

ADVANCED MATERIALS SOLUTIONS

METAL INJECTION MOULDED COMPONENTS

AMS-MIM

- High quality and tight tolerances
- Cost effective alternative to machining, investment casting and 3D printing
- Small and large runs in a variety of materials



METAL INJECTION MOULDING (MIM)

MIM is an advanced manufacturing process which combines the technical advantages of powder metallurgy and the straightforward process of injection moulding. MIM manufacturing allows AMS to produce complex parts with high consistency, high strength, tight tolerances and almost no waste.

Advanced Materials Solutions (AMS) control the entire MIM process in house here in Australia, from the mould design and fabrication through to shipping the finished components. Feedstock manufacture, moulding, debinding and sintering are all done in our Adelaide facility. This control of the process allows us to manage the consistency and dimensional repeatability of the parts we produce enabling us to supply components of superior quality.

Metal Injection Moulding is a cost effective alternative to CNC machining, and investment casting, offering substantial savings and reduced lead times for medium to large production runs. It is also a cost effective step up from 3D (SLS/DMLS) metal printing. AMS can work with you from prototyping through to small, medium or large production runs.

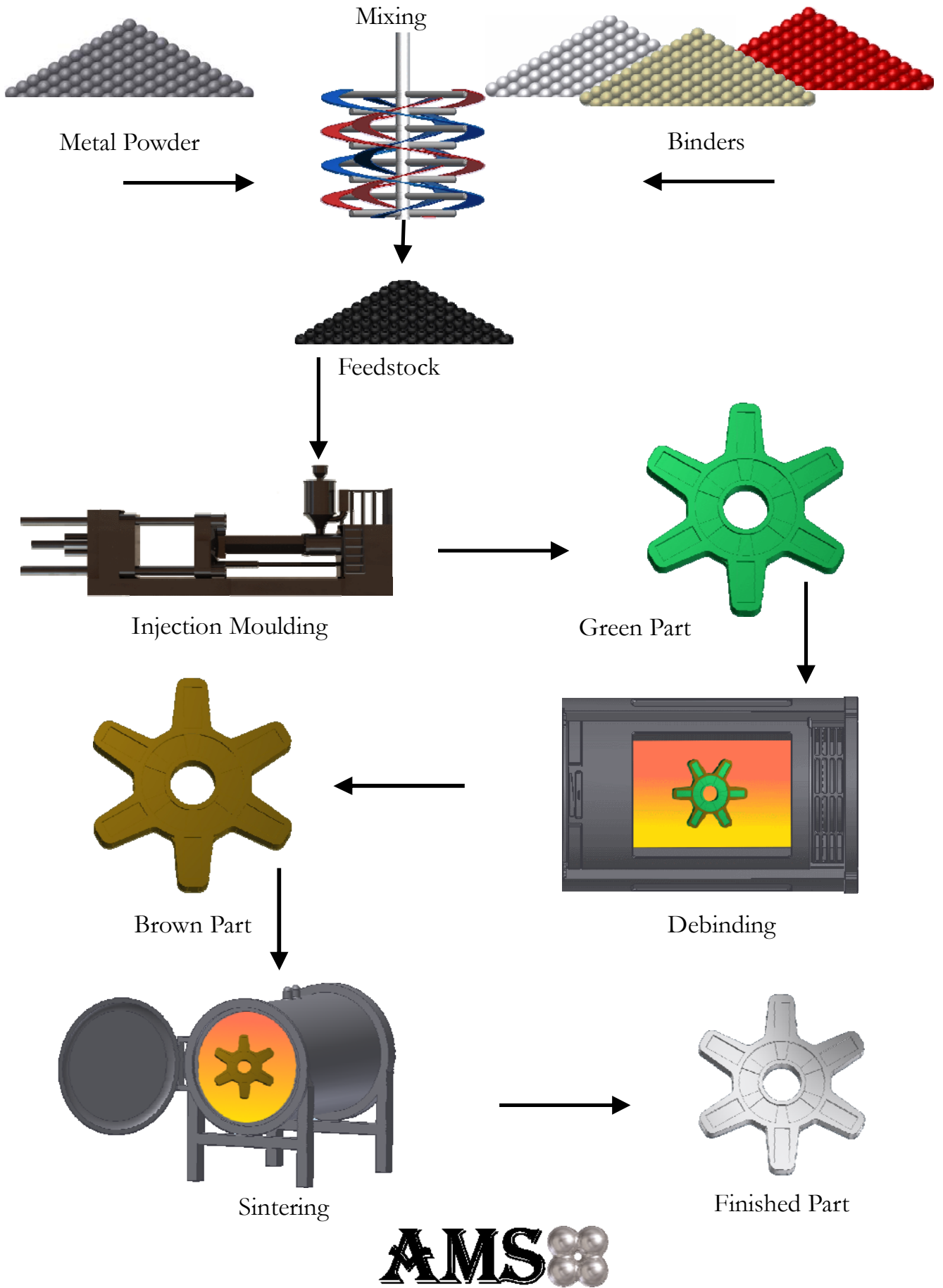
AMS have specialized on high-value metals, such as 316L stainless steel, Inconel, high nickel alloys and Titanium. Manufacturing in MIM can bring the cost of high-quality complex components down to the level of those components machined out of lesser metal grades. That means better quality components for the same or better cost.

THE MIM PROCESS

The MIM process starts with metal powder and binders that are blended together. The resulting feedstock is liquefied and injected into a mould using a customized injection moulding press. The green part that comes out of the injection moulding machine is then chemically or thermally treated to remove the bulk of the binders, producing a “brown” part. Finally that part is sintered in a high temperature vacuum furnace to form the finished part.

Threads, grooves, holes, protrusions, embossing and dating can all be incorporated into the mould, making it possible to produce complex parts with little to no secondary operations, such as machining, deburring, polishing, or tapping.

METAL INJECTION MOULDING PROCESS



AMS MIM ADVANTAGES

- ◆ *Cost Savings—commonly 50% less than investment casting or CNC machining*
- ◆ *Design Flexibility*
 - ◆ *Ideal for complex shapes that would be difficult to machine*
 - ◆ *Allows features like threads and blind holes to be moulded instead of made in secondary operations*
- ◆ *Part count reduction—two or more parts may be able to be produced in one MIM design*
- ◆ *Tight tolerances—repeatable tolerances of +/- 0.3 mm (better on smaller parts)*
- ◆ *Efficient—virtually no material waste, largely automated process means lower cost*
- ◆ *Net Shape process—little or no secondary operations needed to produce finished part*
- ◆ *Difficult to machine materials can be moulded*
- ◆ *Eliminates multiple setup machining operations*
- ◆ *Produces thinner walls, sharper cutting points, better tolerances and better surface finish than investment casting*
- ◆ *Superior corrosion protection, wear resistance, strength and larger material selection than possible with die casting*



AMS Vacuum/Hydrogen Sintering
Furnace



FOR MORE INFORMATION PLEASE CONTACT

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