

Investment Casting

An aluminium die is machined and injected with wax to create a replica of the required component.

A number of waxes are then assembled on a runner bar system, the end product commonly referred to as a riser or tree...

The riser is then coated in 'zircon' sand and 'molicite' to build up the mould.

The wax is then removed from the mould by high pressure steam using an 'autoclave'.

The empty mould is then 'fired' in a furnace to a temperature circa 1050 C and the molten metal poured into the mould.

The metal is said to be being invested in to the mould, hence the name 'Investment Casting'.

The individual castings are then cut from the mould assembly, blasted clean and made ready for any subsequent operations.

Metal Injection Moulding

This process is ideally suited to making small intricate and complicated parts in large batch quantities.

MIM or metal injection moulding is a technology combining the strengths of conventional powder metallurgy and plastic injection moulding.

A mould is machined with one or more cavities to the required size and shape.

Fine metal powders and thermoplastic binders are kneaded and fed into an injection moulding machine.

Under pressure and heat the feedstock flows into the cavities forming the desired shape.

After removal from the mould the parts go through a debinding process and are then sintered to a density greater than 95%.

Powder Metal - Sintering

This process is similar to that of MIM but has the added advantage of being able to produce slightly larger components with thicker sections.

Dry metal powder is fed into a steel die and then pressed with a load up to 600 tonnes depending on the shape and size of the component.

After removal from the die the components are then sintered, (heat treated) to achieve the required shape and strength.