सीएसआईआर-केंद्रीय खाद्य प्रौद्योगिक अनुसंधान संस्थान
CSIR- CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE
मैसूरु / MYSURU-570 020, भारत / INDIA
(Constituent Laboratory of CSIR, New Delhi (Ministry of Science & Technology)
An ISO 9001:2008, ISO 14001:2004 & ISO 17025:2005, NABL Accredited Laboratory

Corrigendum: Tender for Ragi Milling Machineries

Corrigendum Title: Revised Technical Specification based on PBC

Tender Ref: A3/74196/2020 Date: 30-06-2020

Tender ID: 2020_CSIR_51828_1

The revised final specification based on the discussion in Pre Bid Conference held on 08-07-2020 @ 10.00A.M. at Purchase Committee Room, CSIR-CFTRI Mysuru through Video Conference enabling equal opportunity to all OEMs has been incorporated and given below as revised specification to the original tender specification. All bidders are requested to take cognizance of the revised specification and submit their bids accordingly on or before 02.00 p.m. on 11/August/2020.

The Firms who has already submitted their offer may resubmit their offer as per our revised final technical specification.

All other tender terms and conditions remain unaltered as mentioned in our initial tender terms & conditions.

Final revised specifications for the Ragi Milling Machineries based on PBC

Sl. No.	Item	Power Consumption	Quantity
1	**Cleaner, grader cum Destoner** Pressure type/Vaccum type destoner equipped with complete dust control system and grading system for Ragi. All steel construction deck capable of handling 500kg of Ragi required for high-quality size separation, removal heavier impurities like stone, metal etc and aspiration of dry material such as leaves, straw and other foreign materials. The unit should have feed hopper equipped with magnetic roller and feed control gate for even distribution of material on screen surface, aspiration system at inlet point and grading system at outlet point. Provision to vary the deck vibration, airflow and speed; provision to vary machine conditions while the machine is in operation. 1 set of the additional following size of sieves should be provide along with the machine: a) Sieve – 0.8 to 1.0 mm b) Sieve – 1.2 to 1.5 mm c) Sieve – 1.6 to 3.0mm The unit should be fitted with appropriate capacity continuous rated TEFC induction motor and starter of reputed make to run on 415V, 50Hz, 3 phase AC supply. Capacity: 500kg/h		1
2	**In – hopper magnetic separator:** Magnetic grids/ grates – round (200mm Ø) to catch Ferrous particle size of minimum of 30 μm and maximum of 10mm. The system should have 4 magnetic bar in extractor tube, with tube of Ø 25mm and bar Ø 23mm with 13,000 gauss (at 20^{o}C) having a field strength (flux density) on magnetic bar (± 10%) translating to field strength of 10,000 gauss on extractor tube. The extractor tube should be made out of SS AISI304. The circular grid (with cover) should have a diameter of 200 mm and height of 50mm. This circular magnet should be placed in the plant at each unit operation of grain processing.		5

3	**Brushing unit** All steel construction, brushing/Scarifier should designed to DE-gloom raw Ragi without damage. Upon entering the Brushing chamber, the seed is brushed against screen by the inside cylinder on which the Nylon brush is mounted. The system should DE-gloom raw Ragi in one operation. Brushing cylinder / screen should have a variable speed drive / mechanical drive pulley. The unit should have settling chamber & Exhaust fan, adjustable air control facility and feed control hopper. 1 set of the additional following type of Nylon brushes should be provide along with the machine: a) Soft b) Medium c) Hard The unit should be fitted with appropriate capacity continuous rated TEFC induction motor and starter of reputed make to run on 415V, 50Hz, 3 phase AC supply. Capacity: 500kg/h		1
4	**Engelburg Huller sheller** Number 1 engelburg huller is required for DE-glooming raw Ragi without damage capable of handling 450-500Kg/h of Ragi The unit should be fitted with all necessary accessories like V-belt, shock absorbing anti-vibration mounts to make the frame vibration free and appropriate capacity continuous rated TEFC induction motor and starter of reputed make to run on 415V, 50Hz, 3 phase AC supply.		1
5	**Continuous Vibro Fluidized bed dryer** Continuous Vibratory fluid bed dryers Non-GMP type(Contact part only of AISI304 SS) is required for drying of Soaked/steamed Ragi. The hot air blowing through the grains mass should be in the range of 40^{o} to 80^{o}C and it should be possible to maintain the set temperature through digital systems. The vibrating deck should be mounted on springs and vibration should be delivered through vibratory motors having provision to control the degree of vibration to suit the process requirement. The following features should be in built into the system: • Control systems for adjusting vibration, fluidization (air flow) and residence time (thus product moisture) • System should ensure uniform product temperature across the depth and length of fluidization • Control system to ensure only cooling of grains (without		2

	heating) • Explosion proof design • CIP (Cleaning In Place) option for good sanitation • Source of heat for hot air could be electrical, diesel, thermic fluid, LPG) • Cyclone separators with bag filters and scrubbers to ensure zero pollution into the process area The system should have all necessary options to customize the thermal processing of grains with respect to temperature and air flow through grain mass with a view to maximize efficiency of heat and mass transfer, thus assuring processing of product within the best time and temperature range for high quality output. The system should be fitted with all regulatory safety features. The electrical motors used in the system should have an efficiency of 80% and above. The system should be fitted with appropriate capacity motors of continuous rating and automatic starter, both of reputed make to run on 415V, 50Hz, 3 phase AC supply. Capacity - 500kg/h		
6	**Tray Dryer** Electrically Tray dryer for drying of steam Ragi with holding capacity of 500 kg. Unit should be fitted with electric heaters and blower fans to ensure proper circulation and transfer of heat, proper system for temperature/airflow and controls to customize the thermal process and maximize the efficiency of heat transfer, assuring drying of the product within the best time and temperature range for high-quality output • Trays should be fabricated in Stainless Steel 304 • Digital temperature controller cum timer • Interiors are protected with high temperature heat resist aluminium paint • Adjustable exhaust air intake, proper temperature uniformity throughout work chamber • Safety temperature controller is set to protect overshot temperature • Adjustable louvers for balanced air flow • Explosion venting latches, static and dynamic blower balancing • Fast acting heating element ensuring rapid heat up • Gasket on door to prevent heat loss The unit should be fitted with suitable continuous rated TEFC induction electric motor and starter of reputed make to run on 415volts, 50Hz, 3 phase AC supply		1

7	**Horizontal emery disc grinder / abrasive disc grinder for grains** Emery stone grinder / abrasive disc grinder for De-branning of ragi grain. The system should have the following features: • Emery stone size =Dia30" *without any grooves or feathering on the grinding surface* • Vibrating feeder / vibrator hopper with control system to adjust the feed rate of grains being ground • Aspiration channel and dust collection with blower, cyclone, rotary valve and bag filters complete with drive motors and starters and all regulatory safety features • All drive systems should be concealed or provided safety guards for operators' safety • Unit should be equipped with automatically controlled gap adjustment system. Quote separately for system with this feature. The system should be fitted with all regulatory safety features. The electrical motors used in the system should have an efficiency of 80% and above. The system should be fitted with appropriate capacity motors of continuous rating and automatic starter, both of reputed make to run on 415V, 50Hz, 3 phase AC supply.	30Hp	2 unit
8	**Cone polisher** Semi-automatic polisher for De-branning of ragi grain with provision to vary machine speed/conditions while the machine is in operation. Abrasive cone polisher of 24" diameter with segmented and pre – cast abrasive segments to De-branned grains. The cone polisher should have Silicon Carbide abrasive of 18/20 grit size in equal proportion. The wire mesh screen cage should have an opening size of 0.6mm. One set of extra wire mesh screen and supporting cage to be supplied with wire mesh having an opening of 0.6mm. It should be possible to move the entire cone assembly vertically to adjust the clearance in the milling chamber. The system should have 5 rubber brakes in the milling chamber. The system should automatically discharge the separated bran through a pneumatic bran collection system comprising of blower, motor, drive system, cyclone and dust collection system to transport the bran outside the milling premises. The cone polisher should have a surge hopper with adjustable feed gate to accommodate material for 15 minutes of running at rated capacity. The system should be fitted with all regulatory safety features. The electrical motors used in the system should have an		1

	efficiency of 80% and above. The system should be fitted with appropriate capacity motors of continuous rating and automatic starter, both of reputed make to run on 415V, 50Hz, 3 phase AC supply. • Capacity 500kg/h		
9	**Vertical abrasive type polisher/whitener** Semi-automatic polisher for De-branning of ragi grain with provision to vary machine speed/conditions while the machine is in operation. Vertical abrasive type Whiteners with Motor & a surge hopper with adjustable feed gate to accommodate material for 15 minutes of running at rated capacity. The Whiteners should be supplied with all accessories, air compressor, complete bran collection and discharge system, operator controls with differential manometer for precise control of chamber air pressure. Digital Ammeter to indicate motor load should also be provided. It should be possible to adjust the degree of polishing easily while the machine is in running condition. It should be supplied with one set of quickly interchangeable sieves of 0.6mm opening. The grit size of the Whitener should have a 18/20 grit size. Capacity: 500kg/h The unit should be fitted with suitable continuous rated TEFC induction electric motor and starter of reputed make to run on 415volts, 50Hz, 3 phase AC supply.		1
10	**Plansifter** The planetary sifter should sift and grade ragi flour into flour and semolina. The sieve should be imparted gyratory motion through a suitable motor and drive. The screen deck should be suitably balanced by a counterweight. The screen should be interchangeable and should be equipped with self-cleaning rubber balls to prevent choking and easily replaceable sieves(additional set of sieves for grading the different size of semolina & flour(250µm) and screen tensioning system to be provided). The inside of the sifter box should be made out of AISI304 SS material. Hopper Outlets for the discharge of stock should be through plastic chutes within a gravity spouting scope. The material of the mesh should be Nylon or Polyamide grit gauze material with an opening size of 1405µm (12 mesh BSS), 1240µm (14 mesh BSS), and 1003µm (16 mesh BSS). An additional set of screens of the following sizes is also to be included in the scope of supply: 850 µm (18 mesh), 710 µm (22		3

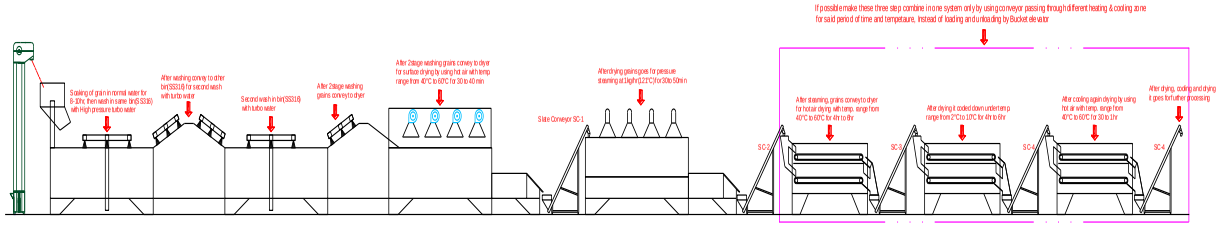
	mesh), 500μm (30 mesh) & 250μm (60 mesh). The system should be fitted with all regulatory safety features. The electrical motors used in the system should have an efficiency of 80% and above. The system should be fitted with appropriate capacity motors of continuous rating and automatic starter, both of reputed make to run on 415V, 50Hz, 3 phase AC supply. • Capacity – 500kg/h		
11	**Centralised Dust Collection & Discharge System:** A centralised dust collection and discharge system from each individual machinery across the mill and all bucket elevators to be provided. The pneumatic lines for dust collection from each of the machine is to be taken and the discharge system should be outside the building. At the exit of the pneumatic lines, the cyclone systems, air locks, blower and drive should be housed outside the building to ensure the entire building is dust free. All pneumatic lines from the individual machines should be installed at a height of 3m (10 feet) from the ground level to facilitate easy movement of staff in the plant area. The system should be fitted with all regulatory safety features. The electrical motors used in the system should have an efficiency of 80% and above. The system should be fitted with appropriate capacity motors of continuous rating and automatic starter, both of reputed make to run on 415V, 50Hz, 3 phase AC supply. **Capacity: To suit the entire plant**		1
12	**Bucket elevator:** Bucket elevators for vertical transport and discharge of grains from one machine's output to the inlet of the subsequent machine. The Head of the elevator should be made out of heavy – duty galvanized steel construction for clean discharge. Sectioned Head cover should be provided for easy service of internal components. The drive to the crowned pulley should be through a gear reducer with easily adjustable torque arm and should be noiseless in operation. The pulleys should be crowned and fitted with taper – lock bushings, non-slip rough top lagging for maximum traction. Sealed, high quality, high duty bearings having low maintenance and long life should be used. The belt should be made from high strength PVC belt for minimal stretch, impregnated solid carcass, pre – punched for easy bucket mounting. Buckets should be made out of high quality Polyethylene CC material with deep terminal design. Trunking should be of twin box construction made out of heavy		8nos.

	gauge ASTM A-526 G90 galvanized steel, double seam, track welded for perfect alignment. Trunking should be provided with inspection sections for easy access to belt and buckets. The boot should be made out of heavy gauge galvanized steel having easy to adjust take – ups for the boot pulley. Clean – out doors that easily slide open to access the elevator boot floor for cleaning should be provided. The output pipe from elevator to the subsequent machine should be made out of AISI304 SS material. The standalone elevator should be supplied in accordance with the requirements of the entire plant for continuous, trouble – free operation. The system should be fitted with all regulatory safety features. The electrical motors used in the system should have an efficiency of 80% and above. The system should be fitted with appropriate capacity motors of continuous rating and automatic starter, both of reputed make to run on 415V, 50Hz, 3 phase AC supply. **Capacity: 1000 kg/h (1TPH)**		
13	**Continuous Weighing and Bag filling machine:** A semi – automatic continuous Auger type packing machine for granular material like millet grains with a maximum filling capacity of 50kg with provision to pack into unit packs of 5kg, 10kg and 25kg bags. The sealing type should be automatic (centre and side seal), with all contact parts made out of Stainless steel, with an accuracy of filling of 0.6% or better. System should run on 3 phase, 415V, and 50Hz supply. The standalone system should be supplied complete with all accessories like processor based electronic weighing system with load cells, pneumatically/ electrically operated functions and operator interface (HMI). The unit should also have an in – built pouch/ bag counter. It should be able to handle a range of packing material like plastic, cloth, plastic woven sacks depending on the unit size of packing. Air compressor required for the system with all accessories has to be included in the scope of supply.		1

General:

In addition to the detailed specifications of the machinery, the following points may also be added in the specifications of machinery

1. The scope of supply shall include transportation of machinery to CFTRI, installation and commissioning charges at the site as indicated by CFTRI.
2. Training on the operation and maintenance of the machinery should be provided by the supplier to the staff identified by the Institute.
3. Essential spares of machinery for smooth functioning of the plant should be supplied.
4. All tools required for maintenance of each individual machinery should be supplied.
5. All open drives should be provided with safety guards and operator safety should be ensured.
6. Pits made for installing the elevators should be covered with removable grating to ensure operator safety.
7. All machinery should be supplied with electrical motor and matching starter.
8. The electrical motors supplied with the machinery should be from reputed manufacturers and each motor should have an efficiency of 80% and above.
9. Remote control buttons for starting/ stopping the individual machine should be provided.
10. All automatic systems should be provided with a provision to run them either on automatic or manual mode.
11. All hoppers should be fitted with individual feed gate to adjust the flow rate of material. Optional: Quote separately for pneumatically operated feed gates complete with all accessories including pipelines, air compressors and safety features. These pneumatic system should have a provision to operate the feed gate either automatically or manually.
12. Control panel for the entire plant should be provided along with all regulatory safety features, indicator lamps, voltage, current and power factor indicators should be provided.
13. The charges for wiring the individual machinery from the supplied control panel with all necessary and regulatory safety features should be included in the scope of supply.
14. The AMC for the entire plant beyond the warranty period should also be indicated.
15. The colour scheme of painting of all machines shall be uniform. Colour scheme, preferably Cream (CMYK: 0, 1, 18, 0, Hex triplet #FFFDD0 and Cerulean (CMYK: 100, 26, 0, 35, Hex triplet: #007BA7) or equivalent. Cerulean colour percentage should be about 20 - 25%.
16. Steam line: The supply should include installation of steam line (with glass wool cladding and covering) with necessary statutory steam and water traps and safety features applicable to a food processing industry. All steam lines should be mounted on the walls with suitable supports and connections to the individual machines/ system should have a minimum clear height of 3m (10 feet) from the ground level.
17. Unless mentioned otherwise, each machine should be provided with a surge hopper to hold material for 15 – 20 minutes of operation with an individual, adjustable feed gate.
18. In case of machinery with other options, the quotation should be submitted separately for such items indicating the changes/ deviations from the specifications.
19. All vibrating/ reciprocating/ gyratory machines should be supplied with individual anti – vibration mountings.
20. All civil construction requirements for erection and commissioning of the machines should be included in scope of supply.



This whole Plant should be of 1ton holding capacity of grain(Dia 1mm) with bulk density of 830Kg/hr

	DATE	NAME
DRN	07.11.18	M.A.Shaikh
CHD		
APPD		
SCALE: N.T.S		
All Dimensions are in Metric		

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TITLE: PROCESSING PLANT

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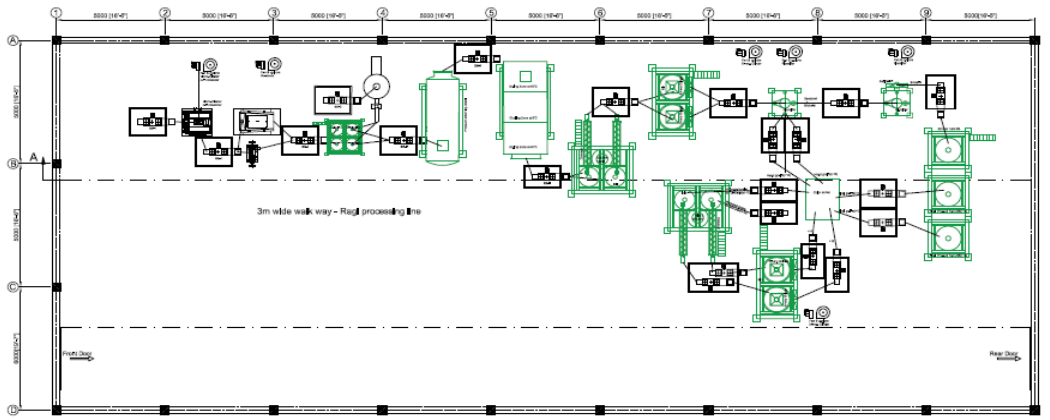

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DRN.	26/3/2020	Md. Shakeb
CHD.		
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SCALES: N.T.S

All Dimensions are in Metres

TITLE: RAGI PROCESSING PLANT

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