CHAPTER 1

INTRODUCTION

1.1 Project Background

Injection molding process is a manufacturing technique for making parts from plastic material. The process started when the molten plastic was injected at high pressure into a mold, which was followed of the desired shape. The mold was made by a mold maker from metal, usually either steel or aluminum and precision-machined to form the features of the desired part. The product can be produce in better quality and better quantity by using process which integrated with computer control.

Injection molding nowadays have been one of the important industry in the world because of from the injection molding we can produce many type of product. The product from injection molding process expand from just one color product to multi color product, that show and make the developing in this industry becomes competitive from a day to day.

The most important requirement when design the mold for injection molding process is to get the high accuracy mold in order to reduce the cost and ensure that the mold have good specification because of this process was expensive in early set up. Year before, mold designer use manual analysis process to analyze the mold but nowadays the designer can use software to simulate the analysis of the mold. The results from analysis give very high accuracy to compare with manual analysis.
From software simulation we can avoid the problem easily. If we make the process several times without make a proper analysis the problem like warpage, shrinkage, voids and many more can be occurs and it will add the processing cost. By using the software, the designers can easily make the simulation, locate the problem and solve it with proper ways.

1.2 Problem Statement

In plastic injection there a few problem may occurs that can affect the product. The problem like warpage of the part, weak welds, and unmelted particles in molding, jetting, voids, shrinkage and many more can occurs to the products if we not design the mold correctly. The mold components are an expensive therefore the mold design should be precise and accurate in order to reduce the cost.

Different gate location give different results of defects when making the analysis and therefore the analysis about the gates location by using the Moldflow software should be analyze. The problem occurs in order to choose several gate locations to be analyze and then to understand the application of Moldflow software to make the analysis.

Then the software which is will be use to design the mold for two colors plastic injection molding process is AutoCAD and SolidWork2007. To design the mold some application for two colors mold like the product material, mold material mold plate, materials injection system and ejection system which can affect in order to design the mold should be considered.
1.3 **Objectives of the Project**

This project can teach the student to practice the knowledge and used the skill to apply it in problem solving. This project also important to train and increase the student capability when to answering, researching, data gathering, decision making and to solve the problem occurs to apply it in working life. The objectives of the project are;

1.3.1 To design a mold for two colors plastic injection molding process.
1.3.2 To determine the best gate location to produces the best mold design.

1.5 **Scope of Study**

This project will conduct about the designing the mold for two color plastic injection molding by using the software AutoCAD and Solidwork2007. To designing the mold, the best gate location need to be determine in order to apply it to the design. Moldflow software will be used for analysis the gate location. The parameter of the analysis is about the effect of gate location from several gate locations in order to find the best gate location and apply it to the design mold.