



Ref No _____

Date _____

Date: 30 May 04.

To,
M/s H&R Johnson (India) Limited
Mumbai.

Kind Attention: Mr Shivkumar

Sir,

As discussed with you, I am enclosing herewith a detailed quotation for the Batch Smelter Plant for making frits. Please note that the price includes installation and commissioning. The burners are designed to work with Coal Gas / Producer Gas as the fuel. The fuel shall be provided by HRJ to the gas station at the frit making facility.

BATCH SMELTER PLANT

Item No	Machinery Details	Rate Rs. Lakhs	UoM	Qty	Amount Rs. Lakhs
01	Weighing Hopper: 3cum volume: 2 tons capacity	1.00	No	2	2.00
02	Ribbon Mixer for blending raw material	0.50	No	2	1.00
03	Batch storage hopper with remote operated gates	0.50	No	3	1.50
04	Smelter with structure, lining and driving system: 2 tons capacity	25.0	Set	6	150.00
05	Water quenching hopper & tank	0.10	Set	7	0.70
06	Exhaust chimney	0.10	set	7	0.70
07	Temperature controller	0.25	set	7	1.75
08	Gas regulating station	0.50	set	1	0.50
09	Electric Hoist 5 ton cap	2.50	Set	1	2.50
10	Emergency Spares	5.00	set	1	5.00
Total					165.65

Rs One Crore Sixty Five Lakhs and Sixty Five Thousand Only.

DELIVERY TERM : EX-OUR WORKS.

TAXES AND DUTIES : 16% + 4% EXTRA AS APPLICABLE AT THE TIME OF DELIVERY

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DELIVERY TIME : 2 MONTHS FROM THE DATE OF CONFIRMED ORDER.

PAYMENT TERMS : 35% ADVANCE, 55% AGAINST PI AND 10% ON COMMISSIONING.

DESIGN BASIS:

Plant Capacity : 30 tons per day of frits

Operating time : 20 hrs/d

Weighing Equipment : 2 tons/batch; 1.5 hr/batch

Smelter : 2 tons per batch; firing cycle 8 hrs each batch. Each smelter can fire about 2.5 cycles a day considering 20 hrs operation.

TECHNICAL DESCRIPTION:

01 WEIGHING HOPPER: The weighing hopper is made of M.S. suitable of handling powder raw materials. Volume is 3 cum and can weigh 2.25 ton material each batch. It is fitted with 4 load cells each 750 kg and precision 2% on maximum scale. Weighed material is then transferred to the mixer for mixing.

02 RIBBON MIXER: The ribbon mixer is made of SS shell and ribbon. It is powered by a 5 kW geared motor. Screw speed is 36 rpm. Volume is 3 cum and can process 2.25 ton each batch. Estimated mixing time for powder material is 30 min to 45 min. Prepared material is then stored in storage hopper ready for smelter feeding.

03 BATCH STORAGE HOPPER: The hopper is made of SS and provided with remotely operable gates to discharge material from the hopper into the smelter.

04 SMELTER: The smelter shell is made of MS. Volume is 5.5 cum and can process 2.25 tons raw material. The raw material loading port cum frit unloading port is provided. The inner lining is made of electro-cast alumina refractory. Burner is provided at the drive end. Burner capacity is 4 Mn Kcal/hr based on coal gas/producer gas with net calorific value 1350 to 1450 kcal/cum. Maximum flame

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temperature achievable is 1550 deg C. A 5 kW motorized drive and rocking system is provided for oscillating the smelter for effective smelting and homogenization of the material.

Fuel Consumption for smelting: 7000 – 7200 kCal per kg frit production.

Shell Thickness: 10mm

Lining Thickness: 50mm of Electro-cast Alumina with high temp castable refractory.

05 WATER QUENCHING HOPPER: Water quenching hopper is made up of SS with water drain provided at the bottom of the hopper. The hopper is immersed in water tank and frit is discharged from the smelter. Thermal difference cracks frit into small pieces easily grindable.

06 EXHAUST CHIMNEY: The exhaust gases are vented into the atmosphere through this chimney. Height is 12 m from ground level. Diameter is 1m.

07 TEMPERATURE CONTROLLER: The smelter temperature is regulated by a PID controller. Thermocouple is provided inside the smelter. The controller is programmable and can store 6 different programs for firing cycle.

08 GAS REGULATING STATION: The gas regulating station is designed to work with low btu gas. Volume handled is 10000 cum/h. Inlet pressure to be given for design purpose.

09 ELECTRIC HOIST: This hoist is used for lifting the batch hopper and positioning over the loading port to facilitate raw material loading into the smelter. Capacity is 5 tons. The railing shall cover all the smelter loading points and two batching points.

10 EMERGENCY SPARES: Some emergency spares like valves, thermocouples, burner nozzles etc shall be provided. List of spares to be mutually decided after order confirmation.



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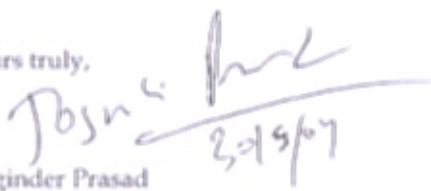
TECHNICAL DOCUMENTATION AND ENGINEERING: Technical documentation including layout drawings, foundation drawings, elevation drawings, electrical circuit drawings, operation manual, spares manual and maintenance manual shall be provided in soft copy.

KNOW-HOW: Frit manufacturing know-how which includes designing formulations based on raw material characteristics, pre-production tests, trial runs, testing procedures and simulating smelter runs is not included in this supply.

ESTIMATED LIFE CYCLE: The batch type frit smelter quoted in this offer is estimated to last at least 25 years with regular maintenance to the refractories and drive systems.

We hope to receive your esteemed order confirmation. In case of any clarifications, please do not hesitate to contact us.

Yours truly,


Jyoginder Prasad