



INDO-MIM<sup>®</sup>  
COMPLEXITY SIMPLIFIED

## CASE STUDIES - AUTOMOTIVE



# ABOUT US



**85+**

**Material Options**

**24**

**MPIF  
Awards**

**6000+**

**MIM Parts  
Variety**

**650+**

**Customers  
Globally**



**150M+**

**Parts Shipped  
Annually**



**3000+**

**Employees**



**\$200M+**

**Annual Revenue**

# METAL INJECTION MOLDING PLANTS



**Over 8,90,000 sq. ft. of MIM manufacturing in multiple locations in 2 countries**



**Manufacturing Plant – 1  
Hoskote, Bengaluru**



**MIM Manufacturing Plant – 2  
Doddaballapur, Bengaluru**



**MIM Manufacturing Plant – 3  
INDO-MIM Inc., USA**

# INTEGRATED VALUE CHAIN



## One-Stop Solution Provider

**MIM**

**METAL INJECTION  
MOLDING**

Largest installed  
capacity



**CIM**

**CERAMIC INJECTION  
MOLDING**

ISO 9001 and  
ISO 14001 Certified



**IC**

**INVESTMENT  
CASTING**

Temperature and  
Humidity controlled



**PMG**

**PRECISION  
MACHINING**

Aerospace, Oil & Gas,  
Medical



**SURFACE  
TREATMENT**

**SPECIAL  
PROCESSES**

AS9100 & NADCAP  
Approved



**MBJ**

**METAL BINDER JET  
3D PRINTING**

New Addition to  
INDO-MIM





# GLOBAL PRESENCE



# CERTIFICATIONS



 <p><b>CERTIFICATE</b></p> <p>INDO-MIM Private Limited</p> <p><b>AS 9100:2016</b></p> <p><b>AEROSPACE</b></p>	 <p><b>CERTIFICATE</b></p> <p>INDO-MIM PVT. LTD.</p> <p><b>IATF 16949:2016</b></p> <p><b>AUTOMOBILE</b></p>	 <p><b>CERTIFICATE</b></p> <p>INDO-MIM PVT. LTD.</p> <p><b>ISO 13485:2016</b></p> <p><b>MEDICAL</b></p>	 <p><b>CERTIFICATE</b></p> <p>INDO-MIM PRIVATE LIMITED</p> <p><b>ISO 14001:2015</b></p> <p><b>ENVIRONMENT</b></p>	 <p><b>CERTIFICATE</b></p> <p>INDO-MIM PVT. LTD.</p> <p><b>ISO 9001:2015</b></p> <p><b>QMS</b></p>	 <p><b>CERTIFICATE</b></p> <p>ISO CLASS 8</p> <p><b>CLEAN ROOM</b></p>	 <p><b>CERTIFICATE</b></p> <p>INDO-MIM PRIVATE LIMITED</p> <p><b>OHSAS 18001:2007</b></p> <p><b>HEALTH &amp; SAFETY</b></p>	 <p><b>GC-MARK CERTIFICATE</b></p> <p>INDO-MIM PRIVATE LIMITED</p> <p><b>GC-MARK</b></p> <p><b>ENERGY EFFICIENT</b></p>
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# PRODUCT PORTFOLIO



## AUTOMOTIVE

Turbochargers, sensors,  
pumps, seating, door  
mechanism, nozzle,  
etc.



## CONSUMER

Fashion accessory,  
Mountaineering, Lock  
parts, Home appliances,  
Personal care etc.



## DEFENSE

Firearm parts, sights



## AERO & MEDICAL

Surgical parts,  
Staplers, Implants,  
Brackets

# CASE STUDY – FUEL PUMP ACTUATION



## APPLICATION – FUEL ACTUATION



- Entire profile manufactured through MIM.
- Large batch production with auto rewinding mechanism for thread in tool.

## SOLUTION

## PRODUCT DESCRIPTION

- Material :- MIM 4605 (Medium Carbon Steel)
- Weight :- 9gm
- Segment :- Automotive
- Annual Requirement :- 3600K



- 6 separate machining operations for every part.
- Problem faced in repeatability and burr formation.
- High machining cost.

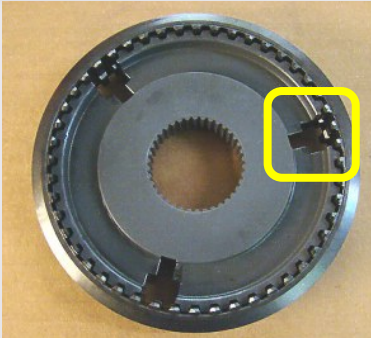
## CUSTOMER PAIN POINTS



# CASE STUDY – TRANSMISSION SYSTEM



## APPLICATION – TRANSMISSION SYSTEM



- MIM can offer 98% of the theoretically density, hence higher strength in the components.
- Could be produced in large volume
- Entire profile manufactured through MIM.

## SOLUTION

## PRODUCT DESCRIPTION

- Material :- MIM8620(Low carbon steel with case hardening)
- Weight :- 7gm
- Segment :- Automotive
- Annual requirements:- 600K



- Conventionally manufactured through the press and sinter method, Parts have lower strength due to the low density (80%).
- Breakage of parts due to reduced strength.

## CUSTOMER PAIN POINTS

# CASE STUDY – PISTON COOLING NOZZLE



## APPLICATION – PISTON COOLING NOZZLE



- Net shape of hole directly formed in MIM even for 0.8 to 1 mm dia.
- No presence of burr.

## SOLUTION

## PRODUCT DESCRIPTION

- Material :- MIM 4605 (Medium Carbon Steel) with Heat treatment
- Weight :- 5gm
- Segment :- Automotive
- Annual Required :- 120K



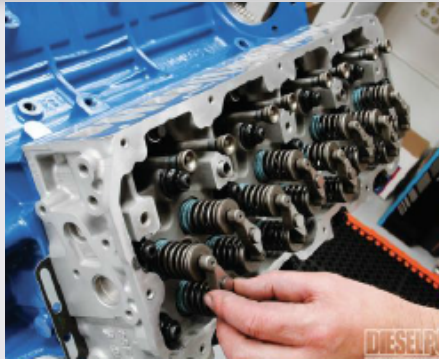
- Inconsistency in machined hole dimension & position.
- Additional problem of burr removal.

## CUSTOMER PAIN POINTS

# CASE STUDY – VALVE BRIDGES



## APPLICATION – BRIDGE TO HOLD VALVES



- Manufactured through MIM without any machining
- Coring provided to reduce the weight & improve efficiency

## SOLUTION

## PRODUCT DESCRIPTION

- Material :- MIM 4605 (Medium Carbon Steel) with Heat treatment
- Weight :- 25gm
- Segment :- Automotive
- Annual Requirement :- 180K



- Manufacturing through Forging required multiple machining post forging.

## CUSTOMER PAIN POINTS

# CASE STUDY – HYDRAULIC PROPORTION VALVES



## APPLICATION – HYDRAULIC PROPORTION VALVES



- Integrated parts without joining operations
- Compact parts with reduction in weight

## SOLUTION

## PRODUCT DESCRIPTION

- Material :- SS 17-4PH and MIM 4605 (medium carbon steel) with heat treatment
- Weight :- 26gm to 32gm
- Segment :- Automotive
- Annual Requirement :- 360K



- Multiple manufacturing operations
- Joining operations for assembly

## CUSTOMER PAIN POINTS



# CASE STUDY – COLLAPSABLE ROOF



## APPLICATION – COLLAPSABLE ROOF



Parts assemblies in Collapsible roof system of Convertible Car

## PRODUCT DESCRIPTION

- Material :- MIM17-4PH
- Weight :- 34gm
- Segment :- Automotive
- Annual Requirement :- 200K



- Plastic molded over the MIM part for the functionality of mechanism.
- The cost saving is around 30%.
- Solid Film Lubrication coating for better movement of the part.

## SOLUTION

- Strength required for the part with plastic over molding.

## CUSTOMER PAIN POINTS

# MORE THAN 3000 HEARTS – ONE TARGET

Creating Value :

In-depth technical competence

International presence

Application and Industry Expertise

Long-term Relationships

# THANK YOU

[www.indo-mim.com](http://www.indo-mim.com)

