

ANALYSIS COMPARISON BETWEEN SOLIDWORKS
PLASTICS AND SIMULATION MOLDFLOW ADVISER
OF OPTIMUM GATE SIZE FOR THE DESIGN OF A
SINGLE CAVITY PLASTIC NAME CARD HOLDER
MOLD

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FOR THE DESIGN OF A SINGLE CAVITY PLASTIC NAME
CARD HOLDE MOLD**

This report submitted in accordance with requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor Degree of Manufacturing Engineering (Manufacturing Design) (Hons.)

by

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Signature :

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Date : 8th June 2016

APPROVAL

This report is submitted to the Faculty of Manufacturing Engineering of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Manufacturing Engineering (Manufacturing Design) (Hons.). The member of the supervisory is as follow:

.....

(Project Supervisor)

ABSTRAK

Projek tahun akhir adalah mengenai "Analisis Perbandingan antara SolidWorks Plastics dan Simulasi Moldflow Penasihat Optimum Gate Saiz bagi Rekabentuk Pemegang Mold Single Cavity Nama plastik Kad". Projek ini memberi tumpuan kepada reka bentuk saiz dimensi pintu untuk rongga tunggal, analisis saiz pintu optimum, analisis perbandingan parameter (tekanan, halaju dan suhu) dan bahan terbaik untuk digunakan untuk saiz pintu dimensi optimum yang dipilih. Reka bentuk Nama Pemegang Kad plastik dan saiz pintu reka bentuk telah direka dengan menggunakan perisian CATIA V5R20. Simulasi Moldflow Penasihat dan SolidWorks Plastics telah digunakan untuk menganalisis dan membandingkan saiz pintu optimum dan bahan terbaik rongga tunggal Nama Pemegang plastik Kad. Bahan yang digunakan untuk menganalisis Nama Pemegang plastik Kad Optimum Gate Saiz adalah Acrylonitrile-butadiene-styrene (ABS), High-Density Polyethylene (HDPE), polikarbonat (PC), Polyethylene (PE) dan Polypropylene (PP). Projek ini bermula dengan menganalisis yang disyorkan daripada beberapa saiz pintu menggunakan Simulasi Moldflow Penasihat dan SolidWorks Plastics reka bentuk yang sedia ada. Kemudian, kedua-dua keputusan simulasi akan dibandingkan mengikut parameter yang ditentukan saiz pintu optimum dan bahan terbaik untuk digunakan untuk Nama Pemegang plastik Kad.

ABSTRACT

This final year project is about “Analysis Comparison between SolidWorks Plastics and Simulation Moldflow Adviser of Optimum Gate Size for the Design of a Single Cavity Plastic Name Card Holder Mold”. This project is focused on the design of the gate size dimension for single cavity, analysis of the optimum gate size, analysis comparison of parameters (pressure, velocity and temperature) and the best material to be used for the selected optimum gate size dimension. The design of Plastic Name Card Holder and gate size of the design were designed by using CATIA V5R20 software. Simulation Moldflow Adviser and SolidWorks Plastics were used to analyze and compare the optimum gate size and best material for single cavity Plastic Name Card Holder. Material used to analyze Plastic Name Card Holder of Optimum Gate Size were Acrylonitrile-butadiene-styrene (ABS), High-Density Polyethylene (HDPE), Polycarbonate (PC), Polyethylene (PE) and Polypropylene (PP). The project started by analysing the suggested of several gate size using Simulation Moldflow Adviser and SolidWorks Plastics of existing design. Then , both results of the simulations will be compared according to the parameters to determined the optimum gate size and best material to be used for the Plastic Name Card Holder.

DEDICATION

To my beloved parents, this is for you:

Zubaidi bin Zamri

Rahayu bt A Rahman

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First and foremost, all praise to Allah, for giving me strength and opportunity to accomplish this project. I seek His mercy, favour and forgiveness for everything. A lot of thanks to my great supervisor, Encik Baharudin bin Abu Bakar for his help, encouragement and guidance from the beginning until the end of this project. For my parents whom always pray for the best of me and give support with much love all the time. For my friends, I appreciate the present of being there for me through thick and thin. Thank you.

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CHAPTER 1

INTRODUCTION

In this chapter, it contains a brief explanation about this project and the background of the project title, “Analysis Comparison between Solidworks Plastics and Simulation Moldflow Adviser of Optimum Gate Size for the Design of a Single Cavity Plastic Name Card Holder Mould”. This chapter covers about the problem statement, objectives, and the scope and limitation of this project.

1.1 Project Background

Many factors can affect the molding process and quality of final products in injection molding. The method of traditional mold design is depend on the mold designer’s experiences. With the help of software analysis, the designers or engineers can lessen the development time and reduce cost of making the mold. Therefore, it helps solve the production problems on the material properties, product design and mold design. Setting parameter such as temperature, speed and pressure are very important for the cycle time in injection molding. The product can be affected even if there is slight difference of those parameters.

Furthermore, the other most important factor in injection molding is gating system. The plastic flow in the mold can be bad without proper selection of gate design. The selection of gate size is important as it can improve the quality of the part besides reducing the rejection and elimination in trial session.