

Enqslno	Materialcode	Description	Lot no	Qty	Unit	Dely dt	Destination	Bidder Response
3	RFW008350001	COMPLETE AGITATOR (SIDE ENTRY) FOR ABSORBER TANK(RECTANGULAR) WITH ALL ACCESSORIES. ABSORBER TANK SIZE:13.9M WIDTH X 7.9M DIAMETER X 5.5M HEIGHT. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	6	ST	24-May-21	Stores/Site Office/Bhilai	
7	RFW008540001	IMPELLER ASSEMBLY FOR ABSORBER AGITATOR (2NO. OF EACH TYPE AND SIZE) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	30-Dec-22	Stores/BAP Ranipet	
8	RFW008540002	BEARING ASSEMBLY FOR ABSORBER AGITATOR(2NO. OF EACH TYPE AND SIZE) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	30-Dec-22	Stores/BAP Ranipet	
9	RFW008540003	MOTOR FOR ABSORBER AGITATOR AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	30-Dec-22	Stores/BAP Ranipet	
10	RFW008540004	COMPLETE BELT AND PULLEYS(IF APPLICABLE) / COUPLING BETWEEN MOTOR AND GEAR BOX	1	2	ST	30-Dec-22	Stores/BAP Ranipet	
11	RFW008540005	GEAR BOX ASSEMBLY (IF APPLICABLE) FOR AB SORBER AGITATOR AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	30-Dec-22	Stores/BAP Ranipet	
12	RFW008540006	AGITATOR SHAFT ASSEMBLY FOR ABSORBER AGITATOR. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	2	ST	30-Dec-22	Stores/BAP Ranipet	
13	RFW008540007	SHAFT SEAL FOR ABSORBER AGITATOR. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	2	ST	30-Dec-22	Stores/BAP Ranipet	
14	RFW008540008	COMPLETE ABSORBER AGITATOR ASSEMBLY. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	30-Dec-22	Stores/BAP Ranipet	
35	RFW009520001	SUPERVISION OF E&C(1ST VISIT = 7 WORKING DAYS) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	24-May-21	Stores/Site office/Bhilai	
36	RFW009520002	SUPERVISION OF E&C (2ND VISIT= 7 WORKING DAYS) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	1	ST	24-May-21	Stores/Site Office/Bhilai	

Enq sno	Material code	Item Description	Qty	Unit	Unit rate	Total rate
3	RFW008350001	COMPLETE AGITATOR (SIDE ENTRY) FOR ABSORBER TANK(RECTANGULAR) WITH ALL ACCESSORIES. ABSORBER TANK SIZE:13.9M WIDTH X 7.9M DIAMETER X 5.5M HEIGHT. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	6	ST		
7	RFW008540001	IMPELLER ASSEMBLY FOR ABSORBER AGITATOR (2NO. OF EACH TYPE AND SIZE) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		
8	RFW008540002	BEARING ASSEMBLY FOR ABSORBER AGITATOR(2NO. OF EACH TYPE AND SIZE) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		
9	RFW008540003	MOTOR FOR ABSORBER AGITATOR AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		
10	RFW008540004	COMPLETE BELT AND PULLEYS(IF APPLICABLE) / COUPLING BETWEEN MOTOR AND GEAR BOX	2	ST		
11	RFW008540005	GEAR BOX ASSEMBLY (IF APPLICABLE) FOR AB SORBER AGITATOR AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		
12	RFW008540006	AGITATOR SHAFT ASSEMBLY FOR ABSORBER AGITATOR. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	2	ST		
13	RFW008540007	SHAFT SEAL FOR ABSORBER AGITATOR. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	2	ST		
14	RFW008540008	COMPLETE ABSORBER AGITATOR ASSEMBLY. AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		
35	RFW009520001	SUPERVISION OF E&C(1ST VISIT = 7 WORKING DAYS) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		
36	RFW009520002	SUPERVISION OF E&C (2ND VISIT= 7 WORKING DAYS) AS PER SPEC FGD:AGITATORS:R00, BHILAI:FGD:AGITATORS:R00 & AGITATORS:QR-3K:BHILAI.	1	ST		



QUALIFYING REQUIREMENTS FOR AGITATORS OF NSPCL BHILAI (2X250MW)

AGITATORS:QR-3K:BHILAI

ANNEXURE- 3K : Qualifying Requirements for Agitators

The following terminology shall be followed for 3K Document:

- a) Bidder means BHEL
- b) Bidder's sub-vendor means Agitator Manufacturer.
- c) Employer or owner means NTPC

Agitator Vendor shall meet the below qualification requirement of NTPC .

NTPC CLAUSE NO	DESCRIPTION			
4.01.00	The Bidder / Bidder's sub-vendor(s) is required to meet the provenness criteria and/or qualification requirement for critical equipments, auxiliaries, systems and bought out items as per criteria stipulated below			
4.01.01	Agitators for the Wet Limestone based Flue Gas Desulphurisation (FGD) System offered by the Bidder shall be only from such manufacturer(s) who has previously designed (either by itself or under collaboration / licensing agreement), manufactured / got manufactured the respective equipment(s) of the type, application and minimum equipment rating as stipulated below such that the respective equipment(s) should have been in successful operation in at least one (1) plant for a period not less than one(1) year.			
	Type and Rating for Qualification			
	Name of Equipment	Type of Equipment	Application	Equipment Rating
	Agitators	Horizontal	Wet Limestone based FGD application in Coal fired power plant	Agitator rating not less than that supplied for 500 MW or higher size unit for similar application
4.01.03	A JV / Subsidiary Company formed for manufacturing and supply of equipment(s) as listed at clause no. 4.01.01 above in India, shall also be considered qualified for manufacturing such equipment(s), provided that it has a valid collaboration or licensing agreement for design, engineering, manufacturing of such equipment(s) in India with a qualified equipment manufacturer who meets the requirements stipulated at clause 4.01.01 above (or the technology provider of the qualified equipment manufacturer) for the respective equipment(s). Before taking up the manufacturing of such equipment(s), the bidder/ his sub-vendor(s) must create /have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system for such equipment(s). Further, in such a case, such qualified equipment manufacturers should have, directly or indirectly through its holding company/ subsidiary company, at least 26%			



QUALIFYING REQUIREMENTS FOR AGITATORS OF NSPCL BHILAI (2X250MW)

AGITATORS:QR-3K:BHILAI

	equity participation in the Indian Joint Venture Company/ Subsidiary Company, which shall be maintained for a lock-in period of seven (7) years from the date of incorporation of such Joint Venture/ Subsidiary or upto the end of defect liability period of the contract, whichever is later
4.01.06	In case the Bidder or the proposed sub-vendor is not manufacturer of proven Agitators as per clause 4.01.01(f) above but is a manufacturer of Agitators for similar process/duty application in petrochemical or metals and mining industry, the Bidder or the proposed sub-vendor shall also be considered qualified for manufacturing Agitators, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Agitators in India with such manufacturer who meets the requirements stipulated at clause 4.01.01(f) above for the Agitators. Before taking up the manufacturing of such equipment, the bidder/ his sub-vendor must create /have created manufacturing facilities at his works as per collaborator's /licenser's design, manufacturing and quality control system for such equipments
04.01.08	Before taking up the manufacturing of such equipment(s) as per clause 4.01.02, 4.01.03, 4.01.06 above, the Bidder / its sub vendor(s) must create (or should have created) manufacturing and testing facilities at its works as per Collaborator / licenser's design, manufacturing and quality control system for such equipments duly certified by the Collaborator / licensor. Further, the Collaborator / Licensor shall provide (or should have provided) all design, design calculation, manufacturing drawings and must provide (or should have provided) technical and quality surveillance assistance and supervision during manufacturing, erection, testing, commissioning of equipments.
04.01.09	Bidder shall offer and supply only the type of the above equipment(s) for which it, itself or the manufacturer / Collaborator(s) / Licenser(s) proposed by the Bidder for the above equipment(s) is qualified.
04.01.10	The Employer reserves the right to fully satisfy himself regarding capability and capacity of Bidder / its sub-vendor(s) and the proposed arrangement and may prescribe additional requirement before allowing manufacture of the equipment listed above for this contract.
	Note to clause 4.01.01 : Whenever the term 'coal fired' is appearing above, "Coal" shall be deemed to also include bituminous coal/brown coal/Anthracite Coal/lignite.

**FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE
FOR
LOT-2 PROJECTS
BIDDING DOCUMENT NO. CS-0011-109(2)-9**

Bidder's Name and Address:

To
Contract Services-I
NTPC Limited
Noida-201301

Summary of Critical Equipment indicated under clause 4.01.00, sub-section-I, Part-A of Section-VI.

Equipment Name	Sub-Vendor Name	Collaborator's Name, if applicable	Seeking Qualification as per clause..... Sub-Section-I, Part-A of Section-VI
Booster Fans			*4.01.01 / *4.01.02 / *4.01.03
*Slurry Recirculation Pumps			*4.01.01 / *4.01.03 / *4.01.07
Oxidation Blowers			*4.01.01 / *4.01.03 / *4.01.04
Wet limestone Grinding mills			*4.01.01 / *4.01.03 / *4.01.05 (i) / 4.01.05 (ii)
Slurry Pumps			*4.01.01 / *4.01.03
Agitators			*4.01.01 / *4.01.03 / *4.01.06
Vacuum Belt filters			*4.01.01 / *4.01.03

Note : *Strike-off whichever is not applicable.

Signature of authorized signatory.....

1. If qualification sought as per clause 4.01.01, sub-section-I-A, Part-A of Section-VI then the details of the sub vendor (manufacturer) shall be filled by the bidder in the format A to G.
2. If the qualification sought as per the clause 4.01.02, sub-section-I-A, Part-A of Section-VI, then the details of proposed sub vendor (i.e manufacturer of such equipment for at least *195/*250/*500/*660 MW unit rating) shall be filled individually by the bidder in the format A and the details of collaborator who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI shall also be filled by the bidder in the format A separately. Further, in case of qualification vide clause 4.01.02, sub-section-I-A, Part-A of Section-VI a copy of valid ongoing collaboration and technology transfer agreement for design, engineering, manufacturing, supply of such equipment in India with the collaborator who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI shall also be furnished.
3. If the qualification sought as per the clause 4.01.03, sub-section-I-A, Part-A of Section-VI then the details of JV/Subsidiary Company formed for manufacturing of such equipment in India shall be furnished individually for each equipment by the bidder such as,
 - i) Copy of document of incorporation of JV/Subsidiary company in India
 - ii) Copy of valid ongoing collaboration and technology transfer agreement for design, engineering, manufacturing, supply of such equipment in India with the collaborator who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI.
 - iii) Copy of document of at least 26% equity participation of qualified equipment manufacturer in the Indian JV company/subsidiary company directly or indirectly through its holding company /Subsidiary company, which shall be maintained for a lock -in period of seven (7) years from the date of incorporation of such JV/subsidiary or up to the end of defect liability period of the contract which ever is later.

Further, the details of collaborator or technology provider of the qualified equipment manufacturer who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI shall be filled by the Bidder in the format A to G (format given at 1.00.00). In addition to that, the sub vendor along with the Indian JV company/subsidiary company, qualified equipment manufacturer and its holding company/subsidiary company as applicable shall furnish the Letter of Support as per the format enclosed at Annexure-I.

*** strike out whichever is not applicable.**

- 1.00.00 (Applicable for Bidder/his sub vendors seeking qualification as per clause no. 4.01.01, Sub section-I, Part-A of Section-VI. Bidder shall furnish the required data only for those equipments / auxiliaries which are proposed to be sourced under this route.)

Signature of authorized signatory.....

We, hereby furnish the data on proveness criteria for critical equipment, auxiliaries, systems and Bought Out Items such as ~~Booster Fans, *Slurry Recirculation Pumps, Oxidation Blowers, Wet Limestone Grinding Mills, Slurry Pumps, & Agitators~~ which have been designed (either by self manufacturer or under valid ongoing collaboration and technology transfer agreement), *manufactured/ *got manufactured and supplied by us /Manufacturer (or manufactured/ got manufactured & supplied by our proposed sub-vendors) and these are in successful operation in at least one (1) plant for a period not less than one year reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder. The details of type and minimum equipment rating of such equipment are given below :

- A. ~~For Booster Fans:~~** We declare that, ~~we/our Sub Vendor, have designed (either by itself or under collaboration / licensing agreement),*manufactured/*got manufactured and supplied at least one (1) number of Booster Fan of required flow & head of the offered Booster Fan with Fan Speed 900 rpm (maximum), Axial type with variable pitch control working in a Coal fired power plant and which has been in successful operation for minimum one(1) year reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder, as per the details furnished below:~~

Sl. No.	Description	Reference Work
1.	Name of the reference plant & location:	
2.	Client name and his address:	
3.	No. of units and capacity in MW of unit:	
4.	Whether equipment operating in a coal fired power plant	*Yes/*No
5.	Name of equipment manufacturer & address:	

~~Signature of authorized signatory.....~~

F. Agitators: We declare that, we/our Sub-Vendor, have designed (either by itself or under collaboration / licensing agreement),*manufactured/*got manufactured and supplied at least one (1) number of Agitators with rating not less than that supplied for 500 MW or higher size unit for similar application, Vertical/Horizontal type working in Wet Limestone based FGD application in Coal fired power plant and which has been in successful operation for minimum one(1) year reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder, as per the details furnished below::

Sl. No.	Description	Reference Work
1.	Name of the reference plant & location:	
2.	Client name and his address:	
3.	No. of units and capacity in MW of unit:	
4.	Whether power plant is coal fired	-*Yes/*No
5.	Whether operating in a Wet Limestone based FGD application in coal fired power plant	-*Yes/*No
6.	Name of equipment manufacturer & address:	
7.	Date of commission of the equipments:	
8.	Model no. of the equipment:	
9.	Brief Technical particulars of the equipments:	
10.	Agitators supplied for	MW unit size

Signature of authorized signatory.....

Sl. No.	Description	Reference Work
11.	Whether the equipment(s) are in successful operation in atleast one(01) plant for a period not less than one(01) year reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder	-*Yes/*No
12.	Flue gas Desulphurization system details:	*Technical extract/ *paper letter/ *email/ *Drwaing from user or *contract document or *scheme or *any document in public domain enclosed at annexure....to Attachment-3K
13.	Scope of Work:	*Letter of Award or *Contract or *P.O. enclosed at Annexure.....to Attachment-3K
14.	Performance details:	*Certificate/*Letter/*E-mail from End user enclosed at Annexure.....to Attachment-3K

*** Strike off whichever is not applicable.**

Signature of authorized signatory.....

***2.00.00** **Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.02, Sub section-I, Part-A of Section-VI.**

2.01.00 ~~We, hereby confirm that we/our sub vendors are a regular manufacturer of Booster Fan for units of atleast *195/*250/*500/*660 MW rating and the details in this regard on provenness criteria as per clause **4.01.01**, sub section I, Part A, Section VI are hereby furnished below:~~

~~***Bidder to strike off whichever is not applicable.**~~

~~**(Data to be furnished in line with format given at 1.00.00 of this Attachment)**~~

2.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the aforesaid equipment as per 2.01.00 above who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of proveneness criteria for these equipment which are in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below. We further confirm that we/ our sub vendor(s) have created manufacturing and testing facilities at our/ their works as per collaborator's/ Licensor's design, manufacturing & quality control system for these equipment(s)/ Auxiliary(ies).

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

Signature of authorized signatory.....

***3.00.00** **Applicable for JV Company/Subsidiary Company meeting provenness criteria as per clause no. 4.01.01, Sub section-IA, Part-A of Section-VI.**

3.01.00 We, hereby confirm that JV company/ Subsidiary company (Strike off whichever is not applicable) formed for manufacturing and supply of equipment(s) (~~*Booster Fans, *Slurry Recirculation Pumps, *Oxidation Blowers, *Wet Limestone Grinding Mills, *Slurry Pumps, *Agitators, *Vacuum Belt Filters~~) has a valid ongoing collaboration and technology transfer agreement for design, engineering, manufacturing of such equipment(s) in India with a qualified equipment manufacturer who meets the requirements stipulated at clause 4.01.01 of sub-section-I, Part-A, Section VI of bidding documents (or the technology provider of the qualified equipment manufacturer). Further, in such a case, such qualified equipment manufacturers is having, directly or indirectly through its holding company/subsidiary company, at least 26% equity participation in the Indian Joint Venture Company/subsidiary company, which shall be maintained for a lock-in period of seven (7) years from the date of incorporation of such Joint Venture / Subsidiary or up to the end of defect liability period of the contract, whichever is later. Before taking up the manufacturing of such equipment(s) (~~*Booster Fans, *Slurry Recirculation Pumps, *Oxidation Blowers, *Wet Limestone Grinding Mills, *Slurry Pumps, *Agitators, *Vacuum Belt Filters~~), we/ our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

We further confirm that details in respect of collaboration / valid licencing agreement for the aforesaid equipment(s) (~~*Booster Fans, *Slurry Recirculation Pumps, *Oxidation Blowers, *Wet Limestone Grinding Mills, *Slurry Pumps, *Agitators, *Vacuum Belt Filters~~) who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI for are enclosed at **Annexure-.....** to this Attachment.

Signature of authorized signatory.....

~~*6.00.00 Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.05 (ii), Sub section I, Part A of Section VI.~~

~~6.01.00 We, hereby confirm that *we/*our sub vendors have designed, manufactured & supplied dry Grinding Ball Tube mills for at least 500 MW pulverized coal fired power plant. (Details of references enclosed at Annexure)~~

~~(Data to be furnished in line with format given at 1.00.00 of this Attachment))~~

~~6.02.00 We further confirm that details in respect of valid licencing agreement for the Wet Grinding Mills between *us/*our sub vendors, as per 6.01.00 above, and with qualified Wet Grinding Mill manufacturer, who meets the requirement stipulated at clause 4.01.01, sub section I, Part A, Section VI are enclosed at Annexure to this Attachment. The data in respect of proveneness criteria for the qualified Wet Grinding Mill manufacturer, which is in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below.~~

~~(Data to be furnished in line with format given at 1.00.00 of this Attachment)~~

~~We further confirm that *we/*our sub vendors shall provide an extended warranty of three (3) years for the Wet Limestone Grinding Mills~~

~~(Data to be furnished in line with format given at 1.00.00 of this Attachment)~~

~~Signature of authorized signatory.....~~

***7.00.00** **Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.06, Sub section-I, Part-A of Section-VI.**

7.01.00 We, hereby confirm that *we/*our sub-vendors is a manufacturer of a manufacturer of Agitators for similar process/duty application in petrochemical or metals and mining industry. (Details of references enclosed at Annexure)

(Data to be furnished in line with format given at 1.00.00 of this Attachment))

7.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the Agitator between *us/*our sub-vendors, as per 6.01.00 above, and with qualified Agitator manufacturer, who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of provenness criteria for the qualified Agitator manufacturer, which is in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below.

We further confirm that before taking up the manufacturing of such Agitator, *we/ *our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

Signature of authorized signatory.....

Technical Information of Agitators for NSPCL BHILAI (2 X 250 MW)
REF: BHILAI:FGD:AGITATORS

PROJECT INFORMATION:		
a.	Owner	NSPCL
b.	Capacity (MW)	2X250 MW
c.	Buyer	BHEL, Ranipet
c.	Process/Application	Flue Gas Desulphurization

PROJECT LOCATION		
a.	Country	India
b.	State/Division	Bhilai
c.	District	Chhattisgarh

TECHNICAL INFORMATION FOR SIZING OF ABSORBER AGITATORS

1	Absorber Details	
1.1	Tank shape	Rectangular
1.2	Dimension of tank (m)	13.9W X 7.9D X 5.5H
1.3	Capacity of tank (in m3)	604 m ³
1.4	No. of absorber tank	1 no.
1.5	Total no. of tanks for two units	2 nos.
2	Agitator selection data	
2.1	Type	Marine Propeller – Horizontal Type (Side Entry)
2.2	Medium to be handled	Gypsum slurry
2.3	Seal Type	Mechanical seal (emergency flush start)required in case of side entry
2.4	Duty	continuous
2.5	Agitator location	Outdoor
2.6	Operation	Whenever Recirculation Pumps are not running or during blackout condition or when FGD is under Maintenance.
2.7	MOC of Agitator	
i.	Impeller blade	Alloy 926 or better material
ii.	Impeller Hub	Alloy 926 or better material
iii.	Shaft	Alloy 926 or better material
iv.	Fasteners in wetted parts or In Tank fasteners	Alloy 926 or better material
v.	Fasteners in Non Wetted	GI fastener (40 μ plated) / SS
vi.	Mounting base	Alloy 926/C276 (Wetted parts)
vii.	Tank Nozzle (for inserting agitator) with Flange	Carbon Steel with 2mm C276 lining inside the pipe and on the flange face- for absorber agitator
viii.	Flush pipe for Start up with flange	FRP or Alloy 926 or Alloy 59 (Material has to be selected based on flushing velocity)
ix.	Tank nozzle with flange (for Flush Pipe)	Carbon Steel with 2mm C276 lining inside the pipe and on the flange face
x.	Agitator Support Leg	Carbon Steel
2.8	Minimum liquid level in the tank (m)	4.2
2.9	Normal liquid level in the tank (m)	5.5
2.10	Maximum liquid level in the tank (m)	6.5
2.11	Quantity of Agitators per Tank	2 No's + 1 warehouse spare
2.12	Total Quantity for two units	6
3	Slurry Analysis	
3.1	Maximum solid particle size	200 mesh (74 μ)
3.2	Normal solid particle size, d50	325 mesh (44 μ)
3.3	Solid to be handled	gypsum along with Limestone & other impurities
3.4	Chloride concentration	max 25000 ppm
3.5	Hardness of particle	5-7 mohs scale
3.6	Slurry concentration, wt%	30%
3.7	Sp. Gravity of slurry	1.213
3.8	Sp. Gravity of Lime Stone & Gypsum	2.32(avg)
3.9	Viscosity of Slurry	10 cP
3.10	pH	4 to 8
3.11	SiO ₂ Content	4 to 6 g/l
3.12	Temperature	Normal -62 deg C; Design-70 deg C.
4	Power loading for auxiliary power consumption	Not applicable

Project: NSPCL BHILAI FGD (2x250 MW)							
Cont No: G211, G212		Rev 00		Rev 01		Rev 02	
		Sign	Date	Sign	Date	Sign	Date
Engineer	Vidya V	Sd	02.06.20				
Reviewer	PNR/ACR	Sd	02.06.20				
Approver	RSB	Sd	02.06.20				