

Production Possibilities



AMT MIM is a division of an award-winning contract manufacturing company with the core business in Metal Injection Molding. With material and engineering expertise, we serve customers worldwide from product development to mass production.



Accolades Hallmark of Excellence



**Metal Powder
Industries Federation (MPIF)
Awards**

Grand Prize

1993 • 2000 • 2005 • 2006 • 2009 • 2010
2015 • 2018

Award of Distinction

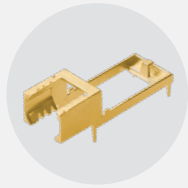
1995 • 2002 • 2003 • 2012



2000

MPIF Grand Prize

Four individual pieces were integrated into a one-piece PIM component, which resulted in higher performance at a lower cost.



2002

MPIF Award of Distinction

This component has intricate geometries, a hollowed structure and an overall wall thickness of less than 1mm (0.04in).



2006

MPIF Grand Prize

The complex geometries of the flip slider and hinge barrel capitalized on the advantages of PIM technology and elevated mobile design to a new level.



2010

MPIF Grand Prize

Incorporating multiple side core inserts in the tooling enable this complex locking component to be manufactured by the PIM technology at competitive pricing.



2018

MPIF Grand Prize

This MIM component with multiple internal cross-channels allows smooth flow of the gases in and out of the five ports.



**European Powder Metallurgy
Association (EPMA) Awards**

2003 • 2005 • 2018



2018

EPMA Award

This One-Piece Nozzle with complex internal channels was manufactured using MIM without any assembly process. Such features are impossible to be produced by conventional process.

"AMT is a dependable supplier with its responsiveness, tireless effort from supporting the NPI till production ramp up. Your effort is recognised at my organization and we look forward to many years of mutual benefit cooperation" **Commodity Manager, Medical MNCs, USA**

Powder Injection Molding (PIM)

PIM, encompasses MIM and CIM, excels at applications that require shape complexity and superior properties such as high strength, excellent magnetic permeability, good creep resistance, corrosion resistance and thermal conductivity.

Metal, Ceramic and Copper Injection Molding (MIM, CIM and CuMIM)

With over 35 years expertise in the MIM technology, AMT is able to work with customer in the early design phase to fully optimize the capability of the MIM technology to enhance the product's performance and reduce overall cost.

The PIM Process:

1 Mixing

Metal/ceramic powder is mixed with polymer binder to form the feedstock.



2 Injection

The feedstock is molded to form the desired geometry known as green part.



3 Debinding

The polymer binder is removed from the green part by a debinding process to form the brown part.



4 Sintering

During sintering, the brown part shrinks and densifies into a net-shape solid component.



Advantages of MIM, CIM and CuMIM:

- Complex geometry.
- Minimal or no machining needed.
- Achieve overall cost savings.
- Ability to combine or integrate multiple parts.
- Ideal for annual production volume of > 10k.
- Minimal or zero material wastage.
- Ideal for part weight of 0.1g to 250g.

Innovative Applications

AMT not only applies the MIM technology to deliver consistent, reliable and quality products to our customers, but is able to synergize the MIM technology, process and material innovations to provide innovative solutions to all our customers.



Innovative Applications:

- Complex design parts used in Robotic Surgical Systems.
- Inter-connecting channel parts used in Life Science Systems.
- Components with internal channels used in Automotive Selective Catalytic Reduction (SCR) Systems.
- Components with Bi-Material used in Automotive Sensors.
- Integration of multiple components used in Oil & Gas.
- Complex copper heat sinks used in Advanced Thermal Management Systems

Material Portfolio

Material	Classifications
Soft Magnetic Alloy	Fe-3%Si
	Fe-8%Ni
	Fe-50%Ni
	Fe-50%Co-2%V
	Fe-80%Ni-2%Mo
Special Alloy	F75 Super Alloy
	Inconel 713C
	Nimonic 90
BASF Catamold	AISI 630 (17-4PH)
	AISI 316L
	42CrMo4

Stainless Steel	AISI 630 (17-4PH)
	AISI 304L
	AISI 316L
	AISI 420
	AISI 430L
	AISI 440C
Ceramics	Nitronic 50
	Alumina (Al ₂ O ₃)
	Zirconia (ZrO ₂)
	Zirconia Toughened Alumina
Non-Ferrous	Copper
	Tungsten
	Tungsten-Copper

In-house Characterisation and Analytical Capabilities

With the strong belief of wanting to deliver greater value to our customers, AMT has invested significantly in the Analytical Equipment to support R&D to stay ahead of the technology.



Characterisation and Analytical Equipment:

- Mastersizer Particle Analyser.
- Dual Bore Capillary Rheometer.
- Specimen Grinder and Polisher.
- LED Microscope (up to 100x).
- Mold Flow Simulation.
- X-ray Fluorescence (XRF) Chemical Analyzer.
- Laser Marking.
- Zeiss Scanning Optical System.

Value Added Services

Our value-added services range from advanced hardening to precision machining to customer-specific finishing.

Through our stringent quality control and industry certifications, we deliver products that meet the precise requirements of your project with quality, durability, performance, and compliance.



Services include:

- Precision mold fabrication.
- Case or full hardening.
- Precipitation hardening.
- Stress relief annealing.
- Precision CNC machining.
- EN/PTFE/Au plating.
- Electro-polishing.
- Passivation.

We are Committed to Excellence

Combining our MIM technology, material innovations and engineering expertise over the past 35 years, AMT is able to offer innovative solutions including the In-Coring®, Bi-Material, Integration, Thin Wall Capability, etc.



Compliance

ISO 13485, ISO 9001, ISO 14001 and IATF 16949 ensure products of the utmost quality are delivered each and every time.



Quality

With over 35 years of manufacturing experience and adhering to stringent process controls and quality system, we are able to deliver quality parts to all our customers.



One-Stop Solutions

We are able to provide one-stop solutions from DFM, mold flow simulation, prototyping, mass production to assembly services.



Expertise

Our expertise in metal processing technology and our commitment to innovate enable us to overcome any manufacturing challenges.



Innovation

We provide innovative solutions by optimizing the MIM process capabilities and application of superior material characteristic to deliver compelling values to our customers.



Awards & Recognitions

Our continuous effort in innovating with new materials and processes has garnered numerous awards, patents and recognitions.



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