aGroup project – CAM works

Deadline: September 20, 11:59pm

In this assignment, you are asked to design molds for a plastic bottle manufacturing process called blow molding (illustrated below).

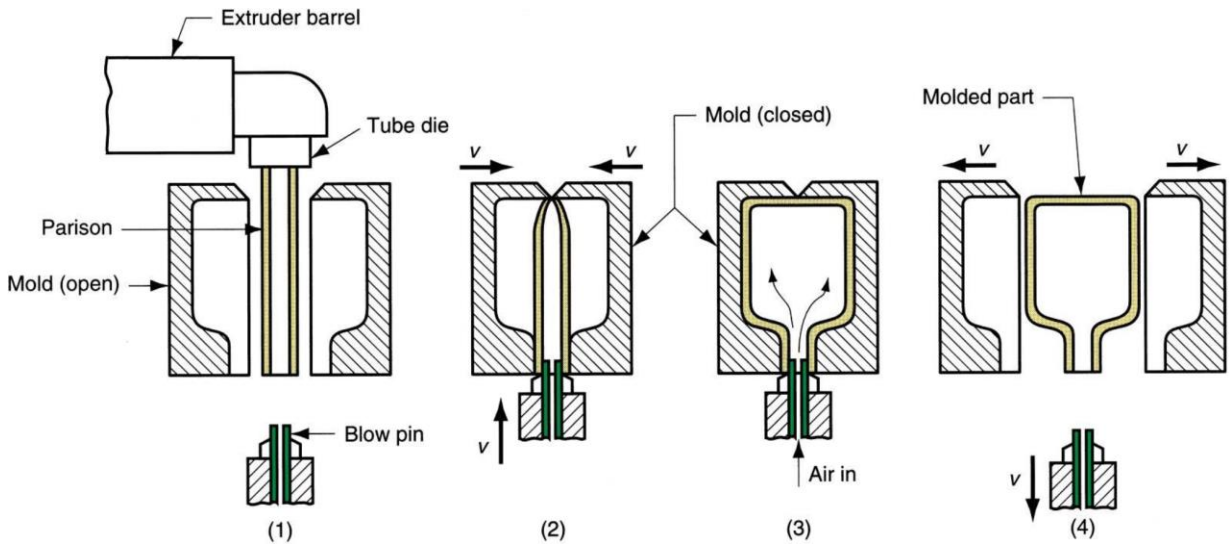

Figure 1. Extrusion blow molding (adapted from Groover, 2020)

Assume the plastic material is PET with a shrinkage coefficient of 0.4% when cooling.

You can choose your own beverage type, having a capacity between 300 ml to 600 ml.

The molds are to be machined from a rectangular block of 150mm x 150mm x 250mm, made from 6061-T6 aluminum alloy.

There are a few tools available: End mill (Dia. 10mm, 12mm, 16mm CRB 4FL versions), Twist drill (dia. 5mm, 6mm, 10mm, 12mm), Face mill (dia. 40mm, 50mm). Recommended feed rates for end mill, twist mill and face mill are 5000mm/min; 3000mm/min and 1000 mm/min respectively.

Your task is to develop the G-code for machining of all the features of the parts and estimate the total machining time for each part.

Your submission must include:

- The plastic bottle design
- The mold designs
- Solidworks CAM part
- NC code

A short document describes your choice of tools, machining time, ref (if any, please follow IEEE style). You can use any format template.