



Indian Institute of Technology Jodhpur

N.H. 62, Nagaur Road, Karwar, Jodhpur – 342030, Rajasthan (India)

☎ 0291- 280 1852 | ✉ office_ece@iitj.ac.in

Website: Department: www.iitj.ac.in/ece | IITJ: www.iitj.ac.in

INDIAN INSTITUTE OF TECHNOLOGY JODHPUR Request For Technical Information and Pro Forma Quotations

For Procurement of PCB Fabrication & Assembly System

1. Introduction

The Indian Institute of Technology Jodhpur (IIT Jodhpur) intends to establish a laboratory-scale Printed Circuit Board (PCB) Prototyping Facility capable of supporting the complete workflow from PCB fabrication to PCB assembly and integration. The facility is intended for rapid prototyping and low-volume production of single-sided, double-sided, and multilayer PCBs. The proposed facility shall support academic teaching, research and development, product prototyping, and technology development for start-ups, MSMEs, and other industrial users.

Before initiating the formal procurement process, the Institute invites **Technical Information and Indicative Pro Forma Quotations** from eligible Original Equipment Manufacturers (OEMs) or their authorized representatives.

2. Purpose

The objectives are to:

- Obtain technical information from prospective OEMs/authorized representatives.
- Obtain indicative Pro forma quotations for estimating the procurement cost.

3. Disclaimer

This document is issued **only for obtaining technical information and indicative Pro Forma quotations**.

Submission of information under this proposal:

- shall **not** be treated as a financial bid;
- shall **not** constitute any commitment on the part of IIT Jodhpur to procure the equipment;
- shall **not** confer any right upon the participating firm for award of any future contract;
- shall **not** automatically qualify the responding firm for participation in any future tender.

The Institute reserves the right to modify the technical specifications, estimated cost, procurement methodology, or procurement timeline based on its requirements.



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4. Equipment Details

- Name of Equipment: **PCB Fabrication & Assembly System**
- Quantity: 1

Broad Functional Requirements (The essential functions or capabilities that the system should have, without mentioning a specific make, model, or brand):

The objective of this procurement is to establish a laboratory-scale Printed Circuit Board (PCB) Prototyping Facility comprising end-to-end capabilities for PCB fabrication and PCB assembly, initially up to 4 layers, with a provision for future expansion to 6 layers. The proposed facility shall enable the design, fabrication, assembly, inspection, and rework of prototype PCBs and is intended to support academia, R&D, start-ups and MSMEs with its ability for rapid prototyping and limited manufacturing.

To facilitate flexible participation by equipment manufacturers and system integrators, the procurement (comprising of multiple tools/equipment) has been organized into two independent packages:

- **Package A:** PCB Fabrication System
- **Package B:** PCB Assembly System

Package A: PCB Fabrication System

The equipment listed below represent the core workflow for PCB fabrication. OEMs or their authorized representatives may propose additional tools, accessories, or process modules that improve the completeness, performance, or integration of the fabrication workflow, provided they are technically justified and compatible with the intended application. Technical Information & Pro Forma Quotations can be submitted by prospective OEMs or their authorized representatives for one or more individual equipment items or for the complete PCB fabrication package as an integrated solution.

	Name of the Tool	Technical Specification
1.	High-Precision PCB Mechanical Milling Machine	CNC-controlled mechanical milling, drilling and routing system for PCB prototyping. Suitable for fabrication of single, double and multilayer PCBs (up to 4 layers, expandable to 6 layers when integrated with lamination and metallization systems). Effective working area: ≥ 350 mm $\times$ 250 mm. Minimum track/space capability: $\leq 100/100$ μ m. Integrated camera system for fiducial recognition, double-sided registration and multilayer alignment. Automatic tool changer (preferred, minimum 10 tools) or equivalent tool management system. Spindle speed: $\geq 60,000$ RPM. Minimum drilled hole capability: ≤ 0.20 mm.



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2.	Multi-Layer Vacuum Lamination Press	Vacuum hydraulic press; Temperature range $\geq 250^{\circ}\text{C}$; Computer-controlled multi-step pressure and temperature profiling; Platen size $\geq 300 \times 300$ mm, Suitable for 4-layer fabrication (upgradeable to 6-layer).
3.	Through-Hole Plating & Metallization Line	The system shall provide reliable electrical connection of drilled holes for double-sided and multilayer PCB fabrication. Low-chemical or dry-compatible direct metallization technologies are preferred. The system shall support plated through holes with minimum finished hole diameter of 0.20 mm and demonstrate electrical continuity and mechanical reliability.
4.	Dry Film Photoresist Laminator	Hot-roll lamination. Applies dry film photoresist uniformly onto inner and outer layers to prepare for high-density track etching.
5.	UV Exposure & Curing System	Transfers high-resolution circuit patterns from photomasks onto dry-film resists or solder masks. Post-exposure curing to achieve full chemical and thermal resistance.
6.	PCB De-panelling Router / Guillotine	Manual or motorized linear blade/router; Anti-static construction; Rigid fixtures for thin multi-layer boards.
7.	PCB Inspection Microscope / Vision System	Digital microscope, $\geq 10\text{X} - 200\text{X}$ magnification, measurement capability, image capture

(The above requirements are indicative and may be revised after evaluation of the responses.)

Package B: PCB Assembly System

The equipment listed below represent the core workflow for PCB assembly, inspection, rework, and integration. OEMs or their authorized representatives may propose additional tools, accessories, or process modules that improve the completeness, performance, or integration of the assembly workflow, provided they are technically justified and compatible with the intended application. Technical Information & Pro Forma Quotations can be submitted by prospective OEMs or their authorized representatives for one or more individual equipment items for one or more individual equipment items or for the complete PCB assembly package as an integrated solution.

	Name of the Tool	Technical Specification
1.	Desktop Stencil Fabrication System	Laser-based stencil cutting system suitable for rapid fabrication of SMT solder paste stencils using Mylar, Kapton, polymer film, or equivalent materials. CO_2 laser, IR laser, UV laser, or equivalent technologies are acceptable. The system shall support Gerber paste layer input and produce stencils



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		suitable for fine-pitch SMT assembly. Minimum feature size: $\leq 50 \mu\text{m}$ preferred.
2.	Manual/Semi-Automatic Solder Paste Printer	Precision SMT stencil printing system suitable for prototype and low-volume PCB assembly. The system shall support PCB sizes of at least $300 \text{ mm} \times 300 \text{ mm}$, with adjustable X-Y-Theta alignment, stencil height control, and repeatable solder paste deposition. Printing alignment accuracy: $\leq 50 \mu\text{m}$ preferred. The system shall be suitable for fine-pitch SMT components including 0402 passives, QFN, QFP, LGA, and devices with pitch $\geq 0.5 \text{ mm}$. Compatible with metal and polymer prototype stencils.
3.	SMT Pick & Place machine	The system shall be a vision-assisted SMT pick-and-place platform suitable for prototype and low-volume PCB assembly. The system shall support automated component placement using tape feeders and/or tray-based component carriers. In addition, the system shall provide provision for vision-guided robotic placement of manually presented or non-standard components. The vision system shall enable component identification, orientation correction, and placement at programmed PCB locations using CAD/Centroid (XY placement) data. Minimum component handling capability shall include tape feeder capacity of ≥ 10 feeder positions with provision for future expansion, and a minimum 2 tray positions with provision for future expansion, support for standard SMT components as well as fine-pitch devices including QFN, QFP, LGA, and BGA packages (preferred), and vision-assisted PCB and component alignment for accurate and repeatable placement.
4.	Programmable SMT Reflow Oven	The oven shall provide programmable multi-stage thermal profiling, controlled cooling, and temperature profile data logging for process validation and repeatability. The system shall support lead-free SMT reflow processes and provide forced-convection heating with programmable and storable thermal profiles.
5.	High-Resolution Digital PCB Inspection System	The system shall provide optical inspection capability for assembled PCB verification, including solder joint quality, component placement, polarity, and defect identification. The system shall include a high-resolution digital camera with adjustable illumination, variable magnification ($\geq 10X - 200X$ preferred), image capture and measurement capability, and suitable PCB holding arrangements. The system shall



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		support inspection of fine-pitch SMT components including 0402, QFN, QFP, LGA, and BGA packages.
6.	SMT Rework and Repair and manual Assembly Workstation	The system shall provide an ESD-safe workstation for removal, replacement, repair, and manual assembly of SMT and through-hole components on prototype PCB assemblies. The workstation shall include temperature-controlled soldering and hot-air rework systems, desoldering tools, PCB preheating capability, component handling fixtures, and necessary accessories for fine-pitch SMT rework including QFN, QFP, LGA, and similar packages. The workstation shall support manual integration of non-SMT components such as connectors, headers, wires, and other through-hole devices using appropriate soldering and rework tools.
7.	PCB Cleaning System	The system shall provide suitable PCB cleaning capability for removal of flux residues and contaminants after soldering and rework operations. The system shall be suitable for prototype and low-volume PCB assemblies and compatible with SMT and through-hole components.
8.	ESD-safe Assembly Infrastructure	The facility shall provide suitable ESD-safe handling infrastructure for reliable prototype and low-volume PCB assembly operations. The infrastructure shall enable safe handling of sensitive electronic components and assembled PCBs during assembly, inspection, and rework activities. The provision shall include ESD-safe work surfaces, grounding provisions, and appropriate component and PCB handling accessories.

(The above requirements are indicative and may be revised after evaluation of the responses.)

5. Eligibility Criteria

Interested firms should:

- Be an Original Equipment Manufacturer (OEM) or an authorized distributor/ dealer
- Have experience in supplying similar equipment.
- Have adequate installation and after-sales service support in India.

6. Information/Documents to be Submitted

The interested firms shall submit the following (*Annexure-I*):

1. Company Profile.
2. Details of the OEM.
3. Product Brochure/Catalogue.
4. Detailed Technical Specifications.
5. Compliance with the Broad Functional Requirements.



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6. List of previous users/clients with installation reports
7. Details of Warranty.
8. Details of After-Sales Service Support.
9. Authorization Letter from OEM (where applicable).
10. Any additional technical information relevant to the offered equipment.

7. Pro forma Quotation

- Interested firms are requested to submit a Pro forma Quotation (*Annexure-II*) along with their Request For Technical. Indicative **Pro Forma** quotation in Indian Rupees (INR), including the cost of the equipment, essential accessories, taxes, duties, freight, insurance, installation, commissioning, training, and any other associated charges. Wherever applicable, the Annual Maintenance Contract (AMC) and/or Comprehensive Maintenance Contract (CMC) charges and spare parts shall be quoted separately as additional charges.
- Expected delivery schedule and other relevant technical and commercial information

Important Note:

- The **Pro Forma** quotation is required only for cost estimation and budget planning purposes.
- The prices quoted shall be indicative/non-binding.
- The Pro Forma quotation shall not be treated as a financial bid.
- Submission of a **Pro Forma** quotation shall not confer any right or preference in the subsequent procurement process.

8. Presentation/Demonstration

The Institute may invite for a technical presentation or product demonstration. The date and venue shall be communicated separately.

9. Submission

Interested firms may submit their Proforma Quotations on or before the due date in sealed cover or through email (as applicable).

The envelope/email should be superscribed as:

"Request For Technical Information and Pro forma Quotations for PCB Fabrication & Assembly System, clearly mentioning whether the submission is for Package A or Package B or both.



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10. Important Dates

Activity	Date
Publication	11/08/2026
Last Date for Submission	24/08/2026
Technical Presentation (if required)	To be informed
Clarification Meeting (if required)	To be informed

11. General Terms & Conditions

1. This Request For Technical Information and Pro forma Quotations is issued only for obtaining technical information and Pro Forma estimates.
2. The Institute reserves the right to accept or reject any or all responses without assigning any reason.
3. Submission of an Request For Technical Information and Pro forma Quotations does not create any contractual obligation.
4. The Institute may seek additional information, technical clarifications, demonstrations, or presentations from any participant.
5. The Institute may modify the technical requirements based on the responses received.
6. The final technical specifications may be prepared by the User Committee after evaluating all Request For Technical Information and Pro forma Quotations responses.
7. The subsequent procurement, if any, shall be carried out through an appropriate procurement method in accordance with the GFR 2017 and applicable procurement rules.
8. Participation in this Request For Technical Information and Pro forma Quotations does not automatically entitle any firm to participate in or receive any preference during the subsequent tender process.

12. Contact Details

Name: Dr. Lavi Tyagi

Designation: Assistant Professor

Department: Electronics Engineering

Email: lavityagi@iitj.ac.in



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Annexure-I

Request For Technical Information and Pro forma Quotations Response Format

1. Name of the Firm:
2. Registered Address:
3. Name of OEM (if applicable):
4. Contact Person:
5. Email:
6. Phone:
7. Product Name and Model:
8. Brief Technical Description:
9. Compliance with Broad Functional Requirements:
10. List of previous users/clients with installation reports:
11. After-Sales Service Details:
12. Any Additional Features:
13. Remarks (if any).



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Annexure-II

Format for Pro forma Quotation

Sl. No.	Description	Amount (INR)
1	Indicative Pro forma quotation in Indian Rupees (INR), including the cost of the equipment, essential accessories, taxes, duties, freight, insurance, installation, commissioning, training, and any other associated charges.	

Warranty Period: _____

AMC/CMC Charges (after warranty): _____

Delivery Period: _____

Authorized Signatory

Name: _____

Designation: _____

Company Seal & Signature