

Er. PRATIK ADHIKARI

(Registered Mechanical Engineer)

License No.: 5607 Mechanical "A"

PAN No.: 127274430

Address: Khairahani-4, Chitwan

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Date: 2083/01/23

Paddle Wheel Aerator Technical Specifications

Technical Specifications

Application/Test facility

Surface floating paddle wheel aerator for aquaculture ponds used in fish farming, shrimp/prawn farming.

1. Design considerations

- Type of Aerator: Surface floating paddle wheel type for open-pond aquaculture use.
- No. of Paddles: Minimum 6 (six) paddles/impellers for efficient aeration coverage.
- Motor Power: Minimum 2 kW electric motor.
- Motor Type: 3-Phase AC motor with ISI mark or equivalent certification. High-efficiency self-cooling design.
- Voltage: 415 V (± 10 V), 3-Phase, 50 Hz.
- Motor Speed: Minimum 1,200 RPM.
- Aerator Paddle Speed: Minimum 90 RPM at the paddle wheel.
- Gearbox: Bevel-type gearbox with high-quality gears for low friction and a minimum 20% power saving. Cast iron or equivalent body with a minimum noise level.
- Paddle/Impeller Material: HDPE or PPCP (Polypropylene Copolymer) with an additive for protection against sunlight degradation.
- Float Material: Double-layered HDPE blow-moulded floats
- float weight: minimum 6 kg per float.
- Oxygen Transfer Capacity: Minimum 0.25 kg O₂/h;
- Total Equipment Weight: 80-130 kg (assembled unit).

2. Safety and maintenance Requirements

- Motor Enclosure: All rotating parts, gearbox, shaft, and electrical components must be properly enclosed/guarded to prevent operator injury and water ingress.
- Electrical Safety: Motor must include overload protection and be suitable for continuous outdoor operation near/in water (weatherproof rating).
- Corrosion Protection: All metal parts (frame, shaft, bolts, movable joints) must be SS-304 or SS-316 grade. All plastic parts must include a UV stabilizer for outdoor pond use.
- Continuous Operation: Equipment must be designed and rated for continuous 24-hour/7-day operation without overheating.
- Language Requirements: All indications, instructions, warning labels, and operational manuals on the machine must be in English or Nepali.

3. Required documents (during bid submission)

- Product-specific catalogue with detailed specifications and photographs.
- The manufacturer's company profile with proof of manufacturing capacity with technical datasheet including material specifications.
- Material specification for float, impeller, frame, and shaft.
- List of spare parts with pricing.

Other requirements (during delivery)

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- Warranty Letter: Minimum 1-year comprehensive warranty covering manufacturing defects and normal wear and tear.
- Delivery, Installation, and Testing: Complete delivery to the site, professional installation, and demonstration/testing with actual load or equivalent weight.
- Operator Training: On-site training for operators on safe operation, maintenance, and troubleshooting.
- User Manual: Comprehensive operating and maintenance manual in English or Nepali with clear illustrations.
- Spare Parts Kit: Initial set of critical spare parts to be provided on the same bid price, including bearings, belts, hooks, and consumables with the equipment.
- After-Sales Support: Availability of spare parts and technical support for a minimum of 3 years from the date of purchase.



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Submersible Pump Technical Specifications

Technical Specifications

Application/Test facility

Electric submersible pump for agricultural irrigation, open well water supply, borewell water lifting, and domestic water supply in rural/farm settings.

1. Design considerations

- Type: Borewell or Open Well submersible pump. Must be suitable for clean water application (irrigation and domestic use).
- Power Rating: Minimum 1 HP (0.75 kW) rated motor output.
- Phase / Voltage: Single Phase, 220–240 V, 50 Hz compatible with Nepal Electricity Authority (NEA) supply.
- Max Head: Minimum 25 metres (100 ft) for borewell type; minimum 18 m for open well type.
- Max Discharge: Minimum 50 LPM at mid-head duty point.
- Impeller Material: Thermoplastic or SS-304; corrosion-resistant, sand-resistant.
- Motor Winding: 100% pure copper winding for efficiency and rewind ability.
- Motor Type: Water-cooled or oil-filled hermetically sealed motor, continuous-duty rated.
- Body/Casing: Cast iron or SS-304; corrosion and rust resistant.
- Motor Speed: minimum 2,300 RPM.
- Outlet Size: Minimum 1-inch (25 mm) outlet; compatible with GI/HDPE delivery pipe.
- Insulation: Class F or better for motor windings.

2. Safety and maintenance Requirements

- Safety: Dry-run protection preferred. Motor must withstand voltage fluctuations of $\pm 10\%$ of rated voltage without damage.
- Cable: Submersible cable (3-core flat or round) of minimum 15 m length to be supplied with the pump.
- Enclosure: Motor must be hermetically sealed against water ingress during full submergence.
- Maintenance: Motor should be rewindable.
- Spare parts (impellers, bearings, mechanical seal) to be available locally.
- Noise/Vibration: Pump must operate smoothly without excessive vibration or noise during normal operation.
- Language: All labels, instructions, and panel markings must be in English or Nepali.
- Certifications: ISI mark (India) or CE (China); BIS compliance preferred.

Required documents (during bid submission)

- Product-specific catalogue
- Copy of ISI/CE/BIS certification.

Other requirements (during delivery)

- Warranty letter: Minimum 1-year
- Delivery, installation, and testing.


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Pellet Making Machine Technical Specifications

Technical Specifications

Application/Test facility

Pellet maker for producing aquatic feed, livestock and poultry feed, and pet food pellets.

1. Design considerations

- Capacity requirement: minimum 100 kg/h (based on floating fish feed, die hole $\text{Ø}3\text{--}4$ mm).
- Construction Frame: Heavy-duty reinforced cast iron, corrosion-resistant paint.
- Screw type: Twin-screw or Single screw of minimum diameter of 35 mm.
- Die: Minimum 4 interchangeable die Molds ($\text{Ø}2\text{mm--}8$ mm, custom shapes).
- Die Material: Hardened alloy steel die.
- Hopper and discharge: Wide feeding hopper with enlarge discharge outlet to prevent clogging.
- Motor: minimum 3HP electric induction motor.

2. Safety and maintenance Requirements

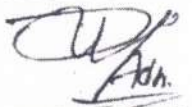
- Power Supply: Single phase/ 3-phase, 50 Hz. Must be compatible with the standard Nepal Electricity Authority (NEA) three-phase supply.
- All rotating parts must be covered by safety guards with interlock switches.
- Electrical Safety: Motor must include overload protection.
- Emergency stop buttons on control cabinet at machine side.
- Language Requirements: All indications, instructions, warning labels, and operational manuals on the machine must be in English or Nepali.

3. Required documents (during bid submission)

- Product-specific catalogue with detailed specifications and photographs.
- List of spare parts with pricing.

Other requirements (during delivery)

- Warranty Letter: Minimum 1-year comprehensive warranty covering manufacturing defects and normal wear and tear.
- Delivery, Installation, and Testing: Complete delivery to the site, professional installation, and demonstration/testing with actual load or equivalent weight.
- Operator Training: On-site training for operators on safe operation, maintenance, and troubleshooting.
- User Manual: Comprehensive operating and maintenance manual in English or Nepali with clear illustrations.
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