

TERMS OF REFERENCE

Title: Procurement of Plastic Recycling Machineries and Equipment

1) Description and Objective

Practical Action is looking for a competent and experienced firm/manufacturing agency to supply, transport, install, and commission **Plastic Recycling Machineries and Equipment**. The selected firm will ensure the equipment is delivered to the designated project site (beneficiary premises/recycling center).

The machinery must be robust, easy to operate, energy-efficient, and suitable for local conditions. The supplier is also expected to provide installation, testing, and training for the operators.

2) Duration of the Assignment

- **Supply, Installation, and Commissioning:** 45 days of contract signing).
- **Post-sales Technical Service:** Valid for a warranty period of at least **one year** from the date of commissioning.

3) Scope of Work & Bill of Quantities (BoQ)

The selected agency must supply the following items. The quoted price must include VAT, Tax, Transport, and Installation costs.

SL#	Name of Machine/Equipment	Qty	Unit	Remarks
1	Plastic Extruder Machine (Large)	1	PCS	New
2	Palletizer Machine	1	PCS	New
3	Plastic Agglomeration Machine	1	PCS	New
4	Plastic Cool Press Machine (Jack Operated)	1	PCS	New
5	Plastic Heat Press Machine (Jack Operated)	1	PCS	New
6	Plastic Zero Cutter Machine	1	PCS	New
7	Manual Injection Molding Machine (120g)	1	PCS	New
8	Dice for Craft Making	4	PCS	New
9	Lumber Dice (1", 2", 3", 4", 5", 6")	6	PCS	New

4) Technical Specifications

The machinery must strictly adhere to the following minimum specifications. Bidders are encouraged to provide detailed datasheets with their proposal.

A. Plastic Extruder Machine (Large)

Particulars	Specifications
Diameter of Screw	100mm
Diameter of Barrel	150mm
Length of Barrel	1800mm
Surface	Hard Chrome
Hardness	55 HRC
Gear Box	Helical-180
Fabrication	Channel Stand 100mm
Heater	Heat Proof
Panel Board	Standard Panel Board
Main Motor	20/25/30/35 HP (new or shipyard)
Production (Kg/Hr)	100 Kgs
Die Changer (availability)	Yes
Die Changer	Hand Tools
Process Control Panel	Electrical Outlets: Contactors, Synchronization card, standard cord wiring Phase Synchronizer and Over Voltage Protection as per CE Standard.

B. Palletizer Machine

Particulars	Specifications
Production Capacity	100 kg/hr to 300 kg/hr (standard, up to 1000kg/hr industrial)
Motor Power	2.2 kW – 5.5 kW (3 HP – 7.5 HP)
Blade Material	SKD-11 High-Carbon Steel or Carbide Alloy
Cutting Method	Strand Cutting (Rotary Blade) or Die Face Cutting
Voltage/Phase	415V - 440V, 3 Phase
Speed	Approx. 50–60 RPM (Rotor Speed)
Max Cutting Width	5-10 mm
Material Construction	Mild Steel (body), Stainless Steel (components)
Noise Level	< 85 dB
Adjustable Cutting	Speed control is often achieved via electromagnetic
Safety	Equipped with interlock systems and safety guards
Material Suitability	Optimized for PP, PE, PET, PVC, and PA compounds
Granule Quality	Ensures uniform, consistent, and clean-cut pellets

C. Plastic Agglomeration Machine

Particulars	Specifications
Capacity & Performance	Production Capacity: 70 kg/h – 1200+ kg/h. Motor Power: 22 kW – 200 kW. Rotational Speed: ~700 – 1050 RPM. Output Form: Free-flowing, high bulk density chips, reducing volume for easy feeding into extruders.
Structure & Design	Tank Volume: 50 Kg Blade Configuration: 2 Rotating blades. Body Material : High-duty MS steel Discharge Method: Manual valve.
Operating Features	Cooling System: Automatic air injection/spray. Voltage: Standard 420V 3-phase (customizable). Heating: Self-friction (frictional heat). Applications: Suitable for LDPE, HDPE, PP

D. Plastic Cool Press Machine (Jack Operated)

Particulars	Specifications
Frame	Structure/Frame: 3 Inch x 2 Inch x 4/5 mm, C-type MS channel Aluminum Plate: 8 feet x 4 feet x 8/10 mm, both upper and lower part Pressure Jack: 2 sets of 15-ton standard manual jack at the bottom of the pressing system Rolling Mechanism: Standard 4 rolling mechanism to ensure smooth up-down rolling of the bottom plate.
Sheet press Dimension	8 feet x 4 feet
Input Flake Size	Large, Medium, Small
Max Running Time	8 hours per day
Tested Plastics	HDPE, LDPE, PP, PS
Size of Sheet	8 feet x 4 feet
Range of Sheet Thickness	4 - 35mm
Sheets Per Day with full system (12mm)	10

E. Plastic Heat Press Machine (Jack Operated)

Particulars	Specifications
Frame	<ul style="list-style-type: none"> • Structure/Frame: 3 Inch x 2 Inch x 4/5 mm, C-type MS channel • Aluminum Plate: 8 feet x 4 feet x 8/10 mm, both upper and lower part • Pressure Jack: 2 sets of 15-ton standard manual jack at the bottom of the pressing system • Heating Zone: 3 Inch x 2 Inch C-type MS channel and MS plate • Heater Type: Total 48 high-grade cartridge/shaft type heaters in the machine, 24nos heaters on each side mounted on aluminum plates to ensure equal distribution of heat. • Rolling Mechanism: Standard 4 rolling mechanism to ensure smooth up-down rolling of the bottom plate.
Sheet press Dimension	8 feet x 4 feet
Voltage	400V
AMP	32A
Power	15kW
Input Flake Size	Large, Medium, Small
Max Running Time	8 hours per day
Max temp	300°C
Tested Plastics	HDPE, LDPE, PP, PS
Input Between Plates	300mm
Size of Sheet	8 feet x 4 feet
Range of Sheet Thickness	4 - 35mm
Sheets Per Day with full system (12mm)	10
Process Control Panel	<p>Temp. Controllers: PID Controller with Auto tuning & dual display</p> <p>MCB: Reputed make MCB in line with every heating zone supply</p> <p>Other Electrical Outlets: Contactors, Synchronization card, standard cord wiring with PVC conduct channel framing.</p> <p>Phase Synchronizer and Over Voltage Protection as per CE Standard</p>

F. Plastic Zero Cutter Machine

Particulars	Specifications
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Base Frame	Size: Length 65 Inches x Width 25 Inches x Hight 18.5 Inches Angle Size: 3 Inches x 3 Inches x 6 Millimeter Materials: Mild Steel
Thresher Body	Size: Length 18/22/24 Inches x width 18 Inches x Hight 20. 5 Inches (Inside to Inside) and Length 18/22/24 Inches x width 20 Inches (Outside to Outside) Materials Thickness: 1 Inch Materials: Mild Steel
Thresher Zone	Shaft Size: Length 44 Inches x Diameters 3 Inches Arms/Pakha: 1.5 Inches Plate thickness Number of Arms: 4 Arm's Materials: Mild Steel
Cutting blade (Flat)	Size: Length 22 Inches x Width 4 Inches x Thickness .5 Inch Number Holes: 05/ as required. Materials: Mild Steel
Metal Net	Size: Length 27 Inches x Width 21 Inches x Thickness 6 Millimeters Holes Size: 3 to 10 Millimeters Materials: Mild Steel
Feeding Hopper	Top Size: Length 33 Inches x Width 33 Inches x Thickness 3 Millimeters Bottom Size: Length 19 Inches x Width 15 Inches x Thickness 3 Millimeters (Both are inside to inside measurement) Hight: 21 Inches Materials: Mild Steel
Electric part	Electric Motor: 30 HP Power: 22 KW Phase: Three phases Voltage: 440 Volt Speed: 1500 RPM
Total Measurement	Total Hight 58 Inches and 44 Inch width (The mentioned measurement considering after installation)
Production Capacity	700-1000 kg per day

G. Manual Injection Molding Machine (120g)

Particulars	Specifications
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Designs Features	<ul style="list-style-type: none">✓ High Quality Laser Cut Parts✓ High Quality Coated Pieces✓ Disassembly Mechanisms✓ Safety Mechanisms✓ Heated Elements in Insulated Barrel✓ Metal Base
Operating Type	Manual
Output Weight	120 G
Frequency	50 Hertz (HZ)
Heating Voltage	220 Volt.

H. Dice for Craft Making

- Materials MS and each product weight will be 100g -120g

I. Lumber Dice (1", 2", 3", 4", 5", 6")

- Square and length 10 feet

5) Roles and Responsibilities

A. Role of the Selected Vendor

The selected firm/agency will be responsible for:

- **Supply & Logistics:** Ensuring the safe transportation of all machinery to the designated project site at their own risk and cost.
- **Installation & Commissioning:** Installing all units and ensuring they are fully operational and synchronized.
- **Training:** Providing hands-on training to the operators designated by Practical Action on machine operation, basic troubleshooting, and safety protocols.
- **Safety:** Taking all necessary safety measures for their own employees during the installation process. Practical Action will not be liable for any accidents or injuries sustained by vendor staff.
- **Compliance:** Adhering to the technical specifications and timeline agreed upon in the contract.

B. Role of Practical Action

Practical Action will be responsible for:

- **Site Access:** Facilitating access to the beneficiary premises/recycling center for installation.
- **Coordination:** Sanjida Kaium, Senior Expert – Business Development, Marketing and Advocacy.
- **Monitoring:** Inspecting the quality of delivered goods and installation work.
- **Exclusions:** Practical Action will **not** provide vehicles, accommodation, or food to the selected agency/vendor team during the supply or installation period.

6) Payment Terms

- **Payment Mode:** Payment will be made through Account Payee Cheque or Bank Transfer (BEFTN) in the name of the organization/firm.
- **Deductions:** VAT and Tax will be deducted at source as per the Government rules of Bangladesh.
- **Milestones:**
 - **Tranche 1:** 50% delivery of machinery to the site.
 - **Tranche 2:** 40% upon successful installation, commissioning, and training.
 - **Retention Money:** 10% to be retained for the warranty period (or released upon submission of a Performance Guarantee), subject to negotiation.

7) Exclusivity, Ownership, and Copyright

- **Exclusivity:** This agreement does not constitute an exclusive arrangement. Practical Action reserves the right to procure similar goods or services from other vendors if required.
- **Ownership:** Title to the machinery and equipment shall pass to Practical Action (or the designated beneficiary) immediately upon successful delivery and acceptance of the goods.
- **Copyright:** Any manuals, training materials, or specific designs developed explicitly for this assignment shall remain the property of Practical Action.

8) Cancellation and Termination of Contract

- **Right to Cancel:** Practical Action reserves the right to cancel, amend, defer the contract, or drop any line item from the BoQ at any stage if the project requirements change or if funds are unavailable.
- **Termination for Cause:** Practical Action may terminate the contract immediately if the vendor fails to deliver goods within the stipulated time, delivers substandard goods, or violates safety/compliance standards.
- **Force Majeure:** Neither party shall be liable for failure to fulfil obligations due to events beyond reasonable control (e.g., natural disasters, political unrest), provided written notice is given immediately.

9) Required Competencies and Experience

- **Experience:** Minimum **5 years** of experience in manufacturing or supplying industrial machinery, specifically in the plastic recycling or waste management sector.
- **Track Record:** Proven history of working with Government agencies, Commercial agencies, or I/NGOs.
- **Legal:** Valid Trade License, TIN, BIN, and other relevant business documents.

10) Submission Process

Bidders must submit the following within 7-days of ToR circulation:

- a) **Technical Proposal:** Including machine photos, detailed specs, and work plan.
- b) **Financial Proposal:** Detailed budget breakdown following the BoQ (Section 3).
- c) **Legal Documents:** Copies of Trade license, TIN, BIN, and other relevant documents.

Email to: procurement.bd@practicalaction.org.bd

Subject Line: "Proposal for Plastic Recycling Machineries"

11) Important Notes for Bidders

- **Validity:** Bidders must clearly state the period for which the quoted pricing remains valid.
- **Safety:** The agency must take all safety measures for its employees during installation. Practical Action reserves the right to stop work if safety standards are violated.
- **Liability:** Practical Action will not compensate for any damage/loss of equipment during transport or installation.

- **Logistics:** Practical Action will **not** provide vehicles, accommodation, or food to the selected agency.
- **Rights:** Practical Action reserves the right to cancel, amend, defer the contract, or drop any line item from the BoQ at any stage.

12) Who We Are

We are an international development organisation helping people in poverty create lasting change in their lives. We work with communities to find smart, locally led solutions to big challenges, like waste, management, climate change, gender inequality, enterprise development, access to finance, farming, clean energy, and WASH.