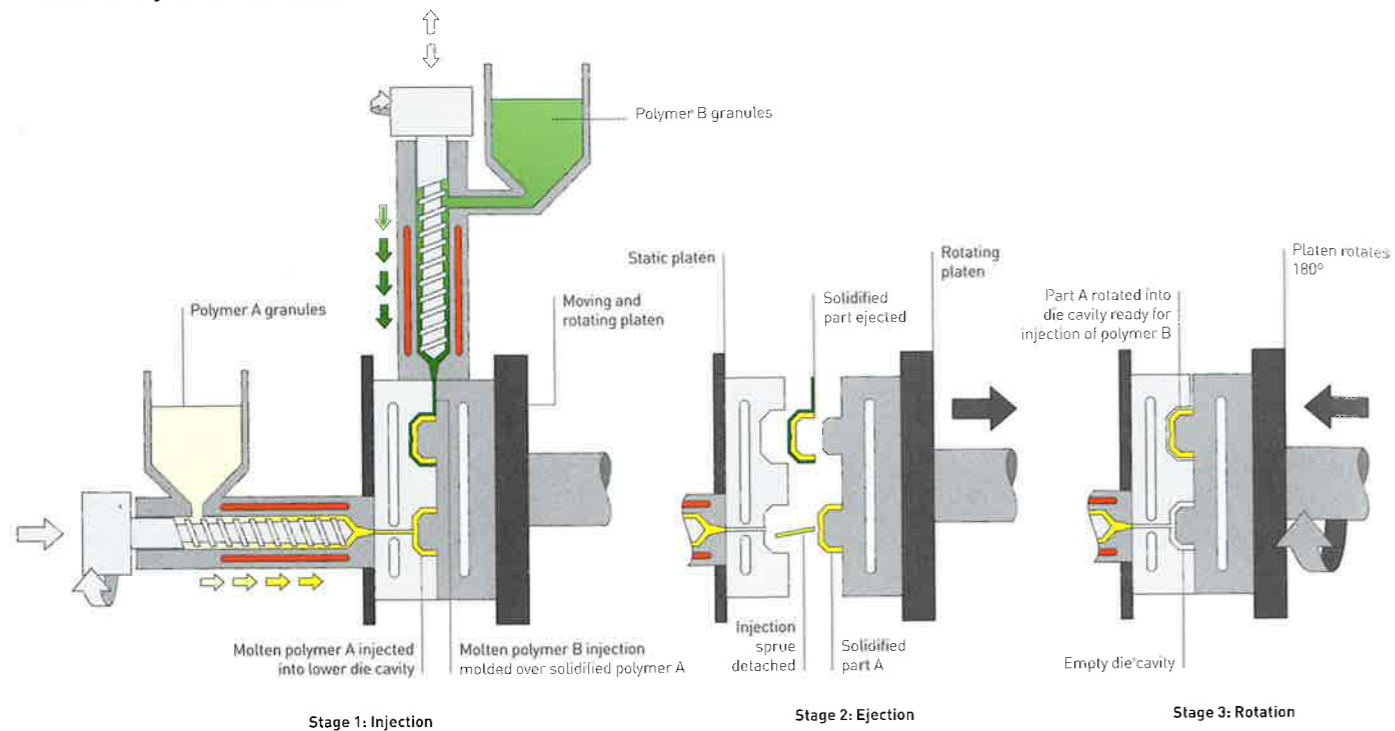


Multishot Injection Molding Process



TECHNICAL DESCRIPTION

Injection molding 2 or more plastics together is known as multishot or overmolding. The difference is that multishot is carried out in the same tool. Overmolding is a term used to describe injection molding over any preformed material, including another thermoplastic, or metal insert, for example.

The process of multishot injection molding uses conventional injection molding machines. It is possible to multishot up to 6 different materials simultaneously, each one into a different die cavity in the same tool.

The tool is made up of 2 halves: one is mounted onto a static platen, the other onto a rotating platen. Like conventional injection, this process can have complex cores, inserts and other features.

In stage 1, polymers A and B are injected at the same time into different die cavities: polymer A is injected into the lower die cavity; meanwhile, polymer B is injected over a previously molded polymer A in the upper cavity. The molten polymers form a strong bond because they are fused together under pressure.

In stage 2, the molds separate and the sprue is removed from molded polymer A. Meanwhile the finished molding is ejected from the upper die cavity. The rotating platen spins to align molded polymer A with the upper die cavity. In stage 3, the mold closes again and the sequence of operations is repeated.



Case Study

Multishot injection molding a handheld gas detector

This product is molded by Hymid for Crowcon. It is a handheld gas detection unit (image 1). Multishot injection molding has very important benefits that are essential for the effectiveness of this device, which is potentially lifesaving. The part is made up of a water clear polycarbonate (PC) body and thermoplastic electrometric (TPE) covering. The features of these materials are combined by multishot injection molding.

This is a tricky combination because the materials operate at different temperatures. Therefore, the runner system for the PC is heated with oil, whereas the TPE runner is cooled with water.

Of the 2 die cavities (image 2), the closest has just been injected with water clear PC. This gives the product rigidity, toughness and impact resistance. The farthest die cavity is the PC with a TPE

molded over it. The TPE provides integral features with hermetic seals, such as flexible buttons and a seal between the 2 halves.

The mold half with the moldings rotates through 180° (images 3 and 4). In doing so, it brings the solidified PC into alignment with the second injection cavity. Then the finished molding is ejected (image 5) ready for the next injection cycle to commence.

The knurled metal inserts (image 6) are incorporated in the PC by overmolding. These

are inserted into the mold by hand prior to each injection cycle.

The finished moldings are stacked (image 7) ready for assembly. The integral and flexible button detail is shown in the final product (image 8).



Featured Manufacturer

Hymid Multi-Shot
www.hymid.co.uk