INDO-MIM®

COMPLEXITY SIMPLIFIED

DESIGN FOR ADDITIVE MANUFACTURING

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Process	Laser powder bed fusion (LPBF)		
Printers available	Model	Build Box Dimensions (mm)	
Intech	SF1	Ø 150 X 180 (Z)	
SLM -NIKON	SLM 280	280 X 280 X 365 (Z)	
SLM -NIKON	SLM 500	400 X 250 X 250 (Z)	
Material Options (Current)	SS 17-4PH	SS 316L	Inc 625
	Inc 718	CoCr(F75)	Maraging Steel
Typical density	99.5 % minimum		
Material Hardness range post-heatment (based on heat treatment process)	Depends on the material and heat treatment process		
Material properties	Can be shared upon request		
Minimum wall thickness based on asepct ratio	< 10 mm length	Aspect ratio 1:10	Aspect ratio 1:30
	0.30 mm	0.30 mm~ 3.0 mm	>3 mm
Maximum wall thickness	~ 50+ mm (2.0")		
Weight Range	10 grams to 10+ Kgs		
Maximum part foot print	Based on the build box dimension available		
Surface finish based on layer thickness for printing	30 microns layer	60 microns layer	Surface finish in Z direction will be rougher
	6~10 Ra	8~14 Ra	
Flatness	Depends upon product configuration and wall thickness		
Dimensional tolerance	upto 5 mm length	5~40 mm length	Beyond 40 mm length
	0.05 mm	± 0.10 mm	As per DIN ISO 2768
Minimum resolution	0.20 mm (0.008") minimum (resolution in Z direction 0.40 mm)		
Suitable production volume (10~30 grams)	10~100,000+ parts/yr per Printer		
Suitable production volume (30~1000 grams)	10~5,000 parts/yr per printer		
Secondray finishing offered	CNC turning/ milling, surface grinding ,surface finishing, heat treatment etc.		
Design assistance	Offered through detailed DFAM		
Service locations	Bangalore, India	San Antonio, USA	
Typical leadtime for sample shipment	~ 2 weeks for simple projects, 3~5 weeks for complex projects		
RFQ response time	24~72 hours for simple projects, ~ 10 days for complex projects		

Process	Binder-Jet 3D printing		
Printers available	Model	Build Box Dimensions (mm)	
Desktop Metal	P1	200 X 100 X 40 (Z)	
Desktop Metal (ExOne)	Innovent+	65 X 160 X 65 (Z)	
Desktop Metal (ExOne)	25 PRO	400 X 250 X 250 (Z)	
Desktop Metal	Shop pro	350 X 222 X 220 (Z)	
HP	SJ 100	430 X 309 X 140 (Z)	
Material Options (Current)	SS 17-4PH	SS 316L	Tool Steel M2
Material density as sintered	98% min	98% min	99.5% min
Material Hardness range post-heatment (based on heat treatment process)	30~42 HRC	~70 HRB	55~ 65 HRC
Material properties	Can be shared upon request		
Minimum wall thickness	1.00 mm (~0.04"). Lower wall thickness need closer review		
Maximum wall thickness	15 mm (~ 0.60")		
Weight Range	3 grams to 10 Kgs		
Maximum part foot print	70% of Build Box dimenssions		
Surface finish	4~7 Ra as sintered (Z direction will have rougher finish)		
	Can be improved upto 0.20 Ra through additional finishing		
Dimentional tolerance	± 1.50% of the feature size		
Flatness	Depends upon product configuration and wall thickness		
Minimum resolution	0.5 mm (0.02") in X-Y direction, 1 mm (0.04") in Z direction		
Suitable production volume (3~30 grams)	10~250,000+ parts/yr per Printer		
Suitable production volume (30~300 grams)	10~10,000 parts/yr per printer		
Secondray finishing offered	CNC turning/ milling, surface grinding ,surface finishing, heat treatment etc.		
Design assistance	Offered through detailed DFAM		
Service locations	Bangalore, India	San Antonio, USA	
Typical leadtime for sample shipment	~ 2 weeks for simple projects, 3~5 weeks for complex projects		
RFQ response time	24~72 hours for simple projects, ~ 10 days for complex projects		

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Process	Lithography based Metal Mfg (LMM)		
Printers available	Model	Build Box Dimensions (mm)	
INCUS	LAB 35	56 X 89 X 120 (Z)	
INCUS (to be installed in 2025)	Hammer 35	250 X 153 X 150 (Z)	
Material Options (Current)	SS 17-4PH	SS 316L	Tool Steel M2
As sintered density	98%	98%	99.50%
Material Hardness range post-heatment (based on heat treatment process)	30~42 HRC	~ 70 HRB	55~64 HRC
Material properties	Can be shared upon request		
Minimum wall thickness	0.15 mm (Aspect ratio can influence this)		
Maximum wall thickness	~ 10 mm		
Weight Range	0.05 ~ 10 grams		
Maximum part foot print	Based on the build box dimension available		
Surface finish based on layer thickness for printing	20 microns layer	50 microns layer	Surface finish in Z direction will be rougher
	2~4 Ra	5~7 Ra	
Flatness	Depends upon product configuration and wall thickness		
Dimensional tolerance	±1% of the feature size		
Minimum resolution	0.15 mm (0.006") minimum (resolution in Z direction 0.3 mm)		
Suitable production volume (0.05~5 grams)	10~50,000+ parts/yr per Printer		
Suitable production volume (5~10 grams)	10~10,000 parts/yr per printer		
Secondray finishing offered	CNC turning/ milling, surface grinding ,surface finishing, heat treatment etc.		
Design assistance	Offered through detailed DFAM		
Service locations	Bangalore, India		
Typical leadtime for sample shipment	~ 2 weeks for simple projects, 3~5 weeks for complex projects		
RFQ response time	24~72 hours for simple projects, ~ 10 days for complex projects		

Process	Lithography based Metal Mfg (LMM)		
Printers available	Model	Build Box Dimensions (mm)	
LITHOZ	Cera Fab 65	102 X 64 X 320 (Z)	
	Services offered through third party for now		
Material Options (Current)	Alumina 99.8%	Zirconia	Zirconia toughened Alumina (ZTA)
As sintered density	99%	99%	98.80%
Material properties	Can be shared upon request		
Minimum wall thickness	0.10 mm (Aspect ratio can influence this)		
Maximum wall thickness	10+ mm		
Weight Range	0.05 ~ 1000 grams		
Maximum part foot print	Based on the build box dimension available		
Surface finish based on layer thickness for printing	10 microns layer	30 microns layer	Surface finish in Z direction will be rougher
	0.90 Ra	1.5~3 Ra	
Flatness	Depends upon product configuration and wall thickness		
Dimensional tolerance	±1% of the feature size		
Minimum resolution	0.10 mm (0.004") minimum (resolution in Z direction 0.2 mm)		
Suitable production volume (0.05~10 grams)	10~100,000+ parts/yr per Printer		
Suitable production volume (5~100 grams)	10~10,000 parts/yr per printer		
Secondray finishing offered	Vibro finishing , Grinding services on selective features		
Design assistance	Offered through detailed DFAM		
Service locations	Bangalore, India		
Typical leadtime for sample shipment	~ 4 weeks for simple projects, 5~8 weeks for complex projects		
RFQ response time	3~5 days for simple projects, ~ 15 days for complex projects		

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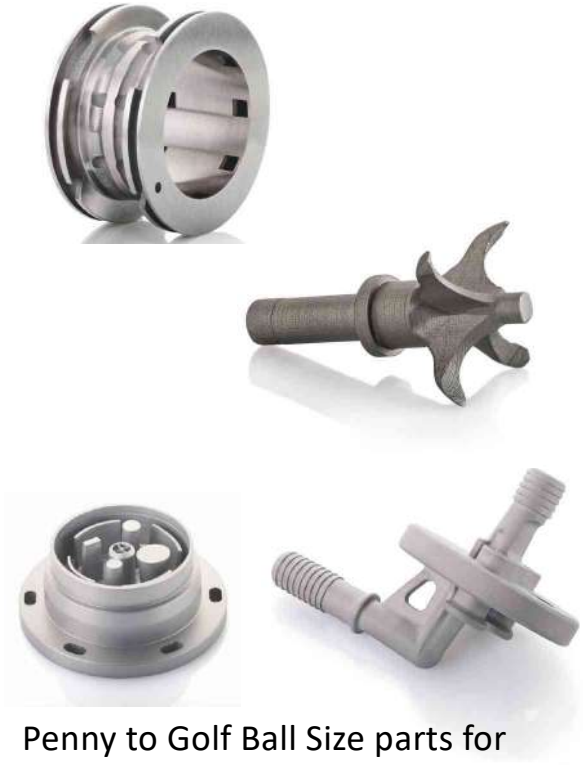
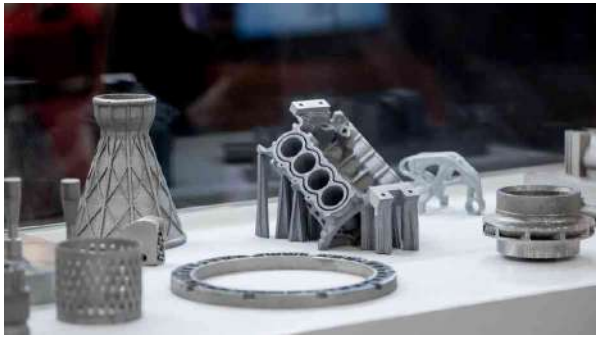
CHOOSE YOUR PROCESS, THE RULE OF

Binder-Jet 3DP



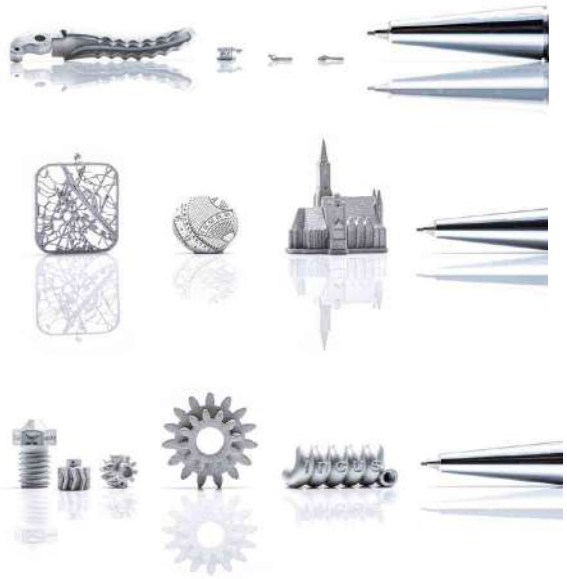
Penny to Golf Ball Size parts for production, Mold Inserts etc.

Laser Powder-Bed 3DP



Golf ball to football size parts for production

Lithography based Metal 3DP



Smaller than penny size parts with high resolution for production