

Global Additive Solutions



**Revolutionizing Metal Additive Manufacturing
with leading-edge Hardware & Software solutions
and end-to-end services.**

Intech Additive Solutions Pvt. Ltd is a TUV Certified ISO 9001:2015 & AS 9100D Bangalore based company at the forefront of Additive Manufacturing with a global presence, having Business offices in Europe and Asia.

INTECH GROWTH

2012

INTECH establishment
with a solid 30+yrs foundry and machine shop knowledge foundation.

2014-2016



Supplied Metal 3D printed Combustion chamber to HAL, for a 25KN Turbofan engine in 2015 and parts for Turboshaft engine in 2016

Breakthrough in supplying 3Dprinted parts to Aerospace and Tool & Die Industry



MJE20 AMOptoMet case study

2017

India's first Metal 3D Printed Micro Jet Engine. Additive software solution: **AMOptoMet** launch

DMG MORI partnership. GE's Most Innovative Supplier Award



Trailing Edge Turbine Nozzle tip repair for GE

2018

2019

AMBuilder software announcement.

Launch of SLM 3D printer

- **iFusion SF1**
- **iFusion LF Multi**

2020



Services

- Rapid Prototyping
- Low Mass Production
- DFAM
- Machining



Software

Additive Software solutions integrated with AI.



Hardware

Industrial Metal 3D Printers - best suited for competitive cost per part

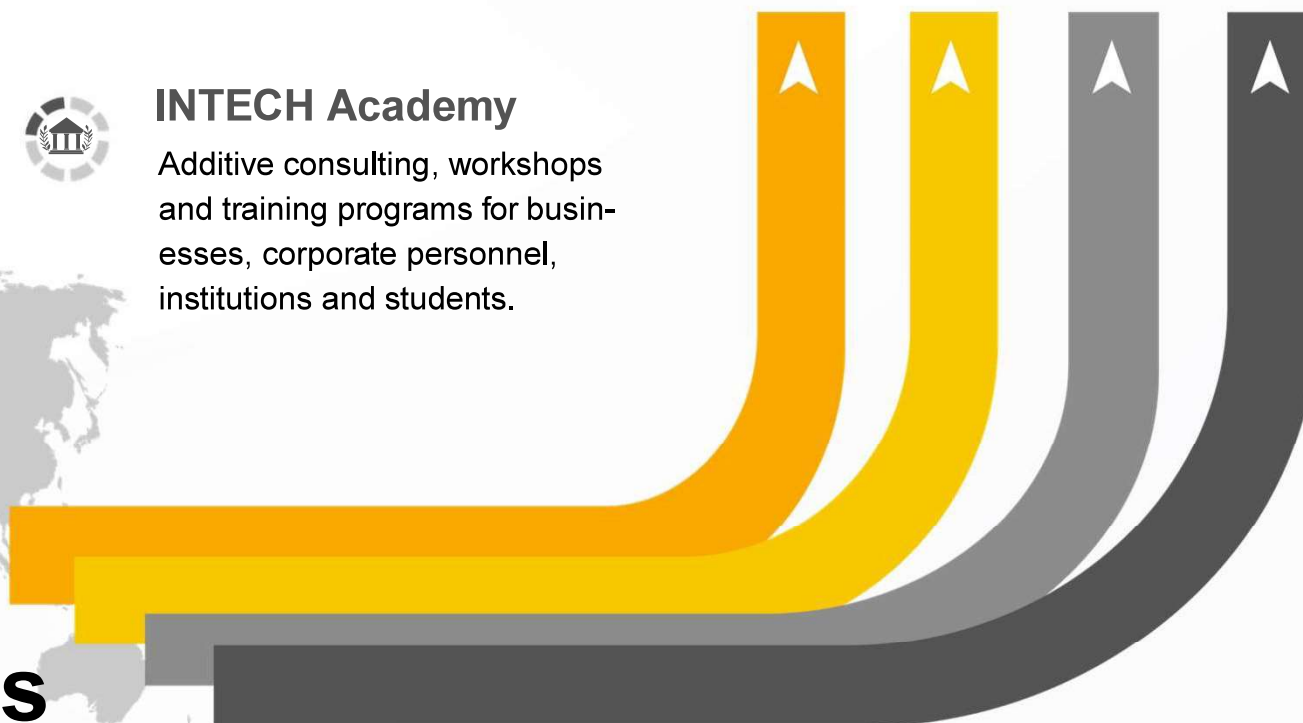


INTECH Academy

Additive consulting, workshops and training programs for businesses, corporate personnel, institutions and students.



INTECH Solutions



Industries We Cater To:



INFRASTRUCTURE

Metal 3D printers



- 02 - M280 -EOS
- 01 -SLM 285-SLM Solutions
- 01 - DMG MORI Realizer
- 01 - iFusion LF Multi
- 01 - iFusion SF1
- 01 -MetalFab - Additive Industries
- 01 - 3D FDM - Plastics
- Build Size -500x500x500
(ABS, PLA)



BEYOND PROTOTYPING - TOWARDS PRODUCTION

Post - Processing

1

HEAT TREATMENT

In-house Heat Treatment Facility to optimize micro structure and mechanical properties of the parts

2

SURFACE FINISHING & SUPER FINISHING

Grinding | Deburring | Polishing | Vibro Finishing | Shot Peening| Glass Beading | Sand Blasting

3

POST PROCESSING

Multi-Axis Machining center – 5 Axis, 4 Axis and 3 Axis vertical
CNC Turning center / High precision Drilling

4

INSPECTION AND TESTING

Surface Roughness/ Density/ Hardness/ XRD/ FPA Measurement
Co-ordinate Measuring Dimensional Measurement – CMM



Intech Expertise

- CAD Modelling
- Structural Analysis
- Flow Analysis

- Material Characterization
- Powder Development
- Powder Qualification

- AM OptoMet
- AM Builder

- 100,000+ spark hours
- 300+ customers across globe
- More than 1600 builds

Design
&
DfAM

Additive
Materials

Software
&
Hardware

Metal 3D
Printing
&
Post
Processing

Low
Mass
Production

- Topology Optimization
- Generative Design
- Part consolidation
- Lattice Structures & Bio Mimicry

- iFusion SF1
- iFusion LF Multi
- Sieving station

- Heat treatment
- Surface optimization
- Machining
- Quality and certification

- First time right part
- Consistent Quality
- Competitive cost per part

A complete ecosystem for metal additive manufacturing

Design for Additive Manufacturing (DFAM)

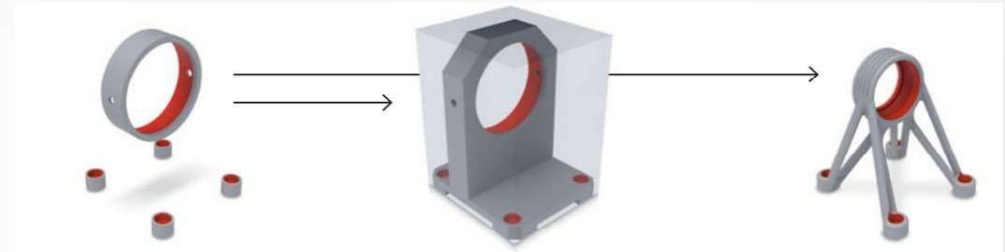
Design

- **CAD Modelling**
3D Modelling | Virtual Prototyping | Surface Modelling
- **Structural Analysis**
Stress - Strain Analysis | Structural Optimisation | Finite Element Analysis
- **Flow Analysis**
Fluid Flow Simulation | Parametric Study | Turbulant Flow Analysis

DFAM

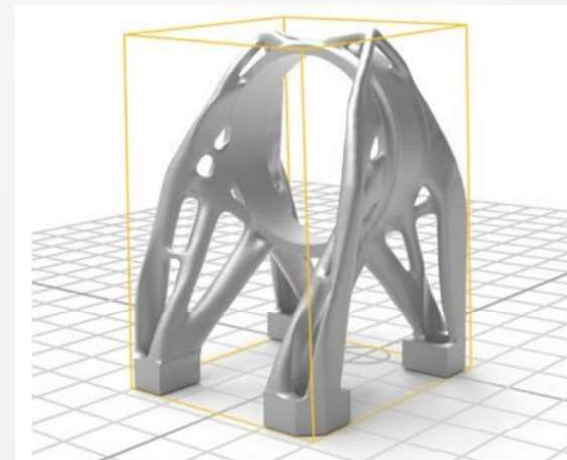
- BIO - MIMICRY
- GENERATIVE DESIGN
- TOPOLOGY OPTIMIZATION
- ASSEMBLY SIMPLIFICATION
- LATTICE STRUCTURES

Design for Additive Manufacturing



Traditional Design

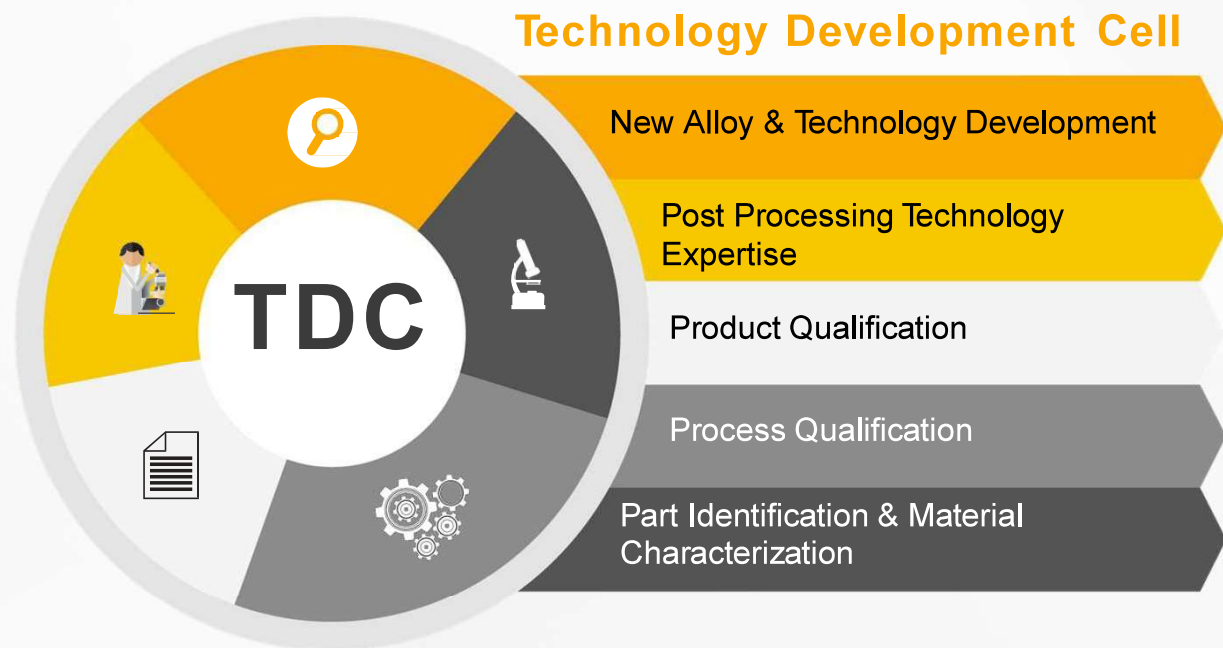
Additive Design



- + Cost reduction due to lightweight construction:
- + Reduced material usage due to structure optimization
- + Design advantages: Freedom in the design process.
- + Unrivaled: Cannot be produced conventionally

Lens holder LASERTEC 30
SLM 2nd Generation

Additive Materials



Developed Materials

- IN-718
- IN- 625
- CM247LC
- CoCrMo
- SS316L
- 17-4 PH
- HK30
- 18Ni300
- 13Ni400
- AlSi10Mg
- Ti64
- X22CrMoV12-1
- Copper alloy

Abrasive Cutter



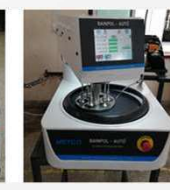
Belt Grinder



Hot Mounting Press



Automatic Grinder/ Polisher



Surface Roughness Tester



Micor-Hardness



Metallurgical Micro scope



Our software solutions aims to significantly reduce pre-processing costs and take metal AM to the next level of automation.

Software solutions



4μR	12μRa
a With	Without
AMOptoMet	AMOptoMet

AMOptoMet

AI for parameter optimization.

- Excellent Surface finish.
- Faster build rate - 30% reduction in cycle time.
- Advanced mechanical & Material properties calculation.
- Less porosity - approx >99.5% denser parts.

AMBuilder

An integrated cloud-based software for the best pre- build process.

Part Orientation | Support Generation |
Distortion Calculation | Slicing |
Hatching (CAM Post - Processing)



Hardware Solutions

India's first Commercial Grade Metal 3D printers



iFusion Series of SLM 3D Printers

- **iFusion SF1**
- **iFusion LF Multi**

Designed, Developed & Built at Intech, Bangalore Facility

- **iFusion SF1**, a high-performance small format Metal 3D Printer
- Affordable & Low cost
- A best entry level metal 3D printer for any industry.
- Suited for R&D Labs, Academy, Universities & Institutions
- **iFusion LF Multi**, a high performance metal 3D printer.
- Build Volume of 450 X 450 X 450 mm.
- Suited for large / low mass production parts

iFusion series - 3D printers with integrated software for build processing & parameter optimization.

Metal 3D Printed Parts

CONFORMAL COOLING CHANNELS

LIGHTWEIGHT DESIGN

DIRECTLY TO THE FINISHED PRODUCT

Optimum angle of the coolant jet to the point of cutting. 30

% reduction in weight with the same torsional stiffness.

Build process on an HSK holder does away with the need for support structures



Cannot be achieved conventionally:
Function integration and lightweight
structures ensure shorter cycle times



PROSTHETIC TIBIAL PLATEAU

Dimensions: 75 57 53mm

Material: Ti6Al4V

Machining time : 9hours (9 parts)



Metal 3D Printed Parts

Aerospace



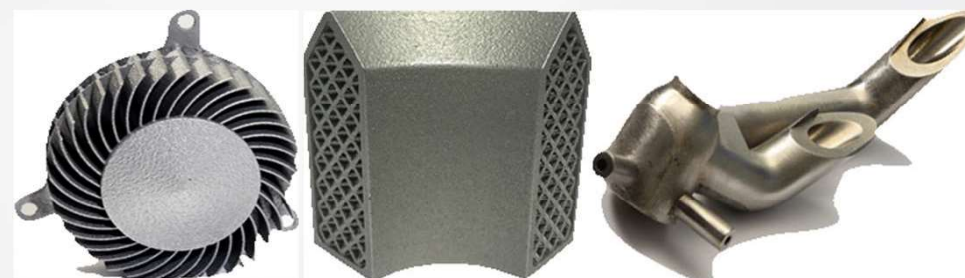
Automobile



General Engineering



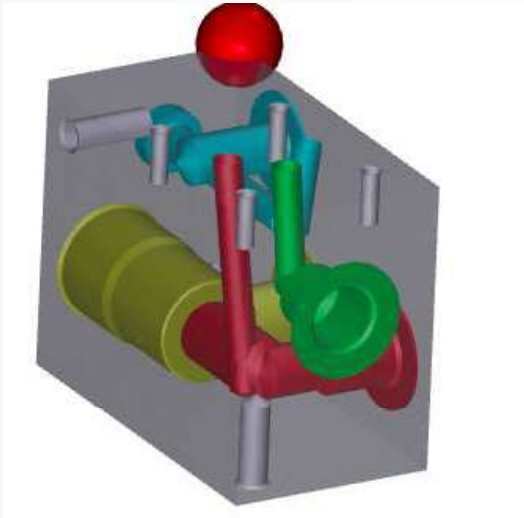
**Tool & Die
Conformal Cooling**



AEROSPACE AND AUTOMOTIVE PARTS



Case Studies- Manifold



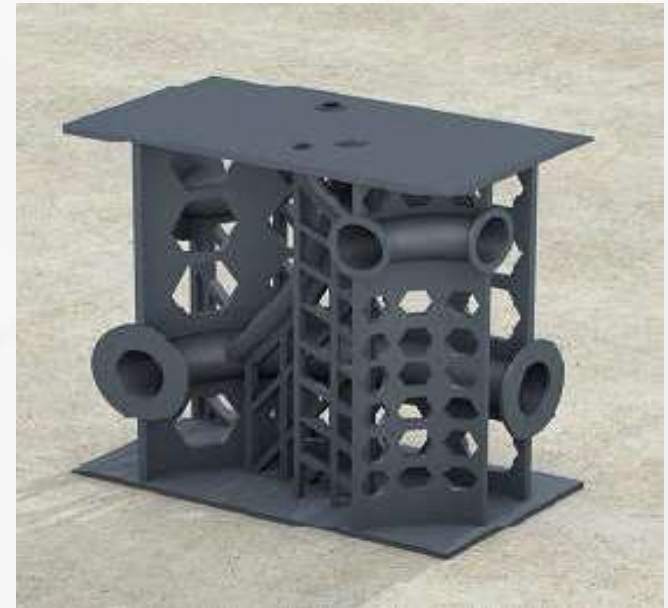
Initial Design of Manifold.

- Initial Weight—6.5Kgs
- Manufacture Time- 6-8 Weeks



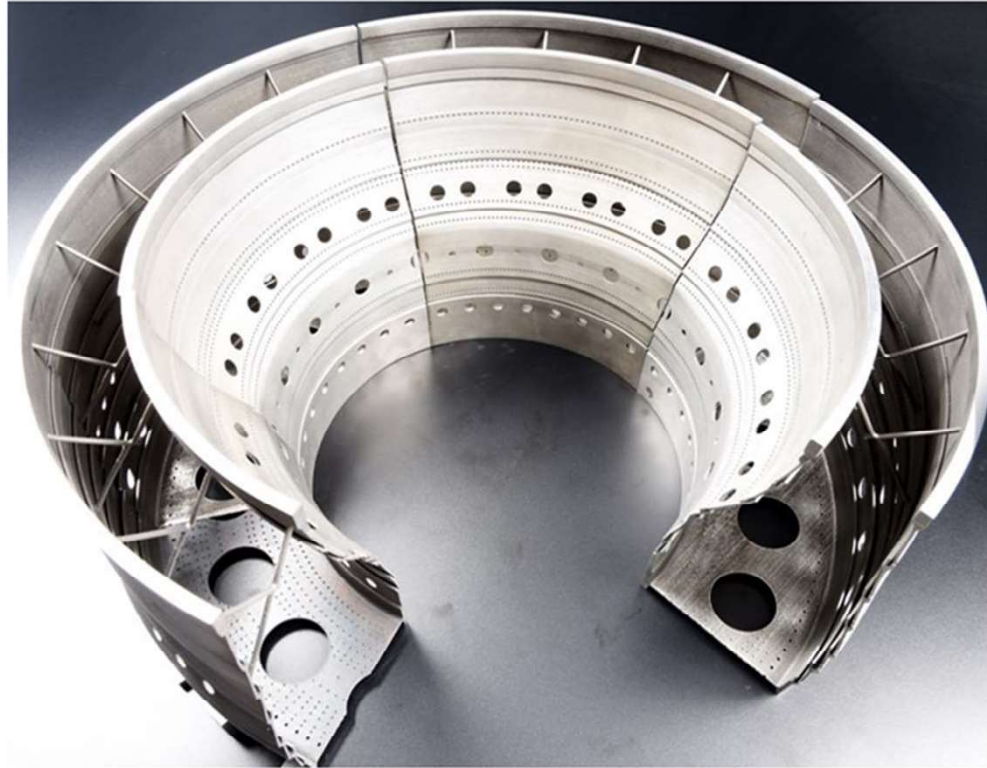
DfAM Design

Acheived Weight—2.88kgs
Optimesed Volume XXX
Print Time—2 Days
Inventory Cost---Nil
Delta P reduction up to 70-75%
Overall efficiency improved by 5%



- **55% Reduction in Weight**
- **Better Structural integrity**
- **Improved Efficiency**
- **Reduced lead time**

Case Studies- Aerospace Engine Parts

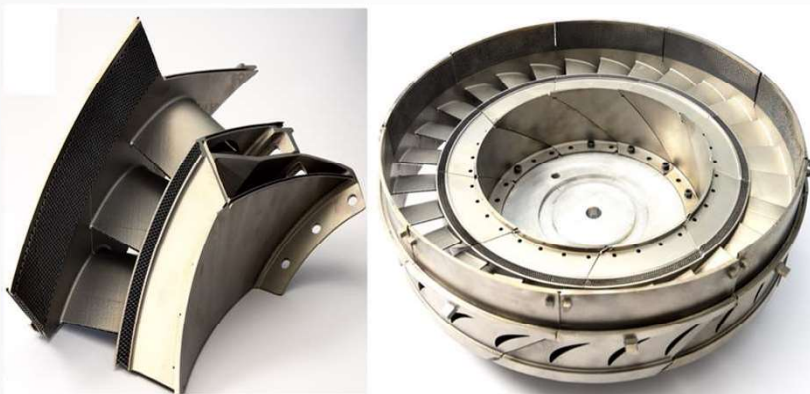


Part : Combustion Chamber

Material: IN 625

Dimension/Duration: Max Dia 436,ht 278 (in mm)/ 10-12 Weeks

Aerospace and Nuclear Parts



Part : Nozzle guide vane

Material: IN718

Dimension/Duration : Max dia 480 ht 180 (in mm)/ 8-10 weeks



Part : Gear assembly

Material: SS316 L



Part : HPT Blade

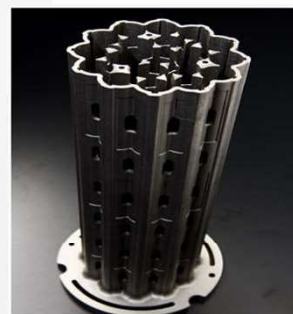
Material: IN718



Part : Combustion Chamber

Material: IN 625

Dimension/Duration: Max Dia 436,ht 278 (in mm)/ 10-12 Weeks



Part : NFC Fixture

Material: CoCr

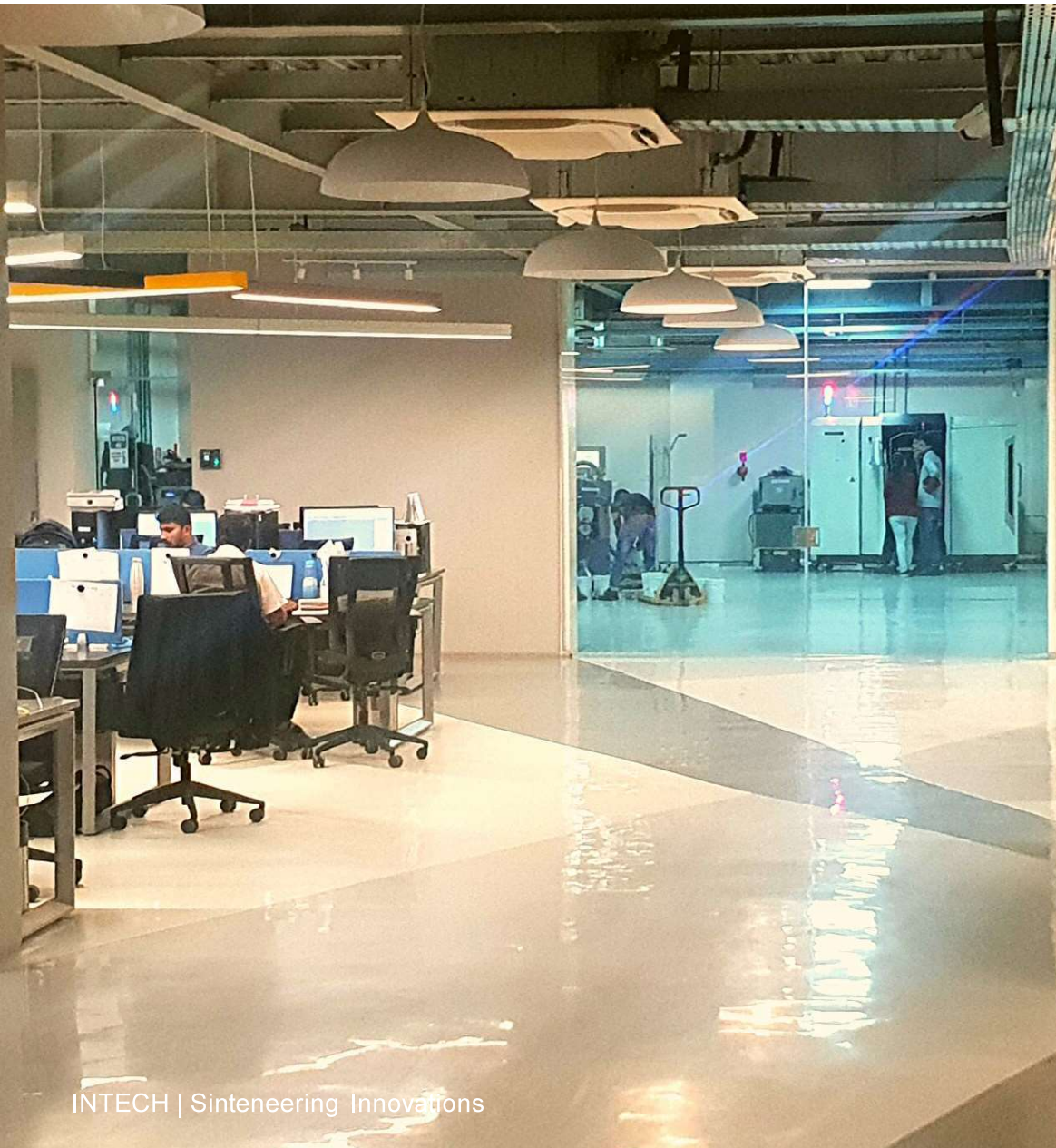
Dimension/Duration
: ht 270mm/ 4 days



Part : FUEL NOZZLE

Material: IN718

Duration: 1 week



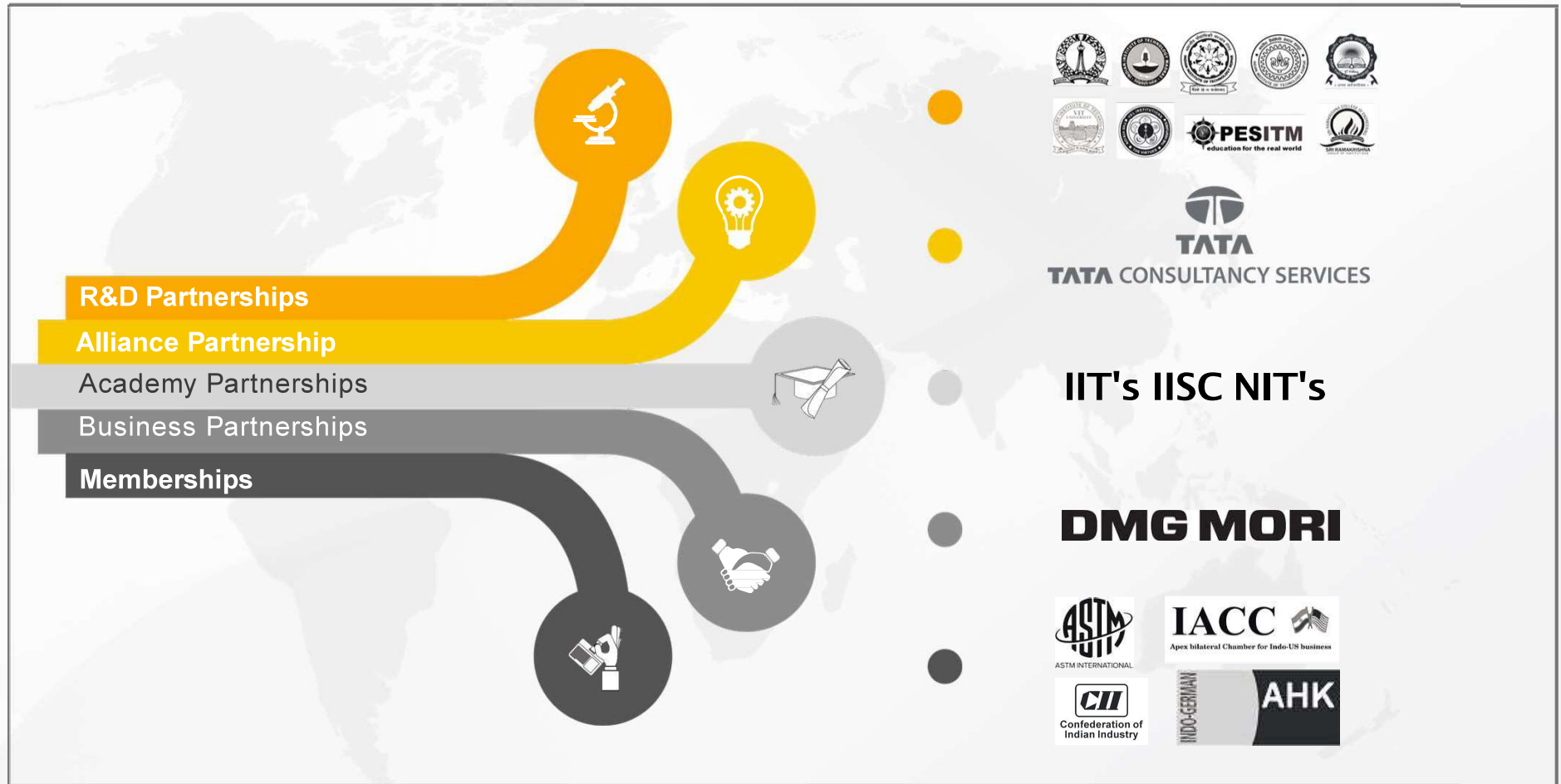
INTECH | Sinteneering Innovations



PARTNERSHIPS

Collaboration is the key to the global adoption of Additive Manufacturing at an accelerated speed.

Partnerships



Business Partnership



INTECH and DMG MORI Strategic Additive Partnership to advance Metal Manufacturing Industry.

- Worldwide Market Presence across 79 countries.
- Collaboration with partnered universities.
- Access to extensive research database to promote and develop solutions in Additive Manufacturing

Our Edge

- Forerunner in India as service provider for metal 3D Printed parts-since 2012.
- Experience of more than 100,000 laser Sparking hours.
- Supplied more than 500 types components for various applications.
- Catering to Major OEM's.
- Indegeniously developed Additive software and hardware solutions.
- Proficient Design and manufacturing team for Part identification DFAM, Topology Optimization, Light weighting, Alloy development Etc.
- AM Work flow, processes and solutions developed and optimized to achieve competitive cost per part - Low Mass Production.





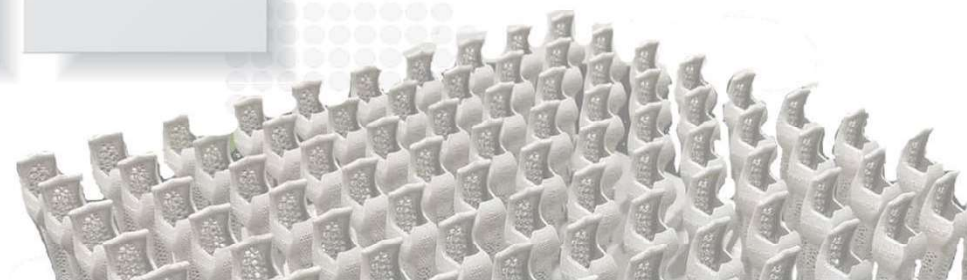
ACHIEVE COMPETITIVE COST PER PART

Based on three decades of manufacturing, metallurgical and innovative product development expertise we had formulated End to End solutions for AM technology



LOW MASS PRODUCTION SOLUTIONS

Discovering what's possible instead of what's feasible. Manufacture the impossible at a global scale



THANK YOU

You can find us at:

Intech Additive Solutions Pvt. Ltd.

239, 11th main road, 2nd cross, Peenya Industrial

Area Phase III, Bengaluru, Karnataka, India 560058

Email: nanaiah.ma@intechadditive.com

nanaiah.ma@Intech-dmls.in