanism which lifting an items corresponding to a position of working place, a loading mechanism for moving, move the lifting unit which is arm mechanism lift an item to the desire location.

1.2 PROBLEM STATEMENT

AGC is designed to reduce the time handling of manufacturing process. The time management for the process is really important for the improvement the product efficiency. Material handling is an integral part of any manufacturing activity. Given the high costs involved in manufacturing process, many industries cannot afford to high production rate. It is imperative to design a good loading and unloading mechanism to handle material. The Robotic Arm functions as the loading and unloading mechanism slightly increase the production rate which is able to transfer an item to specific location systematically. The AGC system is an important element in computer integrated manufacturing facility. AGC provide considerable advantages as compared to other material loading equipment.

The problem statement of this project is size, material selection, torque, and motor rpm which affect the characteristic of Robotic Arm performances. Thus, the problems regarding to Robotic Arm should be care of to achieve the desire performances.
1.3 PROJECT OBJECTIVES

i. To design Robotic Arm of loading and unloading mechanism for AGC application

ii. To fabricate Robotic Arm of loading and unloading mechanism for AGC application.

iii. To assemble Robotic Arm into AGC main body

iv. To perform Stress analysis of the Robotic Arm.

1.4 SCOPE OF PROJECT

i. Design Robotic Arm cad model using SOLIDWORKS.

ii. Analysis the design using ALGOR.

iii. Fabricate prototype of Robotic Arm.

iv. Assemble the Robotic Arm into AGC main body.

v. Transport an item.