TECHNICAL DATA SHEET

Annexure-12

Bidder to fill following data along and to be submitted along with offer.

Sl. No.	Description	Data To be filled by Bidder
	Bunker shut off gates	
1.	Manufacturer	
2.	Type	
3.	Material of the gates	
4.	Motor rating (KW)	
	Limestone Feeders	
1.	Manufacturer	
2.	Model Number & Type	
3.	Feeder size	
4.	Normal capacity (tonnes/hr)	
5.	Maximum capacity (tonnes/hr)	
6.	Feeder belt width (mm)	
7.	Speed pulser allowable VA burden	
8.	Method of measurement	
9.	Range of measurement (kg/hr)	
	Downspout from feeder outlet to pulverizer	
1.	Manufacturer	
2.	Inside diameter (mm)	
3.	Thickness (mm)	
4.	Material	
5.	Height (mm)	
6.	Off set between feeder outlet and centre line of limestone bunker, if any (m)	
	Limestone Pulverizers	
	Design Data	
1.	Manufacturer	
2.	Type and model	
3.	Total Number of mills	
4.	Mill maximum capacity (kg/hr)	
5.	Size of raw limestone at mill inlet (mm)	
6.	Bond Index of Limestone	
7.	Fineness of pulverized coal through 325	

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
	mesh (%)	
8.	Noise level dB(A) when measured at a distance of 1 meter	
9.	Pulverizer Speed (rpm)	
10.	Mill Power Consumption	
11.	Brake KW	
12.	Mill Main Motor Rating (KW)	
13.	Total weight Excluding motor	
14.	Overall dimensions	
15.	Solid Concentration (w/w %) in mill	
16.	Method of Classification	
17.	Initial Ball Charge – quantity and distribution	
18.	Ball Consumption (kg per ton of limestone)	
19.	Refilling Ball size diameter	
	Constructional Features	
1.	Material / Thickness of Mill Wear Liners	
2.	Guaranteed Wear Life of Wear Liners	
3.	Estimated labour (in man hours) for replacement of wear liners)	
4.	Material / Diameter (mm) of Ball Hardness of Ball	
	Mill Support bearing	
1.	Journal bearing: Type / Size: (GA drawing to be enclosed.)	
2.	Type of Lubricating oil used	
	Pulverizer lube oil system for Support bearing	
1.	No. of lube oil pumps per pulverizer	
2.	No. of lube oil pumps working	
3.	No. of oil coolers per pulverizer	
4.	No. of oil coolers per working	
5.	Lube Motor Make and Model(along with rating)	

TECHNICAL DATA SHEET

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
6.	Pump Make and Model	
7.	Cooler make and Model	
8.	Lube oil Heater	
	Type of drive transmission	
1.	Make / Model of Gearbox	
2.	Speed Ratio	
3.	Type of coupling	
	Pulverizer lube oil system for reducer	
1.	No. of lube oil pumps per pulverizer	
2.	No. of lube oil pumps working	
3.	No. of oil coolers per pulverizer	
4.	No. of oil coolers per working	
5.	Lube Motor Make and Model(along with rating)	
6.	Pump Make and Model	
7.	Cooler make and Model	
8.	Lube oil Heater	
9.	Lubricating oil type	
	Auxiliary Motor Rating (KW)	
	Mill speed with Auxiliary Motor (rpm)	
	Mill Separator Tank	
1.	Capacity (m3)	
2.	Material/Thickness (mm)	
3.	Lining Material/Thickness (mm)	
4.	No. of Agitators	
	Mill circuit Pump	
1.	No. per mill	
2.	No. of stand-by pumps	
3.	Make/Model	
4.	Impeller Type	
5.	Material/Thickness (mm) of Impeller and lining Casing Type	
6.	Material/Thickness (mm) of Casing/Lining	

TECHNICAL DATA SHEET

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
7.	Rated Flow Head (m3/hr / mWCI)	
8.	Slurry Solid concentration (w/w %)	
9.	Mounting orientation (H/V)(Horizontal/Vertical)	
10.	Normal solid particle size,d50	
11.	Hardness of particle	
12.	Chloride concentration	
13.	Slurry to be handled	
14.	SiO2 concentration	
15.	PH	
16.	Operating temperature range	
17.	Number of pump (for one ball mill 2 nos)	
18.	Working and standby	
19.	Discharge orientation	
20.	Duty condition (continuous /intermittent	
21.	Flange standard	
22.	Mechanical seal required (Duplex & SiC/ SiC)	
23.	Head of the pump (in meter of slurry column)	
24.	Capacity of the Pump(in m^3/hr)	
25.	Pump & Motor shall be designed with discharge valve fully open & close conditions	Vendor to confirm
26.	pump model offered to be mentioned by vendor	
27.	Minimum & maximum liquid level in the tank (in m)	vendor to specify
28.	NPSHr to be indicated by vendor	
29.	Pump performance curves **i. Flow v/s Head** **ii. Flow v/s NPSH** **iii. Flow v/s Efficiency**	

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
	iv. Flow v/s power **(v) Flow v/s NPSHr** are to be submitted along with offer by vendor for evaluating the Bid	
30.	General Arrangement drawings with sectional view & material of construction, important dimensions- to be submitted along with offer by vendor for evaluating the Bid.	
31.	All mounting bolts and foundation bolts are are in vendor scope	
32.	Inlet and outlet dia of pump	
33.	Impeller diameter	
34.	Tip speed vendor to specify (less than 30m/s) - vendor to specify	
35.	GD^2 at drive end of the shaft to furnished	
36.	All bearing of pump and motor are FAG/SKF only vendor to confirm	
37.	Bearing cooling air /oil/water - if any required vendor to specify	
38.	Pump efficiency (minimum expected 65%) - Vendor to specify	
39.	Rated RPM of the pump - should not exceed 1500RPM (vendor to confirm)	
40.	The operating speed shall be atleast 20% higher than first critical speed - and Second speed should be 130 % higher than operating speed vendor to confirm	
41.	The operating range of the pump shall be 40% to 120% of the duty point - vendor to confirm	
42.	The maximum efficiency of pump shall preferably be within ± 10% of the duty point flow	

TECHNICAL DATA SHEET

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
43.	Shut-off head is minimum 15% higher than the duty point head- vendor to confirm	
44.	Common base plate to be provided by vendor A/29/A36 /A283/IS2062 or equivalent international standard	
45.	Vibration pad required (between base plate and pump & motor) vendor to provide & confirm	
46.	pump casing ,Wear plate and cover plate and all slurry wetted part shall be high chrome alloy ASTM 532 Grade IIIA with - vendor to confirm	
47.	Impeller high chrome alloy ASTM 532 Grade IIIA with - vendor to confirm	
48.	for all wear parts of pump should be guaranteed for 14000 hours of operation – Vendor to confirm	
49.	Impeller mounting bolt and nut shall be Duplex 2205 - vendor to confirm	
50.	Main drive shaft (single piece from coupling to impeller) material Duplex S32205/S31803 or vendor to confirm	
51.	Shaft sleeve at mechanical seal portion shall be CD4MCu ASTM A 743 or better material - vendor to confirm	
52.	Key material for impeller mounting minimum SS 316- vendor to confirm	
53.	Name plate shall be in SS 304 - vendor to confirm	
54.	Rotation arrow to be cast in the body or arrow plate with SS304 to be fixed on the pump -vendor to confirm	
55.	Direct Drive flexible coupling with high tensile bolts is to be provided by vendor	

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
	(belt drive not acceptable). Coupling make and model Number Coupling drawing with BOM to be provided after purchase order. Vendor to confirm	
56.	Coupling guards with mounting bolt to be provided	
57.	Mechanical seal life minimum ---- hrs	
58.	Mechanical drawing with complete BOM to be provided	
59.	Temporary conical strainer to be provided - vendor to confirm	
60.	Mechanical seal flushing provision to be provided (If applicable) by vendor at inlet/outlet with G 1/4 pipe connection - vendor to confirm	
61.	Flushing water Quantity , quality & pressure will be informed by the vendor	
62.	pump shaft power for each pump to be provided	
63.	safety factor 1.1 minimum required vendor to confirm	
64.	Motor efficiency class (minimum IE3)	
65.	Pump shaft power power consumption and Motor selected in KW vendor to specify	
66.	Motor rating to be furnished for all motor along with backup calculation	
67.	At pump Inlet & outlet non-metallic expansion joint with flange and fasteners to be provided	
68.	Pump Casing shall be provided with vent valve	
69.	Drain pipe with valve to be provided at the bottom of casing- vendor to confirm	
70.	First fill oil /grease other consumable to be	

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
	sent along with pump - vendor to confirm	
	Agitators	
1.	No./Make/Model	
2.	Type	
3.	Speed (rpm)	
4.	Drive Mechanism	
5.	Shaft Material	
6.	Material / Thickness (mm) of Impeller / Lining	
7.	Power Consumption	
8.	Motor Rating (KW)	
9.	Motor Speed (rpm)	
10.	Maximum solid particle size (for pump design)	
11.	Normal solid particle size,d50	
12.	Slurry concentration not more than	
13.	Chloride concentration	
14.	SiO2 concentration	
15.	PH	
16.	Operating temperature range	
17.	Agitator Mounting Orientation	
18.	Number of Agitator (for one ball mill 1 nos)	
19.	Agitator Model number- vendor to specify.	
20.	Gearbox make & model - vendor to specify.	
21.	Agitator shaft power in kw- vendor to specify.	
22.	Impeller diameter - vendor to specify.	
23.	Blade Material-Alloy926/1.4529 -vendor to confirm	
24.	Impeller mounting bolt and nut shall be Alloy 926 - vendor to confirm	
25.	Shaft Material (carbon steel) - vendor to	

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
	specify the grade.	
26.	Shaft diameter - vendor to specify.	
27.	Shaft to be rubber lined - vendor to confirm.	
28.	Rubber lining material (cholorobutyl rubber)- vendor to specify	
29.	Rubber lining thickness - 6mm -vendor to confirm	
30.	Rubber lining hardness (55-65)	
31.	Life of Rubber Lining (minimum 2 yrs.)	
32.	Selected Motor frame size-	
33.	Selected motor power in kw	
34.	Motor RPM & Agitator shaft RPM	
35.	Motor efficiency class (minimum IE3)	
36.	All bearing are FAG/SKF only vendor to confirm	
37.	Static load- vendor to specify.	
38.	Dynamic load (vertical axial force, torsional moment, bending moment)	
39.	Static & dynamic balancing required- vendor to confirm	
40.	Tip speed vendor to specify (less than 30m/s)	
41.	Critical Speed of agitator	
42.	Ratio of shaft speed to critical speed	
43.	Coupling guards with mounting bolt to be provided	
44.	Name plate shall be in SS 304 - vendor to confirm	
45.	Rotation direction of agitator shaft to be marked through arrow plate at a visible location near coupling- vendor to confirm	
46.	General Arrangement drawings of agitator assembly with sectional view & material of construction, BOM, important	

Annexure-12

Sl. No.	Description	Data To be filled by Bidder
	dimensions- to be submitted along with offer by vendor for evaluating the Bid - vendor to confirm.	
47.	Direct Drive flexible coupling with high tensile bolts is to be provided by vendor . Coupling make and model Number Coupling drawing with BOM to be provided after purchase order - Vendor to confirm	
48.	First fill oil /grease other consumable to be sent along with pump - vendor to confirm	
	Hydro-cyclone	
1.	Make / Model	
2.	Number working	
3.	Flow Capacity (m3/hr)	
4.	Inlet Solid Concentration (% w/w)	
5.	No. of Hydro-cyclone in each set	
6.	No. of spare hydro-cyclone in each set	
7.	Under flow Volume (m3/hr) Solid Concentration (% w/w)	
8.	Over flow Volume (m3/hr) Solid Concentration (% w/w	
9.	Size / Material / Thickness (mm) of base / Lining	
10.	Feed Chamber	
11.	Apex Stopper	
12.	Cone Casing	
13.	Under flow pipe	
14.	Overflow pipe	
15.	Pressure Drop at rated capacity (mmWCI)	
16.	Design Pressure	

S. NO.	LT MOTORS	1 Mill Circuit pump Motor	2 Agitator Motor	3 Gravimetric Feeder Motor	4 Inching Motor
A.	**GENERAL**				
1.	Quantity	4	2	2	2
2.	Motor Manufacturer & Country of origin.				
3.	Motor type				
B.	**DESIGN AND PERFORMANCE DATA**				
1.	Frame size				
2.	Type of duty	S1	S1	S1	
3.	Type of enclosure / Method of cooling/ Degree of protection				
4.	Applicable standard to which motor generally conforms				
5.	Efficiency IE3 of IS 12615 or above (vendor to fill up efficiency here				
6.a	Whether motor is flame proof	NO	NO	NO	
6.b	If yes, the gas group to which it conforms as per IS:2148	N.A	N.A	N.A	

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TO BE FILLED & ATTACHED ALONG WITH TECHNICAL OFFER
(incomplete filling of data sheet liable to rejection of offer)

7	Type of mounting				
8	Direction of rotation as viewed from DE END				
9	Standard continuous rating at 40 deg.C. Ambient temp. as per Indian Standard (KW)				
10	Derated rating for specified normal condition i.e. 50 deg. C ambient temperature (KW)				
11	Maximum continuous load demand of driven equipment in KW				
12	Rated Voltage (volts)	415	415	415	
13	Permissible variation of :				
13.a	Voltage (Volts)				
13.b	Frequency (Hz) (+3% to -5%)- vendor to specify				
13.c	Combined voltage and frequency 10% -vendor to specify				
14	Rated speed in RPM (at rated voltage and frequency)				
15	At rated Voltage and frequency:				
15.a	Full load current				

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15.b	No load current				
16	Power Factor at				
16.a	100%/75%/50% load				
16.b	NO load				
16.c	Starting.				
17	Efficiency at rated voltage and frequency,				
17.a	100% load				
17.b	75% load				
17.c	50% load				
18	Starting current (amps) at				
18.a	100 % voltage				
18.b	85% voltage				
18.c	80% voltage				
19	Minimum permissible starting Voltage (Volts) 85% of rated voltage upto 110KW , 80% above 110kw				
20	Starting time with minimum permissible voltage/80%/ 100%/ 110%				

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20.a	Without driven equipment coupled				
20.b	With driven equipment coupled				
21	Safe stall time with 100% ,110% & 80% of rated voltage				
21.a	From hot condition				
21.b	From cold condition				
22	Torques :				
22.a	Starting torque at min. permissible voltage(kg-mtr.)/ rated voltage				
22.b	Pull up torque at rated voltage				
22.c	Pull out torque				
22.d	Min accelerating torque (kg.m) available at lowest permissible starting voltage should be 10% of rated torque				
22.e	Rated torque (kg.m)				
23	Stator winding resistance per phase (ohms at 20 Deg.C.)				
24	GD2 value of motors				
25	No of permissible successive starts when motor is in hot condition				
26	Locked Rotor KVA Input				
27	Locked Rotor KVA/KW				

SIGNATURE: SEAL:

28	Vibration limit :Velocity (mm/s)				
29	Noise level limit (dBA)				
C.	**CONSTRUCTIONAL FEATURES**				
1.	Stator winding insulation				
1.a	Class & Type (minimum155 F				
1.b	Winding Insulation Process				
1.c	Tropicalised (Yes/No)				
1.d	Temperature rise over specified maximum ambient temperature of 50 deg C				
1.e	Method of temperature measurement				
1.f	Stator winding connection				
2	Main Terminal Box				
2.a	Type				
2.b	Location(viewed from NDE side)				
2.c	Entry of cables(bottom/side)				

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2.d	Recommended cable size(To be matched with cable size envisaged by owner)				
2.e	Fault level (MVA),Fault level duration(sec)				
2.f	Cable glands & lugs details (shall be suitable for power cable recommended by motor vendor (vendor scope)				
3	Type of DE/NDE Bearing				
4	Motor Paint shade	RAL 5012 Blue	RAL 5012 Blue	RAL 5012 Blue	
5	Weight of				
5.a	Motor stator (KG)				
5.b	Motor Rotor (KG)				
5.c	Total weight (KG)				
D.	List of accessories.				
1.	Space Heaters (Nos./Power in watts/supply voltage) for motor 30KW and above				
2.	Terminal Box for Space Heater (Yes/No)				
3.	Speed switch (Yes/No) No of contacts and contact ratings of speed switch				

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TO BE FILLED & ATTACHED ALONG WITH TECHNICAL OFFER
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4.	Insulation of bearing (Yes/No)				
5.	Noise reducer(Yes/No)				
6.	Grounding pads				
6.a	No and size on motor body				
6.b	Nos on terminal Box				
7.	Any other fitments				
E.	**List of curves. (All curves to be attached along with offer)**				
1.	Torque speed characteristic of the motor (enclosed yes / No)				
2.	Thermal withstand characteristic ((enclosed yes / No)				
3.	Starting. current Vs. Time ((enclosed yes / No)				
4.	Starting. current Vs speed (enclosed yes / No)				
5.	P.F. and Effi. Vs Load (enclosed yes / No)				

SIGNATURE: SEAL:

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(incomplete filling of data sheet liable to rejection of offer)

Project Name: _____ Enq/NIT No_____(Vendor to fill and submit along with offer)

IMPORTANT LT MOTOR DATA SHEET FOR SLURRY PUMPS

S. NO.	LT MOTORS	1 Mill Circuit pump Motor	2 Agitator Motor	3 Gravimetric Feeder Motor	4 Inching Motor
A.	**GENERAL**				
1.	Quantity	4	2	2	2
2.	Motor Manufacturer & Country of origin.				
3.	Motor type				
B.	**DESIGN AND PERFORMANCE DATA**				
1.	Frame size				
2.	Type of duty	S1	S1	S1	
3.	Type of enclosure / Method of cooling/ Degree of protection				
4.	Applicable standard to which motor generally conforms				
5.	Efficiency IE3 of IS 12615 or above (vendor to fill up efficiency here				
6.a	Whether motor is flame proof	NO	NO	NO	
6.b	If yes, the gas group to which it conforms as per IS:2148	N.A	N.A	N.A	

SIGNATURE: SEAL:

TO BE FILLED & ATTACHED ALONG WITH TECHNICAL OFFER
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7	Type of mounting				
8	Direction of rotation as viewed from DE END				
9	Standard continuous rating at 40 deg.C. Ambient temp. as per Indian Standard (KW)				
10	Derated rating for specified normal condition i.e. 50 deg. C ambient temperature (KW)				
11	Maximum continuous load demand of driven equipment in KW				
12	Rated Voltage (volts)	415	415	415	
13	Permissible variation of :				
13.a	Voltage (Volts)				
13.b	Frequency (Hz) (+3% to -5%)- vendor to specify				
13.c	Combined voltage and frequency 10% -vendor to specify				
14	Rated speed in RPM (at rated voltage and frequency)				
15	At rated Voltage and frequency:				
15.a	Full load current				

SIGNATURE: SEAL:

15.b	No load current				
16	Power Factor at				
16.a	100%/75%/50% load				
16.b	NO load				
16.c	Starting.				
17	Efficiency at rated voltage and frequency,				
17.a	100% load				
17.b	75% load				
17.c	50% load				
18	Starting current (amps) at				
18.a	100 % voltage				
18.b	85% voltage				
18.c	80% voltage				
19	Minimum permissible starting Voltage (Volts) 85% of rated voltage upto 110KW , 80% above 110kw				
20	Starting time with minimum permissible voltage/80%/ 100%/ 110%				

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20.a	Without driven equipment coupled				
20.b	With driven equipment coupled				
21	Safe stall time with 100% ,110% & 80% of rated voltage				
21.a	From hot condition				
21.b	From cold condition				
22	Torques :				
22.a	Starting torque at min. permissible voltage(kg-mtr.)/ rated voltage				
22.b	Pull up torque at rated voltage				
22.c	Pull out torque				
22.d	Min accelerating torque (kg.m) available at lowest permissible starting voltage should be 10% of rated torque				
22.e	Rated torque (kg.m)				
23	Stator winding resistance per phase (ohms at 20 Deg.C.)				
24	GD2 value of motors				
25	No of permissible successive starts when motor is in hot condition				
26	Locked Rotor KVA Input				
27	Locked Rotor KVA/KW				

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28	Vibration limit :Velocity (mm/s)				
29	Noise level limit (dBA)				
C.	**CONSTRUCTIONAL FEATURES**				
1.	Stator winding insulation				
1.a	Class & Type (minimum155 F				
1.b	Winding Insulation Process				
1.c	Tropicalised (Yes/No)				
1.d	Temperature rise over specified maximum ambient temperature of 50 deg C				
1.e	Method of temperature measurement				
1.f	Stator winding connection				
2	Main Terminal Box				
2.a	Type				
2.b	Location(viewed from NDE side)				
2.c	Entry of cables(bottom/side)				

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2.d	Recommended cable size(To be matched with cable size envisaged by owner)				
2.e	Fault level (MVA),Fault level duration(sec)				
2.f	Cable glands & lugs details (shall be suitable for power cable recommended by motor vendor (vendor scope)				
3	Type of DE/NDE Bearing				
4	Motor Paint shade	RAL 5012 Blue	RAL 5012 Blue	RAL 5012 Blue	
5	Weight of				
5.a	Motor stator (KG)				
5.b	Motor Rotor (KG)				
5.c	Total weight (KG)				
D.	List of accessories.				
1.	Space Heaters (Nos./Power in watts/supply voltage) for motor 30KW and above				
2.	Terminal Box for Space Heater (Yes/No)				
3.	Speed switch (Yes/No) No of contacts and contact ratings of speed switch				

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4.	Insulation of bearing (Yes/No)				
5.	Noise reducer(Yes/No)				
6.	Grounding pads				
6.a	No and size on motor body				
6.b	Nos on terminal Box				
7.	Any other fitments				
E.	**List of curves. (All curves to be attached along with offer)**				
1.	Torque speed characteristic of the motor (enclosed yes / No)				
2.	Thermal withstand characteristic ((enclosed yes / No)				
3.	Starting. current Vs. Time ((enclosed yes / No)				
4.	Starting. current Vs speed (enclosed yes / No)				
5.	P.F. and Effi. Vs Load (enclosed yes / No)				

SIGNATURE: SEAL:

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