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 Processing Machineries

Corrigendum Title: Revised Technical Specification based on PBC

Tender Ref: CFTRI/74197/2020 dt.30-06-2020

Tender ID: 2020_CSIR_51829_1

The revised final specification based on the discussion in Pre Bid Conference held on 08-07-2020 @ 11.30A.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 processing Machineries based on PBC

Ragi processing plant

S. No.	Item	Quantity
1	**SS Soaking/ Steaming tanks with MS structure:** Cylindrical steaming tanks with conical bottom constructed out of AISI304 SS sheet of 3mm thickness. A discharge system should be provided at the bottom of the tank with a pneumatic feed gate. The supply should include air compressor, air tank, and all accessories and safety devices, for the operation of the pneumatic gate manually. It should be possible to control the output of grains from the tank to the desired quantity output per hour. The tank should be watertight and should have provision to drain out only water separately. All contact parts with the grains should be made out of AISI304 SS material. The quotation should include the supply and installation of steam and water line from the nearest point in the building till the process tank and should be quoted per running meter. Steam line should be cladded with fibre glass material as per standard specification. The steam line should be supplied complete with all safety features and accessories like steam trap, drain line, etc. Pressure gauges to indicate pressure in the steam line should be provided at a height for convenient reading. Waterline should be painted SEA GREEN as per standard specification. Waterline should be provided with ball valves for control of water flow. A set of soaking/ steaming tank consists of two tanks each of holding capacity of 750kg of Ragi. The outlet of these tanks should be such that there is free flow of wet material to the next machine (Elevator). Thus the angle of the pipe from the outlet of the tank to the inlet hopper of the elevator should be 60^{o} from the horizontal. The support structure for the soaking/steaming tank should be made out of MS material. It should be complete with staging, grating platform, ladders, and walkways with safety railings throughout. The MS structure should be coated with enamel paint matching the scheme of the plant. **HDPE storing tank** with holding capacity 2000ltrs and supporting structure connect to the suitable capacity of pump for filling and recirculating of water in soaking tanks	2 set.
2	**Grain Steamer/ Industrial cooker** Ragi is fed in the vertical cooker (constructed in S.S.304/316) with cover fitted along with suitable fittings and accessories. Strainer Pipe & Discharge Valve in S.S. with holding capacity of 1ton.	1

	Cooker should be equipped with the necessary system (Dry steam/vacuum pump) to avoid condensation of steam on the surface of steamed ragi grains. The unit should be fitted with temperature, moisture & pressure control system with sensors, appropriate capacity continuous rated TEFC squirrel cage induction motor and starter of reputed make to run on 415V, 50Hz, 3 phase AC supply. Capacity - 1ton	
3	**Cooling system** **PreFab pipe Jacketed vessel for cooling steamed Ragi** Ragi is fed in the vertical Jacketed vessel (constructed in S.S.304/316) with cover fitted along with suitable fittings and accessories. Strainer Pipe & Discharge Valve in S.S. with holding capacity of 1ton. The system should be equipped with a suitable recirculating system of cooling water or refrigerant, along with fittings and accessories. The system should have all the necessary options to customize the cooling processing of grains assuring processing of products within the best time and temperature range for high-quality output. Colling Range: 6°C to 10°C. • CIP (Cleaning in Place) options should be provided for good sanitation. • Explosion proof design • All the necessary systems like cooling system (water/refrigent) and temperature-controlled system should be provided for smooth and efficient functioning of Jacket vessel. 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.	1
4	**Mixing Screw Conveyor/ Moisture Conditioning/ Dozing System:** A mixing type screw conveyor system with three nozzles to spray water in a fine mist on the grain mass. The system should ensure complete mixing of grains with sprayed water. The drive to the screw should be through a geared motor driven through a VFD system for precise control of screw speed as desired(*to control the conveying/conditioning speed of conveyor, Length & screw Diameter of conveyor should capable of handling 500kg of Ragi for 30min of conditioning*). Provision should be made to control	4

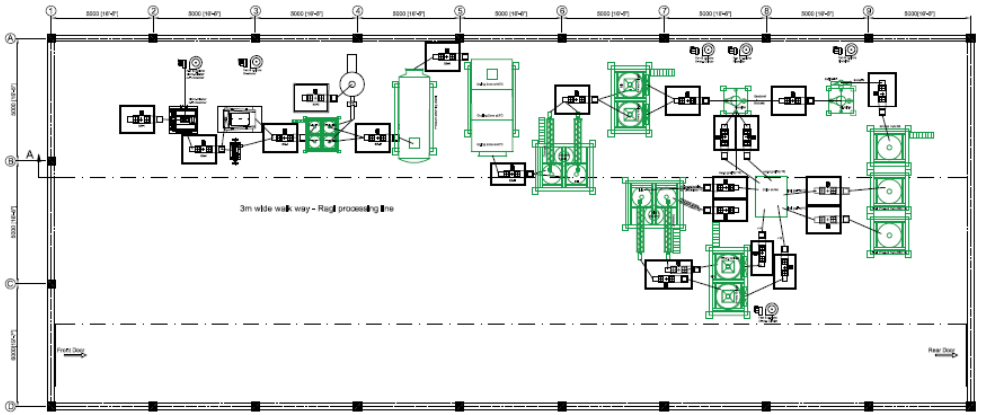
	the amount of water being sprayed and should be supplied along with a metering unit for the same. The U trough screw conveyor system should ensure a throughput of 500kg/h. Owing to the size of the grain, the gap between the bottom of the trough and screw should be less than 0.5mm. Suitable hanger bearings should be used throughout the length of the screw to ensure no sagging of the screw inside the trough. The supply should be complete with water tank (PE or PP) and water line for inlet and outlet should be provided. The storage capacity of the water tank should be 500 litres. The quotation should include supply and installation of structure for water tank. All contact parts with grains should be made from AISI304 SS material. Quotation should include supply and installation of water line from the nearest point in the building till the process tank and should be quoted per running meter. 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: 500 kg/h**	
5	**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 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	8nos. / As per layout requirement for smooth and continuous running of plant

	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)**	
6	**Storing tanks with MS structure:** Storage tank to store processed Ragi. The tanks and systems in contact with grains should be made out of 3mm thick AISI304 SS material and the support structure should be made out of MS. The structure should be complete with stair case, walkways, railings and grating platform ensuring complete safety of personnel. The outlet of these tanks should be such that there is free flow of material to the next machine. Thus the angle of the pipe from the outlet of the tank to the inlet hopper of the elevator should be 60^{o} from the horizontal or higher. The following storage tanks are required: a. To temper moisture conditioned Ragi after the mixing screw conveyor consisting of 2 tanks each tank having a holding capacity of 1000 kg (1T) b. To temper moisture conditioned Ragi after the second pass of mixing screw conveyor consisting of 2 tanks each tank having a holding capacity of 1000 kg (1T) c. To store polished Broken Ragi after separated by plansifter – as by-product consisting of 1 tank of holding capacity of 1000 kg (1T) d. To store polished Ragi after sortex by color sorter– final product consisting of 2 tanks each tank having a holding capacity of 2000 kg (1T)	7
7	**Surge bin with MS structure** Storing tanks 3 to 4 mm body thickness in SS 304/GI Construction without cover fitted with suitable Discharge Valve with required holding capacity 15 to 20min. **M.S. STRUCTURE:** 1 lot Supporting structure in M.S. construction including Stair Case, ladder, Walkways, Railings, and Grating Platform wherever required	As per layout requirement for holding of Ragi at different stage during the continuous running of plant

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.



	DATE	NAME
DRN.	JULY,2021	ML Shalini
CHD.		
APPD.		

SCALE: N.T.S

All Dimensions are in Metres

Break Sharp Edges

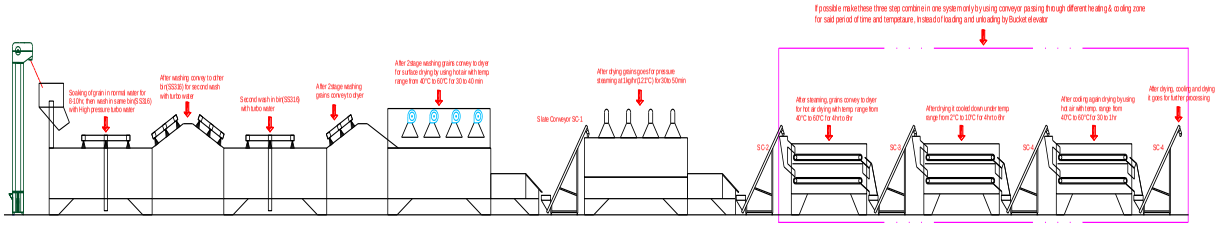
CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE, MYSURU – 570 020

TITLE: RAGI PROCESSING PLANT

DRAWING NUMBER

Sheet No. of

Rev. No.



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

	DATE	NAME
DRN.	27.11.2018	Mr. Dinesh
CHD.		
APPD.		

SCALE: N.T.S

All Dimensions are in MMRS

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TITLE: PROCESSING PLANT

DRAWING NUMBER

Sheet No. 01

Rev. No.