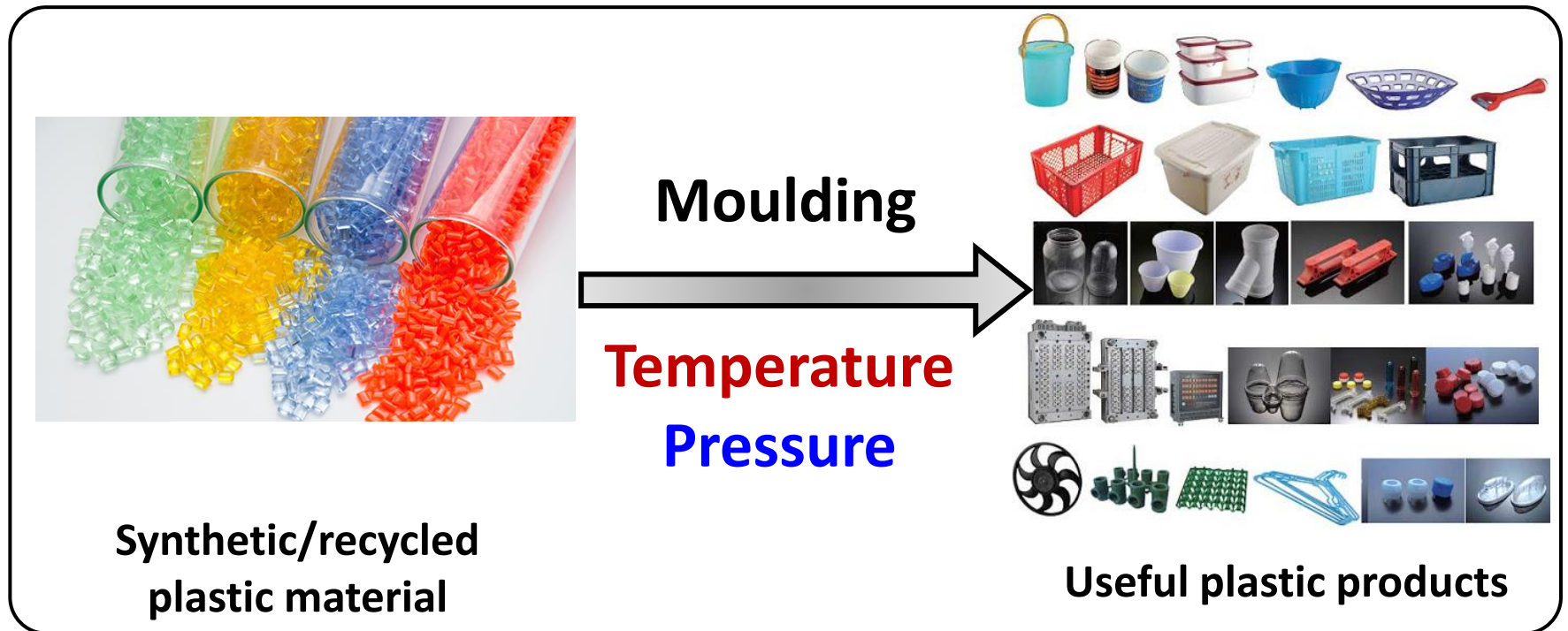


Plastic compounding

- This process involves fabrication of plastic material into desired shape under the influence of heat and pressure in a closed chamber.

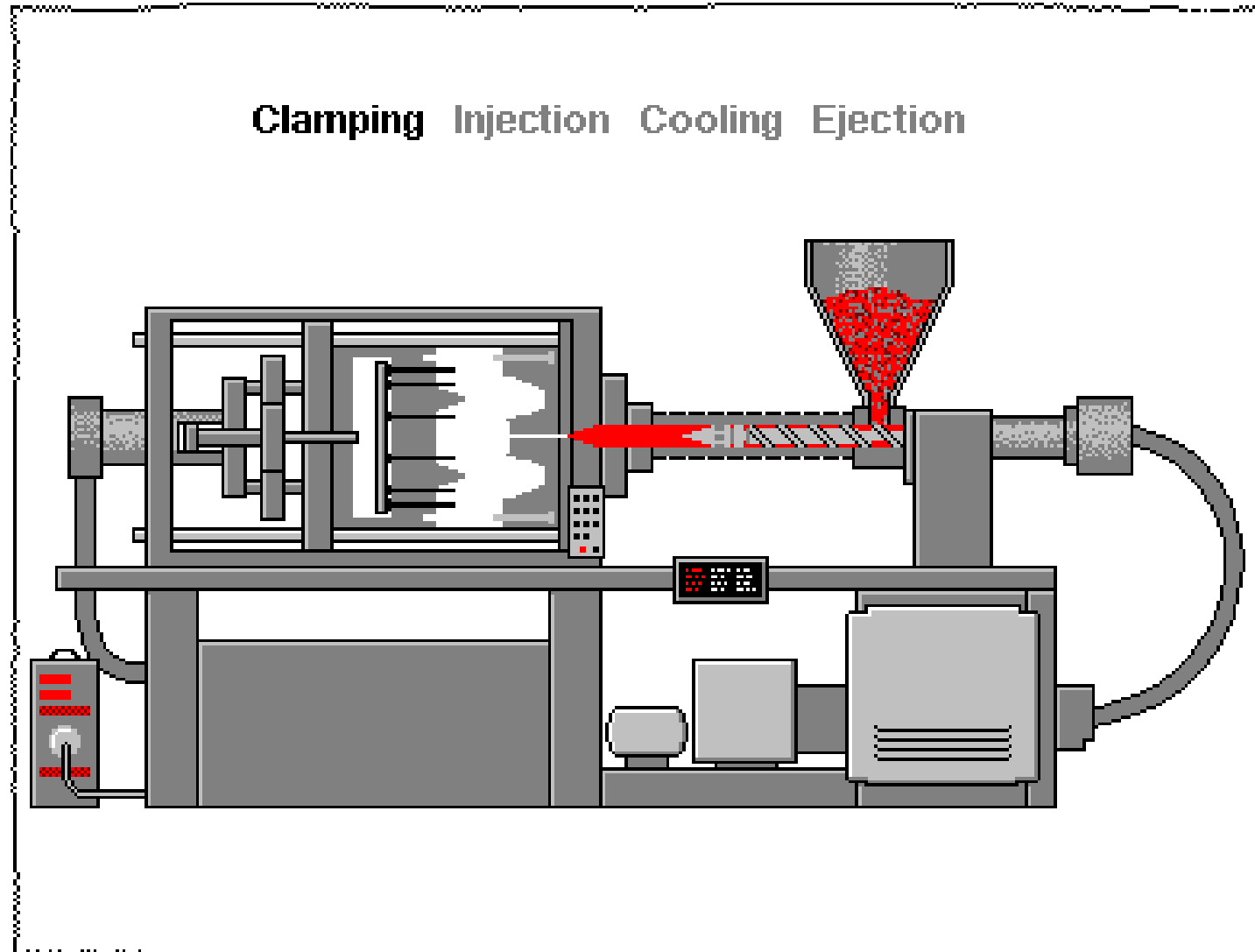


Plastics - Moulding

- Some moulding processes are

Moulding Type	-	Uses
(a) Injection moulding	-	Car parts, bottle caps
(b) Extrusion moulding	-	Pipes, Hoses
(c) Compression moulding	-	Mobile Phone Cases, Battery Trays
(d) Transfer moulding	-	Fibre reinforced polymers, Composites
(e) Blow moulding	-	PET bottles

(a) Injection moulding



(a) Injection moulding

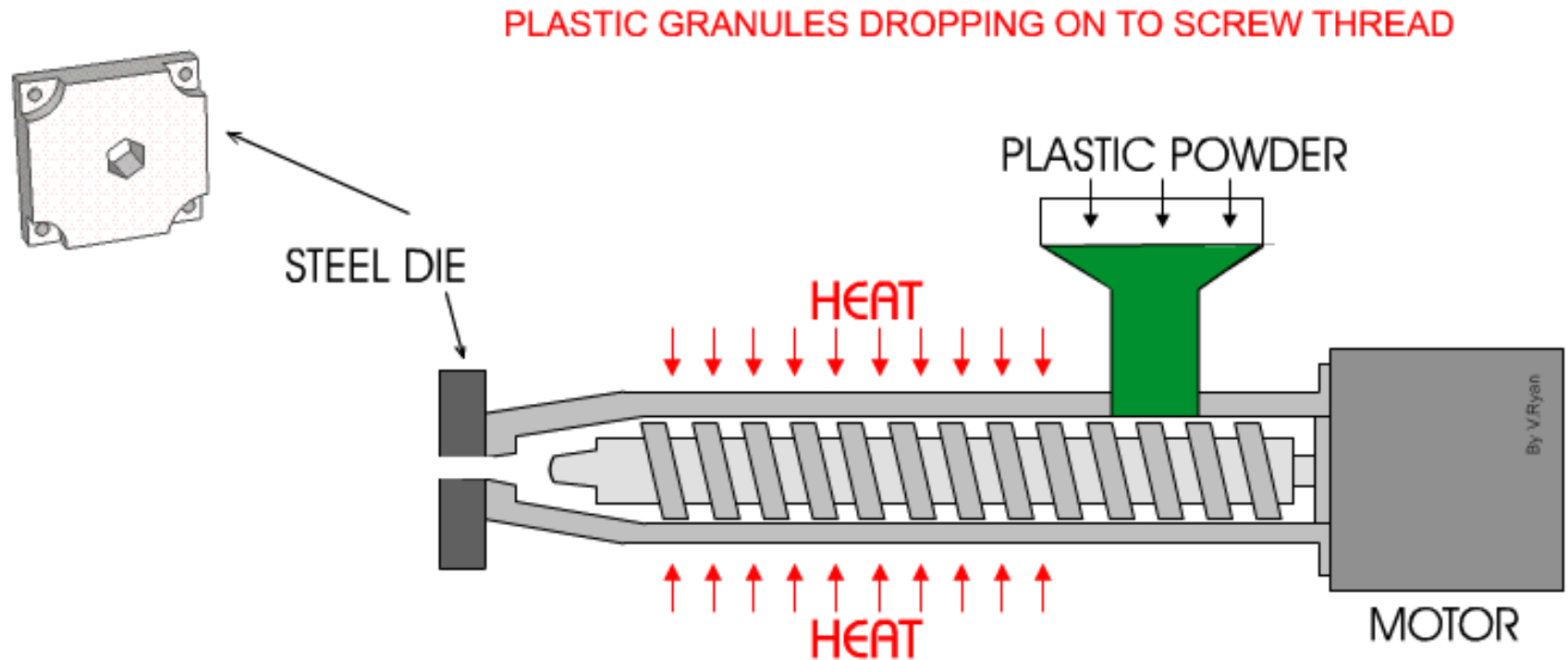
Process

- This method is mainly **applicable to thermoplastics**.
- The powdered plastics material is fed into a heated cylinder through the hopper.
- The plastic material melts under the influence of heat and becomes fluid.
- The hot fluid is injected at a controlled rate into a tightly locked mould by means of a screw arrangement or by a piston
- The mould is kept cold to allow the hot plastic to cure and becomes rigid. After curing the mould is opened and the object is ejected.
- Telephones, buckets etc., are made by this method.

Advantages

1. Low mould cost
2. Low finishing cost
3. Low loss of materials
4. High speed production

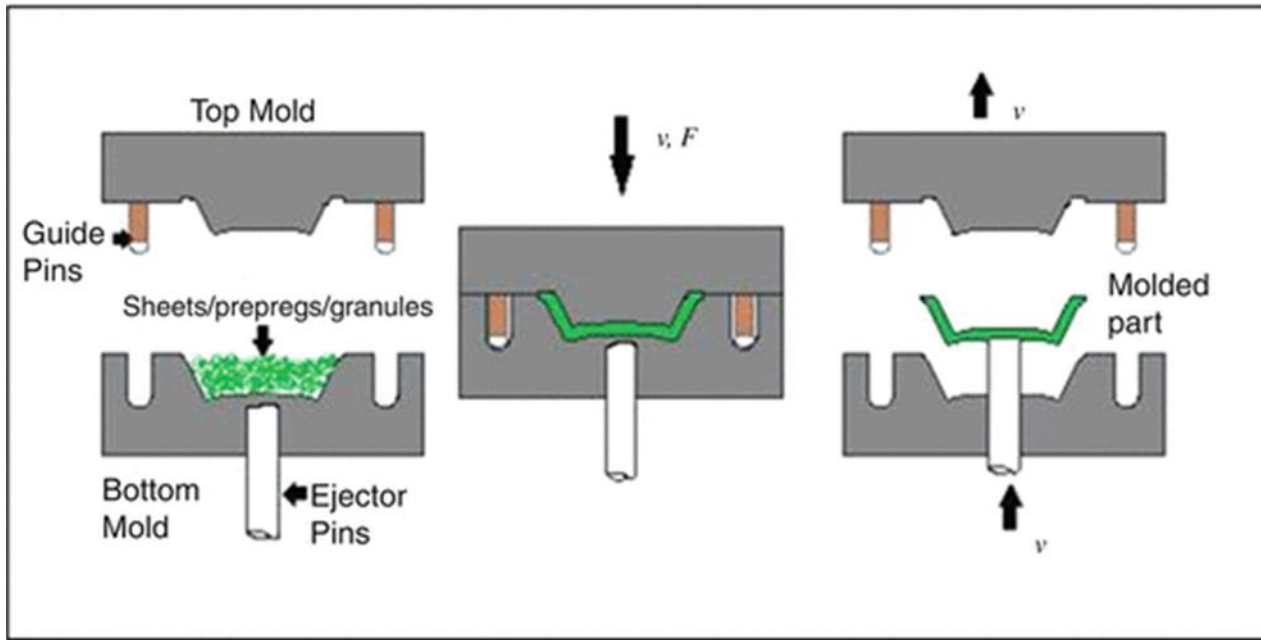
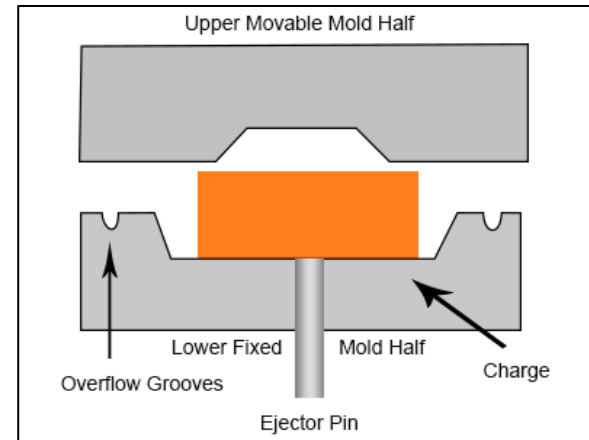
(b) Extrusion moulding



(b) Extrusion moulding

- This method is mainly used for **continuous moulding of thermoplastic materials** into articles of uniform cross section like rods, tubes, etc.
- In this method, the powdered plastic material is fed into the heated cylinder through the hopper.
- The molten plastic material is then pushed by means of a revolving screw conveyor into a die having the required shape of the object to be manufactured. The finished product that extrudes out is cooled by atmospheric air. A long conveyor carries away the cooled product.

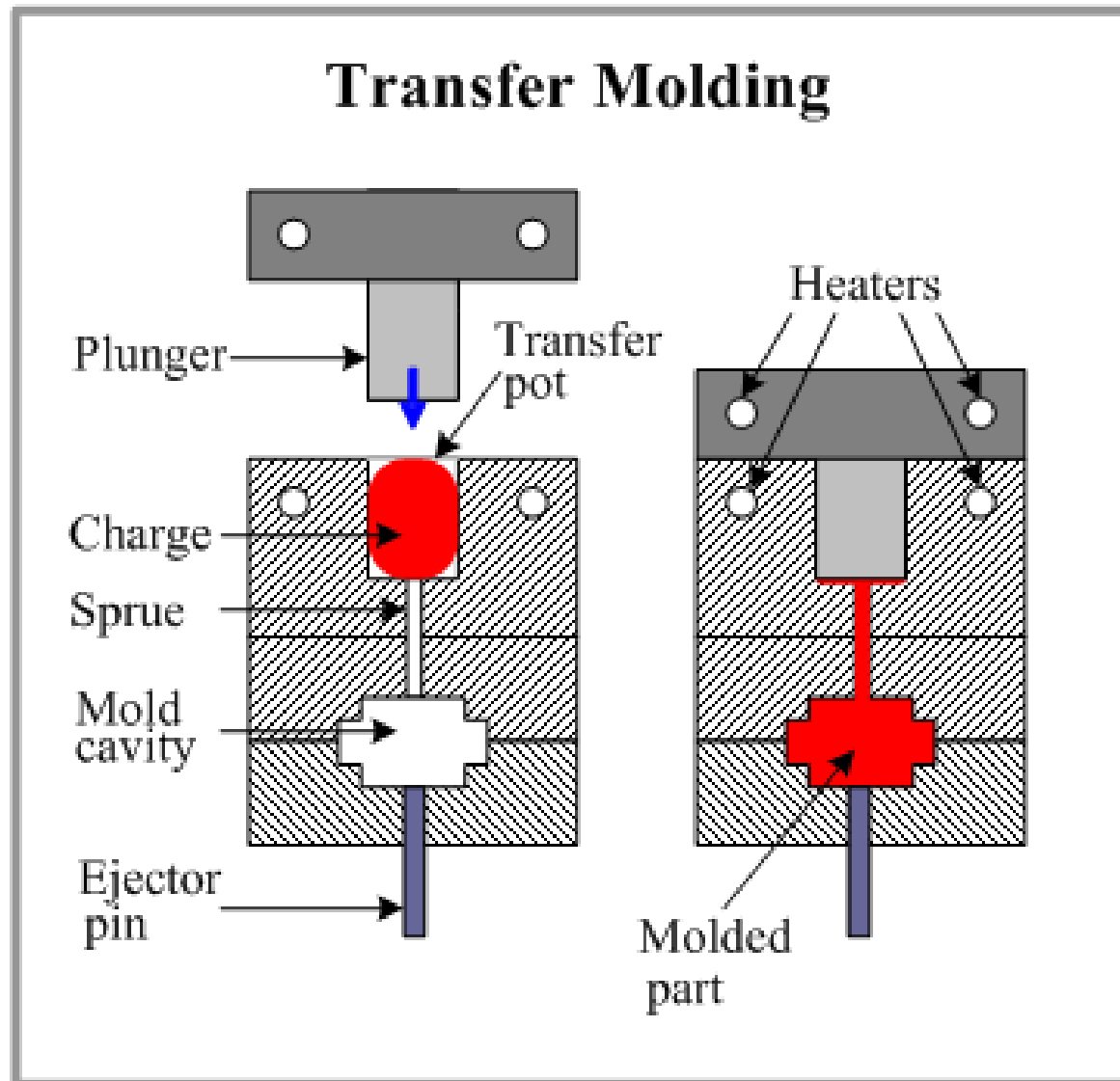
(c) Compression moulding



(c) Compression moulding

- This method is applied to both thermoplastics and thermosetting plastics
- The mould is made up of two halves, the upper and the lower halves.
- The lower half usually contains a cavity in the shape of the article to be moulded.
- The upper half has a projection, which fits into the cavity when the mould is closed.
- The material to be moulded is placed in the cavity of the mould. Then the mould is closed carefully under low pressure
- Finally the mould is heated to 100-200° C and simultaneously high pressure (100-500 kg/cm²) is applied on the top of the mould. Curing is done either by heating or cooling. After curing the moulded article is taken out by opening the mould parts.

(d) Transfer moulding



(d) Transfer moulding

- This method is used for thermosetting plastics
- The principle is same as that of the injection moulding
- The powdered moulding materials is taken in a heated chamber, maintained at low temperature, at which the material just begins to become plastic. This plastic is then injected through an orifice into the mould by a plunger working at high pressure
- Due to the great friction developed at the orifice during ejection, the temperature of the material rises to such an extent that the moulding powder becomes almost liquid. So that it flows quickly and easily into the mould.
- Then the mould is heated up to the curing temperature required for setting. Finally the moulded article is ejected from the mould

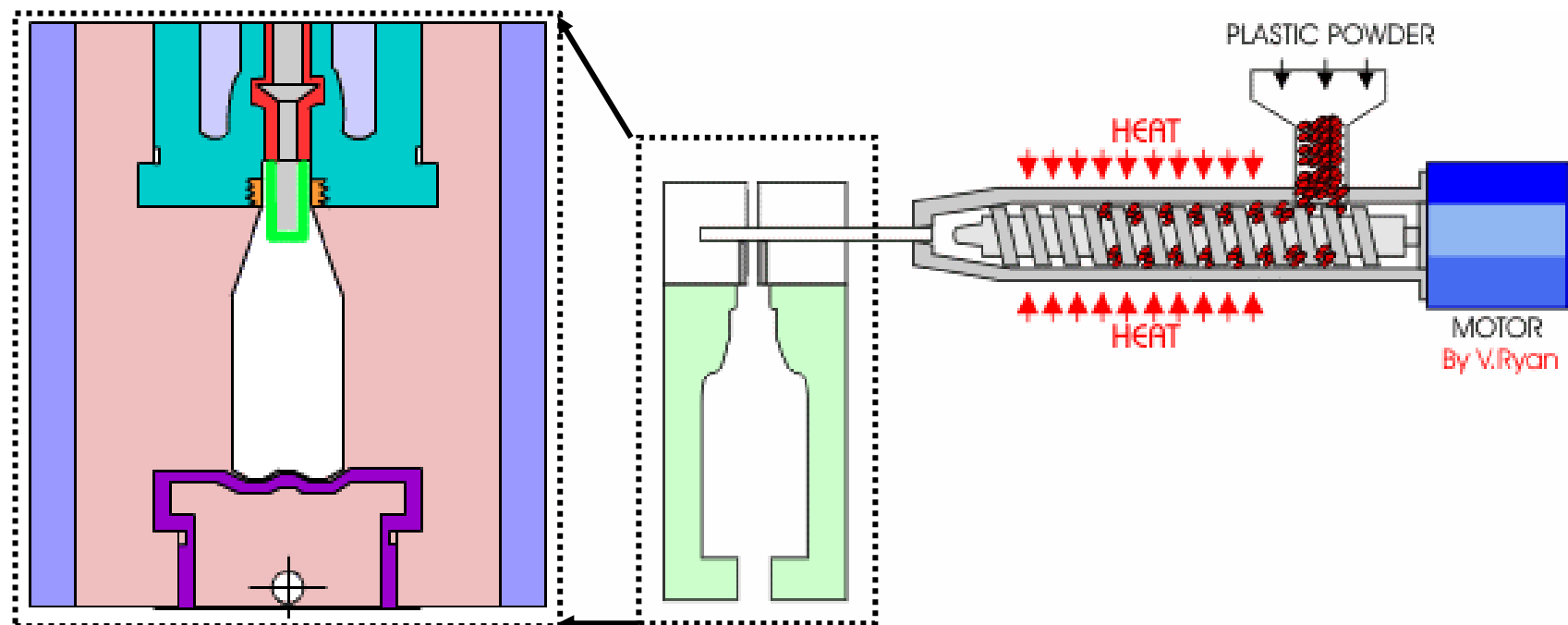
(d) Transfer moulding

Advantages

1. More complicated shapes can be fabricated by this method
2. Less expensive
3. Blisters can be eliminated
4. Shrinkage and distortion are minimum
5. Very delicate articles can be made by this method

(e) Blow moulding

Blow moulding is the process of forming a molten tube (preform) of thermoplastic material (polymer or resin) and placing the preform within a mould cavity and inflating the tube with compressed air, to take the shape of the cavity and cool the part before removing from the mould.



(e) Blow moulding

- The major **difference between injection moulding and blow moulding** is the kind of product produced. Typically, **blow moulding** is designed to produce hollow, singular containers, such as bottles. On the other hand, **injection moulding** is used to produce solid pieces, such as plastic products.
- **Advantages:** Because of lower pressure, the mould **costs** in this blow moulding are lower as compared to injection moulding and the machinery **costs** are **low** as well.