

Expression of Interest (EOI) for Design, Development, Manufacturing, Testing, Supply, Installation, Commissioning of Indigenous High-Speed Coining Presses:

1. Introduction

The India Government Mints (unit of Security Printing and Minting Corporation of India Limited) at Mumbai, Kolkata, Hyderabad, and Noida, invites Expressions of Interest (EOI) from eligible Indian companies, engineering organizations, machine tool manufacturers, research and institutions for the indigenous development, design, engineering, manufacture, testing, supply, installation, commissioning, and lifecycle support of High-Speed Automatic Coining Presses for production of circulation coins.

This initiative aims to establish a robust indigenous capability for manufacturing world-class coining presses under the **Make in India** and **Atmanirbhar Bharat initiatives**, reducing dependence on imported equipment while ensuring long-term technological self-reliance.

2. Objective

The primary objective of this EOI is to identify technically capable organizations that can develop and manufacture high-speed coining presses in India with performance comparable to internationally recognized equipment.

The objectives of this EOI are to:

- Develop an indigenous high-speed coining press to meet the operational requirements of all four India Government Mints.
- Replace ageing imported presses with modern and standardized equipment.
- Achieve self-reliance in minting technology under the Atmanirbhar Bharat initiative.
- Enhance production capacity, machine reliability, and coin quality.
- Reduce dependence on imported machinery, spare parts, and foreign technical support.
- Establish a common technology platform for all Mints.

3. Existing Infrastructure:

India Government Mints operate high-speed coining presses to meet national coinage requirements that have been in service for several years. While mechanically robust, these machines require comprehensive refurbishment to address wear, obsolescence, evolving safety requirements, and opportunities for automation and

digital integration. The existing high-speed coining presses having approximately the following characteristics:

Parameter	Requirement
Machine Type	High-Speed Mechanical Coining Press
Operating Principle	Knuckle Joint Press
Application	Circulation Coin Production
Operation	Automatic
Feeding	Automatic Blank Feeding
Coin Discharge	Automatic
Drive	Mechanical Flywheel Driven
Automation	PLC Controlled
Cooling	Hydraulic Oil Cooling

4. Scope of Work

The participating firms shall undertake:

- Design, engineering, and development of the indigenous high-speed coining press.
- Mechanical, electrical, hydraulic, pneumatic, and automation system design.
- Design of knuckle-joint or equivalent high-force mechanism.
- Design of drive system, lubrication, hydraulic, and pneumatic systems.
- Development of automatic blank feeding and coin discharge systems.
- Development of PLC/SCADA/Computer based control systems.
- Factory Acceptance Test (FAT), Site Acceptance Test (SAT), and performance validation.
- Installation, commissioning, and operator training.

- Supply of technical documentation, software, drawings, and maintenance manuals.
- Warranty support and post-warranty technical assistance.
- Provision for future technology upgrades and lifecycle support.

5. Technical Requirements:

The proposed High-Speed Coining Press shall be a fully automatic, heavy-duty, precision machine designed for continuous production of circulation coins. The machine shall be suitable for round, multi-sided, bi-metallic, and security-feature coins, with consistent quality, high productivity, and reliable long-term operation.

Press Type: High Speed Precision Mechanical Coining Press, Automatic Operation.

Production Speed: Preferred throughput: 750 Coins/minute or above.

Stroke: Adjustable.

Coin Diameter: suitable for: 15.00 mm to 35.00 mm.

Coin Thickness: 1.00 mm to 2.50 mm.

Material: The coining press shall be suitable for minting Ferrous and Non-Ferrous materials:

i) General Machine Requirements

The machine shall:

- Be of robust heavy-duty construction designed for continuous industrial operation.
- Be designed with modular construction for ease of maintenance.
- Incorporate energy-efficient technologies.
- Minimize machine downtime through high reliability and maintainability.
- Ensure operator safety in accordance with applicable Indian and international standards.
- Be designed for a minimum service life of 25 years with proper maintenance.
- Facilitate future upgrades through modular hardware and software architecture.
- Machine should be mounted on foundation springs/pads to absorb any shocks and vibration during operation.

- Complete open-architecture control system documentation, including fully commented PLC logic source code and HMI application runtime files to allow internal Mint engineers to perform future lifecycle modifications and recipe tuning.

ii) Performance Requirements

The machine shall be capable of:

- High-speed production of circulation coins.
- Continuous production with high operational availability.
- Consistent striking force throughout production.
- Stable production without vibration or chatter.
- High Overall Equipment Effectiveness (OEE).
- Low rejection rate.
- High dimensional repeatability.
- Continuous operation without overheating.
- Reduced die wear.
- Low power consumption.

iii) Mechanical Design Requirements

The mechanical design shall include:

- Heavy-duty fabricated or cast steel frame with high rigidity.
- Finite Element Analysis (FEA) validated structural design.
- Knuckle-joint or equivalent Mechanism optimized for precision coin striking.
- Dynamically balanced flywheel.
- Precision bearings with adequate service life.
- Automatic centralized lubrication system.
- Provision for quick die change.
- Precision guide mechanisms.
- Adjustable die alignment.
- Maintenance-friendly access doors and covers.
- Corrosion-resistant machine components.
- Anti-vibration mounting arrangement.

iv) Coining Mechanism

The coining mechanism shall ensure: uniform striking pressure, high striking accuracy, excellent metal flow, sharp coin impressions, uniform rim formation, accurate die alignment, controlled striking energy, stable production at rated speed, reduced die stress, long die life.

v) Blank Feeding System

The machine shall include:

- Automatic blank hopper.
- Automatic blank feeder.
- Blank feeding system via rotating drum or automated dial-feed plate to minimize coin blank abrasion and noise generation or any suitable mechanism.
- Precision blank positioning.
- Missing blank detection.
- Double blank detection.
- Jam detection.
- Automatic machine stop in case of feeding malfunction.
- Adjustable feed mechanism for different coin sizes.
- Easy cleaning and maintenance.

vi) Coin Transfer and Ejection System

The machine shall provide:

- Automatic coin ejection.
- Damage-free coin handling.
- Coin transfer conveyor/chute.
- Coin counting system.
- Rejection of defective coins.
- Collection arrangement.

- Overflow protection.
- Smooth transfer without scratching the coin surface.

vii) Die Mounting System

The die mounting system shall provide:

- Precision die positioning.
- Quick die replacement.
- Positive locking arrangement.
- Repeatable die alignment.
- Easy adjustment.
- Tool protection against improper installation.
- Safe handling during die replacement.

viii) Knuckle-joint or equivalent Mechanism

The Knuckle-joint or equivalent Mechanism shall:

- Convert rotary motion into high-force linear motion.
- Deliver maximum striking force at the bottom of the stroke.
- Maintain accurate ram alignment.
- Ensure repeatable striking energy.
- Minimize vibration and shock.
- Protect tooling from abnormal loading.
- Operate continuously at rated production speed.

ix) Drive System

The drive system shall include:

- High-efficiency AC motor.
- Variable speed drive.
- Heavy-duty flywheel.
- High-performance clutch and brake arrangement.
- Smooth acceleration and deceleration.
- Low maintenance transmission.

- Protection against overload.
- Dynamic balancing of rotating components.

x) Automation and Control System

The machine shall include:

- PLC-based/SCADA/PC Based automation.
- Touch-screen HMI.
- Production monitoring.
- Alarm management.
- Recipe management.
- Batch management.
- User access management.
- Password protection.
- Event logging.
- Historical data storage.
- Remote diagnostics.
- Machine health monitoring.

xi) Pneumatic System

The pneumatic system shall include:

- Air preparation unit.
- FRL assembly.
- Pneumatic cylinders.
- Solenoid valves.
- Pressure regulators.
- Pressure switches.
- Air quality monitoring.
- Easy accessibility.

xii) Hydraulic System

The hydraulic system shall include:

- Compact hydraulic power pack.
- High-efficiency pumps.
- Pressure control valves.
- Direction control valves.
- Hydraulic cylinders where required.
- Oil filtration system.
- Oil cooling arrangement.
- Pressure monitoring.
- Temperature monitoring.
- Leakage detection.
- Easy maintenance.

xiii) Electrical System

The electrical system shall include:

- Main electrical control panel.
- MCC.
- PLC-based/SCADA/PC Based automation.
- Servo drives.
- Variable Frequency Drives.
- Safety features.
- Industrial-grade wiring.
- Surge protection.
- UPS for control system.
- Proper earthing.
- Cable trays.
- Panel cooling system.
- Energy metering.

xiv) Safety Requirements

The machine shall include:

- Emergency stop system.
- Interlocked safety guards.
- Suitable Safety measures/Interlocks.
- Light curtains or equivalent safeguards where applicable.
- Overload protection.
- Over-temperature protection.
- Over-pressure protection.
- Electrical safety devices.
- Hydraulic safety devices.
- Pneumatic safety devices.
- Fire-resistant cable arrangements where applicable.
- Compliance with relevant safety standards.

xv) Coin Quality Requirements

The machine shall consistently produce coins with No Double Strike, No Weak Strike, No Off-Centre Strike, No Rotation Error, No Cracks, No Burr, No Surface Damage, Uniform Rim Formation.

NOTE :

- A) The technical requirements and specifications mentioned above are indicative and tentative in nature and are intended to outline the broad functional and performance expectations of the Indian Government Mints. These requirements are not exhaustive and may be refined, modified, or expanded during subsequent stages of the procurement process.
- B) Interested firms are encouraged to conduct a detailed assessment of the existing facilities, production processes, and operational requirements. For a better understanding of the project scope and technical requirements, prospective applicants may visit the designated Government Mint(s), subject to prior approval from the Employer and in accordance with the prescribed security and administrative procedures.
- C) The successful bidder shall be expected to propose a comprehensive, optimized, and technically proven solution that fully meets the functional, performance, reliability, safety, maintainability, and lifecycle requirements of the Indian Government Mints.

5. Eligibility Criteria

The participating firms should possess:

- Experience in design, development and manufacture of heavy-duty precision machinery.
- Capability in mechanical, electrical, hydraulic, pneumatic, and automation engineering.
- Adequate manufacturing infrastructure, testing facilities, R&D facilities and quality management systems.
- Experience in executing large engineering projects for Government, Defence, Railways, Heavy Engineering, automobile or similar sectors.
- Availability of qualified design engineering and project management teams.
- Adequate Financial capability to undertake design, development, prototyping, testing, and commissioning.
- Commitment to provide long-term technical support, training, and lifecycle maintenance on reasonable terms.
- ISO 9001 certified quality management system (ISO 14001 and ISO 45001 desirable).

6. Documentation

Firm should submit the following document to prove their eligibility:

- Details of Design, Development & Manufacturing activities carried out by the firm in the field of heavy-duty precision Machinery, CNC Machines, special purpose machines and other plant & machinery.
- List of manufacturing / testing facilities available.
- List of Design/ Analysis / Simulation software available.
- Number of Qualified Designers/ Managers/ Engineers / Technicians available with the firm.
- List of projects executed of similar plant & machinery and customers.
- Satisfactory project completion certificate given by the customers.
- Balance Sheet & P&L Account Statement for last 3 years, Credit rating, Net worth, Turnover etc.
- List of QMS certifications.

7. Project Deliverables

The selected bidder shall deliver:

- Fully engineered High-Speed Coining Press.

- Design and engineering documentation.
- Complete manufacturing documentation.
- Installed and commissioned machine.
- FAT and SAT reports.
- Performance guarantee reports.
- Training
- Manufacturer recommended spare parts.
- Warranty and post-warranty support.

8. Evaluation

- EOIs will be evaluated based on technical capability, Design and R&D expertise, Manufacturing infrastructure, Past Experience in similar equipment, financial strength, Quality assurance systems, Indigenous development plan and Long-term support capability.
- Shortlisted Applicants shall be invited for technical presentations and further discussions during pre-bid meeting.

9. Warranty and Life- cycle Support

The successful bidder shall provide:

- Comprehensive warranty for a minimum of 24 months from the date of installation & commissioning.
- Preventive and breakdown maintenance support during the warranty period.
- Availability of critical spare parts.
- Software updates and technical assistance.
- Optional Annual Maintenance Contract (AMC) and long-term lifecycle support for continued reliable operation.

Note:

1. This Expressions of Interest (EOI) is meant for CMTI, IITs, and CSIR labs only.
2. Interested bidders shall submit Budgetary Quotation (BQ) and tentative Delivery Period (DP) along with their proposal.