PRODUCT AND MOULD DESIGN USING CADMOULD -AN INJECTION MOULDING SIMULATION SOFTWARE

MOHD KALOS MOHD NOR

**Final Year Project Report Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Polymer Technology
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

MAY 2008

ACKNOWLEDGEMENT

Alhamdulillah, first of all I would like to express my grateful to Allah S.W.T for giving me His blessing to complete my project proposal because without His permission, I cannot finish this project proposal.

I would like to express my gratitude to my project supervisor, Y.M Raja Roslan Raja Mohamed for his guidance and advice on this project. His inspiring suggestion is very useful and had given me a lot of ideas on ways to improve on my project dissertation.

Apart from that, I would like to express my appreciation to Mr Wong Nam Ken, the Managing Director of Namken Industries (M) Sdn Bhd for his assistance throughout the whole project. Heartfelt thanks to my friends for sharing information and their support which had brought me through good and bad times. I am grateful to those who had in one way or another contributed towards the success of this project proposal.

Last but not least, I would like to acknowledge my family for their indefinitely moral and financial support offered to me throughout this whole project.

Mohd Kalos Mohd Nor

TABLE OF CONTENTS

CONTENTS   **Page**

CHAPTER 1 INTRODUCTION

CHAPTER 2 LITERATURE REVIEW

CHAPTER 3 METHODOLOGY

CHAPTER 4 RESULTS AND DISCUSSION

ABSTRACT

PRODUCT AND MOULD DESIGN USING CADMOULD- AN INJECTION MOULDING SIMULATION SOFTWARE

The study was conducted to design a product and its mould by using product design guidelines for injection moulding plastic products using computer simulation technique. Initially, a three-in-one stationery holder was designed according to plastic product design guidelines. An injection moulding simulation software; Cadmould was then employed to evaluate the design. Material used was Polypropylene. Once the product design was finalized, a mould for the product was then designed and simulated again using Cadmould. In both stages, problems that tried to avoid were the location of weld lines, air traps and warpage. Based on this study, it was found that by using Cadmould can assist designer to predict the outcome which to position weld lines and air traps in location that are not critical in terms of aesthetic value and minimize warpage. Generally, it can be said that the CAE simulation program can be used to help designer to design product and its mould in order to produce excellent product.

CHAPTER 1

INTRODUCTION

1.1 Background

Nowadays, designing and manufacturing competitive plastic moulded products can be difficult. All companies absolutely demand for high profits for sure, therefore, drive the need to reduce costs continually, through reduced material consumption, lower tooling cost, and faster cycle times.

Injection moulding is a high production process that can be used to produce plastic parts of complex geometry. When designing plastic parts, the designer must consider aesthetic, functional, and manufacturing issues (Robert A. Malloy, 1994). Thus, the designer must refer to part design guidelines for injection moulded plastic parts during designing plastic parts. The design criteria must consider relating to the wall thickness, undercuts, taper or draft, fillets and radius. The mould is designed in such manner that minimum cycle time will be targeted to produce the final product. In order to avoid major bad decision during design product and production, an injection moulding simulation softwares such as Cadmould, Moldflow and Moldex is used to simulate the behaviour of a plastics during mould filling, packing and cooling. It means that it is used to deal with mould troubleshooting and to avoid problems concerning filling time, injection

1