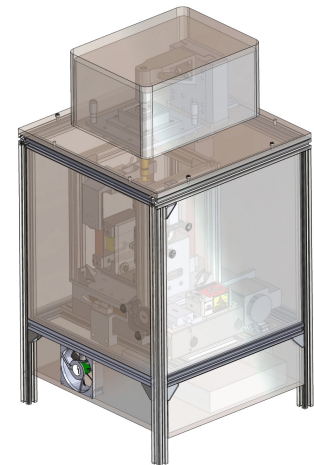




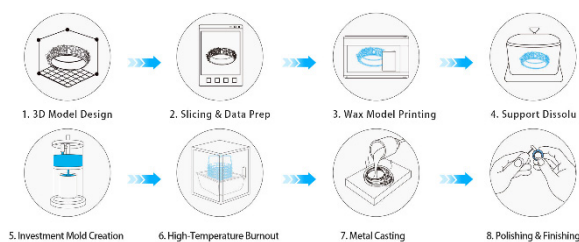
Spanda¹ LLM 3D Printer

WHAT IS LMM 3D Printer?

Lithography-based Metal Manufacturing (LMM) combines high-resolution vat photopolymerization with precious metal-loaded photopolymer feedstocks. A metal-filled resin is selectively cured layer-by-layer to form a green part, then debinded and sintered to obtain the final silver or gold component — replacing the wax-mould-casting process with a direct digital-to-metal workflow.

HOW IT WORKS

Conventional Investment Casting vs. Spanda¹ LMM Technology



Conventional Investment Casting Process



Spanda¹ LLM Direct Metal 3D Printing Process

Red Ø marks the steps FlexMotion LMM removes from the process.

BENEFITS OF OUR PRINTER

Extra Material Holding

~5% with LMM direct printing vs ~40-50% extra metal in investment casting

Lead Time

Simplified workflow — reduced lead time & skilled-labour dependency

Design Freedom

Enables hollow, lightweight and highly intricate designs

Material Wasteage

Digital metal deposition sharply cuts excess vs. conventional casting

Specifications of SPANDA¹ 3D Printer

Printing Volume

Desktop: 30×30×30 mm³
Industrial: 300×300×300 mm³

Printing Speed

300 – 2000 mm/s

Resolution

5–10 µm

Position Accuracy

0.1 µm

Layer Thickness

10–100 µm

Note: the direct precious-metal LMM process is currently under development.

WHO THIS IS FOR

- Jewellery Manufacturers — faster prototyping and production of intricate Jewellery
- Lightweight Jewellery brands
- Low-Carat Jewellery manufacturers (9-12 Carats)
- Idol Manufacturers.
- Custom & Personalised Jewellery makers

ABOUT FLEXMOTION TECHNOLOGIES

FlexMotion Technologies Pvt. Ltd. is a deep-tech startup founded at the SML Lab, IIT Bombay, and incubated at SINE, IIT Bombay and JewelStart by GJEPC. The company develops ultra-precision motion platforms and additive manufacturing technologies, with a current focus on precision micro-SLA/DLP printing and the transition toward direct precious-metal LMM for the jewellery industry.

Solution & products we offer:

3D printing service, micro-motion linear & rotary stages, harmonic gear drive.

BACKED BY SML LAB, IIT BOMBAY

The SML Lab provides an interdisciplinary research platform centred on MEMS and advanced microengineering — spanning micro-mechanical design, microfluidics, micro-machining, mechatronic systems, harmonic drives and ceramic 3D printing. This ecosystem is the research foundation from which FlexMotion's precision technologies have been developed.

FOUNDERS

Ratnesh Bafna

Co-Founder • Full-time

B.E. Mechanical Engineering. 12+ years at IIT Bombay as Research Associate, specializing in micro-SLA 3D printing systems, mechatronics, product development and manufacturing.

Prof. Prasanna S. Gandhi

Co-Founder

Ph.D., 25+ years in precision engineering, research and teaching. Expertise in mechatronics, dynamical systems & control, 3D microprinting, microfabrication and compliant mechanisms.

IP & RECOGNITION

Three Granted Indian Patents

- Patent No. 270072 — Linear mirror scanning for uniform spot size & perpendicular exposure
- Patent No. 456889 — Frictionless, backlash-free compliant mechanism
- Resonant displacement amplification for high-speed precision motion

Recognition

- Outstanding Research Presentation, Smart Manufacturing — NASSCOM (2024)
- Abdul Kalam Technology Innovation National Fellowship (2022)
- FIE Foundation Award (2019)

CONTACT US

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