

Mathematical Modeling of Plastics Injection Mould

Aswad A. Sagdeo
Student

*Department of Mechanical Engineering
WCOEM, Nagpur, India*

Vidyaadhar P. Kshirsagar
Assistant Professor

*Department of Mechanical Engineering
WCOEM, Nagpur, India*

Abstract

Injection moulding calculation is most important for the mould designing, according to the plastic injection moulding machine specification. It is required to determine number of cavities in mould during injection mould designing. There are basically three methods we are used to determine the number of cavities. These methods are depending upon Shot Capacity, Clamping Force of machine and plasticising rate of polymer which is used for a product. With the help of these calculations we designed a proper balanced mould and maximum utilize the machine.

Keywords: Shot Capacity, clamping force, plasticising rate

I. INTRODUCTION

Injection moulding machine is use to manufacturing the plastic product such as: Bowl, Plate, Mug, spoon, bottle cap, etc. For manufacturing a product, it is essential to make a mould /Die for that Product. The product and Die is Designed with the help of CAD software (Crea2.0). After analysing the product, the most significant part is mathematical modelling of mould. In mathematical modelling we determine the number of cavities in the mould.

There are three methods we have used:

- 1) Shot Capacity
- 2) Plasticising Capacity
- 3) Clamping force

According to following calculation we have decided the number of cavities, shape and size of mould.

II. OBSERVATION

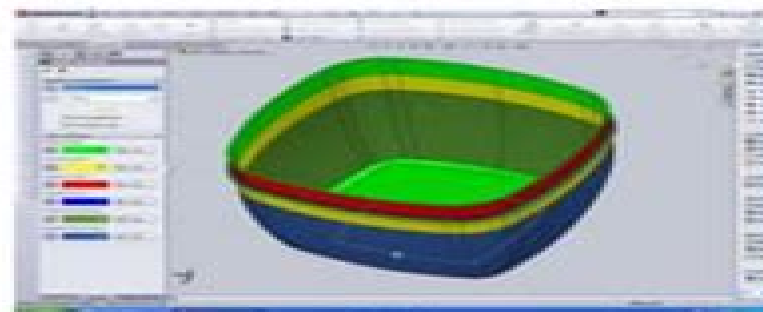


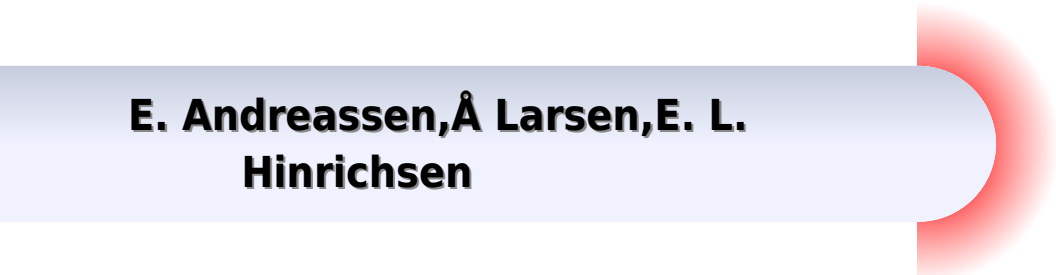
Fig. 1:

Table – 1

Sr.No	Properties	Values
1	Mass of component	30gm
2	Shot capacity of machine	90gm
3	Projected area of Component	4566.5mm ²
4	Material	PVC
5	Shrinkage	0.4-0.5%
6	Density	1.43
7	Machine	Serve 120

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