



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 Flaking Line**

**Corrigendum Title: Revised Technical Specification based on PBC**

**Tender Ref: A3/74191/20-21 Date: 29-05- 2020**

**Tender ID: 2020\_CSIR\_49280\_1**

The revised final specification based on the discussion in Pre Bid Conference held on 09-06-2020 @ 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 07/July/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 except delivery schedule date i.e. 10-12 weeks from the date of issue of P.O (instead of 6-8 weeks as mentioned in our initial tender terms & conditions).**

## Revised Technical Specification based on PBC

### 1. Millet flaking system & accessories:

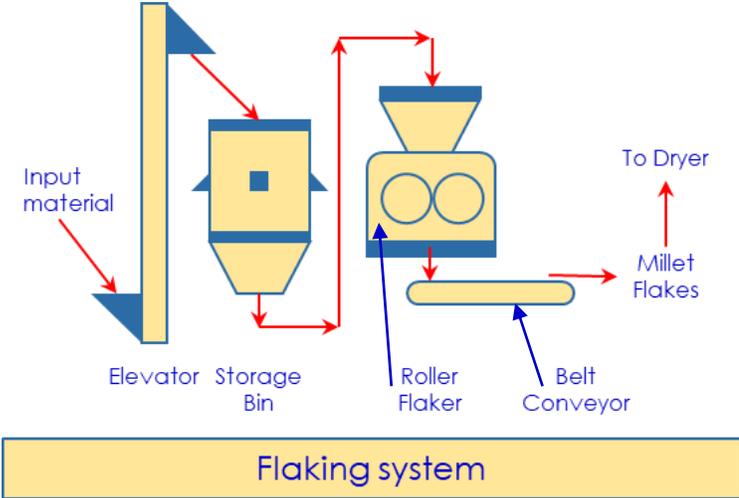
Complete plant for processing of millets, to produce polished millets, at a capacity of 1 Tonne per hour consisting of the following machinery and accessories as per tentative plant layout enclosed.

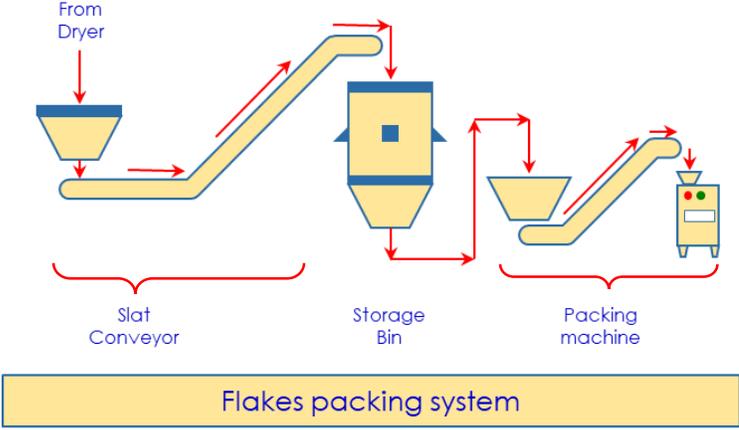
List of equipment include Input material for raw material, Storage bin, Continuous cereal roller flaker, Belt conveyor for flakes discharge, Slat conveyor with hopper, Storage bins for flakes, Flakes packing system with all accessories for continuous operation at 300 – 400 kg/h capacity.

The detailed specifications and essential features of each individual machine/system is as indicated below:

Sl. No.	Specifications and essential features of individual machine/system	Quantity
1	<p><b>Bucket elevator:</b></p> <p>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, and 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 the requirements of the entire plant for continuous, trouble – free operation. In case of the elevator feeding material to multiple storage</p>	1

Sl. No.	Specifications and essential features of individual machine/system	Quantity
	<p>bins, a distributor with individual feed gates is to be provided to facilitate discharge of material to the required bin.</p> <p>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.</p> <p><b>Capacity: 1000 kg/h (1TPH)</b></p>	
2	<p><b>Heavy Duty, Continuous Cereal Roller Flaker:</b></p> <p>Heavy duty, continuous cereal roller flaker to convert conditioned grains into flakes up to 0.4mm or less. The flaker should consist of 2 counter rotating, centrifugally cast (spun cast) chilled Cast Iron rollers with smooth finish, having a hardness of 550 – 560BHN. The chill depth should be for a minimum of 15mm or more.</p> <p style="text-align: center;">Roll diameter: 460mm, Roll length: 610mm</p> <p>The roll pressure should be applied by substantial disc springs, which will compress in case of a hard material passes through the roll thus minimizing the damage to the roll surface or machine. The system should have a single manual with integral micrometer gauge to provide fine parallel roll gap adjustment and measurement. The roll drive should be through a single electric motor with heavy duty inter – roll belt with a choice of roll speeds and differentials. The differential roll speeds should be of the ratios 1:1, 1:1.06 and 1:1.12. The adjustable scraper blades with adjustable counterweights to regulate pressure should be provided to keep the rolls clean and remove any sticking material on the rolls. Quote separately for the model with water cooled rolls which should be supplied with water tank, water lines, trunnions and all necessary accessories. The discharge should be via integral hopper boards and the flaker should be fitted with stainless steel covers to enclose all moving parts. It should also be provided with Polypropylene cheek plates to prevent whole grains going past the end of the nip. It should be supplied with variable speed feed roll unit. The mill roll feeder should be fit directly over the flaking mill and should be made out of AISI304 stainless steel material. It should essentially provide a 'curtain' of grains fully across the width of the roll. The fluted roll should be regulated in speed and gap to adjust the throughput. The system should have viewing access to monitor flow of material. The system should be supplied along with a belt conveyor with belt made of food grade material to transport the flakes from below the flaker to be collected separately. The discharge height of this flakes conveyor should be at least 1 m (3 feet) from the ground level.</p>	1

Sl. No.	Specifications and essential features of individual machine/ system	Quantity
	<p>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.</p> <p><b>Capacity: 300 - 400 kg/h</b></p> <p style="text-align: center;"><i>Schematic diagram of flaking line:</i></p> 	
3	<p><b>Slat Belt Conveyor:</b></p> <p>The slat type (cleated) belt conveyor system or Z type elevator is required to transfer the flakes (after drying) through an inlet hopper on to the Storage bin. The belt material should be made out of food grade material with all other contact parts made out of AISI304 Stainless steel material. The design should ensure zero spillage of material. It should have a single point of drop with gentle handling of material, least maintenance and quiet in operation.</p> <p>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.</p> <p><b>Capacity: 300 - 400 kg/h</b></p>	As per layout

Sl. No.	Specifications and essential features of individual machine/ system	Quantity
	 <p>The diagram illustrates a 'Flakes packing system'. It starts with a hopper labeled 'From Dryer' at the top left. A red arrow points down into a blue hopper, which then feeds into a yellow 'Slat Conveyor'. The conveyor moves material up and then down into a blue 'Storage Bin'. From the bottom of the storage bin, a red arrow points down into another blue hopper, which feeds into a yellow 'Packing machine'. A red arrow points from the packing machine to the right. Below the diagram is a yellow box with the text 'Flakes packing system'.</p>	
4	<p><b>Storage tanks with structure:</b></p> <p>Storage tank to store conditioned millets and flakes, separately. 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 70° from the horizontal or higher.</p> <p>The following storage tanks are required:</p> <ol style="list-style-type: none"> <li>To store conditioned millet grains consisting of 2 tanks each tank having a holding capacity of 2000 kg (2T)</li> <li>To store dried millet flakes, consisting of 2 tanks, each tank having a holding capacity of 300 kg of flakes</li> </ol>	<p>As required</p> <p>1 set</p> <p>1 set</p>
5	<p><b>Continuous weighing and bag filling machine for flakes</b></p> <p>A semi – automatic, continuous Auger type packing machine for material like millet flakes with a maximum filling capacity of 20kg with provision to pack into unit packs of 5kg, 10kg and 15kg. The stitching type machine should be automatic/manual system 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.</p>	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.
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. 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.
17. All vibrating/ reciprocating/ gyratory machines should be supplied with individual anti – vibration mountings.
18. All civil construction requirements for erection and commissioning of the machines should be included in scope of supply.