

Corrigendum - 7 dated 04/12/2024 to CPC Tender No. BHEL/CPC/UKI/PRE-BID BOP/25/050

Corrigendum - 7 dated 04/12/2024 to CPC Tender No. BHEL/CPC/UKI/PRE-BID BOP/25/050 for the work of “PRE-BID TIE-UP/ MOU FOR EXECUTION OF BOP PACKAGES ON EPC BASIS AT 1X800 MW ULTRA SUPER CRITICAL UNIT No. # 7 TO BE CONSTRUCTED ON ASH DYKE AREA AT UKAI TPS, GSECL, GUJARAT”.

A) Time Extension: Clause No. 1.0 Salient Features of NIT in NOTICE INVITING TENDER is revised as below:

Sl. No.	Clause No.	Existing in Tender	Extended vide Corrigendum - 4	Extended vide Corrigendum - 5	Revised As
1	Sl. No. v) DUE DATE & TIME OF OFFER SUBMISSION.	Date: 25/11/2024, Time: 10:00 Hrs	Date: 02/12/2024, Time: 10:00 Hrs	Date: 05/12/2024, Time: 10:00 Hrs	Date: 06/12/2024, Time: 15:00 Hrs
2	Sl. No. vi) OPENING OF TENDER	Date: 25/11/2024, Time: 16:30 Hrs	Date: 02/12/2024, Time: 16:30 Hrs	Date: 05/12/2024, Time: 16:30 Hrs	Date: 06/12/2024, Time: 16:30 Hrs

B) Modification in NIT: - Sl. No. ‘B’ of PRE QUALIFYING REQUIREMENTS (PQR) (Annexure – 1) of NIT is revised as below;

Sl. No.	Clause No.	Existing clause in Tender	Revised clause
1.	Sl. No. ‘B’ of PRE QUALIFYING REQUIREMENTS (PQR) (Annexure – 1) of NIT	TECHNICAL CRITERIA: (i) PQR FOR BOP ON EPC BASIS AS PER CEA GUIDELINES (REFER CEA GUIDELINES ATTACHED AS ANNEXURE - 23) OR (ii) THE BIDDER CAN SUBMIT THE BID IN INDIVIDUAL CAPACITY & SHOULD HAVE EXECUTED IN THE LAST 10 YEARS INDUSTRIAL PROJECTS ON EPC BASIS ALONG WITH CIVIL WORKS IN THE AREA OF POWER, STEEL, OIL & GAS, PETRO-CHEMICAL, FERTILIZER AND / OR ANY OTHER PROCESS INDUSTRY WITH THE TOTAL VALUE OF SUCH PROJECTS BEING INR 10000 MILLION OR MORE. AT LEAST ONE OF SUCH PROJECTS SHOULD HAVE A CONTRACT VALUE OF INR 4000 MILLION OR MORE. THESE PROJECTS SHALL BE IN SUCCESSFUL OPERATION FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR PRIOR TO THE DATE OF TECHNO-COMMERCIAL BID OPENING.	TECHNICAL CRITERIA: (i) PQR FOR BOP ON EPC BASIS AS PER CEA GUIDELINES (REFER CEA GUIDELINES ATTACHED AS ANNEXURE - 23) OR (ii) THE BIDDER CAN SUBMIT THE BID IN INDIVIDUAL CAPACITY & SHOULD HAVE EXECUTED IN THE LAST 10 YEARS INDUSTRIAL PROJECTS ON EPC BASIS ALONG WITH CIVIL WORKS IN THE AREA OF POWER, STEEL, OIL & GAS, PETRO-CHEMICAL, FERTILIZER AND / OR ANY OTHER PROCESS INDUSTRY WITH THE TOTAL VALUE OF SUCH PROJECTS BEING INR 10000 MILLION OR MORE. AT LEAST ONE OF SUCH PROJECTS SHOULD HAVE A CONTRACT VALUE OF INR 4000 MILLION OR MORE. THESE PROJECTS SHALL BE IN SUCCESSFUL OPERATION FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR PRIOR TO THE DATE OF TECHNO-COMMERCIAL BID OPENING.

Corrigendum - 7 dated 04/12/2024 to CPC Tender No. BHEL/CPC/UKI/PRE-BID BOP/25/050

		<p>NOTE: IN CASE, BIDDER ALONE DOES NOT MEET THE PRE-QUALIFYING TECHNICAL CRITERIA MENTIONED UNDER B(ii) ABOVE, BIDDER MAY UTILIZE THE EXPERIENCE OF ITS PARENT/ SUBSIDIARY COMPANY ALONG WITH ITS OWN EXPERIENCE, SUBJECT TO FOLLOWINGS:</p> <ol style="list-style-type: none"> THE PARENT COMPANY SHALL HAVE A CONTROLLING STAKE OF $\geq 50\%$ IN THE SUBSIDIARY COMPANY (AS PER FORMAT-1). THE PARENT COMPANY/ SUBSIDIARY COMPANY OF WHICH EXPERIENCE IS BEING UTILIZED FOR BIDDING SHALL SUBMIT SECURITY DEPOSIT (SD) EQUIVALENT TO 1% OF THE TOTAL CONTRACT VALUE. THE PARENT/ SUBSIDIARY COMPANY AND BIDDER SHALL PROVIDE AN UNDERTAKING THAT THEY ARE JOINTLY OR SEVERALLY RESPONSIBLE FOR SUCCESSFUL PERFORMANCE OF THE CONTRACT (AS PER FORMAT-2). PARENT COMPANY/ SUBSIDIARY COMPANY OF WHICH EXPERIENCE IS BEING USED FOR BIDDING, CANNOT PARTICIPATE AS A 'STANDALONE BIDDER' OR AS A 'CONSORTIUM BIDDER'. 	<p>NOTE: IN CASE, BIDDER ALONE DOES NOT MEET THE PRE-QUALIFYING TECHNICAL CRITERIA MENTIONED UNDER B(ii) ABOVE, BIDDER MAY UTILIZE THE EXPERIENCE OF ITS PARENT/ SUBSIDIARY COMPANY ALONG WITH ITS OWN EXPERIENCE, SUBJECT TO FOLLOWINGS:</p> <ol style="list-style-type: none"> THE PARENT COMPANY SHALL HAVE A CONTROLLING STAKE OF $\geq 50\%$ IN THE SUBSIDIARY COMPANY (AS PER FORMAT-1). THE PARENT COMPANY/ SUBSIDIARY COMPANY OF WHICH EXPERIENCE IS BEING UTILIZED FOR BIDDING SHALL SUBMIT SECURITY DEPOSIT (SD) EQUIVALENT TO 1% OF THE TOTAL CONTRACT VALUE. THE PARENT/ SUBSIDIARY COMPANY AND BIDDER SHALL PROVIDE AN UNDERTAKING THAT THEY ARE JOINTLY OR SEVERALLY RESPONSIBLE FOR SUCCESSFUL PERFORMANCE OF THE CONTRACT (AS PER FORMAT-2). PARENT COMPANY/ SUBSIDIARY COMPANY OF WHICH EXPERIENCE IS BEING USED FOR BIDDING, CANNOT PARTICIPATE AS A 'STANDALONE BIDDER' OR AS A 'CONSORTIUM BIDDER'. <p align="center">OR</p> <p>(iii) THE BIDDER SHOULD HAVE EXECUTED INFRASTRUCTURE PROJECT (S) (INDIVIDUALLY OR AS A LEAD PARTNER IN CASE OF CONSORTIUM) WHICH INCLUDES ENGINEERING, PROCUREMENT AND CONSTRUCTION OF INFRASTRUCTURE WORKS AND HAVING TURNOVER OF NOT LESS THAN INR 1500 CRORES DURING THE LAST FINANCIAL YEAR. SUCH BIDDER SHOULD ALSO HAVE EXECUTED ERECTION, TESTING AND COMMISSIONING OF MAJOR BOP WORKS COMPRISING OF COAL HANDLING PLANT, ASH HANDLING PLANT, COOLING TOWER, CHIMNEY (OR) BTG WORKS COMPRISING OF SG STG & ESP IN A MINIMUM ONE (1) NO. COAL BASED/LIGNITE BASED POWER PLANT OF AT LEAST 500 MW UNIT CAPACITY WHICH IS IN SUCCESSFUL OPERATION FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR PRIOR TO THE DATE OF TECHNO- COMMERCIAL BID OPENING.</p>
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C) TECHNICAL CONDITIONS OF CONTRACT (TCC): Clause 11 of TCC are revised as below:

Sl. No.	Clause No.	Existing clause in Tender	Revised vide Corrigendum – 6 dated 03/12/2024	Revised clause
1.	Clause No. 11 of Technical Conditions of Contract (TCC)	CONTRACT PRICE FORMAT: Price bid submitted by Bidder shall comprise of the Civil, E&C and supply of equipment's along with mandatory Spares. Bidder shall quote their price as per the "Price Schedule Formats" in line with Owner (GSECL) bid document. (refer SCHEDULE- 11 (BOQ), COMMERCIAL SPECIFICATION, Volume-1, Part-A, Section-4).	CONTRACT PRICE FORMAT: Price bid submitted by Bidder shall comprise of the Civil, E&C and supply of equipment's along with mandatory Spares. Bidder shall quote their price as per the "Price Schedule Formats" in line with Owner (GSECL) bid document. (refer SCHEDULE- 11 (BOQ), COMMERCIAL SPECIFICATION, Volume-1, Part-A, Section-4). Bidder to consider the prices of attached Itemized list of BOP mandatory spares list (Highlighted in Orange Colour) applicable for subject tender. Bidder to Confirm that all the BOP Mandatory Spares items have been considered by them in their offer.	CONTRACT PRICE FORMAT Price bid submitted by Bidder shall comprise of the Civil, E&C and supply of equipment's along with mandatory Spares. Bidder shall quote their price as per the "Price Schedule Formats" in line with Owner (GSECL) bid document. (refer SCHEDULE- 11 (BOQ), COMMERCIAL SPECIFICATION, Volume-1, Part-A, Section-4). Bidder to consider the prices of attached revised R01 dated 04.12.2024 itemized list of BOP mandatory spares list (Highlighted in Orange Colour) applicable for subject tender. Bidder to Confirm that all the BOP Mandatory Spares items have been considered by them in their offer.

Note:

- 1) All other terms and conditions against this NIT shall remain unchanged.**
- 2) This corrigendum is to be submitted duly signed and stamped along with the Techno-commercial bid (Part- I).**

**for BHARAT HEAVY ELECTRICALS LTD
Sr. Manager/ SCT- CPC**

REV01 dtd 04.12.2024

GSECL-1X800 MW ULTRA SUPER CRITICAL UNIT ON ASH DYKE AREA UKAI UNIT No #7			
Volume V Annexure 3 : LIST OF MANDATORY SPARES (Refer Orange highlighted Rows for BOP Spares)			
TENDER SPECIFICATIONS (Refer Orange highlighted Rows for BOP Spares)			
ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1	2.00.00	MECHANICAL	
2	2.01.00	Steam Generator & Auxiliaries	
3	1.0	PRESSURE PARTS	
4	1.1	ECONOMISER	
5	1.1.1	Straight Tube	500 Mtr. of each size, type, thickness & material or 5% of installed qty whichever is higher
6	1.1.2	Economizer Hanger Tube	100% of installed quantity
7	1.1.3	Coil end bends	20 Nos. of each size, type, thickness, radius & material.
8	1.1.4	Coil Saddle Clamp/Alignment band / Male & Female sliding Spacers / Sliding Hooks /Straight Shields for boiler tubes & Profile Shields for Boiler tube bends/ Tube clamps (Applicability of spares will be discussed during detail engineering)	50 nos of each type, size, material 5% of population tube clamps of each type and size
9	1.2	WATER WALL/EVAPORATOR/ FURNACE SECOND PASS	
10	1.2.1	Spiral tube	1500 m of each type, thickness, size and material or 5% of installed qty whichever is higher
11	1.2.2	Straight tube (First pass & second pass)	600 m of each type, thickness, size and material or 5% of installed qty whichever is higher
12	1.2.3	Furnace Corner Bends for spiral water walls	5% of installed qty or 100 nos. for each size, type, thickness, radius and material whichever is higher
13	1.2.4	Water Wall Furnace Top & Bottom side panel of burner panel (Baby panel)	1 nos panel for each corner top & bottom (= total 8 nos panels)
14	1.2.5	Tube bends panel for LRSB/Wall Blower (For first pass & second pass both)	10 nos for each size, type, thickness, radius and material
15	1.2.6	Furnace screen tube (if applicable)	500 m including all types, size & Material
16	1.2.7	Second pass screen tubes	500 m including all types, size & Material
17	1.2.8	Forged Elbow and Other Forged item forming integral part of pressure parts	50 nos each type & size
18	1.2.9	Bends for Burner elevation	25 nos of each type, size, thickness, radius & material
19	1.2.10	Bends for S-panel top, bottom and centre portion	50 nos of each type, size, thickness, radius & material
20	1.2.11	Profile shield bends & straight shields for water wall screen tube bends	50 nos of each type, size, thickness, radius & material
21	1.2.12	Bends for water wall screen tube	50 nos of each type, size, thickness, radius & material
22	1.3	INTERMEDIATE TEMPERATURE SUPERHEATER (ITSH) / PLATEN SUPERHEATER	
23	1.3.1	Straight tube of 8-10 m length	500 m of each size, thickness, type & material
24	1.3.2	Bends	20 nos. of each type size, thickness, radius, type and material
25	1.3.3	Male & Female couplings spacers	100 Sets (One set means one male & one female coupler)
26	1.3.4	Straight tube above roof	125 mtrs of each size, thickness, type & material
27	1.3.5	Bends below roof	50 nos of each size, thickness, type, radius & material
28	1.3.6	Bends which are integral part of header (above roof)	50 nos of each size, thickness, type, radius & material
29	1.3.7	Male female connectors, male female couplings spacers and alignment bands (Applicability of alignment band will be discussed during detail engineering)	50% of total population of each type and size
30	1.3.8	Spacer tube for super heaters	100 mtr each type & size
31	1.3.9	Spacer tube bends for super heaters	05 nos each type & size
32	1.3.10	Spacer tube connectors & stoppers	100% of installed quantity
33	1.3.11	Alignment Band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/ Forged items forming integral part of pressure parts/ Expansion Bellow (Applicability of spares will be discussed during detail engineering)	50 nos. of each type, size, material
34	1.3.12	Acromat Tube with acromat:	10% of each size, type & thickness
35	1.3.13	Dissimilar weld joint spot pcs	50 Nos. of each size, thickness, type, radius & material
36	1.4	HIGH TEMPERATURE SUPERHEATER (HTSH) / FINAL SUPERHEATER	
37	1.4.1	Straight tube of 8-10 m length	500 mtr. of each size, thickness, type & material
38	1.4.2	Bends	20 nos. of each size, thickness, type, radius & material
39	1.4.3	Male & Female couplings spacers	100 Sets (One set means one male & one female coupler)
40	1.4.4	Dissimilar weld joint spot pcs.:	50 Nos. of each size, thickness, type, radius & material
41	1.4.5	Straight tube above roof	150 mtrs of each size, thickness, type & material
42	1.4.6	Bends below roof	50 nos of each size, thickness, type, radius & material

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
43	1.4.7	Bends which are integral part of header (above roof)	50 nos of each size, thickness,type, radius & material
44	1.4.8	Male female connectors, male female couplings spacers and alignment bands (Applicability of alignment band will be discussed during detail engineering)	50% of total population of each type and size
45	1.4.9	Spacer tube for super heaters:	100 mtr each type & size
46	1.4.10	Spacer tube bends for super heaters	05 nos each type & size
47	1.4.11	Spacer tube connectors & stoppers	100% of installed quantity (if applicable)
48	1.4.12	Alignment Band / Male & Female sliding Spacers / Male and Female connectors/Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/ Forged items forming integral part of pressure parts/ Expansion Bellow (Applicability of spares will be discussed during detailed engineering)	50 nos. of each type, size, material
49	1.5	REHEATER & LTRH	
50	1.5.1	Straight tube of 8-10 m length	300 m of each size, thickness, type & material
51	1.5.2	Coil Bends & Header Joint Bends	50 Nos. of each size, thickness, type, radius & material
52	1.5.3	Male & Female couplings spacer	50 Sets (One set means one male & one female coupler)
53	1.5.4	Dissimilar weld joint spot pcs	50 Nos. of each size, thickness, type, radius & material
54	1.5.5	Coil saddle clamp/ alignment Band / Male & Female sliding Spacers / Male and Female connectors/ Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/Swage tube/ Forged items forming integral part of pressure parts/ Expansion bellow- (Applicability of spares will be discussed during detail engineering)	100 nos. of each type, size, material
55	1.6	REHEATER	
56	1.6.1	Straight tube of 8-10 m length	200 mtr. of each size, thickness, type & material
57	1.6.2	Straight tube above roof	50 m of each size, thickness, type & material
58	1.6.3	Bends below roof	50 nos. of each size, thickness, type, radius & material (including offset bend)
59	1.6.4	Bends which are integral part of header (above roof)	40 Nos. of each size, thickness, radius, type and material
60	1.6.5	Male & Female connectors, male female couplings spacers and alignment bands (Applicability of alignment band will be discussed during detail engineering)	50% of total population of each type and size
61	1.6.6	Dissimilar weld joint spot pcs.	50 Nos. of each size, thickness, type, radius & material
62	1.6.7	Acromat tube with acomat	10% of each type, size, thickness and radius
63	1.6.8	Spacer Tube for Superheaters	100 mtr each type and size
64	1.6.9	Spacer Tube connectors and stoppers	100% of population of one boiler (if applicable)
65	1.6.10	Alignment Band / Male & Female sliding Spacers / Male and Female connectors/Sliding Hooks/ Shields for boiler tubes & Profile Shields for Boiler tube bends/ Swage tube/Forged items forming integral part of pressure parts/ Expansion Bellow (Applicability of spares will be discussed during detailed engineering)	50 nos. of each type,size, material
66	1.6.11	Spacer tube bends for reheaters:	05 nos each type & size
67	1.7	Boiler roof and steam cooled wall	
68	1.7.1	Straight tube of 8-10 mtr length	200 mtrs of each size, thickness, type & material
69	1.7.2	Bends	70 nos of each size, thickness, type, radius and material (including offset bend around SH & RH)
70	2.0	SPARES FOR HEADER	
71	2.1	Water wall Header (All)	
72	2.1.1	Hand hole plate with cap	2 nos of each type & size
73	2.1.2	Yoke plate with fasteners	2 sets* of each type & size
74	2.2	Spares for Superheater Header (All)	
75	2.2.1	Hand hole plate with cap	2 nos of each type & size
76	2.2.2	Radiographic plug	4 nos of each type & size
77	2.3	Spares for Reheater Header (All)	
78	2.3.1	Hand hole plate assembly	2 nos of each type & size
79	2.3.2	Radiographic plug	4 nos of each type & size
80	3.0	SUPERHEATER / REHEATER ATTEMPERATION SYSTEM	
81	3.1	Complete nozzle assembly for SH	1 set
82	3.2	SH Block Valve Spares	(Note: 1 set means complete replacement for one valve)
83	3.2.1	Gland packing set	5 sets of each type
84	3.2.2	Pressure seal gasket	3 sets of each type
85	3.2.3	Stem	2 sets of each type
86	3.2.4	Valve plug	2 sets of each type
87	3.3	SH Spray Control Valve	Set means all spares required to complete assembly of one valve.
88	3.3.1	Valves spares excluding body, yoke & actuator (required for complete assembly of one valve)	2 set (includes gland packing, body gaskets, o-rings, bonnet seal, disc, spindle, valve seat, bush, guide bush, coupling nut, operating nuts, coupler set, Seat Ring, Cage, Plug /Stem assly, Balance seal, Balance Cylinder, Plug Basket, Packing Spacer etc)
89	3.3.2	Complete superheater spray control valve	1 nos. of each size & type
90	3.3.3	Gland packings set	5 sets *
91	3.3.4	Pressure seal gasket	3 sets
92	3.3.5	Stem	1 no
93	3.3.6	Plug valve	2 nos
94	3.4	SH Spray Isolating Valves (MO & Manual)	Set means all spares required to complete assembly of one valve.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
95	3.4.1	Gland Packing set	200% of installed qty
96	3.4.2	Gasket set	2 set for each valve
97	3.4.3	Bonnet ring/Pressure seal	1 nos for each valve
98	3.4.4	Bonnet	1 nos for each type & size
99	3.4.5	Gland bush	Min. 1 no for each size, type & rating
100	3.4.6	Stem	1 nos for each type & size or 20% of installed qty whichever is higher
101	3.4.7	Disc	1 nos for each type & size or 50% of installed qty whichever is higher
102	3.4.8	Actuator brass Bush	2 nos for each type & size
103	3.5	Complete nozzle assembly for RH	1 set
104	3.6	RH Block Valve	(Note: 1 set means complete replacement for one valve)
105	3.6.1	Gland packing set	5 sets of each type*
106	3.6.2	Pressure seal gasket	3 sets of each type
107	3.6.3	Stem	2 sets of each type
108	3.6.4	Valve plug	2 sets of each type
109	3.7	RH Spray Control Valve	Set means all spares required to complete assembly of one valve.
110	3.7.1	Valves spares excluding body, yoke & actuator (required for complete assembly of one valve)	2 set (includes gland packing, body gaskets, o-rings, bonnet seal, disc, spindle, valve seat, bush, guide bush, coupling nut, operating nuts, coupler set, Seat Ring, Cage, Plug /Stem assly, Balance seal, Balance Cylinder, Plug Basket, Packing Spacer etc)
111	3.7.2	Complete superheater spray control valve	1 nos. of each size & type
112	3.7.3	Gland packings set	5 sets *
113	3.7.4	Pressure seal gasket	3 sets
114	3.7.5	Stem	1 no
115	3.7.6	Plug valve	2 nos
116	3.8	RH Spray Isolating Valves (MO & Manual)	Set means all spares required to complete assembly of one valve.
117	3.8.1	Gland Packing set	200% of installed qty
118	3.8.2	Gasket set	2 set for each valve
119	3.8.3	Bonnet ring/Pressure seal	1 nos for each valve
120	3.8.4	Gland bush	Min. 1 no for each size, type & rating
121	3.8.5	Bonnet	1 nos for each type & size
122	3.8.6	Stem	1 nos for each type & size or 20% of installed qty whichever is higher
123	3.8.7	Disc	1 nos for each type & size or 50% of installed qty whichever is higher
124	3.8.8	Actuator brass Bush	2 nos for each type & size
125	4.0	Steam Generator startup System	
126	4.1	Boiler Re-circulating Pump	
127	4.1.1	Complete pump & motor assembly	1 set*
128	4.1.2	Motor stator winding	1 set
129	4.1.3	Journal bearing	1 sets *
130	4.1.4	Thrust bearing	1 sets *
131	4.1.5	Casing wear rings	2 sets *
132	4.1.6	Impeller wear rings	2 sets *
133	4.1.7	Set of gaskets (All gaskets including heat exchanger)	2 sets*
134	4.1.8	Set of 'O' rings	2 sets*
135	4.1.9	Gland packings	2 sets*
136	4.1.10	Motor heat exchanger	1 set *
137	4.1.11	Thermocouples	1 sets*
138	4.1.12	Temperature switches	1 sets*
139	4.1.13	Pressure switches	1 sets*
140	4.1.14	Flow switches	1 sets*
141	4.1.15	Special tools & tackles for maintenance of BRP	1 set*
142		*One set means one complete replacement for one equipment	
143	4.2	Boiler Mixing Sphere	
144	4.2.1	Metallic Gasket	6 nos
145	4.3	Boiler Separator Level Control Valves, MEFCV	
146	4.3.1	Separator Level Control Valves	100% spares (includes Seat Ring with basket, Plug disc, plug guide bush, Balance seal, Balance Cylinder, Plug-stem assly, Plug Basket, Gaskets set, Gland Packing set, Packing Spacer) plus 6 sets of complete consumables (i.e. Gasket set & Gland packing set, etc required for assly of 1 valve)
147	4.3.2	MEFCV	100% spares (includes Seat Ring, Cage, Plug /Stem assly, Balance seal, Balance Cylinder, Plug Basket, Gaskets set, Gland Packing set, Packing Spacer) plus 4 sets of complete consumables (i.e. Gasket set & Gland packing set, etc required for assly of 1 valve)
148	4.3.3	Hydraulic Power System Unit	Below mentioned list is not exhaustive and List of Spares recommended by OEM for the same shall be submitted during Pre-Bid.
149	a)	Hydraulic Pump	1 nos
150	b)	Bladder-Accumulator assembly with 2 sets washers	1 set
151	c)	Manual Hydraulic Pump with accessories	1 set
152	d)	Set of all type of installed O-rings & gaskets	2 sets
153	e)	Oil supply & return Hoses with end connections	1 set
154	f)	Solenoids for valve units	1 of each type & rating
155	g)	Oil barrel	1 barrel (approx.. 200 ltr)
156	h)	Level gauge for oil tank	1 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
157	j)	Nitrogen filing kit with pressure pump and other accessories (Portable kit)	1 set
158	4.4	Boiler Feed Control Valves	100% spares (includes Seat Ring, Cage, Plug /Stem assly, Balance seal, Balance Cylinder, Plug Basket, Gaskets set, Gland Packing set, Packing Spacer) plus 3 sets of Gasket set & Gland packing
159	4.5	Valves for start-up system (Manual/MOV)	
160	4.5.1	Isolating Valves (Manual)	
161	a)	Gland Packing set	300% of installed qty
162	b)	Gasket set	1 set for each valve
163	c)	Bonnet ring/Pressure seal	1 nos for each valve
164	d)	Gland bush	Min. 1 no for each size, type & rating
165	e)	Bonnet	1 nos for each type & size
166	f)	Stem	1 nos for each type & size
167	g)	Disc	1 nos for each type & size
168	h)	Brass Bush if applicable	2 nos for each type & size
169	i)	Operating Nut set	1 set
170	4.5.2	Isolating Valves (Motor Operating Valve)	
171	a)	Gland Packing set	300% of installed qty
172	b)	Gasket set	2 set for each valve
173	c)	Bonnet ring/Pressure seal	1 nos for each valve
174	d)	Gland bush	Min. 1 no for each size, type & rating
175	e)	Bonnet	1 nos for each type & size
176	f)	Stem	1 nos for each type & size
177	g)	Disc	1 nos for each type & size
178	h)	Actuator brass Bush	2 nos for each type & size
179	i)	Operating Nut set	1 set
180	4.6	Condensate Transfer Pump & accessories	
181	a)	Impeller of Pump	1 No.
182	b)	Impeller Wear Ring	2 Nos.
183	c)	Casing Wear Ring	2 Nos.
184	d)	Pump Gaskets and packings	3 sets*
185	e)	Pump Mechanical Seal	3 sets*
186	f)	Suction & Discharge expansion bellow	2 Nos. of each type, size
187	g)	Pump shaft	1 nos
188	h)	Coupling bush	2 nos
189	i)	Oil level indicator	2 nos
190	j)	Pump bearings	2 sets*
191			* One set means one complete replacement for one equipment.
192	5.0	Boiler main steam stop valve & its bypass	
193	5.1	Boiler main stop valve assly excluding Valve body	1 no.
194	5.2	Set of gland packings	5 sets* for each MSSV & its bypass valves (each size & type)
195	5.3	Bonnet/Pressure seal gaskets	5 nos
196	5.4	Bonnet	1 nos for each type & size
197	5.5	Stem	1 nos. of each type
198	5.6	Disc	1 nos. of each type
199	5.7	Seal rings & bonnet ring	3 set.
200	5.8	Fasteners	2 sets for each type of valve
201	5.9	Actuators	1 nos. of each type (1 no. for main valve and 1 no. for bypass valve)
202	5.10	Packing ring set & Gaskets	3 set* for each type of valve
203	5.11	Set of Disc, stem, seat ring, seal ring & bonnet ring MSSV bypass valve	100% of installed qty
204	5.12	Brass bush for actuator	2 sets for each MSSV & its bypass
205		Note: 1 set means complete replacement for one valve	
206	6.0	Boiler Feed Check Valve	
207	6.1	Body seat rings	1 no.
208	6.2	Flap	1 no.
209	6.3	Pressure seal ring	2 nos
210	6.4	Gland Packings	5 sets*
211	6.5	Fasteners	4 sets
212		Note: 1 set means complete replacement for one valve	
213	7.0	Start-up vent valve	
214	7.1	Stem	4 nos
215	7.2	Disc	4 nos
216	7.3	Body seat rings	5 sets*
217	7.4	Gland packings	5 sets*
218	7.5	Pressure seal rings & bonnet seal	3 nos
219	7.6	Fasteners	5 sets*
220	7.7	Brass bush for Actuator	3 nos
221	7.8	Bonnet	2 nos
222		Note: 1 set means complete replacement for one valve	
223	8.0	Fans	
224	8.1	Special tools & tackles, platforms, bearing pullers, etc for each type of fan maintenance work	1 set for each ID, FD & PA fan

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
225	8.2	ID Fans	
226	8.2.1	Fan rotor assembly (including impeller & shaft)	1 no.
227	a)	Fan bearings	2 set
228	b)	ID fan motor bearings	1 set
229	8.2.2	Spares for blade bearing Assembly	
230	a)	Bearings	2 sets
231	b)	'O' rings	2 sets
232	c)	Bushes	2 sets
233	d)	Metallic rings	2 sets
234	e)	Intermediate piece (if applicable)	2 sets
235	f)	Thrust Plate	1 set
236	8.2.3	Lube Oil / Hydraulic Oil system	
237	a)	Pump assembly	1 nos. of each type
238	b)	Pressure regulator	3 nos.
239	c)	Filters	8 nos.
240	d)	Coupling between oil pump & motor	4 nos.
241	e)	Coolers	1 set
242	8.2.4	Fan Blades	2 sets
243	8.2.5	Coupling between Fan & Motor	2 sets
244	8.2.6	Hydraulic servomotor	1 no.
245	8.2.7	ID fan impeller liner	2 sets
246	8.2.8	ID fan casing liner	1 set
247	8.2.9	Fan main bearing housing assembly	1 set
248	8.3	FD Fans	
249	8.3.1	Fan rotor assembly (including impeller & shaft)	1 no.
250	a)	Fan bearings	2 set
251	b)	FD fan motor bearings	1 set
252	8.3.2	Spares for blade bearing Assembly	
253	a)	Bearings	2 sets
254	b)	'O' rings	2 sets
255	c)	Bushes	2 sets
256	d)	Metallic rings	2 sets
257	e)	Intermediate piece (if applicable)	2 sets
258	f)	Thrust Plate	1 set
259	8.3.3	Lube Oil / Hydraulic Oil system	
260	a)	Pump assembly	1 nos. of each type
261	b)	Pressure regulator	3 nos.
262	c)	Filters	8 nos.
263	d)	Coupling between oil pump & motor	4 nos.
264	e)	Hydraulic servomotor	1 no.
265	f)	Coolers	1 set
266	8.3.4	Fan Blade	2 sets
267	8.3.5	Coupling between Fan & Motor	2 sets
268	8.3.6	Fan main bearing housing assembly	1 set
269	8.4	PA Fan	
270	8.4.1	Fan rotor assembly (including impeller & shaft)	1 no.
271	8.4.2	Fan Bearings	2 set
272	8.4.3	PA fan motor bearings	1 set
273	8.4.4	Coupling between fan & motor	2 no.
274	8.4.5	Fan blades	2 set
275	8.4.6	Spares for blade bearing Assembly	
276	a)	Bushes	2 set
277	b)	Bearings	2 set
278	c)	'O' rings	2 set
279	d)	Metallic rings	2 set
280	e)	Intermediate piece (if applicable)	2 set
281	8.4.7	Lube Oil / Hydraulic Oil System	
282	a)	Pump assembly	1 nos. of each type
283	b)	Pressure regulator	3 set
284	c)	Filters	8 set
285	d)	Pump & motor coupling	2 set
286	e)	Hydraulic Servomotor	1 no.
287	f)	Coolers	1 set
288	8.4.8	Fan main bearing housing assembly	1 set
289		Note: One set means one complete replacement for one fan	
290	8.5	Scanner Air Fan	
291	8.5.1	Fan assembly (excluding fan body)	1 No. of each type
292			
293	8.6	Seal Air Fan	
294	8.6.1	Complete Fan assembly (excluding fan body)	2 sets*
295	8.6.2	Bearings & seals	2 sets*
296	8.6.3	Motor bearing	1 set*
297	8.6.4	Motor	1 no.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
298		* One set means complete replacement of one fan	
299	9.0	Air and Gas Ducting	
300	9.1	Expansion joint for hot air duct (PA)	1 set consisting of each type size and material
301	9.2	Expansion joint for hot air duct (SA)	1 set consisting of each type size and material
302	9.3	Expansion joint for gas duct	1 set consisting of each type, size and material
303		Note: Set means requirement for complete replacement for Unit	
304	10.0	Dampers (air and flue gas ducting) including Hot air duct up to coal mill	
305	10.1	Bearings	1 set consisting of each type size and material
306	10.2	Shaft	1 set consisting of each type size and material
307	10.3	Seals (if any) (except hot air gates)	1 set consisting of each type, size and material
308	10.4	Seals for Hot Air Gates	100% of installed qty.
309		Note: Set means requirement for complete replacement for Unit	
310	11.0	Coal Pulverizers	
311	11.1	Grinding elements:	
312	11.1.1	Rollers/grinding balls.	10 sets*
313	11.1.2	Bull ring segments / bowl / rings	6 sets*
314	11.1.3	Gear box internals (except bearings & seals)	2 sets*
315	11.1.4	Complete Gear Box	2 sets*
316	11.1.5	Bearings for mills & motors	5 sets* for each
317	11.1.6	Seals & rings for gear box	4 sets*
318	11.1.7	Seals & rings for mills	5 sets*
319	11.1.8	Pulverisers motor bearing	4 sets
320	11.1.9	Mill Liners with brackets & fasteners	10 sets*
321	11.1.10	Discharge valve assembly	4 sets*
322	11.1.11	Multiport outlet & liners	6 sets
323	11.1.12	Mill main shaft/yoke	1 no.
324	11.1.13	Complete set of Journal Shaft assly	2 sets (1 set = 3 assly)
325	11.1.14	Hydraulic loading cylinder	3 nos
326	11.1.15	Filter Cartridges	16 nos
327	11.1.16	Actuators (pneumatic/hydraulic) (complete)	1 no. of each type
328	11.1.17	Actuators (pneumatic/hydraulic) spare kits	1 set of each type*
329	11.1.18	Mill Bottom	2 nos
330			
331	11.1.19	Bowl hub assembly/Ring seat	2 no.
332	11.1.20	Journal Shaft Oil seals and O-rings	8 sets*
333	11.1.21	Journal Head Assembly O Ring	8 sets*
334	11.1.22	Vane Wheel segment (01 set= 08 nos of vane wheel segment i.e. 1 Mill Qty)	08 Set
335	11.1.23	Air Restriction Ring	08 set
336	11.1.24	Scraper Assembly	08 Nos.
337	11.1.25	Scraper Spring & shaft/pin	16 nos each
338	11.2	Lube Oil System	
339	11.2.1	Pressure regulator	3 nos
340	11.2.2	Filters	100% of installed quantity
341	11.2.3	Pump & Motor coupling	4 nos
342	11.2.4	Oil cooler assy for coal mills	2 nos
343	11.2.5	Bearings for gear box	4 sets*
344	11.2.6	Complete pump assembly	3 sets
345		Note:* One set means one complete replacement of one mill	
346	11.3	Dynamic Classifier	
347	11.3.1	Classifier rotor with rotor & rotor support	6 sets.
348	11.3.2	Drive assly for dynamic classifier	4 nos.
349	11.3.3	Bearings for drive assly	10 set
350	11.3.4	Gearbox with driving sheave	4 set
351	11.3.5	Driven sheave	1 nos
352	11.3.6	Center feed pipe upper, mid & lower of dynamic classifier assly	02 nos each
353	11.3.7	Dynamic Classifier Rotor Assembly Split oil seals and O-rings	8 sets*
354	11.4	Special tools & tackles for maintenance of Coal Mill & RC Feeders	1 set*
355	12.0	Coal Feeder	
356	12.1	Belt	10 sets*
357	12.2	Belt drive reducer	3 nos*
358	12.3	Clean out conveyor reducer	2 nos*
359	12.4	Counter assembly (complete)	2 set
360	12.5	Head pulley assembly (complete)	1 no.
361	12.6	Weight sensing system	4 no.
362	12.7	Weighing roll	3 set
363	12.8	Weighing spare roller assembly	3 no.
364	12.9	Drag link assembly	3 no.
365	12.10	Tension roll	2 no.
366	12.11	Worm	3 no.
367	12.12	Worm wheel	3 no.
368	12.13	Feeder gate	3 no.
369	12.14	Actuator	2 no.
370	12.15	Rotary type feeder (if applicable)	2 set
371	12.16	Rotating tables	2 set
372	12.17	Divider plates	1 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
373	12.18	Speed reduction arrangement	1 set
374	12.19	Speed sensing device	1 set
375	12.20	Complete RC Feeder gearbox with motor	4 sets
376	12.21	Feeder discharge chute	03 nos
377	12.22	Drive motor	3 sets
378		Note: * One set means one complete replacement of one feeder	
379	13.0	Coal Burners / Coal Pipe Bends	(** One set means one complete replacement for a unit)
380	13.1	Coal compartment assembly	1 set**
381	13.2	Inter air compartments	1 set**
382	13.3	End air compartment	1 set**
383	13.4	Coal nozzle castings	1 set**
384	13.5	Adjustable coal nozzle tips	1 set**
385	13.6	Coal pipe bends with liners (except 1 st Coal Bend)	50% of population for each type size, thickness & radius for unit.
386	13.7	First Coal Bend (inlet to furnace)	1 set**
387	13.8	Victualic couplings	20 nos. of each size
388	13.9	Victualic coupling gasket	50 nos. of each size
389	13.10	Ventury Set/Orifice Set	1 set**
390	13.11	On line fuel measurement facility for accurate measurement of coal mass flow rate/air fuel ratio (Mill Dirty Air Flow & Clean Air Flow Test) in each pulverized fuel (PF) pipe for coal pulveriser. The equipment shall comprise of sensors working on micro wave technology. (Latest version)	1 set
391	13.12	SOFA air compartment assly with nozzle	1 set**
392	13.13	Straight Coal Pipe	20% of installed qty
393	14.0	Regenerative Air Preheater	(*Set means one complete replacement each for APH.)
394	14.1	APH Main drive Motor complete with gearbox	1 assembly for one unit
395	14.2	Support Bearing	2 No. each APH
396	14.3	Guide Bearing	2 No. each APH
397	14.4	Lubricating system of support & Guide Brg	
398	14.1.1	Pump assembly	2 no. each for APH
399	14.1.2	Pressure regulator	1 no. each for APH
400	14.1.3	Filters	4 nos each for APH
401	14.1.4	Pump Motor coupling	2 nos each for APH
402	14.1.5	Coolers	1 set each for APH
403	14.5	Radial seals	2 sets*
404	14.6	Axial Seals	2 sets*
405	14.7	Circumferential or bypass seals	2 sets*
406	14.8	Rotor post seals	2 sets*
407	14.9	Bearings & seals for air motor	2 sets*
408	14.10	Speed Reducer	
409	14.10.1	Complete Speed reducer	1 set*
410	14.10.2	Speed reducer Gears, pinions & shaft	1 set*
411	14.10.3	Speed reducer Bearings	1 set*
412	14.10.4	Speed reducer Seals & gaskets	2 sets*
413	14.10.5	Speed reducer Clutch assembly	2 nos. each for APH
414	14.11	Fluid coupling	1 nos. of each for APH
415	14.12	Other couplings with inserts & fasteners	1 nos. each for APH
416	14.13	Solenoid valves	2 nos. of each for APH
417	14.14	Spare kit for rotor stoppage alarm	One(1) set
418	14.15	Spare kit for fire sensing device	One(1) set
419	14.16	Spare for cleaning device (APH)	
420	14.16.1	Worm & worm wheel for gear reducer	1 set*
421	14.16.2	Coupling	1 set
422	14.16.3	Bearing & seals for speed reducer	1 set*
423	14.16.4	Bearing for cleaning device	2 sets*
424	14.17	Bushings for worm gear reducer	1 set*
425	14.18	Actuators (pneumatic/hydraulic)	One of each type
426	14.19	Cold, intermediate & hot end baskets	
427	14.19.1	Hot End	2 set each type and size*
428	14.19.2	Intermediate	1 set each type and size*
429	14.19.3	Cold	1 set each type and size*
430	14.20	Rack & pinion assembly	1 set
431	14.21	Motor Bearing	2 set each for APH
432	14.22	Special Tools & Tackles for APH maintenance work (i.e. complete set of hydraulic jack, torque wrench, bearing pullers, etc and as per OEM recommendation)	1 set
433	15.0	Hangers/Supports for Critical Piping (SG, TG & Power Cycle Piping)	
434	15.1	Hanger/Support for Piping	1 set of each type (Bidder has to submit the list during pre-bid)
435	16.0	Fuel Oil System	
436	16.1	Light Oil gun assly	25% of installation
437	16.2	Oil gun nozzle (with back plate, mixing plate & cap-nut)	5 sets**
438	16.3	Copper Gaskets	250 nos
439	16.4	Oil gun flexible hoses (including for guide pipe, airline)	50% of installed qty
440	16.5	Spray Plate	5 nos
441	16.6	Light oil pump (each for LDO transfer & pressurizing)	
442	16.6.1	Complete cartridge assembly	1 sets*

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPERATING/DEFINITION
443	16.6.2	Mech. Seals	2 sets*
444	16.6.3	Set of O-Rings & seals	2 sets*
445	16.6.4	Set of all types of bushes & sleeves	2 sets*
446	16.6.5	Set of gaskets	2 sets*
447	16.6.6	Duplex Filter	1 set*
448		* One set means one complete replacement of one pump	
449		** One set means one complete replacement of Unit	
450	16.7	Burner isolating vales/Line isolating valves/Control Valves	
451	16.7.1	Isolation Valves	One(1) where total quantity of particular type and size of valve is less than or equal to 10 or Two(2) where total quantity of particular type and size of valve is more than to 10
452	16.7.2	Gaskets for above valves	10 nos for each type & size, rating
453	16.7.3	Gland packing for above valves	10 nos for each type & size, rating
454	16.7.4	Steam Trap	Five (5) % of total number of each type and size of trap (in case of fractional quantity lower whole quantity shall be taken min qty.)
455	16.7.5	Control Valves	1 set of complete valve spares except body & yoke for each type & size. (if installed qty <) or 3 set of complete valve spares except body & yoke for each type & size. (if installed qty >= 5 nos)
456	16.8	Pressure Control Valve	1 nos for each type & size, rating
457	16.9	Main oil trip valves	1 nos for each type & size, rating
458	16.10	Atomizing pressure reducing control valve	1 nos for each type & size, rating
459	16.11	Actuators for above all valves	1 nos for each type & size, rating
460	16.12	Temperature Switch	Two(2)
461	16.13	Pump & Motor Bearing	
462	16.13.1	LDO Transfer Pump	2 sets*
463	16.13.2	LDO Pressurizing Pump	2 sets*
464	16.13.3	Drain Oil Pump	2 sets
465	16.14	Pressure gauges	20% of installed qty
466	16.15	Temperature gauges	20% of installed qty
467	16.16	Gland packings for valves	50% each type & size valve
468	16.17	Screw Pump	1 assembly for each type
469	16.18	Plug valves for various sizes	10% of each type & size of installed population
470	16.19	Relief Valve	1 nos of each type, size & rating
471	16.20	Drain oil pump	
472	16.20.1	Complete cartridge assembly	One(1)set
473	16.20.2	Mechanical seals	Two(2)sets
474	16.20.3	Bearing(pump & motor)	One(1)set
475	16.20.4	Set of all type of bushes and sleeve	Two(2)sets
476	16.20.5	Set of 'O' rings and seals	Two(2)sets
477	16.20.6	Set of gaskets	Two(2)sets
478	16.20.7	Relief valve accessories	One(1)set complete
479	16.21	Gear Pumps:	
480	16.21.1	Shaft	1 set for each type & size
481	16.21.2	Bearings	1 set for each type & size
482	16.21.3	Gears	1 set for each type & size
483	16.21.4	Relief Valve	1 set for each type & size
484	16.21.5	Mechanical Seal	1 set for each type & size
485	16.21.6	Packing	2 set for each type & size
486	16.21.7	Suction Heater Heating element	1 No.
487	16.21.8	Mat coil Heater – Heating element	2 sections
488	17.0	HEA Ignitors	
489	17.1	HEA retractor	2 sets*
490	17.2	HEA spark rod	2 sets*
491	17.3	HEA spark tip	3 sets*
492	17.4	HEA exciter	4 nos of each type & rating
493	17.5	Solenoid valves	4 nos of each type & rating
494	17.6	Limit switch	4 nos of each type & rating
495	17.7	Solenoid valve coil	4 nos of each type & rating
496	17.8	HEA spark gap	8 nos
497	17.9	HEA Transformer	8 nos
498	17.10	HEA rectifier	8 nos
499	17.11	HEA inductor	8 nos
500	17.12	Resistor	8 nos of each type & rating
501	17.13	Capacitor	-do-
502	17.14	Electronic PCB Complete Assembly	4 sets*
503		* One set means one complete replacement of one HEA Ignitor	
504	18.0	Soot Blowers System	(*One set means one complete replacement of one valve/Equipment)

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
505	18.1	Complete assembly of water wall deslagger	5 nos
506	18.2	Complete valve assembly for water wall deslagger (Puppet Valve)	20 nos
507	18.3	Water wall deslagger lance tube (SS)	10 nos
508	18.4	Water wall deslagger Sleeve (SS)	40 nos
509	18.5	Bearings & oil seals for Water wall deslaggers	10 sets
510	18.6	Complete assembly of Long retractable soot blower	2 nos. of each type
511	18.7	Complete valve assembly for long retractable soot blower	5 nos
512	18.8	Bearings & oil seals for Long retractable soot blower	4 sets
514	18.9	Complete power pack assembly for Long Retractable soot blower	(One no. for rotary + One no. for transverse)
515	18.10	Spare set of rotary & transverse chain for long retractable soot blowers with spare chain locks	2 nos of each type & size
516	18.11	LRSB lance tube (SS)	5 nos
518	18.12	Reduction gear box & motor for air preheater soot blower oscillation	2 nos. of each type (If separate type & rating of SB are envisaged for primary & secondary APH, then 2 Nos. of each type.)
519	18.13	Complete valve assembly for air preheater soot blower	2 no. of each type (If separate type & rating of SB are envisaged for primary & secondary APH, then 2 Nos. of each type.)
520	18.14	Soot Blowing Pressure Reducing Station	
521	18.14.1	Steam safety valve assembly	
522	a)	Complete safety valve assembly	1 nos
523	b)	Disk	1 nos
524	c)	Stem	1 nos
525	d)	Seat	1 nos
526	e)	Adjacent pins set	1 set (set means for one safety valve)
527	18.14.2	Control valves	
528	a)	Consumables (i.e. Gland packing, Gaskets, seal ring, seat ring, Bonnet seal, etc)	200% of installed quantity for each type & size
529	b)	Valve Disc	100% of installed quantity for each type & size
530	c)	Valve Spindle	50% of installed quantity for each type & size
531	d)	Valve Seat	100% of installed quantity for each type & size
532	e)	Bush	100% of installed quantity for each type & size
533	f)	Guide & Guide Bush	100% of installed quantity for each type & size
534	g)	Actuator with piston rod & seal	20% of installed quantity for each type & size
535	18.14.3	Isolating Valves	
536	a)	Consumables (i.e. Gland packing, Gaskets, seal ring, seat ring, Bonnet seal, etc)	100% of installed quantity of each type & size
537	b)	Valve Disc	100% of installed quantity of each type & size
538	c)	Valve Spindle	50% of installed quantity of each type & size
539	d)	Valve Gland Bush	50% of installed quantity of each type & size
540	e)	Brass Bush for MOV	100% of installed quantity of each type & size
541	f)	Valve Gland Bush	50% of installed quantity of each type & size
542	g)	Operating Nuts	50% of installed quantity of each type & size
543	18.14.4	Spares for rack gear assembly	
544	a)	Set of Gears & shaft (Spur & worm)	10 set of each type & size
545	b)	Rack & pinion	5 set of each type & size
546	18.14.5	Limit switches	2 nos. of each type & ratings.
547	18.14.6	Spiral Wound Gaskets for Soot Blower Puppet Vlv	30 nos
548	18.14.7	Gland Packing for Soot Blowers	50 sets
549	18.14.8	Thermocouples for temp probes	2 nos of each type & size
550	19.0	Safety Valves	1 set special tools & tackles including lapping plate for maintenance of each type of safety valves.
551	19.1	Spares for Steam valves Separator Safety	
552	19.1.1	Complete separator safety valve assembly	2 nos
553	19.1.2	Upper adjusting ring	4 nos
554	19.1.3	Lower adjusting ring	4 nos
555	19.1.4	Locking pin set (Upper & Lower)	10 sets
556	19.1.5	Safety valve disc	8 nos
557	19.1.6	Safety valve seat	8 nos
558	19.1.7	Safety valve stem	6 nos
559	19.1.8	Spring	4 nos
560	19.1.9	Disc Holder	6 nos
561	19.1.10	Valve spindle	6 nos
562	19.1.11	Overlap Coller	6 nos
563	19.1.12	Guide	6 nos
564	19.1.13	Washers	8 nos
565	19.1.14	Gaskets	8 nos
566	19.1.15	Gland packing set	8 sets
567	19.1.16	Dummy Plug Disk/Blank and locking gauges	100% of installed qty
568	19.1.17	Special tools & tackles for maintenance of each type of safety valves. (lapping disc, lapping tool, lapping plate, etc)	1 set
569	19.2	Spares for SH Safety Valves	
570	19.2.1	Complete safety valve assembly	1 nos
571	19.2.2	Upper adjusting ring	2 nos
572	19.2.3	Lower adjusting ring	2 nos
573	19.2.4	Locking pin set (Upper & Lower)	5 sets
574	19.2.5	Safety valve disc	4 nos

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
575	19.2.6	Safety valve seat	4 nos
576	19.2.7	Safety valve stem	2 nos
577	19.2.8	Spring	2 nos
578	19.2.9	Disc Holder	3 nos
579	19.2.10	Valve spindle	2 nos
580	19.2.11	Overlap Coller	2 nos
581	19.2.12	Guide	2 nos
582	19.2.13	Washers	4 nos
583	19.2.14	Gaskets	4 nos
584	19.2.15	Gland packing set	4 sets
585	19.2.16	Dummy Plug Disk/Blank and locking gauges	100% of installed qty
586	19.2.17	Special tools & tackles for maintenance of each type of safety valves. (lapping disc, lapping tool, lapping plate, etc)	1 set
587	19.3	Spares for HRH & CRH Safety Valves	
588	19.3.1	Complete safety valve assembly	HRH: 2 nos of each type;
589	19.3.2	Disc	HRH: 100% of installed quantity
590	19.3.3	Valve spindle	HRH: 50% of installed quantity
591	19.3.4	Set of washers	HRH: 100% of installed quantity
592	19.3.5	Guide	HRH: 50% of installed quantity
593	19.3.6	Set of locking pins	HRH: 100% of installed quantity
594	19.3.7	Upper adjusting ring	HRH: 50% of installed quantity
595	19.3.8	Lower adjusting ring	HRH: 50% of installed quantity
596			CRH: 50% of installed quantity
597	19.3.9	Gaskets	HRH: 100% of installed quantity
598	19.3.10	Gland packing set	HRH: 100% of installed quantity
599	19.3.11	Dummy Plug Disk/Blank and locking gauges	100% of installed qty
600	19.4	Spares for ERV for SH & RH	50% of installed quantity
601	19.4.1	Complete Electromatic relief valve	1 nos of each type
602	19.4.2	Spares for above	
603	a)	Disc for main valve	2 nos of each type
604	b)	Spring for main valve	2 nos of each type
605	c)	Seal ring for main valve	2 nos of each type
606	d)	Seal bushing for main valve	2 nos of each type
607	e)	Disc and stem assembly for pilot valve	2 nos of each type
608	f)	Bushing for pilot valve	2 nos of each type
609	g)	Spring for pilot valve	2 nos of each type
610	h)	Seal ring	2 nos of each type
611	19.4.3	Isolation valve of ERV	2 nos of each type and size.
612	20.0	HP Piping Valves & Drain line Valve (Complete SG, TG & Power Cycle Piping)	
613	20.1	HP Valves of various installed sizes (40NB and below size)	20% of the total population of each type, size and class
614	20.2	HP Valves of various installed sizes (Above 40NB size up to 80NB)	20% of the total population of each type, size, MOC and class OR minimum 2 nos. of each type, size and class whichever is more.
615	20.3	HP Valves of various installed sizes (Above 80NB size up to 125NB)	10% of the total population of each type, size, MOC and class OR minimum 2 nos. of each type, size and class whichever is more.
616	20.4	Valve Spindle	30% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.
617	20.5	Valve Gland Packing	150% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.
618	20.6	Valve Gland Bush/follower	20% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.
619	20.7	Valve Bonnet seal/bonnet ring (For valve size>40NB)	100% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.
620	20.8	Valve Disc	100% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.
621	20.9	Brass Bush for actuator (MOV)	100% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
622	21.0	Low Pressure Piping Valves (Complete SG, TG & Power Cycle Piping)	
623	21.1	Valves	10% of the total population of each type, size and class OR minimum 2 nos. of each type, size and class whichever is more.
624		Note: Complete valve along with Actuators (pneumatic / hydraulic) and all other accessories which are the part of original supply shall be supplied	
625	22.0	Auxiliary Steam Pressure Reducing & Desuperheating System	
626	22.1	High Capacity PRDS System (MS)	
627	22.1.1	Desuperheater liners	1 set*
628	22.1.2	Complete valve assembly Steam pressure reducing cum desuperheating valves	1 set
629	22.1.3	Stem	1 no.
630	22.1.4	Disc	1 no. for each type, size, rating of valve
631	22.1.5	Body seat rings	2 nos. for each type, size and rating of valves
632	22.1.6	Set of Gland packings	200% of installed qty
633	22.1.7	Pressure seal ring	2 nos for each valve
634	22.1.8	Gasket	200% of installed qty
635	22.2	Spray water line control valves	
636	22.2.1	Valve trim including cage, plug, stem, seat rings, guide bushings, stem packing	1 set for each size, type & rating of valves
637	22.3	Low Capacity PRDS System (CRH)	
638	22.3.1	Steam pressure reducing valve	1 no.
639	22.3.2	Stem	1 no.
640	22.3.3	Disc	1 no.
641	22.3.4	Body seat rings	2 nos. for each type/size
642	22.3.5	Gland Packings	2 nos. for each size, type & rating of valves
643	22.3.6	Pressure seal ring	3 nos
644	22.3.7	Gaskets	2 nos
645	22.4	Spray water line control valves	
646	22.4.1	Valve trim including cage, plug, stem, seat rings, guide bushings, stem packing	1 set for each size, type & rating of valves
647	22.4.2	Strainer, Traps & Filters	2 sets (for each type & size)
648	22.4.3	Basket/Element	1 set (for each type & size)
649	22.4.4	O-rings/Gaskets	2 sets (for each type & size)
650	23.0	ESP	
651	23.1	Support insulator	15 nos
652	23.2	Shaft insulator	15 nos
653	23.3	Horizontal Rapping Arrangement	
654	23.3.1	Collecting electrode	2% of the installed quantity in ESP
655	23.3.2	Rapping Shaft (Collecting)	50% of installed qty
656	23.3.3	Plain Bearing	50% of installed qty
657	23.3.4	Set Ring	20% of installed qty
658	23.3.5	Shaft Coupling	40% of installed qty
659	23.3.6	Firm & loos type of shock bar	20% of installed qty
660	23.3.7	Shock Pad	20% of installed qty
661	23.3.8	Shock bar guide for rapping drive & non drive end	10% of installed qty
662	23.3.9	U guide for collecting electrode	20% of installed qty
663	23.3.10	Inner Arm	30% of the installed qty
664	23.3.11	Outer Arm	30% of the installed qty
665	23.3.12	HT Fasteners	30% of the installed qty
666	23.3.13	Rapping Gear box with coupling	20% of installed qty
667	23.3.14	Rapping Motor for gear box	10% of installed qty
668	23.4	Vertical Rapping Arrangement	
669	23.4.1	Emitting electrodes (Type: Wire/Rigid/Multipeak/strip with spike/etc)	20% of the installed quantity in ESP
670	23.4.2	Vertical Shaft	50% of installed qty
671	23.4.3	Plain Bearing	50% of installed qty
672	23.4.4	Pin Wheel Big & Small	30% of installed qty
673	23.4.5	Grip Coupling	30% of installed qty
674	23.4.6	Thrust Bearing & Pad	30% of installed qty
675	23.4.7	Support Bearing	30% of installed qty
676	23.4.8	Adapter Sleeve	30% of installed qty
677	23.4.9	Inner Arm	30% of the installed qty
678	23.4.10	Outer Arm	30% of the installed qty
679	23.4.11	HT Fasteners	30% of the installed qty
680	23.5	Transformer Rectifier Set	2 sets

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
681	23.5.1	High voltage insulator	4 nos
682	23.5.2	Switched and gasket	1 set (One set means one complete replacement of all the TR sets for ESP)
683	23.5.3	Transformer-rectifier set intermitter range controller complete	4 nos.
684	23.5.4	Rapper controller complete	1 no.
685	23.5.5	Electronic Cards	
686	23.5.6	For Rapper Controller Management System	2 set
687	23.5.7	For Transformer Rectifier Controller	2 set
688	23.5.8	Display unit	1 no. of each type
689	23.5.9	Key board	1 no. of each type
690	23.5.10	Hopper Heater	100 Nos.
691	23.5.11	Shaft insulator Heater	10 Nos.
692	23.5.12	Support Insulator Heater	10 Nos.
693	23.5.13	Thermostat for Heaters	10% or Minimum 5Nos.
694	23.5.14	Bearing for Collecting/Emitting Electrodes Rapping Motor's Gear Mechanism	5 Sets each type
695	23.5.15	Hopper Ash Level Measurement/Indicator	
696	23.5.15.1	Complete Unit with probe	4 Sets
697	23.5.15.2	Electronic Cards/Module	2 Nos. each type
698	23.5.15.3	Probe with Cable	2 Nos. each type
699	23.5.16	HV Insulating-cum- Earthing Unit Complete Set with disconnecting Switch	2 Nos.
700	23.5.17	HF Choke	2 Nos.
701	23.5.18	AC Reactor	1 No.
702	23.5.19	Silica Gel Breather	5 Nos.
703	23.5.20	Rectifier Card	2 Nos.
704	23.5.21	DC Shunt Resistance	2 Nos.
705	23.5.22	HV Bushing	4 Nos.
706	23.5.23	Pin Insulator of The Isolating Disconnecting Switch	10 Nos.
707	23.5.24	Dial Gauge Thermometer	2 Nos.
708	23.5.25	ESP Controller Panel	
709	23.5.26	Electronic Controller Complete set	3 Sets
710	23.5.27	Thyristor	6 Nos.
711	23.5.28	Firing Card	4 Nos.
712	23.5.29	Prefab Cable with connector for the Controller	2 Nos. each type
713	23.5.30	CPU Card	5 Nos.
714	23.5.31	I/O Card	5 nos. each type
715	23.5.32	Power Supply Card	2 nos. each type
716	23.5.33	Power Supply Transformer	1 no. each type
717	23.5.34	Synchronous Programmer for Rapping System	2 Nos.
718	23.5.35	Motor-Gear Unit of Synchronous Programmer	5 Nos.
719	23.5.36	HT Voltage Feed Back Sensor	2 Nos.
720	23.5.37	HT Current Feed Back Sensor	2 Nos.
721	24.0	HP Drain Lines & Sampling Lines (Complete SG, TG & Power Cycle Piping)	
722	24.1	High Pressure Drain lines & Sampling Lines	100 mtrs of each size, type, schedule, MOC
723	24.2	Forged Elbows for drain & sampling line	30 nos of each size, type, schedule, MOC
724	25.0	CONTROL VALVE SPARES FOR SG & AUX. BOILER (Except else where mentioned in 2.01.00 SG & Auxiliaries)	
725	25.1	Consumables (i.e. Gland packing, Gaskets, Bonnet seal, etc)	200% of installed quantity for each type & size
726	25.2	Valve Disc	100% of installed quantity for each type & size
727	25.3	Valve Spindle	50% of installed quantity for each type & size
728	25.4	Valve Seat	100% of installed quantity for each type & size
729	25.5	Bush	100% of installed quantity for each type & size
730	25.6	Guide & Guide Bush	100% of installed quantity for each type & size
731	25.7	Actuator with piston rod & seal	20% of installed quantity for each type & size
732	26.0	SADC SYSTEM & BURNER TILTING SPARES	
733	26.1	SADC cylinders	5 sets
734	26.2	Double acting positioner	10% of the population
735	26.3	Airlock valves	10% of the population
736	26.4	Piston seals	30 sets
737	26.5	Wiper seals	30 sets
738	27.0	SCAPH SYSTEM SPARES	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
739	27.1	Control Valves	
740	27.1.1	Consumables (i.e. Gland packing, Gaskets, Bonnet seal, etc)	200% of installed quantity for each type & size
741	27.1.2	Valve Disc	50% of installed quantity for each type & size
742	27.1.3	Valve Spindle	50% of installed quantity for each type & size
743	27.1.4	Valve Seat	100% of installed quantity for each type & size
744	27.1.5	Bush	100% of installed quantity for each type & size
745	27.1.6	Guide & Guide Bush	100% of installed quantity for each type & size
746	27.1.7	Actuator with piston rod & seal	20% of installed quantity for each type & size
747	28.0	AUXILIARY BOILER & ITS CHEMICAL DOSING SYSTEM	
748	28.1	Pressure parts tubes and bends	
749	28.1.1	Each category straight tubes	50 m
750	28.1.2	Each category coils	0.1
751	28.1.3	Each category bends	20 Nos.
752	28.2	LDO pumps	
753	28.2.1	Cartridge assembly	1 sets
754	28.2.2	Mech. seals	2 sets
755	28.2.3	O-rings & seals	2 sets
756	28.2.4	Bushes & sleeves	2 sets
757	28.2.5	Gaskets	2 sets
758	28.2.6	Filter	1 set
759	28.2.7	Relief valves	1 each type
760	28.3	Combustion Air Fans (FD type)	
761	28.3.1	Rotor assembly	1 No.
762	28.3.2	Fan bearings	2 sets
763	28.3.3	Motor bearings	2 sets
764	28.4	Drum level control valve	1 set
765	28.5	Boiler feed control valve	1 set
766	28.6	Start-up vent valve	1 set
767	28.7	Boiler safety relief valves	1 set of each type such as drum, super heater.
768	28.8	Feed check valve	1 set
769	28.9	Steam stop valve	1 set
770	28.10	Stop valve gland packing	2 sets
771	28.11	Stop valve seals	2 sets
772	28.12	Stem	2 sets
773	28.13	Bonnet	2 sets
774	28.14	Isolation valves	
775	28.14.1	Size above DN50	1 No of each size
776	28.14.2	Size below DN50	1 No of each size
777	29.0	MILL REJECT HANDLING SYSTEM	
778	29.1	Drag Chain Conveyor / Metallic Conveyor	
779	29.1.1	Chain link with Flight assembly	20 Nos. of each type
780	29.1.2	Metallic Pan assembly (Meshed with Belt)	1 set of each type
781	29.1.3	Chain Pin & Circlip	20 Nos. of each type
782	29.1.4	Sprocket	2 No. of each type
783	29.1.5	Drive & Non-drive Pulleys	2 No. of each type
784	29.1.6	Carrying and return Idler assembly	20% or 5 Nos. of each type, class, size and model whichever is more
785	29.1.7	Bearings	100% of installed qty
786	29.1.8	Conveyor Geared Motor & Gear Box	1 No. of each type
787	29.1.9	Shear Pin of Conveyor	10 Nos. of each type
788	29.1.10	Coupling	1 No. of each type
789	29.2	Bucket Elevator	
790	29.2.1	Chain Link	10 Nos. of each type
791	29.2.2	Shackle	10 Nos. of each type
792	29.2.3	Bearings	100% of installed qty
793	29.2.4	Geared Motor/Gear Box	1 No. of each type
794	29.2.5	Coupling	1 No. of each type
795	29.2.6	Buckets	5 No. of each type
796	29.3	Knife Gate Valve / Plate Valve	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
797	29.3.1	Slide / Shutter Plate	1 no. of each type and size
798	29.3.2	Complete assembly	1 nos of each type & size
799	29.3.3	Set of Gland & Packing	04 Sets
800	29.3.4	Seal kit for Air Cylinder	04 Sets
801	29.3.5	Cylinder operated	1 no. of each type and size
802	29.3.6	Manual operated	1 no. of each type and size
803	29.3.7	Solenoid Valves	1 no. each type and size
804	29.4	Dome valve	
805	29.4.1	Dome	04 Nos.
806	29.4.2	Insert seal (Neoprene)	25 Nos.
807	29.4.3	External V-Ring	20 Nos.
808	29.4.4	O Ring for spigot piece	08 Nos.
809	29.4.5	O Ring for Shaft	08 Nos.
810	29.4.6	Shaft Seal	15 Nos.
811	29.4.7	Spring pin (inner)	05 Nos.
812	29.4.8	Spring pin (outer)	05 Nos.
813	29.4.9	Set of Gasket	06 sets
814	29.5	Bag Filters and Fans	
815	29.5.1	Filter bags	30% of total Qty 0or min. 10 whichever is higher
816	29.5.2	V-belt	1 Sets of each type and size
817	29.5.3	Bearing	100% of installed qty
818	29.5.4	Flexible connection between fan & duct	1 Set of each size
819			
820	2.02.00	STEAM TURBINE& AUXILIARIES	
821	1.0	STEAM TURBINE	
822	1.1	Front bearing (complete set of bearing assembly including torous, intermediate pieces sole/base plate and all other fixing/ assembly materials required to complete one bearing assembly except housing)	One(1) set
823	1.2	Front pedestal oil guard ring (complete set of oil guard assembly for front and rear with fixing material)	One(1) set
824	1.3	High Pressure (HP) shaft seals (complete set of inter stage seals of all the stages of moving blades of HP rotor with fixing material)	One(1) set
825	1.4	HP shaft gland seals (complete set for replacement of front and rear with fixing material)	One(1) set
826	1.5	Sealing of HP casing assembly (1 set should comprise of all sealing segments, fitted keys, pins, caulking material and inter stage sealings of all the stationary rows)	One (1) set machined + One (1) set of un-machined sealing rings.
827	1.6	Sealing of HP inlet and HP exhaust assembly and extraction piping (all sealing rings, lock washers, connecting nuts/capnuts between pipe and casing)	One (1) set machined + One (1) set of un-machined sealing rings.
828	1.7	HP turbine first stage stationary and moving blades with assembly material	One(1) set
829	1.8	HP outer and inner casing fasteners and fixing materials	20%of each type and size
830	1.9	HP/IP pedestal oil guard ring (complete set of oil guard assembly for front and rear with fixing material)	One(1) set
831	1.1	HP/IP shaft coupling bolts, nuts, lock washers pins, screws, coupling guards.	One(1) set
832	1.11	Sealing of IP casing assembly (1 set should consist of sealing segments, fitted keys, caulking material, pin sealing segments)	One (1) set machined + One (1) set of un-machined sealing arrangement.
833	1.12	Sealing of IP inlet and IP exhaust assembly and extraction piping (all sealing rings, lock washers, connecting nuts/capnuts between pipe and casing)	One (1) set machined + One (1) set of un-machined sealing rings.
834	1.13	IP turbine shaft seals (complete set of inter stage seals of all the stages of moving blades of IP rotor with fixing material)	One(1) set
835	1.14	IP shaft gland seals (complete set for replacement of front and rear with fixing material)	One(1) set
836	1.15	IP turbine first stage stationary and moving blades with assembly materials	One(1) set
837	1.16	IP outer and inner casing fasteners and fixing materials	20%of each type and size
838	1.17	IP/LP journal bearing (complete with torous, intermediate pieces sole/base plate and all other fixing/assembly materials required to complete one bearing assembly except housing)	One (1)set
839	1.18	IP/LP pedestal oil guard rings (complete set of oil guard Assembly for front and rear with fixing material)	One (1)set
840	1.19	IP/LP's coupling bolts,lock-washers, nuts, pins, screws coupling guards	One (1)set
841	1.2	LP turbine rear bearing (complete set of bearing assembly including torous, intermediate pieces sole/base plate and all other fixing/assembly materials required to complete one bearing assembly without housing)	One (1)set
842	1.21	LP turbine atmospheric diaphragm (complete set for replacement of one diaphragm assembly)	Two (2) set
843	1.22	LP shaft seals (complete set of inter stage seals of all the stages of LP rotor with fixing materials)	One (1)set
844	1.23	LP shaft gland seals (complete set for replacement of front and rear with fixing materials)	One (1)set
845	1.24	LP turbine rotor moving blades of last 3 stages for each path with all the fastening material required for the above	One (1)set
846	1.25	LP outer and inner casing fasteners fixing materials	20%of each type and size
847	1.26	LP turbine and generator shaft coupling bolts, nuts, lock washers, pins, screws, coupling guard.	One(1) set
848	1.27	Cross over piping gaskets & fixing fasteners	2 sets gaskets & 1 set fixing fasteners
849	1.28	Complete one set of Thrust bearing (complete set of bearing assembly including torous, Thrust pads, intermediate pieces sole/base plate and all other fixing/assembly materials required to complete one bearing assembly without housing)	One(1) set
850	1.29	Set of Thrust Pads for one thrust bearing	One(1) set
851	2.0	EMERGENCY STOP VALVES	
852	2.1	Set of all internals required to complete one valve assembly excluding valve body	One (1) set
853	2.2	Set of all internals required to complete one servo motor assembly excluding body	One(1)set
854	2.3	Set of all internals required to complete one test valve servomotor assembly excluding body	One(1)set
855	2.4	Complete one servomotor assembly	One(1)set
856	3	HP CONTROL VALVES	
857	3.1	Set of all internals required to complete one valve assembly except valve body	One(1)set
858	3.2	Set of all internals required to complete one servomotor assembly except servomotor body	One(1)set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
859	3.3	Set of all internals required to complete one pilot valve assembly except body	One(1) set of each type & size
860	3.4	Set of mounting arrangement for position transmitter for one HP control valve (complete set comprising of bellows, pins, bushes, couplers, lock washers, position detector)	One(1) set
861	3.5	Complete one servomotor assembly	One(1)set
862	4.0	IP STOP VALVES	
863	4.1	Set of all internals required to complete one valve assembly excluding valve body	One(1) set
864	4.2	Set of all internals required to complete one servomotor assembly excluding body	One(1)set
865	4.3	Set of all internals required to complete one test valve assembly except valve body	One(1)set
866	4.4	Complete one servomotor assembly	One(1)set
867	5.0	IP CONTROL VALVES	
868	5.1	Set of all internals required to complete one valve assembly except valve body	One(1)set
869	5.2	Set of all internals required to complete one servo motor assembly except body	One(1)set
870	5.3	Set of all internals required to complete one pilot valve assembly except body	One(1)set
871	5.4	Set of mounting arrangement for position transmitter for one IP control valve (Complete set comprising of bellows, bushes couplers, pins, lock washers, position detector)	One(1)set
872	5.5	Complete one servomotor assembly	One(1)set
873	5.6	Drain Valves With Actuators for Turbine, ESVs , all Stop valves and all Control valves	10% of each type and size
874	6.0	GLAND STEAM S YSTEM	
875	6.1	Turbine gland steam supply valves (complete set of internals required to form one valve assembly except outer body)	One(1)set
876	6.2	Turbine gland steam leak-off valves(complete set of internals required to form one valve assembly except for outer body)	One(1)set
877	6.3	Valves for gland steam seal system	One(1) of each type and size
878	7.0	TURNING GEAR	
879	7.1	Gear internal with shafts, bearing, bushes, lock washers oil seals, 'O' rings	One(1) set
880	7.2	25% nozzle segments and moving blades and complete set of sealing strips with caulking material (if hydraulically operated)	One(1) set
881	7.3	Hydraulic Turning motor with its coupling set	1 set
882	8.0	TURBINE GOVERNING AND PROTECTION SYSTEM	
883	8.1	Hydraulic speed governor (complete set of internals required to form one speed governor assembly except for outer casing)	One(1) set
884	8.2	Electro hydraulic converter for governing system (complete set of internals required to form one convertor assembly except for outer casing)	One(1)set
885	8.3	Follow up pistons for governing system (complete replacement in governing system of one turbine)	20% of each type and size
886	8.4	Hydraulic amplifier for governing system (complete set of internals required to form one hydraulic amplifier assembly except for outer casing)	One(1)set
887	8.5	Over speed trip testing device (complete set of internals required to form one device assembly except outer body)	One(1) set
888	8.6	Main trip valve assembly	One(1)
889	8.7	Release valve for main trip valve	One(1)
890	8.8	Bellow for accumulators in governing system (set comprising of complete replacement in TG unit)	One(1)set
891	8.9	Emergency governor	One(1)set
892	8.1	Gear for loading device (complete set consisting of gear for loading device and its motor and all other fixing/assembly materials except housing)	One(1)set
893	8.11	Gear for start-up device (complete set consisting of bushes, spring motor and all other fixing/assembly materials except housing)	One(1)set
894	8.12	HPSU spares – Hydraulic pump, breather, accumulator, filters, hydraulic hoses and NRV	One (1) set of each and Four (4) set of filters
895	9.0	TURBINE LUBRICATING OIL SYSTEM	
896	9.1	Shaft driven main oil pump (complete set consisting of impeller, shaft, key, impeller nut, wear rings, journal bearings thrust bearing, coupling, shaft sleeves, oil seals, 'O' rings as required for one pump)	One(1)set
897	9.2	Auxiliary oil pumps (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of one TG unit) with NRV	One(1)set
898	9.3	Emergency oil pump (EOP) including motor (set comprising of pump or pumps along with motor required to meet the 100% operational requirement of one TG unit)	One(1)set
899	9.4	Jacking oil pump including motor (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of TG unit) with NRV & throttle valve (Pr. Regulating Valve)	One(1) set
900	9.5	Transfer oil pumps (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of one TG unit)	One(1) set
901	9.6	Oil tank vapour extractors with motor (for each type and size)	One(1) set
902	9.7	Lube oil coolers (for each type and size) Seals, gaskets, 'O' rings etc	Two (2)sets
903	9.8	Duplex oil filters / strainers (for each type and size) (complete set consisting of cartridges, gaskets, 'O' rings except housing)	Two(2) sets
904	9.9	OIL PURIFIER	
905	9.9.1	Bearings including motor bearings	One(1) set
906	9.9.2	Bag filters	Four(4) sets
907	9.9.3	Cartridge filters	Four(4) sets
908	9.9.4	Gaskets	Two(2)sets
909	9.9.5	Dust seats and 'O' rings for motor	Two(2)sets
910	9.9	Hose pipe for JOP oil lines to bearing inlet	100% of installed qty
911	9.10	Magnetic Filter, Line filters and tank breather (if applicable)	100% qty of installed

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
912	10.0	TURBINE CONTROL FLUID SYSTEM	
913	10.1	Control fluid pumps including motor (set comprising of pump or pumps along with motor required to meet the 100% operational requirement of TG unit)	One(1) set
914	10.2	Control fluid vapour exhauster with motor	One(1) set
915	10.3	Control fluid cooler's seals, gaskets and 'O' rings etc.	Two(2)sets
916	10.4	Duplex oil filters/ strainers (complete set consisting of cartridges, gaskets, 'O' rings except housing)	Two(2)sets
917	10.5	CONTROL FLUID PURIFIER	
918	10.5.1	Bearings including motor bearings	One(1) set
919	10.5.2	Bag filters	Four(4)sets
920	10.5.3	Cartridge filters	Four(4)sets
921	10.5.4	Gaskets	Two(2)sets
922	10.5.5	Dust seals and 'O' rings for motors	Two(2)sets
923	11.0	TURBINE THRUST BEARINGS TRIP DEVICE (complete set consisting of springs, bellow assembly, limit switch, pilot valve, gasket, latch spindle, pins, 'O' rings)	One(1) set
924	12.0	AUTOMATIC TURBINE TESTING CHANGEOVER VALVE (complete set of internals required to form one changeover valve assembly except for outer casing)	One(1)set
925	13.0	HP BY PASS SYSTEM	
926	13.1	CONTROL VALVES	
927	13.1.1	Complete set of internals required to form one valve assembly except for outer body	One(1) set
928	13.1.2	Complete set of internals required to form one servomotor assembly except for outer body	One(1) set
929	13.1.3	Complete set of internals required to form one pilot valve assembly except for outer body	One(1) set
930	13.1.4	Complete one servomotor assembly	One(1)set
931	13.2	WATER INJECTION VALVES	
932	13.2.1	Complete set of internals required to form one injection valve assembly except for outer body	One(1) set
933	13.2.2	Complete set of internals required to form one pilot valve assembly except for outer body	One(1) set
934	13.3	Bellow for accumulators	One(1) set
935	13.4	HPSU spares – Hydraulic pump, breather, accumulator, filters, hydraulic hoses and NRV	One (1) set of each and Four (4) set of filters
936	14.0	LP BY PASS SYSTEM	
937	14.1	STOP VALVES	
938	14.1.1	Complete set of internals required to form one valve assembly except for outer body	One(1)set
939	14.1.2	Complete set of internals required to form one servomotor assembly except for outer body	One(1) set
940	14.1.3	Complete one servomotor assembly	One(1)set
941	14.2	CONTROL VALVES	
942	14.2.1	Complete set of internals required to form one valve assembly except for outer body	One(1) set
943	14.2.2	Complete set of internals required to form one servomotor assembly except for outer body	One(1) set
944	14.2.3	Complete set of internals required to form one pilot valve	One(1) set
945	14.2.4	Complete one servomotor assembly	One(1)set
946	14.3	WATER INJECTION VALVES	
947	14.3.1	Complete set of internals required to form one injection valve assembly except for outer body	One(1) set
948	14.3.2	Complete set of internals required to form one pilot valve assembly except for outer body	One(1) set
949	14.4	Bellow for accumulators	One(1)set
950	14.5	HPSU spares – Hydraulic pump, breather, accumulator, filters, hydraulic hoses and NRV	One (1) set of each and Four (4) set of filters
951	15.0	NRV's ON CRH LINE	
952	15.1	Complete set of internals required to form one valve Assembly except for outer casing.	One(1) set
953	15.2	Servomotor for NRV (complete set of internals required to form one servomotor assembly except outer body)	One(1) set
954	15.3	Changeover valve for NRV (complete set of internals required to form one changeover valve assembly except outer body)	One(1)set
955	15.4	Complete one servomotor assembly	One(1)set
956	15.5	NRV body gasket and bonnet seal	2 set of each for each NRV
957	16.0	NRV's ON EXTRACTION LINES (FOR EACH TYPE AND SIZE)	
958	16.1	Complete set of internals required to form one valve	One(1) set
959	16.2	Actuators for one NRV	One(1) set
960	16.3	NRV body gasket and bonnet seal	2 set of each for each NRV
961	17.0	HP HEATERS (FOR EACH HP HEATER)	
962	17.1	Shell side safety relief valve	One(1)
963	17.2	Tube side sentinel valve	One(1)
964	17.3	Instrumental source valve	One(1) set
965	17.4	Vent orifice	One(1) set
966	17.5	Gasket	Two(2)sets
967	17.6	Tube plugs	0.2
968	17.7	Level gauge glass with packing	Two(2)
969	18.0	LP HEATERS (FOR EACH LP HEATER)	
970	18.1	Shell side safety relief valve	One(1)
971	18.2	Tube side sentinel valve	One(1)
972	18.3	Instrumental source valve	One(1) set
973	18.4	Vent orifice	One(1)set
974	18.5	Gaskets	Two(2)sets
975	18.6	Tube plugs	0.2
976	18.7	Level gauge glass with packing	One(1)
977	19.0	GLAND STEAM CONDENSER	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
978	19.1	Level gauge glass with packing	One(1)
979	19.2	Tube side sentinel valve	One(1)
980	20.0	DRAIN COOLER	
981	20.1	Level gauge glass with packing	One(1)
982	20.2	Instrumental source valve	One(1) set
983	20.3	Gasket	Two(2) sets
984	20.4	Tube plugs	20 % of installed qty of tubes
985	21.0	DEAERATOR	
986	21.1	Spray nozzles	10% of each type and size
987	21.2	Trays	5% of each type and size
988	21.3	Level gauge glass with packing	One(1)
989	21.4	Instrumental source valve	One(1) set
990	21.5	Vent orifice	One(1) set
991	21.6	Gaskets	Four(4) sets
992	22.0	STEAM DUMPING DEVICE	
993		(complete set consisting of internals required to form one dumping device assembly except for outer body)	One(1) set of each type and size
994	23.0	CONDENSER	
995	23.1	Low vacuum condenser protection device (set of internals required to complete one protection device assembly except for housing)	One(1) set
996	23.2	Condenser vacuum breaker valve	One(1)
997	23.3	Condenser manhole cover gaskets(set comprising of complete replacement for one condenser)	2 set
998	23.4	Level gauge glass with packing	One(1)
999	23.5	Instrumental source valve	One(1) set
1000	23.6	Condenser tubes	10% of installed qty
1001	23.7	Tube plugs	20 % of installed qty of tubes
1002	23.8	Gaskets	Two(2) sets
1003	23.9	Nozzles for ejector of vacuum pump (set comprising of complete replacement for one vacuum pump)	One(1) set
1004	24.0	VACCUUM PUMPS	
1005	24.1	Complete Impeller Assembly	1 set for each type / size
1006	24.2	Pump shaft	1 set for each type / size
1007	24.3	Bearings	100% for each type / size
1008	24.4	Coupling	1 set for each type / size
1009	24.5	Mechanical Seal	2 set for each type / size
1010	24.6	Drive Motor	1 set for each type / size
1011	24.7	Complete spares of seal water pump excluding body	1 set for each type / size
1012	25.0	CONDENSER ON-LINE TUBE CLEANING SYSTEM	
1013	25.1	Sponge rubber balls for condenser on-load tube cleaning system	Fifty Thousand (50,000)
1014	25.2	Ball circulating pumps (set consisting of shaft, rotor bearings, seals, gland package shafts sleeves for complete replacement in one pump)	One(1) set
1015	26.0	BOILER FEED PUMPS	
1016	26.1	TURBINE DRIVE	
1017	26.1.1	One set of regulating stage blades along with all fastening material, if applicable.	One(1) set
1018	26.1.2	One set of LP blades (only last stage) along with all fastening material.	One(1) set
1019	26.1.3	Set of journal bearings and thrust bearing including liners	2 set
1020	26.1.4	Set of emergency over speed governor (incase over speed governor is provided)	One(1) set
1021	26.1.5	Set of speed probe, extension cable, proximate and monitor (in case electronic over speed protection is provided)	One(1) set
1022	26.1.6	Set of emergency stop and control valves (excluding servo-drives and switch boxes)	One(1) set
1023	26.1.7	Gear internals with shafts bearings, bushes lock washers, oil seals 'O' rings	One(1) set
1024	26.1.8	Fasteners set for complete assembly of pump	One(1) set
1025	26.2	MAIN PUMPS	
1026	26.2.1	Thrust bearing tilting pad with thrust collar	2 set
1027	26.2.2	Sleeve bearings insert and liners	2 set
1028	26.2.3	Wear ring set (rotating and stationary)	2 set
1029	26.2.4	Balancing drum and balancing drum head	One(1) set
1030	26.2.5	Mechanical seal	2 set
1031	26.2.6	Set of Gaskets and 'O' rings, etc required for complete assembly	4 sets
1032	26.2.7	Seal sleeves	One(1) set
1033	26.3	BOOSTER PUMPS	
1034	26.3.1	Thrust bearing and thrust collar	2 set
1035	26.3.2	Sleeve bearings insert and liners	2 set
1036	26.3.3	Wear ring set (rotating and stationary)	2 set
1037	26.3.4	Mechanical seal	2 set
1038	26.3.5	Set of Gaskets and 'O' rings, etc required for complete assembly	4 set
1039	26.3.6	Seal sleeves	One(1) set
1040	26.3.7	Impeller	1 set
1041	26.3.8	Complete set of booster pump assembly	1 set
1042	26.3.9	Coupling set	1 set
1043	26.3.10	Set of Gaskets, fasteners etc required for complete assembly	2 set of each
1044	26.4	REDUCTION GEAR	
1045	26.4.1	Bearings	One(1) set
1046	26.4.2	Set of Gaskets and washers etc for complete assembly	4 sets
1047	26.5	FLUID COUPLING	
1048	26.5.1	Radial bearings	One(1) set
1049	26.5.2	Tilting pad thrust bearing	One(1) set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1050	26.5.3	Set of Gaskets, 'O' rings, lock washers and split pins etc for complete assembly	Two(2)sets
1051	26.6	BFP MOTOR	
1052	26.6.1	Bearings	Two(2)sets
1053	26.6.2	Set of Dust seal and gaskets etc required for complete assembly	Two(2)sets
1054	27.0	LUBRICATING OIL SYSTEM FOR MOTOR DRIVEN BFP	
1055	27.1	Lubricating oil pumps (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of one motor driven BFP)	One(1) set
1056	27.2	DC emergency oil pump (set comprising of pump or pumps along with motor required to meet the 100% operational requirement of one motor driven BFP)	One(1) set
1057	27.3	Lub oil/working oil coolers (for each type and size) Seals, gaskets, 'O' rings etc	Two(2)sets
1058	27.4	Duplex oil filters / strainers (for each type and size) (complete set consisting of cartridges, gaskets 'O' rings except housing)	Two(2)sets
1059	28.0	LUBRICATING OIL SYSTEM FOR TURBINE DRIVEN BFP	
1060	28.1	Auxiliary oil pumps (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of one turbine driven BFP)	One(1) set
1061	28.2	DC emergency oil pump with motor (set comprising of pump or pumps along with motor required to meet the 100% operational requirement of one turbine driven BFP)	One(1)set
1062	28.3	Jacking oil pump with motor (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of one turbine driven BFP), if applicable (AC & DC both)	One(1) set each AC & DC
1063	28.4	Transfer oil pumps (set comprising of pump or pumps along with motor required to meet the 100% operational requirements of one turbine driven BFP)	One(1)set
1064	28.5	Oil tank vapour extractors with motor (for each type and size)	One(1) set
1065	28.6	Lube oil coolers with consumables (for each type and size) Seals, gaskets, 'O' rings etc. reqd to complete one assembly	Two(2)sets
1066	28.7	Duplex oil filters / strainers with consumables (for each type and size) (complete set consisting of cartridges, gaskets, 'O' rings except housing) reqd to complete one assembly	Two(2)sets
1067	28.8	OIL PURIFIER	
1068	28.8.1	Bearings including motor bearings	Two (2)sets
1069	28.8.2	Bag filters	Four(4)sets
1070	28.8.3	Cartridge filters	Four(4)sets
1071	28.8.4	Gaskets	Two (2)sets
1072	28.8.5	Dust seats and 'O' rings for motors	Two(2)sets
1073	29	CONDENSATE EXTRACTION PUMPS (CEP's)	
1074	29.1	Complete thrust bearings	Two(2)sets
1075	29.2	Radial bearings including bushes	Two(2)sets
1076	29.3	Journal pads of thrust bearing	Two(2)sets
1077	29.4	Wearing rings comprising of suction and stage impeller neck rings, casing wear ring.	One(1) set
1078	29.5	Coupling between motor and pump	One(1) set
1079	29.6	Suction strainer	One(1)
1080	29.7	Set of impellers (one set comprises of complete replacement required for one CEP)	One(1) set
1081	30.0	CONDENSATE POLISHING UNIT	
1082	30.1	SERVICE AND REGENERATION VESSELS (For Each Type And Size)	
1083	30.1.1	Each type of Diffusers, distributors and nozzles	0.5
1084	30.1.2	Perforated plates and under drain collectors	0.1
1085	30.1.3	Each type of readymade Gaskets etc. for one vessel	Two(2)sets
1086	30.1.4	Complete set of Nuts and bolts etc.	One(1)set
1087	30.1.5	ARU bottom concept	One(1) set
1088	30.1.6	Resin Strainer for each type of service vessel	One(1) set
1089	30.2	Resin traps	One(1)of each type and size
1090	30.3	Valves	20%of each type and size or minimum 1 no whichever is higher
1091	30.4	Pumps and blowers along with drive motors (For horizontal or vertical pls refer plant water system pumps)	Qty shall be as mentioned in plant water system
1092	30.5	Resin transfer hoppers	One(1)of each type and size
1093	30.6	Ejectors/dosing pumps	100% of each type and size
1094	30.7	STORAGE PREPARATION AND METERING TANK ETC.	(for each type and size)
1095	30.7.1	Tank stirrers (as applicable)	One(1)set
1097	30.7.2	Dissolving baskets (as applicable)	One(1)set
1098	30.7.3	Heating element (as applicable)	One(1)set
1099	30.7.4	Gaskets etc	Two(2)sets
1100	30.7.5	Nuts and bolts etc	One(1)set
1101	30.8	CPU/Regeneration Area Blowers	
1102	30.8.1	Complete air blower assembly	1 set
1103	30.8.2	Air Filters	4 no.
1104	30.8.3	Bearings for drive & driven	2 set
1105	30.8.4	Gears	1 set
1106	30.8.5	V-belts	2 Set for each drive
1107	30.9	CPU/Regeneration Area Pumps including N-pit & Backwash	
1108	30.9.1	Impeller for each type	2 set
1109	30.9.2	Wearing rings - Impeller for each type (if applicable)	2 set
1110	30.9.3	Wearing rings - Casing for each type (if applicable)	2 set
1111	30.9.4	Shaft for each type	2 set
1112	30.9.5	Shaft Sleeves for each type	2 set
1113	30.9.6	Stuffing box for each type	1 set
1114	30.9.7	Pump bearings for each type	3 set
1115	30.9.8	Gland Packing & Gland Assembly/Mechanical seal assy, for each type (as applicable)	2 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1116	30.9.9	Diaphragm Pump for acid/alkali injection & dosing	1 complete pump set
1117	30.9.10	Diaphragms for acid/alkali injection & dosing	Minimum 5 no. each type, size & rating
1118	30.9.11	Strainers in pipelines	Minimum 1 no. each type, size & rating
1119	30.9.12	Relief Valves in Air Blowers unit	Minimum 1 no. each type, size & rating
1120	30.10	CPU/Regeneration Area Valves	
1121	30.10.1	Diaphragm Valves of All types	2 no. of each type, size & rating for total population < 10 nos
1122			3 nos of each type, size & rating for total population > 10 nos
1123	30.10.2	Diaphragms	100% quantity of total population
1124	30.10.3	NRV (Flap type and Dual Plate Type)	Minimum 1 no. each type, size & rating
1125	30.10.4	Ball Valves of all types	Minimum 1 no. each type, size & rating
1126	30.10.5	Butterfly Valves of all types	Minimum 1 no. each type, size & rating
1127	30.10.6	Any other type valve	Minimum 1 no. each type, size & rating
1128	30.11	Resin (Anion & Cation)	Pls refer resin requirement of DM Plant
1129	31.0	DEBRIS FILTERS (if applicable)	
1130	31.1	Filter element seating component	One(1)set
1131	31.2	Actuators along with motors	One(1) set
1132	31.3	Debris discharge and other valves	One(1)set
1133	31.4	Gaskets etc.	Two(2)sets
1134	31.5	Wetted nuts and bolts etc	One(1)set
1135	31.6	Other nuts and bolts etc	20% of installed qty
1136	32.0	EQUIPMENT COOLING WATER (ECW) SYSTEM	
1137	32.1	DMCW PUMPS FOR TG AUXILIARIES	
1138	32.1.1	Impellers	One(1)set
1139	32.1.2	Wearing rings set (impeller & Casing)	Two(2)set
1140	32.1.3	Pumps bearings	100% of installed qty
1141	32.1.4	Motor bearings	100% of installed qty
1142	32.1.5	Pump shaft	Two(2)set
1143	32.1.6	Shaft sleeves	Two(2)set
1144	32.1.7	Gaskets, dust seals and 'O'ring etc.	Three(3)sets
1145	32.1.8	Nut and bolts etc.	Two(2)set
1146	32.1.9	Mechanical seal/Gland sealing assembly	Two(2)set
1147	32.2	DMCW PUMPS FOR SG AUXILIARIES	
1148	32.2.1	Impellers	One(1)set
1149	32.2.2	Wearing rings set (impeller & Casing)	Two(2)set
1150	32.2.3	Pumps bearings	100% of installed qty
1151	32.2.4	Motor bearings	100% of installed qty
1152	32.2.5	Pump shaft	Two(2)set
1153	32.2.6	Shaft sleeves	Two(2)set
1154	32.2.7	Gaskets, dust seals and 'O'ring etc.	Three(3)sets
1155	32.2.8	Nut and bolts etc.	Two(2)set
1156	32.2.9	Mechanical seal/Gland sealing assembly	Two(2)set
1157	32.3	HEATEXCHANGERS FOR TG AUXILIARIES	
1158	32.3.1	Gaskets etc.	Two(2)sets
1159	32.3.2	Nut and bolts etc.	One(1) set
1160	32.3.3	Plates	10% of installed qty
1161	32.4	HEAT EXCHANGERS FOR SG AUXILIARIES	
1162	32.4.1	Gaskets etc.	Two(2)sets
1163	32.4.2	Nut and bolts etc.	One(1) set
1164	32.4.3	Plates	10% of installed qty
1165	32.5	SELF CLEANING FILTERS	
1166	32.5.1	Filter element	One(1) set
1167	32.5.2	Actuators along with motors	One(1) set
1168	32.5.3	Debris discharge and other valves	One(1) set
1169	32.5.4	Gaskets etc.	Two(2)sets
1170	32.5.5	Nut and bolts etc.	One(1) set
1171	33.0	LP CHEMICAL DOSING SYSTEMS	
1172	33.1	HYDRAZINE DOSING SYSTEM	
1173	33.1.1	Complete assembly of Dosing pumps and drives	One(1)of each type and size
1174	33.1.2	Spares for dosing pump except body	One(1)set
1175	33.1.3	Agitators	One (1) of each type and size
1176	33.1.4	Reduction gear assembly	One (1) of each type and size
1177	33.1.5	Strainers	One (1) of each type and size
1178	33.1.6	Valves & NRV	One (1) of each type and size
1179	33.2	AMMONIA DOSING SYSTEM	
1180	33.2.1	Complete assembly of Dosing pumps and drives	One (1) of each type and size
1181	33.2.2	Spares for dosing pump except body	One(1)set
1182	33.2.3	Agitators	One (1) of each type and size
1183	33.2.4	Reduction gear assembly	One (1) of each type and size
1184	33.2.5	Strainers	One (1) of each type and size
1185	33.2.6	Valves & NRV	One (1) of each type and size

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
1186	34.0	AUXILIARY COOLING WATER PUMPS		
1187	34.1	Impellers	One(1)set	
1188	34.2	Wearing rings	Two(2)set	
1189	34.3	Pumps bearings	100% of installed qty	
1190	34.4	Motor bearings	100% of installed qty	
1191	34.5	Pump shaft	Two(2)set	
1192	34.6	Shaft sleeves	Two(2)set	
1193	34.7	Gaskets, dust seals and 'O' ring etc.	Two(2)sets	
1194	34.8	Nut and bolts etc	One(1)set	
1195	34.9	Mechanical seal/Gland seal assly	Two(2)set	
1196	35	CONTROL VALVE SPARES FOR TG Spares to be consider as per 25.00 CONTROL VALVE SPARES FOR SG & AUX. BOILER		
1197	2.03.00	FGD		
1198	1.0	Gates in Flue Gas system		
1199	1.1	Seals for multi lover dampers	1 Set of each type	
1200	1.2	Pneumatic Actuator if consider	1 no of each type	
1201	1.3	Expansion joint	1 Number for each type and size	
1202	1.4	Seals for guillotine gate	1 set for each gate	
1203	2.0	Absorber		
1204	2.1	Liner Material	20% coverage of each material and thickness for one Unit/Absorber	
1205	2.2	Absorber Spray/Oxidation nozzles	30 % of each type	
1206	2.3	Absorber Mist Eliminator Washing Nozzles	30 % of each type	
1207	2.4	Absorber Mist Eliminator	15 % of each type	
1208	3.0	Oxidation Air Compressor		
1209	3.1	Impeller Assembly	1 No	
1210	3.2	Bearing	1 No of each type	
1211	3.3	Motor	1 No	
1212	4.0	Agitators (For Absorber Oxidation Tank, Mill Separator Tank, Limestone Slurry Preparation Tank and any other Tank provided with agitator)		
1213	4.1	Impeller Assembly	1 Set of each type	
1214	4.2	Bearing Assembly	1 Set of each type	
1215	4.3	Motor	1 No of each type	
1216	4.4	Belt and pulley (if applicable)	1 No of each type	
1217	4.5	Gear Box Assembly(if applicable)	1 Set of each type	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1218	5.0	Slurry Pumps (Absorber Slurry Recirculation Pump, Gypsum Bleed Pumps, Gypsum Cake Wash water pumps, Mill Circuit Pump, Limestone Slurry Pumps and any other slurry pumps)	
1219	5.1	Impeller Assembly	2 Nos for each type of pump
1220	5.2	Casing Liners	2 Set for each type of pump
1221	5.3	Seals	4 Set for each type of pump
1222	5.4	Couplings	2 Set for each type of pump
1223	5.5	Bearing	2 Nos for each type of pump
1224	5.6	Pump suction & discharge valve assembly	2 Set for each type of pump
1225	5.7	Motor	1No for each type of pump
1226	5.8	Gear Box	1No for each type of pump
1227	6.0	Hydro-cyclones (Mill, Gypsum Primary Dewatering, Secondary Waste Water and any other Hydro cyclone)	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1228	6.1	Hydro Cyclone Isolation Valve	10 % of each type OR 1 No each type whichever is higher
1229	6.2	Hydro Cyclone	10 % of each type OR 1 No whichever is higher
1230	6.3	Hydro Cyclone rubber/polyurethane lining	1 Set
1231	7.0	Gravimetric Feeders	
1232	7.1	Belt	2 Set
1233	7.2	Belt Drive motor	1 No
1234	7.3	Belt drive reducer	1 No
1235	7.4	Speed Reducer Assembly	1 Set
1236	7.5	Weighing Instrument	1 Set
1237	7.6	Feeder weighing roll	1 No
1238	7.7	Gravimetric feeder gate actuator assembly	1 No
1239	7.8	Counter assembly of feeder complete	1 No
1240	7.9	Feeder head pulley assembly	1 No
1241	7.10	Inlet Span Roller assembly	2 No
1242	8.0	Limestone Mills	
1243	8.1	Mill Wear Parts (Liners) & Grinding element Note: One set of Mill Wear Parts (Liners) above is defined as under: 1 Set = (Grinding elements needed for complete replacement of one mill) X (8000x1)/GWL rounded off to nearest higher whole number. Where: GWL = Guaranteed Wear life of Mill Wear Parts as offered by the bidder	1 Sets
1244	8.2	Mill Motor	1 no
1245	8.3	Auxiliary Motor	1 no
1246	8.4	Gear Box internals (including Bearings and Seals)	2 Sets
1247	8.5	Complete Gear Box	1 Set
1248	8.6	Mill Motor Bearing	1 Set
1249	8.7	Lube oil/Grease system	
1250	8.7.1	Pump assembly	1 No each type
1251	8.7.2	motor	1 No each type
1252	8.7.3	Pressure regulator	1 No each type
1253	8.7.4	Filters	2 No each type
1254	8.7.5	Pump & Motor Coupling	2 Nos each type
1255	9.0	Limestone Silo	
1256	9.1	Poking Hole Assembly	1 Set
1257	9.2	Mechanical rapper assembly	1 Set
1258	9.3	Silo Lining	1 Set
1259	10.0	Slurry Valves	2 no of each type and size
1260	11.0	Slurry Line Bends	4 no of each type and size
1261	12.0	Vacuum Belt Filter	
1262	12.1	Filter cloth	4 Sets
1263	12.2	Belt	1 Sets
1264	12.3	Vacuum Box seals	2 Sets
1265	12.4	Drive Motor (if applicable)	1 No
1266	13.0	Vacuum Pumps	
1267	13.1	Pump impeller Assembly	1 Set
1268	13.2	Pump Bearing	1 Set
1269	13.3	Seals	1 Set
1270	13.4	Motor	1 No.
1271	14.0	Vacuum Breaker Valves	
1272	14.1	Valve Assembly	1 No.
1273	14.2	Actuator	1 No.
1274	15.0	Sump Pump	
1275	15.1	Complete impeller Assembly	1 no of each type
1276	15.2	Casing Liners	1 set of each type
1277	15.3	Bearing	1 set
1278	15.4	Motor	1 No of each type
1279	15.5	Pump suction & discharge valve assembly	1 no of each type
1280	16.0	Mist Eliminator wash pumps, Reclaim Water Pumps, Emergency Absorbent pumps, Mill Recycle Pumps, Process water pumps	
1281	16.1	Complete Pump Assembly	1 no of each type
1282	16.2	Complete Impeller Assembly	1 no of each type
1283	16.3	Casing Liners	1 set of each type
1284	16.4	Bearings	1 set of each type
1285	16.5	Motor	1 no of each type
1286	16.6	Pump suction & discharge valve assembly	1 no of each type
1287	16.7	Seals	2 set of each type
1288	16.8	Coupling	2 set of each type
1289	17.0	Slurry Piping	10% of installed Unit
1290	18.0	LIMESTONE & GYPSUM HANDLING SYSTEM	
1291	19.0	Surface Feeder/ Box Feeder/ Truck Unloading System	
1292	19.1	Head Shat	1 no of each type
1293	19.2	Tail Shaft	1 no of each type

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1294	19.3	Chain	1 length of each type
1295	19.4	Side Liners	1 set for each type
1296	19.5	Flight Bars	1 set for each type
1297	19.6	Keeper Plates	1 set for each type
1298	19.7	Gearbox	1 no of each type
1299	19.8	Couplings	1 no of each type
1300	19.9	Bearings	1 no of each type
1301	19.10	Oil Seals	1 set of each type
1302	20.0	Idlers	
1303	20.1	Troughing idlers complete with base frame and mounting brackets etc. (all type shall be covered)	10% of population for each type
1304	20.2	Rolls for above (a)	20 % of population for each type
1305	20.3	Flat return idlers complete with mounting brackets etc. (all type shall be covered)	30 % of population
1306	20.4	Rolls for above (c)	20 % of each type
1307	20.5	Flat return trainers complete with mounting brackets etc. (all type shall be covered)	20 % of population for each type
1308	20.6	Belt cleaning spiral rubber disc return idler complete with mounting brackets (all type shall be covered)	20 % of population for each type
1309	20.7	SS Idlers (all type shall be covered)	30 % of population
1310	20.8	Guide Rollers for bucket elevator	30 % of population
1311	21.0	CONVEYOR GEAR BOXES	
1312	21.1	Input shafts with pinion	1 Set of each type
1313	21.2	Oil seals	1 Set of each type
1314	21.3	Bearings	1 Set of each type
1315	21.4	Hold back device	1 No of each type & rating
1316	21.5	Cooling fan with cover	1 No of each type & rating
1317	21.6	Complete gear box assy with hold back device	1 Set of each type & rating
1318	22.0	CONVEYOR DRIVE AND CONVEYOR BELT	
1319	22.1	All type of drive couplings including gear Coupling	1 No for each type
1320	22.2	Bolts for gear coupling	2 Set for each size
1321	22.3	Seal kit for gear coupling (o-ring)	02 Set for each type & size
1322	22.4	i) Fluid Coupling complete	1 no each type
1323		ii) Multi Disc assembly (for fluid coupling)	1 set each type
1324		iii) Resilient Drive plate assy.	1 set each type
1325		iv) Bearings	1 no each type
1326		v) Seal kit for fluid coupling	1 set of each type
1327		vi) Fusible plug	1 no each type
1328		vii) Complete actuator and engaging assembly (including motor, gear box etc.)	1 set of each type
1329		viii) Oil Cooler assembly (if applicable)	1 set of each type
1330		ix) Oil pump-motor set (if applicable)	1 set of each type
1331		x) Oil filters	3 set of each type
1332		xi) Oil/Cooler valves (if applicable)	1 set of each type
1333	23.0	Belting	
1334	23.1	Conveyor Belt for main conveyor	Drum length of 250 M each type
1335	23.2	Conveyor Belt for belt feeder	
1336	23.3	Conveyor Belt for Bucket elevator	
1337	23.4	Brake	1No each type & size
1338	23.5	Brakes Shoes	1 set of each type
1339	24.0	Pulleys	
1340	24.1	Pulleys complete with shaft excluding bearing & plummer blocks (complete with lagging)	1 no each type & size
1341	24.2	Plummer blocks complete with bearings & sleeves	1 No each type & size
1342	24.3	SS Pulleys complete with shaft	1 No each type & size
1343	25.0	BELT CLEANERS AND SKIRT BOARD	
1344	25.1	Modular segments for belt cleaner	10% of total population
1345	25.2	Modular segments skirt rubber for skirt board	10% of total population
1346	25.3	Skirt Rubber	10% of total population
1347	25.4	Complete belt cleaner (internal / external)	10% of total population
1348	26.0	IN-LINE MAGNETIC SEPARATORS	
1349	26.1	Cleated conveyor belt	1 complete set
1350	26.2	Motor, gear box drive assy. complete	1 set of each type & size
1351	26.3	Pulleys with plummer block & bearings	1 set of each type & size
1352	26.4	Sheaves	1 set of each type & size
1353	26.5	V-belts	1 set of each type & size
1354	27.0	Lime Sampler	
1355	27.1	Plummer block	1 no. each type & size
1356	27.2	Hammers	1 set of each type & size
1357	27.3	Liner plate	1 set of each type & size
1358	27.4	Cutter lip	1 no. of each type & size
1359	27.5	Cutter seal	1 no of each type & size
1360	27.6	V-belts (for crusher)	1 set of each type & size
1361	27.7	Hammer pins	1 set of each type & size
1362	27.8	Pulley	1 set of each type & size
1363	27.9	Conveyor belt	1.2 times length of each type and rating
1364	27.10	Gear box assembly for conveyor	1 no. of each type & rating
1365	27.11	Gear box drive assy for primary & secondary samplers	1 set of each type & rating
1366	27.12	Hydraulic pump with motor & coupling	1 set of each type & capacity
1367	27.13	Hydraulic motor	1 set of each rating & type
1368	27.14	Hydraulic cylinder	1 no. each type & size

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
1369	27.15	Cylinder sealing kit	2 set of each type & size	
1370	27.16	Set of hoses	1 set of each type & size	
1371	27.17	Coupling with grid for primary sampler	1 Set of each type	
1372	27.18	Screw conveyor gear box	1 Set assembly	
1373	27.19	LIME CRUSHER (If applicable)	1 No	
1374	27.20	Plummer Block assembly	1 set complete including nut, lock washer etc. (DE+NDE)	
1375	27.21	Shaft Seal	2 Set	
1376	27.22	Hammer sets	2 sets (consisting of hammer arm, hammer head, bush for arm etc)	
1377	27.23	Rotor assembly complete - consisting of rod end discs, centre discs, distance rings, suspension bars, disc clamping nuts and shaft extension etc. without pillow blocks	1 Set	
1378	27.24	Cage bars, Perforated screen Set, Breaker plate, Liners, Suspension bars, Kick-off plate, Screen plate upper & lower	1 set each type & size	
1379	28.0	Elevator		
1380	28.1	Friction Block	2 No	
1381	28.2	Guide roller of each type	20% of total population or 3 nos. of each type whichever is higher	
1382	28.3	Contactors of each type	2 nos	
1383	28.4	Control Transformer	1 nos of each type	
1384	28.5	Time device	2 no of each type	
1385	28.6	Rectifier	4 no of each type	
1386	28.7	Over current Relay	2 no of each type	
1387	28.8	Auxiliary relay	3 no of each type	
1388	28.9	Resistor	3 no of each type	
1389	28.10	Fuses of each rating	20% of total population	
1390	28.11	Limit switches of each type	3 no	
1391	28.12	Push Button	3 no of each type	
1392	28.13	Contact device	3 No of each type	
1393	28.14	Brake Motor	2 no of each type	
1394	28.15	Transmitter	2 no of each type	
1395	28.16	Switches of each type	3 no	
1396	28.17	Receivers	2 no of each type	
1397	28.18	Bearing of each type and size	2 no	
1398	28.19	Roller of each type	3 no	
1399	28.20	Worm Gear spares		
1400	28.20.1	'o' rings	3 sets	
1401	28.20.2	Sealing ring of each type	3 sets	
1402	28.21	Spare for brake		
1403	28.21.1	Fan	2 no of each type	
1404	28.21.2	Magnetic coil	3 no of each type	
1405	28.21.3	Brake disc	2 Sets	
1406	28.21.4	Brake pad	2 Sets	
1407	28.21.5	Bushing (for door front)	2 Sets	
1408	28.21.6	Pinion	2 no of each type	
1409	28.21.7	Elevator Motor with VVVF drive	1 no of each type	
1410				
1411	2.04.00	ASH HANDLING PLANT		
1412	Sl. No.	Description	Quantity	UNIT
1413	1.0	HCSD SYSTEM		
1414	1.1	HCSD PUMP		
1415	1.1.1	VALVE UNIT (D)	1	Nos.
1416	1.1.2	CONICAL VALVE	120	Nos.
1417	1.1.3	VALVE DISC	240	Nos.
1418	1.1.4	VALVE SEAT	120	Nos.
1419	1.1.5	LOCK NUT	12	Nos.
1420	1.1.6	COMPRESSION SPRING	6	Nos.
1421	1.1.7	CLAMPING PIECE	3	Nos.
1422	1.1.8	GUIDE BUSH	60	Nos.
1423	1.1.9	STUD BOLTS OF EACH TYPE AND SIZE	4	Nos.
1424	1.1.10	PISTON	4	Nos.
1425	1.1.11	NUTS OF EACH TYPE & SIZE	4	Nos.
1426	1.1.12	SEALING RINGS OF EACH TYPE & SIZE	6	Nos.
1427	1.1.13	CONNECTING NIPPLE	4	Nos.
1428	1.1.14	TREATING REDUCING PIECE	4	Nos.
1429	1.1.15	SEALING RING	4	Nos.
1430	1.1.16	PLUG	4	Nos.
1431	1.1.17	RETAINING RINGS OF EACH TYPE AND SIZE	80	Nos.
1432	1.1.18	O-RING OF EACH TYPE & SIZE	80	Nos.
1433	1.1.19	SEAL	4	Nos.
1434	1.1.20	HEX. SOCKET HEAD SCREW	20	Nos.
1435	1.1.21	VALVE UNIT (S)	1	Set
1436	1.1.22	VALVE SUPPORT	4	Nos.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1437	1.1.23	CLAMPING PIECE	4 Nos.
1438	1.1.24	PIN	4 Nos.
1439	1.2	DIAPHRAGM HOUSING UNIT	
1440	1.2.1	CLAMPING BUSH	2 Nos.
1441	1.2.2	DIAPHRAGM	18 Nos.
1442	1.2.3	SEALING RING	6 Nos.
1443	1.2.4	DISCHARGE DAMPENER DIAPHRAGM	9 Nos.
1444	1.3	Ash Mixer	
1445	1.3.1	Impeller Blades (one set consist of all blades for mixer)	6 sets.
1446	1.4	Ash Mixer Gear Box	
1447	1.4.1	Oil Seals of each type and size	6 Nos.
1448	1.4.2	Gaskets of each type and size	8 Nos.
1449	1.4.3	Bearing of each type and size	4 Nos.
1450	1.4.4	Retaining Rings of each type and size	4 Nos.
1451	2.0	INSTRUMENT AIR COMPRESSOR & CONVEYING COMPRESSOR and Air Dryers (for each type and size)	
1452	2.1	Air Filter element	
1453	2.1.1	Air filter element for conveying Air compressors	5 Nos.
1454	2.1.2	Air filter element for instrument Air compressors at plant Area	2 Nos.
1455	2.1.3	Air filter element for instrument Air compressors at silo area	2 Nos.
1456	2.2	Oil Filter	
1457	2.2.1	Oil Filter for conveying Air compressors	5 Nos.
1458	2.2.2	Oil Filter for instrument Air compressors at plant Area	2 Nos.
1459	2.2.3	Oil Filter for instrument Air compressors at silo area	2 Nos.
1460	2.3	Main shaft oil seal	
1461	2.3.1	Main shaft oil seal for conveying Air compressors	5 Nos.
1462	2.3.2	Main shaft oil seal for instrument Air compressors at plant Area	2 Nos.
1463	2.3.3	Main shaft oil seal for instrument Air compressors at silo area	2 Nos.
1464	2.4	Discharge check valve for each type and size of compressors	2 Nos.
1465	2.5	Intercooler/After cooler parts (including O-rings, gaskets, washer) for each type and size of compressors	2 sets
1466	2.6	Solenoid valve for each type and size of compressors	2 Nos.
1467	2.7	HP/LP safety valve for each type and size of compressors	2 Nos. for each
1468	2.8	Oil stop valve for each type and size of compressors	2 Nos.
1469	2.9	Lub oil pump for each type and size of compressors	2 Nos.
1470	2.10	Complete Rotor Assembly with Shaft	
1471	2.10.1	Complete Rotor Assembly with Shaft Conveying air comp (As per Installed Make & Model)	1 Nos.
1472	2.10.2	Complete Rotor Assembly with Shaft IA air comp. (plant area) (As per Installed Make & Model)	1 Nos.
1473	2.10.3	Complete Rotor Assembly with Shaft IA air comp. (Silo area) (As per Installed Make & Model)	1 Nos.
1474	2.11	Complete Gear Box (For each Compressor)	1 Sets
1475	2.12	Bearing (DE & NDE) (For each Compressor) (1 SET OF NDE & DE side bearing for each type of Motor for Instrument Air Compressor Plant Area)	2 Sets
1476	2.13	Seal Kit	2 Sets
1477	2.14	Coupling (Motor to Gear Box & Gear Box to Compressor) (For each Compressor)	2 Sets
1478	2.15	Air Dryers (For each type and size)	
1479	2.15.1	For Conveying Air Dryer	
1480	a)	Inner ring plate for discharge valve	3 Nos.
1481	b)	Ring plate for suction valve	3 Nos.
1482	c)	Compressor shaft seal assembly	3 Nos.
1483	d)	Piston ring/Guide ring	3 Sets
1484	e)	V-belts for compressor	3 Sets
1485	f)	Oil pressure failure safety switch	3 Sets
1486	g)	Crank case heater	3 Sets
1487	h)	Gaskets	3 Sets
1488	i)	Set of "O" rings and oil seals each type	3 Sets
1489	j)	Suction filter elements	3 Sets
1490	k)	Bearings	3 Sets
1491	l)	Complete set of suction valves	3 Sets
1492	m)	complete set of Discharge valves	3 Sets
1493	n)	Thermostatic Expansion Valve	3 Sets
1494	2.15.2	For Instrument Air Dryer at Plant Area	
1495	a)	Inner ring plate for discharge valve	3 Nos.
1496	b)	Ring plate for suction valve	3 Nos.
1497	c)	Compressor shaft seal assembly	3 Nos.
1498	d)	Piston ring/Guide ring	3 Sets
1499	e)	V-belts for compressor	3 Sets
1500	f)	Oil pressure failure safety switch	3 Sets
1501	g)	Crank case heater	3 Sets
1502	h)	Gaskets	3 Sets
1503	i)	Set of "O" rings and oil seals each type	3 Sets
1504	j)	Suction filter elements	3 Sets
1505	k)	Bearings	3 Sets
1506	l)	Complete set of suction valves	3 Sets
1507	m)	complete set of Discharge valves	3 Sets
1508	n)	Thermostatic Expansion Valve	3 Sets
1509	2.15.3	For Instrument Air Dryer at Silo Area	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1510	a)	Inner ring plate for discharge valve	3 Nos.
1511	b)	Ring plate for suction valve	3 Nos.
1512	c)	Compressor shaft seal assembly	3 Nos.
1513	d)	Piston ring/Guide ring	3 Sets
1514	e)	V-belts for compressor	3 Sets
1515	f)	Oil pressure failure safety switch	3 Sets
1516	g)	Crank case heater	3 Sets
1517	h)	Gaskets	3 Sets
1518	i)	Set of "O" rings and oil seals each type	3 Sets
1519	j)	Suction filter elements	3 Sets
1520	k)	Bearings	3 Sets
1521	l)	Complete set of suction valves	3 Sets
1522	m)	complete set of Discharge valves	3 Sets
1523	n)	Thermostatic Expansion Valve	3 Sets
1524	3	BOTTOM ASH OVERFLOW TRANSFER PUMPS	
1525	3.1	Impeller along with Wearing Parts	1 No.
1526	3.2	Casing Liners	1 sets
1527	3.3	Pump Bearings	2 sets
1528	3.4	Pump Shaft	1 No.
1529	3.5	Shaft Sleeve	1 sets
1530	3.6	Glands	2 sets
1531	3.7	Gland Packing	2 sets
1532	3.8	Liners(Suction Side and Gland Side)	1 sets
1533	4	BOTTOM ASH SLURRY TRANSFER SYSTEM FROM JET PUMPS TO ASH SLURRY SUMP	
1534	4.1	Slurry Line Valves	
1535	4.1.1	Slurry Line Valve Seats	2 Nos.
1536	4.1.2	Slurry Line Valve Gates	4 Nos.
1537	4.1.3	Bottom Ash Slurry Line Fittings	2 Sets
1538	4.1.4	Slurry Line Fittings (Bends and Laterals)	
1539		(Each type and size)	2 Sets.
1540	4.1.5	Slurry Line Couplings (Each type and size)	6 Nos.
1541	5	COARSE ASH SYSTEM	
1542	5.1	Flushing Apparatus for each type and size	1 No.
1543	5.2	Coarse Ash Slurry Line Fittings	
1544	5.2.1	Slurry Line Fittings (Bends, Elbows and Laterals) (Each type and size)	2 Set
1545	5.2.2	Slurry Line Couplings (Each type and size)	4 Set
1546	6	WATER PUMPS	
1547	6.1	High Pressure Water Pumps (HP pump)	
1548	6.1.1	Pump Bearings each type (Each type & Size)	1 sets
1549	6.1.2	Pump/Motor Couplings (Each type & Size)	1 sets
1550	6.1.3	Impeller along with Wear Parts (Each type & Size)	1 sets
1551	6.1.4	Casing Wearing Rings (Each type & Size)	1 sets
1552	6.1.5	Pump Shaft (Each type & Size)	1 No.
1553	6.1.6	Glands (Each type & Size)	1 sets
1554	6.1.7	Gland Packings (Each type & Size)	1 sets
1555	6.1.8	Shaft Sleeve (Each type & Size)	1 sets
1556	6.2	Low Pressure Water Pumps (LP water pumps)	
1557	6.2.1	Pump Bearings (Each type & Size)	1 Set
1558	6.2.2	Pump/Motor Couplings (Each type & Size)	1 Set
1559	6.2.3	Impeller along with Wear Parts (Each type & Size)	1 Set
1560	6.2.4	Casing Wearing Rings (Each type & Size)	1 Set
1561	6.2.5	Pump Shaft (Each type & Size)	1 Set
1562	6.2.6	Glands (Each type & Size)	1 Set
1563	6.2.7	Shaft Sleeve (Each type & Size)	1 Set
1564	6.2.8	Gland Packings (Each type & Size)	1 Set
1565	6.3	Economiser water pumps	
1566	6.3.1	Pump Bearings (Each type & Size)	1 Set
1567	6.3.2	Pump/Motor Couplings (Each type & Size)	1 Set
1568	6.3.3	Impeller along with Wear Parts (Each type & Size)	1 Set
1569	6.3.4	Casing Wearing Rings (Each type & Size)	1 Set
1570	6.3.5	Pump Shaft (Each type & Size)	1 Set
1571	6.3.6	Glands (Each type & Size)	1 Set
1572	6.3.7	Shaft Sleeve (Each type & Size)	1 Set
1573	6.3.8	Gland Packings (Each type & Size)	1 Set
1574	6.4	HCSD Water Pumps	
1575	6.4.1	Pump Bearings (Each type & Size)	1 Set
1576	6.4.2	Pump/Motor Couplings (Each type & Size)	1 Set
1577	6.4.3	Impeller along with Wear Parts (Each type & Size)	1 Set
1578	6.4.4	Casing Wearing Rings (Each type & Size)	1 Set
1579	6.4.5	Pump Shaft (Each type & Size)	1 No.
1580	6.4.6	Glands (Each type & Size)	1 Set
1581	6.4.7	Shaft Sleeve (Each type & Size)	1 Set
1582	6.4.8	Gland Packings (Each type & Size)	1 Set
1583	6.5	Ash Conditioner Water Pumps	
1584	6.5.1	Pump Bearings (Each type & Size)	1 Set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1585	6.5.2	Pump/Motor Couplings (Each type & Size)	Set
1586	6.5.3	Impeller along with Wear Parts (Each type & Size)	Set
1587	6.5.4	Casing Wearing Rings (Each type & Size)	Set
1588	6.5.5	Pump Shaft (Each type & Size)	No.
1589	6.5.6	Glands (Each type & Size)	Set
1590	6.5.7	Shaft Sleeve (Each type & Size)	Set
1591	6.5.8	Gland Packings (Each type & Size)	Set
1592	6.6	SEAL WATER PUMPS	
1593	6.6.1	Pump Bearings (Each type & Size)	Set
1594	6.6.2	Pump/Motor Couplings (Each type & Size)	Set
1595	6.6.3	Impeller along with Wear Parts (Each type & Size)	Set
1596	6.6.4	Casing Wearing Rings (Each type & Size)	Set
1597	6.6.5	Pump Shaft (Each type & Size)	No.
1598	6.6.6	Glands (Each type & Size)	Set
1599	6.6.7	Shaft Sleeve (Each type & Size)	Set
1600	6.6.8	Gland Packings (Each type & Size)	Set
1601	7	FLY ASH EXTRACTION SYSTEM UPTO SURGE/BUFFER HOPPER	
1602	7.1	Vacuum Extraction System	
1603	7.1.1	Fly Ash Vacuum Extraction Line Valves (Each type & Size)	20% of Installed Qty
1604	7.1.2	Vacuum Breaker Valves (Each type & Size)	20% of Installed Qty
1605	7.1.3	Lower Seat of Vacuum Breaker (Each type & Size)	20% of Installed Qty
1606	7.1.4	Upper Seat of Vacuum Breaker (Each type & Size)	20% of Installed Qty
1607	7.1.5	Seal Kit with Bucket for Vacuum Breaker (Each type & Size)	20% of Installed Qty
1608	7.2	Fly Ash Extraction Vacuum Pumps	
1609	7.2.1	Complete Set of Vacuum Pump	2
1610	7.2.1	Vacuum Pump Bearings (DE & NDE)	3
1611	7.2.3	Gland Packing for Vacuum Pumps	3
1612	7.2.4	Bare shaft Vacuum Pump	3
1613	7.2.5	Intake Filters & Silencer	3
1614	7.2.6	V Belt Pulley (Motor & Pump side both)	3
1615	7.2.7	Pump Casing, Side Cover of both sides, Control Cone	3
1616	7.3	FLY ASH EXTRACTION LINE ISOLATION VALVES/ FITTINGS/ COUPLINGS	
1617			
1618	7.3.1	Fly Ash Extraction Line Isolation Valve Seats (For each type & size) (1 Set includes 4 NOS. UPPER PLATE	4
1619		4 NOS. LOWER PLATE FOR PLATE VALVE and	
1620		4 NOS. BODY FOR PLATE VALVE	
1621	7.3.2	Fly Ash Extraction Line Isolation Valve Gates/ Flaps (For each type & size) (1 set includes 4 NOS. SHUTTER	4
1622		PLATE SS304 FOR PLATE VALVE	
1623	7.3.3	4 NOS.SHUTTER PLATE)	
1623	7.3.3	Fly Ash Extraction Line Rgulator Valve Complete Assembly (For each type & size)	2
1624	7.3.4	Fly Ash Extraction Line Coupling (For each type & size)	4
1625	7.3.5	Fly Ash Extraction Line Fittings (Bends/ Laterals) (Each type & Size)	4
1626	7.4	FLY ASH STORAGE HOPPER /ESP /Buffer Hopper / SILO	
1627	7.4.1	ESP Hopper isolation valve (Each type & Size)	20% of Installed Qty
1628	7.4.2	Silo Isolation Valve (Below Silo) (Each type & Size)	2
1629	7.4.3	Fluidising Pad for ESP Hopper	20% of Installed Qty
1630	7.4.4	Fluidising Pad for Buffer Hopper	20% of Installed Qty
1631	7.4.5	Fluidising Pad for Silo (Each type & Size)	20% of Installed Qty
1632	7.5	Fly Ash lean slurry system	
1633	7.5.1	Hydrojector	2
1634	7.5.2	Jet Pump	
1635	a)	Nozzle Assembly	6
1636	b)	Complete Jet Pump Assembly	2
1637	c)	Jet Pump discharge Section	2
1638	7.6	Slurry Line Fittings (Bends, Elbows and Laterals) (Each type and size)	2
1639	7.7	Slurry Line Couplings (Each type and size)	4
1640	8	Lean ASH SLURRY DISPOSAL SYSTEM	
1641	8.1	Lean Ash Slurry Disposal Pumps and Drive	
1642	8.1.1	Complete Set of Ash Slurry Pump	1
1643	8.1.2	Impeller with Wearing Parts	2
1644	8.1.3	Casing Liners	2
1645	8.1.4	Liners (Suction side and Gland side)	2
1646	8.1.5	Gland Packing	2
1647	8.1.6	Pump Bearings	2
1648	8.1.7	Shaft Sleeves	2
1649	8.1.8	Pump Shaft	1
1650	8.2	Lean Slurry/sludge Line Valves	
1651	8.2.1	Knife Edge Valve Assembly at Slurry Pump Discharge (For each type & size)	20% of Installed Qty
1652	8.2.2	Knife Edge Gate Valve in Slurry Disposal Pumps Suction (Complete Assembly) (For each type & size)	20% of Installed Qty
1653	8.2.3	Valve Disc (For each type & size)	20% of Installed Qty
1654	8.2.4	Valve Seat (For each type & size)	20% of Installed Qty
1655	8.3	Drain SUMP PUMPS	
1656	8.3.1	Pump Impeller (Each type & size)	1
1657	8.3.2	Impeller Wearing Rings (Each type & size)	1

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
1658	8.3.3	Shaft Sleeves for Complete Assembly (Each type & size)	1	No.
1659	8.3.4	Pump Bearings (Each type & size)	1	No.
1660	8.3.5	Pump Gland Lantern Ring (Each type & size)	1	No.
1661	8.4	SLUDGE PUMPS (for each type and size)		
1662	8.4.1	Pump Bearings	2	sets
1663	8.4.2	Impeller with Wearing Parts	2	No.
1664	8.4.3	Casing Liners	2	sets
1665	8.4.4	Casing Liners	1	No.
1666	8.4.5	Glands	2	No.
1667	8.4.6	Gland Packing	2	sets
1668	8.4.7	Shaft Sleeves	2	sets
1669	8.5	WATER LINE VALVES AND JETTING NOZZLES		
1670		Valves (Each type & size)(Gate Valve Manual Optd. Flanged End		
1671	8.5.1	Gate Valve Manual Optd. Flanged End	2	Lot.
1672		Gate Valve Motorised Optd. Flanged End		
1673	8.5.2	Nozzles Tips for Nozzles in Ash Slurry Jetting, Agitation, Quenching,Flushing Service, (Each type & size) (32 NOS. FLUSHING NOZZLE & 10 Nos. SPRAY NOZZLE ½" FOR ASH CONDITIONER each type & size)	2	Lot.
1674	9	BOTTOM ASH & JET PUMP SYSTEM		
1675	9.1	Bottom Ash Hopper		
1676	9.1.1	Bottom Ash Hopper Refractory Wall Cooling Assembly	1	sets
1677	9.1.2	Bottom Ash Hopper seal trough flushing nozzles	1	sets
1678	9.1.3	Bottom Ash Hopper Liners	1	sets
1679	9.2	Hopper Discharge Gate		
1680	9.2.1	Gate Wear Liners	2	sets
1681	9.2.2	Seal kit with Bucket Feed gate operating cylinder	2	sets
1682	9.2.3	Gate Shaft Assembly	2	sets
1683	9.3	Ash Crusher/Clinker Grinder		
1684	9.3.1	Ash Crusher Anvil Plate (Liners)	2	sets
1685	9.3.2	Wearing Rings for Ash Crusher	2	sets
1686	9.3.3	Lantern Rings	2	sets
1687	9.3.4	Ash Crusher Shaft Sleeves	3	sets
1688	9.3.5	Ash Crusher Gear Box internals (Complete)	2	sets
1689	9.3.6	Ash Crusher Rolls (Drive roll & driven rolls)	2	sets
1690	9.3.7	Ash Crusher gear box complete set	2	sets
1691	9.3.8	Bearing for Crusher Motor along with the housing	2	sets
1692	9.4	Spares for Fluid Couplings		
1693	9.4.1	Complete set of Fluid Couplings	2	No
1694	9.4.2	Drive Plate	2	sets
1695	9.4.3	Flexible disc	2	sets
1696	9.4.4	Fusible Plug	2	sets
1697	9.4.5	Multiple Disc	2	sets
1698	9.4.6	Assembly	2	sets
1699	9.4.7	Base plug	2	sets
1700	9.4.8	Lantern Rings	2	Sets
1701	9.5	Ash Crusher Complete Assembly	1	No.
1702	9.6	Sprocket for Drive and Driven End	2	sets
1703	9.7	Chain - Complete Length	2	No.
1704	9.8	Jet Pumps		
1705	98.1	Nozzle Assembly	6	No.
1706	9.8.2	Complete Jet Pump Assembly	2	No.
1707	9.8.3	Jet Pump discharge Section	2	sets
1708	10	VENT FILTER/VENT BAG		
1709	10.1	Filter Bags (Bag Filter)	30% of Installed Qty	Nos
1710	10.2	Cages for above Bag (Bag Filter)	15% of Installed Qty	Nos
1711	10.3	Timer Card (Bag Filter)	8	Nos
1712	10.4	Solenoid Valve / Pulse Jet Valves (Bag Filter)	12	Nos
1713	10.5	Filter Bags (Vent Filter)	30% of Installed Qty	Nos
1714	10.6	Cages for above Bag (Vent Filter)	15% of Installed Qty	Nos
1715	10.7	Timer Card (Vent Filter)	6	Nos
1716	10.8	Solenoid Valve (Vent Filter)	10	Nos
1717	11	TELESCOPIC SPOUT		
1718	11.1	Wire Rope	2	Nos
1719	11.2	Limit Switch	2	Nos
1720	11.3	Drive Chain	2	Nos
1721	11.4	Flexible Fabric Cloth	2	Nos
1722	11.5	Lifting Rods	2	Nos
1723	11.6	Turn Buckles	2	Nos
1724	11.7	Complete Gearbox with Motor for Unloading Spout	1	Nos
1725	12	ROTARY FEEDER (for each size)		
1726	12.1	Drive Sprocket	2	Nos
1727	12.2	Driven Sprocket	2	Nos
1728	12.3	Scraper Seals	6	Nos
1729	12.4	Set of LIP Seal	6	Sets
1730	12.5	Bearings	2	Nos

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1731	13	Ash conditioner	
1732	13.1	Nozzle Assembly	1 Set
1733	13.2	Blade	1 No
1734	13.3	Blade liner	3 No
1735	13.4	Shaft	1 Set
1736	13.5	Plummer block	1 Set
1737	13.6	Flexible coupling	1 Set
1738	13.7	Gear box with drive motor (1 Set= 2 nos.)	1 Set
1739	13.8	Shaft Bearing (1Set = 4 Nos.)	1 Set
1740	13.9	Set of Nozzles (1 Set = 25 Nos.)	1 Set
1741	14	BRANCH AIR INTAKE VALVES	
1742	14.1	Complete Assembly	20% of Installed Qty No.
1743	14.2	Spring for Air Intake Valve	20% of Installed Qty No.
1744	14.3	Disc	20% of Installed Qty No.
1745	15	SILO FLUDISING BLOWER/ESP FLUIDISING BLOWER	
1746	15.1	Rotor (Each type & size)	2 Nos
1747	15.2	Oil Seals & Labyrinth Seal (Each type & size)	4 Nos.
1748	15.3	Belts for Blower Drive (Each type & size)	7 Lot.
1749	15.4	Shaft (Each type & size)	2 Nos.
1750	15.5	Bearing (DE & NDE) (Each type & size)	4 Nos.
1751	16	LEAN ASH SLURRY DISPOSAL PUMPS & DISPOSAL LINE RELATED ITEMS	
1752	16.1	Resilient Plate for Fluid Coupling	4 Nos.
1753	16.2	Fusible Plug for Fluid Coupling	4 Nos.
1754	16.3	Slurry Line Fittings	
1755	16.4	90 deg. Elbow (Each type & size)	30% of Installed Qty Nos.
1756	16.5	45 deg. Elbow (Each type & size)	30% of Installed Qty Nos.
1757	16.6	Slurry Line Coupling (Each type & size)	30% of Installed Qty Nos.
1758	17	PIPES	
1759	17.1	Pipe (Excluding non GI / MS pipe each type & Size - 20% of Installed Length	1 Lot.
1760		PIPE (MS ERW), Each Type & Size - 20% of Installed Length, HEAVY Duty	
1761	17.1	PIPE SS -304 ERW each type & Size - 20% of Installed Length	1 Lot.
1762	17.1	Cross Country Slurry Disposal (HCSD) Pipe((PIPE SEAMLESS, each type & Size - 20% of Installed Length, SCH. 80	1 Lot.
1763	17.1	Lean Slurry Disposal Pipes (30% of Installed Length)	1 Lot
1764	18	MISCELLANEOUS CRANES & HOISTS	
1765	18.1	Hoists (for each type and rating, hoists)	
1766	18.1.1	Bearings for Long Travel Wheels (Each type & size)	2 Set
1767	18.1.2	Bearings for Gear Boxes for each type of Hoist (Each type & size)	2 Set
1768	18.1.3	Break Liners for all the Brakes (Each type & size)(1Lot=2 Nos.)	1 Lot
1769	18.1.4	Oil Seals of each type and size(1Lot=4 Nos.)	1 Lot
1770	18.1.5	Brake Springs for all Brakes (Each type & size),1 lot=4 Nos	1 Lot
1771	18.1.6	Wire Ropes for Hooks each crane hook (Each type & size)(1Lot=97 Mtrs)	1 lot
1772	18.1.7	Solenoid Coils for Brakes (Each type & size)	2 set
1773	18.1.8	Overload Relay for Motors (Each type & size)	2 Nos.
1774	18.1.9	Limit Switches for Hoists and Travel Mechanisms (Each type & size)	2 Set
1775	18.1.10	Spare Motors for Hoists (Each type & size)	2 Nos.
1776	18.2	Long Travel Machinery	
1777	18.2.1	Gear Wheel (Each type & size)	1 Set
1778	18.2.2	Internal Clip (Each type & size)	2 Nos.
1779	18.2.3	Pinion (Each type & size)	1 Nos.
1780	19	Chain Pulley Block	
1781	19.1	Load Chain Wheel	1 Nos.
1782	19.2	Load Chain Stripping Fork	5 Nos.
1783	19.3	Hand Chain Wheel	2 Nos.
1784	19.4	Ratchet Pawl	1 Nos.
1785	19.5	Locking Ratchet Wheel	2 Nos.
1786	19.6	Guide Roller	2 Nos.
1787	19.7	Brake Disc	2 Nos.
1788	20	VENTILATION SYSTEM(Fan-Motor Bearing-2 Nos and Fan Motor-1 no.)-	1 lot
1789	21	Conveyor Belt for Bottom Ash	
1790	21.1	Carrying idler rollers	15 % of total requirements of rollers Nos.
1791	21.2	Impact idler rollers	10% of total requirements of rollers Nos.
1792	21.3	Return idler rollers	10% of total requirements of rollers Nos.
1793	21.4	Troughing training idler complete	4 Nos.
1794	21.5	Return training idler complete	2 Nos.
1795	21.6	Transient idler complete	2 Nos.
1796	21.7	Conveyor belting	20% of each type & rating of the belt and thickness. Nos.
1797	21.8	Brake	2 Sets for each conveyor Sets
1798	21.9	Brake shoes	2 Sets for each conveyor Sets
1799	21.1	Drive pulley without bearings and plummer blocks	2 Nos. Nos.
1800	21.11	Non drive pulley without bearings & plummer blocks	4 Nos. Nos.
1801	21.12	Spherical roller bearings for pulleys of different sizes without plummer blocks	3 Nos. for each size Nos.
1802	21.13	Plummer blocks complete with bearings & sleeves	2 Nos. of each type & size Nos.
1803	22	Gear Couplings	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
1804	22.1	Complete gear couplings	2 Nos. of each size and type	Nos.
1805	22.2	Bolts & nuts	2	Sets
1806	22.3	Seal kit	2	Sets
1807	23	Fluid Couplings		
1808	23.1	Complete fluid coupling	1 Nos. of each size and type	No.
1809	23.2	Multi disc assembly	4 Nos. of each size and type	Nos.
1810	23.3	Bearings	1 Set for each size and type	Set
1811	23.4	Seal kit	2 Sets for each size and type	Set
1812	23.5	Resilient drive plate assembly	2 Nos. of each size and type	Nos.
1813	23.6	Fusible plugs	10 Nos. of each size and type	Nos.
1814	24	Belt Cleaner & Skirt Board		
1815	24.1	Modular segments for belt cleaner	10% of total population for each type & size	Nos.
1816	24.2	Modular segments for skirt board	10% of total population for each type & size	Nos.
1817	24.3	Skirt rubber	10% of total population for each type & size	Nos.
1818	24.4	Complete belt cleaner (internal/external)	5% of total population for each type & size	Nos.
1819	25	Vibrating Feeders		
1820	25.1	Drive of Vibrating Feeder	3	set
1821	25.2	Liners of Vibrating Feeder	3	set
1822	26	Ash Crusher		
1823	26.1	Complete Ash Crusher Assembly	1	No.
1824	26.2	Ash Crusher Liners	1	Sets
1825	26.3	Ash Crusher Gear Box	1	Sets
1826	26.4	Ash Crusher Rolls (Drive roll & driven rolls)	1	Sets
1827				
1828	2.05.00	COAL HANDLING PLANT		
1829	Sl. No.	Description	Quantity	Remarks
1830	1.0	Stacker cum Reclaimer (Mechanical)		
1831	1.1	Long Travel Mechanism		
1832	1.1.1	Gear Box		
1833	a)	One Complete Gearbox for-Long travel drive (Type Size & Make-as installed)	1 Set	1 set = (1 LH +1RH)
1834	b)	One set of each Input Shaft, Intermediate Shaft (1st & 2nd as applicable to gearbox), Output Shaft (Hollow or Solid as applicable to Gearbox)	1 Set	1 set all shafts as applicable for one complete gear box
1835	1.1.2	Bearing		
1836	a)	Bearings for Gear box	1 Set	1 set complete for one gear box as applicable
1837	b)	Bearings for Drive Shaft	2 Sets	1 set = 1 no. of each size as applicable for one drive shaft
1838	c)	Bearings for Intermediate shaft	2 Sets	2 set = 2 nos. of each size as applicable for one intermediate shaft
1839	d)	Bearing housing, complete with all types of oil seal/labyrinth seal- as application for drive and intermediate shaft of drive bogie	2 Sets	2 set = 2 no. of each size as applicable for Drive and intermediate shaft
1840	1.1.3	Brake		
1841	a)	Friction Lining for installed Electro Hydraulic Thruster Brake of Long Travel: Semi Flexible with Brass wire inclusion, Type Size & Make-as installed	2 Set	
1842	b)	Brake drum for Long travel drive/ Type - Carbon steel casting / Type Size & Make-as installed	2 Set	
1843	1.1.4	Gear and Pinion for Drive bogie		
1844		Gear and Pinion for Drive bogie	2 sets	1 set = 2 nos. of gear and 1 no. of pinion gear as applicable for one drive bogie
1845	1.1.5	Couplings		
1846	a)	Input and output Couplings for Drive bogie	1 sets	1 set = 1 no. of each size as applicable for drive bogie
1847	1.1.6	Bogie Assembly		
1848	a)	Drive bogie wheel assembly consisting of wheel assemble with shaft and plummer blocks and bearings, reducer, couplings, brakes	2 Sets	2 sets = 1sets RH and 1 sets LH complete for one Stacker/Reclaimer
1849	b)	Non Drive bogie(Idle) wheel assembly consisting of wheel assemble with shaft and plummer blocks and bearings, reducer, couplings, brakes	4 Sets	4 sets = 2sets RH and 2 sets LH complete for one Stacker/Reclaimer
1850	c)	Pins for connecting bogie (drive and non-drive)	3 sets	3 sets of each type
1851	1.2	Slew Drive Mechanism		
1852	1.2.1	Gear Box		
1853	a)	One Complete Gearbox for-Slew drive (Type Size & Make-as installed)	1 Set	1 set = 1 no. of each size as applicable for slew drive
1854	b)	One set of each Input Shaft, Intermediate Shaft (1st & 2nd as applicable to gearbox), Output Shaft (Hollow or Solid as applicable to Gearbox)	1 Set	1 set = 1 no. of each size as applicable for slew drive
1855	1.2.2	Bearing		
1856	a)	Bearings for Slew Gear box	1 Set	1 set complete for one gear box as applicable slew drive
1857	b)	Bearings for Drive Shaft for Slew Gearing	1 Set	1 set = 1 no. of each size as applicable for one drive shaft
1858	c)	Bearings for Intermediate shaft for slew gearing if applicable	1 Set	1 set = 1 nos. of each size as applicable for one intermediate shaft
1859	d)	Bearing housing, complete with all types of oil seal/labyrinth seal- as application for slew drive gear	1 Set	1 set = 1 no. of each size as applicable for Slew Drive gear
1860	e)	Slewing pinion gears assembly with slew bearing (Rothe Erde bearing assembly)	1 Set	1 set. 1 no. of each for one complete machine
1861	1.2.3	Brake		
1862	a)	Friction Lining for installed Electro Hydraulic Thruster Brake of Long Travel: Semi Flexible with Brass wire inclusion, Type Size & Make-as installed	2 Set	
1863	b)	Brake drum for Long travel drive/ Type - Carbon steel casting / Type Size & Make-as installed	2 Set	
1864	1.3	Bucket Wheel Mechanism		

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
1865	1.3.1	Bucket Drive	
1866	a)	Hydraulic Motor, Gear box (if applicable) & Pump each	1 Set
1867	b)	Hoses and connector for Hydraulic bucket drive	1 Set
1868	1.3.2	Bucket Wheel	
1869	a)	Shrink disc / Application-Bucket wheel drive shaft / Type Size & Make-as installed	1 set
1870	b)	Complete bucket / Application-Bucket assembly/ Type Size & Make-as installed/ Capacity-as installed along with fasteners	50% of installed qty
1871	c)	Bucket tooth/ Application-Bucket/ Mat.- Manganese steel casting / Type Size & Make-as installed along with fasteners	100% of installed qty
1872	1.4	Boom Conveyor	
1873	1.4.1	Idlers	
1874	a)	Impact cradle idler/Application-Impact table/ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	30% of installed qty in set
1875	b)	Return idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	40% of installed qty in set
1876	c)	Carrying idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	30% of installed qty in set
1877	d)	Impact idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	30% of installed qty in set
1878	e)	Self Aligning idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	100% of installed qty in set
1879	1.4.2	Pulley	
1880	a)	Drive pulley/ Application:-Boom conv. drive / Type Size & Make-as installed with 12 thk rubber lagging.	1 no.
1881	b)	Bearing for drive pulley/ Application-Drive pulley shaft/ Type Size & Make-as installed/ Rating- 50,000 Hrs	2 nos.
1882	c)	Tail pulley/ Application:-Boom conv. drive/ Type Size & Make-as installed with 12 thk rubber lagging.	1 no.
1883	d)	Bearing for tail pulley/ Application-Tail pulley shaft / Type Size & Make-as installed/ Rating- 50,000 Hrs	2 nos.
1884	e)	Plummer blocks for Boom Head end pulley	1 set
1885	f)	Plummer blocks for Boom Tail end pulley	1 set
1886	1.4.3	Gear Box	
1887	a)	One Complete Gearbox for-Boom Conveyor Drive (Type Size & Make-as installed)	1 set
1888	b)	Bearings for Gear box	1 Set
1889	c)	All types of oil seal/ Application-Input/output shaft of gear box/ Type Size & Make-as installed	1 set
1890	1.4.4	Brake	
1891	a)	Friction Lining for installed Electro Hydraulic Thruster Brake of Long Travel: Semi Flexible with Brass wire inclusion, Type Size & Make-as installed	1 set
1892	b)	Brake drum for Long travel drive/ Type - Carbon steel casting / Type Size & Make-as installed	1 set
1893	1.4.5	Fluid Coupling	
1894	a)	Complete set of Fluid coupling./ Application:-Boom conv. drive/ Size, capacity, Type & Make- As installed	1 set
1895	b)	Multi Disc Assembly / application- Fluid coupling/ material- As installed	1 set
1896	c)	Fusible Plug / application- fluid coupling/ material -As installed	2 nos.
1897	1.5	Boom Luffing/Hoisting	
1898	1.5.1	Each type of Luffing Hydraulic Cylinder complete with connecting hose/pipes	1 pair
1899	1.5.2	Hydraulic Pump/Motor each	1 no.
1900	1.5.3	Pressure Relief Valve / Model, Pressure rating, Make- as installed.	2 nos.
1901	1.5.4	Return Line Filter / Model, Beta rating, Make- as installed.	10 nos.
1902	1.5.5	HP Hose for Power Oil / Type, Size, Make- Pressure rating- as installed. (Full Length)	2 sets
1903	1.6	Rail Clamp Actuator with Motor	1 set
1904	1.7	Intermediate Conveyor	
1905	1.7.1	Idlers	
1906	a)	Impact cradle idler/Application-Impact table/ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	30% of installed qty in set
1907	b)	Return idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	40% of installed qty in set
1908	c)	Carrying idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	30% of installed qty in set
1909	d)	Impact idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	30% of installed qty in set
1910	e)	Self Aligning idler/ Application- Boom conv. arrgt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	100% of installed qty in set
1911	1.7.2	Pulley	
1912	a)	Drive pulley/ Application:-Intermediate conv. drive / Type Size & Make-as installed with 12 thk rubber lagging.	1 no.
1913	b)	Bearing for drive pulley/ Application-Drive pulley shaft/ Type Size & Make-as installed/ Rating- 50,000 Hrs	2 nos.
1914	c)	Tail pulley/ Application:-Intermediate conv. drive/ Type Size & Make-as installed with 12 thk rubber lagging.	1 no.
1915	d)	Bearing for tail pulley/ Application-Tail pulley shaft / Type Size & Make-as installed/ Rating- 50,000 Hrs	2 nos.
1916	e)	Plummer blocks for Intermediate conv. Head end pulley	1 set
1917	f)	Plummer blocks for Intermediate conv. Tail end pulley	1 set
1918	1.7.3	Gear Box	
1919	a)	One Complete Gearbox for-Intermediate Conveyor Drive (Type Size & Make-as installed)	1 no.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
1920	b)	One set of each Input Shaft, Intermediate Shaft (1st & 2nd as applicable to gearbox), Output Shaft (Hollow or Solid as applicable to Gearbox)	1 set	
1921	c)	Input shaft bearing / Application-Input shaft of gear box / Type Size & Make-as installed Rating- 50,000 Hrs.	1 set	1 set complete for one gear box as applicable
1922	d)	All types of oil seal/ Application-Input/output shaft of gear box/ Type Size & Make-as installed	1 set	1 set complete for one gear box as applicable
1923	1.7.4	Brake		
1924	a)	Friction Lining for installed Electro Hydraulic Thruster Brake of Long Travel: Semi Flexible with Brass wire inclusion, Type Size & Make-as installed	2 Set	
1925	b)	Brake drum for Long travel drive/ Type - Carbon steel casting / Type Size & Make-as installed	2 Set	
1926	1.7.5	Fluid Coupling		
1927	a)	Complete set of Fluid coupling./ Application:-Boom conv. drive/ Size, capacity, Type & Make- As installed	1 set	
1928	b)	Multi Disc Assembly / application- Fluid coupling/ material- As installed	1 set	
1929	c)	Resilient Driving Plate	1 no.	
1930	d)	Fusible Plug / application- fluid coupling/ material -As installed	1 nos.	
1931	1.7.6	Conveyor Belt		
1932	a)	Conv belt for Boom conv. / Type, Rating, Grade, Make- As installed	1 set	1 set = complete for on intermediate conv.
1933	1.8	DS System (plain water)		
1934	1.8.1	Bearing for Pump (DE+NDE)	5 sets	1 set = complete for Pumps
1935	1.8.2	Coupling for Pump (DE+NDE)	10 sets	
1936	1.8.3	Bolt, Nut & Bush for Pump	10 sets	
1937	1.8.4	Spray nozzles/ Application-DS system/ Capacity, Make- As installed	50% of installed qty in nos.	
1938	1.8.5	Drive Motor for DS System/ application-pump-motor unit./ rating, speed, type- As installed	1 no.	
1939	1.8.6	Solenoid valve	2 nos.	
1940	1.8.7	Coils	2 nos.	
1941	1.8.8	Local Control Station (LCS) for Dust Suppression System	1 no.	
1942	1.9	Brake/Rail Clamp		
1943	1.9.1	Thruster Brake Actuator with Motor		
1944	1.9.1.1	Complete Thruster Brake Actuator with Motor	1 no.	
1945	1.9.1.2	Thruster Brake Motor for LT	1 no.	
1946	1.9.1.3	Thruster Brake Motor for Slew	1 no.	
1947	1.9.1.4	Thruster Brake Motor for Boom Conv.	1 no.	
1948	1.9.1.5	Thruster Brake Motor for Int. Conv.	1 no.	
1949	2.0	Conveyor, Crushers, Vibrating Grizzly feeder, ERH, DE & Ventilation system		
1950	2.1	Conveyor		
1951	2.1.1	Idlers		
1952	a)	1600 mm Belt Width Carrying Idlers Each type	30% of installed qty in set	
1953	b)	For Belt Feeder/RBF Carrying Idlers each type	30% of installed qty in set	
1954	c)	Each type return idlers complete with mounting base boards & mounting bracket etc for Conveyors & Belt Feeders/RBF	40% of installed qty in set	
1955	d)	Impact Idlers complete with mounting base boards & brackets etc for Conveyors & Belt Feeders	40% of installed qty in set	
1956	e)	Rubber discs for impact idlers	40% of installed qty in set	
1957	f)	Guide Rollers for each Conveyors	40% of installed qty in set	
1958	g)	Self Aligning idler/ Application- Boom conv. argrt./ Type Size & Make-as installed/ Frame- cradle type fixed frame (Rollers with frame)	50% of installed qty in set	
1959	h)	Transition idler complete	50% of installed qty in set	
1960	i)	Non-Magnetic (SS) Idlers	50% of installed qty in set	
1961	2.1.2	RBF & Bunker sealing belt		
1962	a)	Belt for Bunker sealing	2 sets	2 sets = 1 sets RH and 1 sets LH complete of bunker sealing belt
1963	2.1.3	Gear Box		
1964	a)	Complete Gear box including input, output shafts & gears etc	1 set of each type and rating	1 set = 1 no. of each type of gear box rating installed for conveyor drives
1965	b)	Oil Seal each type	2 sets of each type and rating	
1966	c)	Bearings each type	2 sets of each type and rating	
1967	d)	Hold Back	2 sets of each type and rating	
1968	e)	Cooling fan with cover	2 nos. of each type and rating	
1969	2.1.4	COUPLING		
1970	a)	Gear Coupling		
1971	(i)	All type of drive couplings high speed and Low speed (Motor side and Gear Box side)	1 no. of each type and size	
1972	(ii)	Fasteners for gear coupling	1 set each size and types	1 set complete for one coupling
1973	(iii)	Seal kit for gear coupling (o-ring)	1 sets of each type and size	
1974	b)	Fluid Coupling		
1975	(i)	Fluid Coupling complete	1 no. of each type and size	
1976	(ii)	Multi Disc assembly (for fluid coupling)	4 nos each type and size	
1977	(iii)	Resilient Drive plate assy.	1 no. of each type and size	
1978	(iv)	Bearings	1 no. of each type and size	
1979	(v)	Seal kit for fluid coupling	2 sets of each size	
1980	(vi)	Fusible plug	10 nos. of each size	
1981	(vii)	Complete actuator and engaging assembly (including motor, gear box etc.)	1 set of each type	
1982	(viii)	Oil Cooler assembly (if applicable)	1 set of each type	
1983	(ix)	Oil pump-motor set (if applicable)	1 set of each type	
1984	(x)	Oil filters	5 sets of each type	
1985	(xi)	Oil/Cooler valves (if applicable)	2 nos. of each type	
1986	2.1.5	Brake		

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
1987	a)	Friction Lining for installed Electro Hydraulic Thruster Brake of Long Travel: Semi Flexible with Brass wire inclusion, Type Size & Make-as installed	2 Set	
1988	b)	Brake drum for Long travel drive/ Type - Carbon steel casting / Type Size & Make-as installed	2 Set	
1989	c)	Complete brake	1 no. of each type and size	
1990	d)	Brake Shoes	2 nos. of each type and size	
1991	e)	Limit Switch for brakes	2 nos.	
1992	2.1.6	Pulleys		
1993	a)	Drive Pulley Complete with Shaft & lagging (excluding bearing & Plummer Block)	1 nos. of each size and type	
1994	b)	Plummer blocks complete with bearings (Each type of plummer block shall be covered) for drive pulley	1 set of each size and rating	1 set = 1 set complete for one pulley (applicable @ both end of pulley shaft)
1995	c)	Non Drive Pulley Complete with Shaft & lagging (excluding bearing & Plummer Block)	1 nos. of each size and type	
1996	d)	Plummer blocks complete with bearings (Each type of plummer block shall be covered) for non drive pulley	1 set of each size and rating	1 set = 1 set complete for one pulley (applicable @ both end of pulley shaft)
1997	2.2	Vibrating Screen (Grizzly Deck)		
1998	2.2.1	Drive assembly complete without motor & motor seal	1 no.	
1999	2.2.2	V-Belts	1 set	1 set complete for one screen feeder
2000	2.2.3	V-Sheaves	1 set	1 set complete for one screen feeder (drive + non drive)
2001	2.2.4	Liners with Bolts	10 set	1 set = complete for one Vibrating screen(grizzly deck)
2002	2.2.5	Grizzly bars complete for screen with fasteners	5 sets	1 set =complete for one screen
2003	2.3	Ring Granulator		
2004	2.3.1	Plummer block assembly (complete with bearing & seal etc)	2 sets	1 set= 1 no.drive end + 1 no. non drive end
2005	2.3.2	Shaft seals each type	4 nos.	
2006	2.3.3	Hammers	50 nos.	
2007	2.3.4	Screw Jack Assembly for the Door Sealing (if applicable)	1 no.	
2008	2.3.5	Rotor assembly consisting of Rotor, shaft, End discs, distance rings, middle discs, suspension bars, disc clamping nuts & shafts extension etc but without hammer rings, bearings & bearing blocks.	1 set	
2009	2.3.6	Cage bars	1 set	complete for one machine
2010	2.3.7	Breaker plate with HT Bolts	4 nos.	
2011	2.3.8	Liner Plates	4 sets	1 set = complete for one machine
2012	2.3.9	Suspension bars with Brass Plug	4 nos.	
2013	2.3.10	Kick off plate with HT Bolts	4 nos.	
2014	2.3.11	Screen Plate with HT Bolts (upper) if applicable	2 sets	1 set = complete for one machine
2015	2.3.12	Screen Plate with HT Bolts (lower) if applicable	2 sets	1 set = complete for one machine
2016	2.4	Fluid Coupling		
2017	a)	Complete set of Fluid Coupling	1 no.	
2018	b)	Bearing for Fluid coupling	1 set	1 set =complete for one fluid coupling
2019	c)	Sealing	1 set	1 set = complete for one fluid coupling
2020	d)	Multi Disc Assembly	1 set	
2021	e)	Resilient Driving Plate	1 no.	
2022	f)	Fusible Plug	4 nos.	
2023	2.5	Flap Gate		
2024	2.5.1	Complete Flap Gate Assembly	20% of installed qty. in set	
2025	2.5.2	Actuator	20% of installed qty. in set	
2026	2.5.3	Position Limit/Torque Switch	15 nos.	
2027	2.5.4	Local Control Station	1 no.	
2028	2.5.5	Drive Motor	1 no.	
2029	2.6	Rack & Pinion Gate		
2030	2.6.1	Limit switch	10 nos.	
2031	2.6.2	Rollers with bearings	10 nos.	
2032	2.6.3	Drive Motor	1 no.	
2033	2.6.4	Sprockets	1 no.	
2034	2.6.5	Local Control Station	1 no.	
2035	2.7	Thermofisher make Becit Conveyor Belt Weigher		
2036	2.7.1	Load Cell	1 no.	
2037	2.7.2	Tacho Unit	1 no.	
2038	2.8	Vibrating Feeder		
2039	2.8.1	Unbalanced Motro/Exciter with drive motor	1 set	1 set = complete for one feeder
2040	2.9	DE System		
2041	2.9.1	Each type of Fan Bearings	2 nos.	
2042	2.9.2	Each type of V Belt	4 nos.	
2043	2.9.3	Each type of Rotary air lock valve with drive	2 sets	
2044	2.9.4	Filter bags	100 nos. each size	
2045	2.9.5	Each type of Drive motor	1 no. of each type and size	
2046	2.9.6	Complete solenoid valve	8 nos. of each size	
2047	2.9.7	Coils for solenoid valve	2 nos.	
2048	2.9.8	Local Push Button Station	1 no.	
2049	2.9.9	Solenoid Valve	9 nos.	
2050	2.10	Ventilation System		
2051	2.10.1	Each type Fan Bearing	2 nos. each size	
2052	2.10.2	Bearings for pumps each type	2 nos. each size	
2053	2.10.3	Each type of V Belt	4 sets of each size	
2054	2.10.4	Nozzles	20 nos	
2055	2.10.5	Local Push Button Station	1 no.	
2056	2.10.6	Drive Motor	2 nos.	
2057	3.0	Electrical Hoist		

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2058	3.1	Bearings	1 nos. of each size and type
2059	3.2	Brake lining	1 set of each size and rating
2060	3.3	Brake Coil	2 nos.
2061	3.4	Limit switch	2 nos.
2062	3.5	Local Control Station	5 nos.
2063	4.0	Sump Pump	
2064	4.1	Complete set with Level Switch & Motor with piping (From tunnel base upto GL Lengh & as installed in ERH Tunnel)	1 set
2065	4.2	Complete set with Level Switch & Motor with piping (From tunnel base upto GL Lengh & as installed in WT Tunnel)	1 set
2066	5.0	Traveling Tripper	
2067	5.1	Tripper Head Pulley with Plummer Block & Bearing (DE & NDE Each)	1 set
2068	5.2	Tripper Bend Pulley with Plummer Block & Bearing (DE & NDE Each)	1 set
2069	5.3	Complete installed Travel Gear Box	2 nos.
2070	5.4	One set of each Input Shaft, Intermediate Shaft (1st & 2nd as applicable to gearbox), Output Shaft (Hollow or Solid as applicable to Gearbox)	1 set
2071	5.5	Each type of Gearbox Bearing & Oil Seals	2 sets
2072	5.6	Travel Drive & Driven Sprocket with Chain	1 set
2073	5.7	CRD Drive & Driven Sprocket with Chain	1 set
2074	5.8	Complete Motorized Actuator for Flap Gate	1 no.
2075	5.9	Speed encoder	1 no.
2076	5.10	Pressure switch for brake release pressure (0-80Bar)	10 no.
2077	6.0	Wagon Tippler Package	
2078	6.1	Complete Hydraulic Pump	1 no.
2079	6.2	Complete Hydraulic Motor	1 no.
2080	6.3	Complete Set Oil Seals & O rings for Hydraulic Pump	2 sets
2081	6.4	Complete Set Oil Seals & O rings for Hydraulic Motor	2 sets
2082	6.5	Rack/sector gears with fasteners	12 set.
2083	6.6	Pinion with shaft	2 sets
2084	6.7	Brake liners	6 sets
2085	6.8	Bearing housing of drive shaft assembly	
2086	a)	Bearing housing of drive shaft assembly: DE & NDE side each	1 set
2087	b)	Oil seals of Gear Box each type	2 set
2088	6.9	Side Arm Charger	
2089	6.9.1	Suction Filter	6 sets
2090	6.9.2	Each type Return Line Filter	6 sets
2091	6.9.3	Seals for Hydraulic Filter (1 set each type & rating)	1 Lot
2092	6.9.4	Seals for Hydraulic Filter For size each type	2 sets
2093	6.9.5	'O' Ring for Hydraulic System	1 set
2094	6.9.6	Bearing for Guide Rollers each type	2 nos.
2095	6.9.7	Pipe Fittings for hydraulic system each type	2 sets
2096	6.9.8	Valves for Hydraulic System : Ball Valve (Each Type & Size)	1 no. of each type and size
2097	6.9.9	Valves for Hydraulic System : Butterfly Valve With Limit Switch (Each Type & Size)	1 no. of each type and size
2098	6.9.10	Valves for Hydraulic System : OT Oil Shuttle Valve (Each Type & Size)	1 no. of each type and size
2099	6.9.11	Valves for Hydraulic System : Pressure Relief Valve (Each Type & Size)	1 no. of each type and size
2100	6.9.12	Valves for Hydraulic System : Shut Off Valve (Each Type & Size)	1 no. of each type and size
2101	6.9.13	Valves for Hydraulic System : Check Valve (Each Type & Size)	1 no. of each type and size
2102	6.9.14	Valves for Hydraulic System : Pressure Relief Valve-Pilot Operated (Each Type & Size)	1 no. of each type and size
2103	6.9.15	Valves for Hydraulic System : Directional Control Valve-Solenoid Operated Type (Each Type & Size)	1 no. of each type and size
2104	6.9.16	Valves for Hydraulic System : Proportional Direction Control Valve (Each Type & Size)	1 no. of each type and size
2105	6.9.17	Valves for Hydraulic System : Shuttle Change-Over Valve (Each Type & Size)	1 no. of each type and size
2106	6.9.18	Valves for Hydraulic System : Pressure Control Valve (Each Type & Size)	1 no. of each type and size
2107	6.9.19	Valves for Hydraulic System : Pilot Operated Check Valve (Each Type & Size)	1 no. of each type and size
2108	6.9.20	Valves for Hydraulic System : Sandwich Flow Control Valve (Each Type & Size)	1 no. of each type and size
2109	6.9.21	Valves for Hydraulic System : Pressure Reducing Valve Sandwich Type (Each Type & Size)	1 no. of each type and size

NOS.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2110	6.9.22	Valves for Hydraulic System : Counter Balance Valve with Limit Switch (Each Type & Size)	1 no. of each type and size
2111	7.0	Apron Feeder	
2112	7.1	One Complete Gearbox for-Apron Feeder (Type Size & Make-as installed)	1 no. of each type and size
2113	7.2	One set of each Input Shaft, Intermediate Shaft (1st & 2nd as applicable to gearbox), Output Shaft (Hollow or Solid as applicable to Gearbox)	1 no. of each type and size
2114	7.3	Oil seals for Gear box : Each Type	2 sets of each size and type
2115	7.4	Pin & Rubber Bushes for Coupling	3 sets of each size and type
2116	7.5	Apron Pan with fasteners	30% of installed qty in set
2117		Return Rollers with fasteners	30% of installed qty in set
2118	7.7	Carrying rollers	30% of installed qty in set
2119	7.8	Chain drive sprocket	2 sets
2120	7.9	Chain link with pins and bushes	30% of installed qty in set
2121	8.0	Dribble Conveyor Belt	
2122	8.1	Belt (One full length of dribble conveyor) (Installed Size, capacity & Make)	1 set
2123			
2124	2.06.00	PT, DM AND ETP PLANT	
2125	1.0	Raw Water intake Screens	1 each type
2126	2.0	PT Plant	
2127	2.1	CLARIFIERS	
2128	2.1.1	Rake (Scraper) drive	1 Set
2129	2.1.2	Turbine drive shaft assembly	1 Set
2130	2.1.3	Rake (Scraper) drive shaft assembly	1 Set
2131	a)	Worm wheel	1 Set
2132	b)	Worm shaft	1 Set
2133	c)	All Bearings with Motors for turbine drive, and Rack drive	1 Set
2134	d)	Set of bridge Wheel	100% of installed qty
2135		Note: One set consists of quantity required for complete replacement for one clarifier or motor as the case may be	
2136	2.2	Lime Slurry Transfer Pumps, Lime Dosing Pumps	
2137	2.2.1	Lime Dosing Pump Unit along with Motor & suction strainer	1 No.
2138	2.2.2	Lime Slurry Transfer Pump Unit along with Motor & suction strainer	1 No.
2139		Note : One set consists of quantity required for complete replacement for one pump	
2140	2.3	Alum Dosing Pumps : PT - CW, PT - DM System, LET (for tube settlers)	
2141	2.3.1	Alum Dosing Pump Unit along with motor (for each system)	1 No.
2142		Note : One set consists of quantity required for complete replacement for one pump	
2143	2.4	Agitators	
2144	2.4.1	Agitator Assembly with Motor and Gear Box - Lime Slaking Tank	1 Set
2145	2.4.2	Agitator Assembly with Motor and Gear Box - Lime Preparation Tank - PT System	1 Set
2146	2.4.3	Agitator Assembly with Motor and Gear Box - Alum Preparation Tank	1 Set
2147	2.4.4	Agitator Assembly with Motor and Gear Box - Coagulant aid Tank - CSSP System	1 Set
2148	2.4.5	Agitator Assembly with Motor and Gear Box - Flash Mixer	1 Set
2149	2.4.6	Agitator Assembly with Motor and Gear Box - Flocculation Tank	1 Set
2150	2.5	Valves	
2151	2.5.1	Manual Plug Valve	Min 1 no of each type, rating & size
2152	2.5.2	Motor operated Plug Valve (without motor actuator)	Min 1 no of each type, rating & size
2153	2.5.3	Check Valves /Non-return Valve	Min 1 no of each type, rating & size
2154	2.5.4	Manual Ball Valve	Min 1 no of each type, rating & size
2155	2.5.5	Motor operated Ball Valve (without motor actuator)	Min 1 no of each type, rating & size
2156	2.5.6	Manual Globe Valve	Min 1 no of each type, rating & size
2157	2.5.7	Manual Diaphragm Valve	Min 1 no of each type, rating & size
2158	2.5.8	Motor operated Diaphragm Valve (without motor actuator)	Min 1 no of each type, rating & size
2159	2.5.9	Diaphragm for the above Diaphragm Valves	Min 1 no or 50% of installed quantity of each type, rating & size
2160	2.5.10	Manual Butterfly Valve	Min 1 no of each type, rating & size
2161	2.5.11	Motor operated Butterfly Valve (without motor actuator)	Min 1 no of each type, rating & size
2162	2.5.12	Manual Gate Valve	Min 1 no of each type, rating & size
2163	2.5.13	Motor operated Gate Valve (without motor actuator)	Min 1 no of each type, rating & size
2164	2.6	Filters for PT - DM	
2165	2.6.1	Sand and gravel	1.1 times of One full charge for one filter
2166	2.6.2	Filter flow rate indicator	1 no of each type / rating
2167	2.6.3	Rate of flow controller	1 no of each type / rating
2168	2.6.4	Back wash filter flow rate indicator	1 no of each type / rating
2169	2.6.5	Differential head indicator	1 no of each type / rating
2170	2.7	Air Blowers for Pressure Filters, Sludge pit and Mix Bed	
2171	2.7.1	Impeller with shaft	1 Set
2172	2.7.2	All Bearings (Blower & Motor)	100% of installed qty
2173	2.7.3	Gears	1 Set
2174	2.7.4	Filters	150% of installed qty

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2175	2.7.5	Motor	1 Set
2176		Note : One set consists of quantity required for complete replacement for one blower of each type/model/size	
2177	2.8	Spares for Vertical Pumps	
2178	2.8.1	Complete Bowl assembly	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2179	2.8.2	Impeller (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2180	2.8.3	Shafts set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2181	2.8.4	Casing wearing (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2182	2.8.5	Impeller wear ring (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2183	2.8.6	Shaft Sleeves set	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2184	2.8.7	Shaft Coupling set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2185	2.8.8	Shaft nuts & keys	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2186	2.8.9	Lantern rings	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2187	2.8.10	Bell mouth liner	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2188	2.8.11	Bearings & Thrust bearings with thrust pads (For both pump & motor)	200% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2189	2.8.12	Pump motor coupling set with ratchet & pin	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2190	2.9	Spares for Horizontal Pumps	
2191	2.9.1	Shaft	50% of installed quantity for each type & size of pump or minimum 1 no. whichever is higher
2192	2.9.2	Shaft Sleeve	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2193	2.9.3	Impeller	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2194	2.9.4	Impeller locking nut & bolt	20% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2195	2.9.5	Impeller wear ring	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2196	2.9.6	Casing wear ring	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2197	2.9.7	Oil seal set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2198	2.9.8	Oil Deflector	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2199	2.9.9	Oil ring set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2200	2.9.10	Gland Packing	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2201	2.9.11	Lantern Ring	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2202	2.9.12	Mechanical Seal Assly (set used for assly of one pump)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2203	2.9.13	Stationary / Carbon Packing and "O" Ring for Mechanical Seal	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2205	2.9.14	Oil Level Gauge	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2206	2.9.15	Coupling	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2207	2.9.16	Rubber bush for coupling	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2208	2.9.17	O-Ring	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2209	2.9.18	Suction Strainer Element	20% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2210	2.9.19	Bearing for both pump & motor	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2211	3.0	ETP System	
2212	3.1.1	Pack of Lamella Clarifier	1 Set
2213	3.1.2	Oil Skimmer (Waste Water Collection Sump)	1 Set
2214	3.1.3	Horizontal & Vertical pumps spare	List and quantity of spares shall be in line with the list and quantity mentioned in PT plant
2215	3.1.4	Air blowers and chemical dosing pump spares	List and quantity of spares shall be in line with the list and quantity mentioned in PT plant
2216	4.0	DM Plant	
2217	4.1	Activated Carbon filter	
2218	4.4.1	Strainers for activated (of DM Stream) carbon Filters or Header lateral	Min.100 nos or 1 Set whichever is more

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2219	4.4.2	Activated Carbon filter media (for both DM stream & alkali filter application)	1.1 times of One AC filter
2220		Note: One set consists of quantity required for complete replacement for one AC filter of each type /application as the case may be.	
2221	4.2	ION EXCHANGERS	
2222	4.2.1	Middle collector assembly for Mixed Bed	1 Nos for each DM Stream
2223	4.2.2	Strong Acid Cation resin	1.1 times of One (1) full charge of One (1) Mixed bed vessel plus considering makeup of 10% per year for 3 years. = total 1.4 times of one full
2224	4.2.3	Strong Base Anion resin	1.1 times of One (1) full charge of One (1) Mixed bed vessel plus considering makeup of 10% per year for 3 years. = total 1.4 times of one full
2225	4.2.4	Weak Acid Cation resin	1.1 times of One (1) full charge of One (1) Mixed bed vessel plus considering makeup of 10% per year for 3 years. = total 1.4 times of one full
2226	4.2.5	Weak Base Anion resin	1.1 times of One (1) full charge of One (1) Mixed bed vessel plus considering makeup of 10% per year for 3 years. = total 1.4 times of one full
2227	4.2.6	Strainers for Ion exchanger or Header lateral	Min. 50 nos or 1 Set whichever is more
2228	4.2.7	Resin Trap	1set for each vessel
2229	4.3	VALVES (DM PLANT)	
2230	4.3.1	Manual Diaphragm valves and Pneumatic operated diaphragm valves with actuators	1 no of each type, size & rating for total population < 10 nos 2 nos of each type, size & rating for total population > 10 nos
2231			(Each size) 150% of installed qty or minimum 2 nos whichever is higher.
2232	4.3.2	Diaphragm for above valves	
2233	4.3.3	Butterfly Valves (manual and pneumatic operated valves with actuators)	1 no of each type, size & rating for total population < 10 nos 2 nos of each type, size & rating for total population > 10 nos
2234			
2235	4.3.4	Check Valves /Non-return Valve	1 no of each type, size & rating for total population < 10 nos 2 nos of each type, size & rating for total population > 10 nos
2236			
2237	4.3.5	Gate Valves	1 no of each type, size & rating for total population < 10 nos 2 nos of each type, size & rating for total population > 10 nos
2238			
2239	4.3.6	Rupture Disc	100% of installed qty
2240	4.3.7	CPVC Valves	50% of installed qty
2241	4.3.8	Control Valves	1 set of all removable spares except body & yoke
2242	4.4	DEGASSER BLOWERS , MIXED BED BLOWERS	
2243	4.4.1	Impeller with lock nuts & washers	1 Set
2244	4.4.2	Shaft	1 Set
2245	4.4.3	Bearings of Blowers	1 Set
2246	4.4.4	Suction filter Assembly	100% of installed qty
2247	4.4.5	Motor with Bearings	1 Set
2248		Note : One set consists of quantity required for complete replacement for one blower of each type /Rating	
2249	4.5	Agitators	
2250	4.5.1	Agitator Assembly with Motor and Gear Box - Alkali Preparation Tank	1 Set
2251	4.5.2	Agitator Assembly with Motor and Gear Box - Alkali Day Tank	1 Set
2252	4.5.3	Agitator Assembly with Motor and Motor and Gear Box - Lime Tank near N.Pit	1 Set
2253	4.5.4	Agitator Assembly with Motor and Gear Box - Brine Preparation tank	1 Set
2254	4.6	DOSING EJECTORS	
2255	4.6.1	Complete Ejector Assembly	For Acid Application 100% of installed qty
2256			For Alkali Application 100% of installed qty
2257		Note : One set consists of quantity required for complete replacement for one ejector of ol each type & capacity	
2258	4.7	Coagulant Unloading cum Transfer Pumps	
2259	4.7.1	Impeller with nuts & other accessories	1 Set
2260	4.7.2	Wearing rings (Impeller & Casing ; as applicable)	1 Set
2261	4.7.3	Shaft	1 Set
2262	4.7.4	Shaft Sleeves	1 Set
2263	4.7.5	Pump bearings	1 Set
2264	4.7.6	Mechanical Seal	1 Set
2265	4.7.7	Motor with bearings	1 Set
2266		Note: One set consists of quantity required for complete replacement for one pump	
2267	4.8	Coagulant Aid .Coagulant Dosing Pumps	
2268	4.8.1	Diaphragm	2 Sets
2269	4.8.2	Connecting Rod with nuts & blots	1 Set
2270	4.8.3	Worm & worm wheel	1 Set
2271	4.8.4	All pump Bearings including Cross head guide Bearings	1 Set
2272	4.8.5	Motor with bearings	1 Set
2273		Note : One set consists of quantity required for complete replacement for one pump	
2274	5.0	CHEMICAL STORAGE & DOSING SYSTEM AND VARIOUS PUMPS FOR DM PLANT	
2275	5.1	Anti-Sealant Dosing Pumps, Anti-Oxidant Dosing Pumps	
2276	5.1.1	Dosing Pump with Motor unit of each type / size	1 No.
2277		Note : One set consists of quantity required for complete replacement for one pump	
2278	5.2	Dosing (Metering) Pumps (For Each Type & Size)	
2279	5.2.1	Dosing Pump unit with motor of each type / size	1 No.
2280	5.3	Anti-Sealant Dosing Pumps, Anti-Oxidant Dosing Pumps	
2281	5.3.1	Dosing Pump unit with motor of each type / size	1 No.
2282		Note : One set consists of quantity required for complete replacement for one pump	
2283	5.4	Dosing (Metering) Pumps (For Each Type & Size)	
2284	5.4.1	Dosing Pump unit of each type / size	1 No.
2285	5.4.2	Motor with bearings	1 Set
2286	5.5	Pall ring for degasser	50%of installed quantity
2287	5.6	Spares for Vertical Pumps	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2288	5.6.1	Complete Bowl assembly	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2289	5.6.2	Impeller (s) with locking nut	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2290	5.6.3	Shafts set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2291	5.6.4	Casing wearing (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2292	5.6.5	Impeller wear ring (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2293	5.6.6	Shaft Sleeves set	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2294	5.6.7	Shaft Coupling set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2295	5.6.8	Shaft nuts & keys	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2296	5.6.9	Lantern rings	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2297	5.6.10	Bell mouth liner	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2298	5.6.11	Bearings & Thrust bearings with thrust pads (For both pump & motor)	200% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2299	5.6.12	Pump motor coupling set with ratchet & pin	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2300	5.7	Spares for Horizontal Pumps	
2301	5.7.1	Shaft	50% of installed quantity for each type & size of pump or minimum 1 no. whichever is higher
2302	5.7.2	Shaft Sleeve	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2303	5.7.3	Impeller	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2304	5.7.4	Impeller locking nut & bolt	20% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2305	5.7.5	Impeller wear ring	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2306	5.7.6	Casing wear ring	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2307	5.7.7	Oil seal set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2308	5.7.8	Oil Deflector	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2309	5.7.9	Oil ring set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2310	5.7.10	Gland Packing	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2311	5.7.11	Lantern Ring	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2312	5.7.12	Mechanical Seal Assly (set used for assly of one pump)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2313	5.7.13	Stationary / Carbon Packing and "O" Ring for Mechanical Seal	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2314	5.7.14	Oil Level Gauge	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2315	5.7.15	Coupling	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2316	5.7.16	Rubber bush for coupling	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2317	5.7.17	O-Ring	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2318			
2319	5.7.18	Suction Strainer Element	20% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2320	5.7.19	Bearing for both pump & motor	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2321	6.0	STP (MBBR Technology)	
2322			
2323	6.1	MBBR BIO MEDIA	2% of the total quantity
2324	6.2	Nozzles	15% of the installed quantity
2325	6.3	Pack of Lamella Clarifier	1 set
2326	6.4	Media Filters	100% of the installed quantity
2327	7.0	Electrically Operated Hoists (For each type & capacity)	
2328	7.1	Bearings	1 Set
2329	7.2	Rope guide	1 Set of each hoist (i.e. 100%)
2330	7.3	Brake lining	Minimum 1 Set or 50% installed quantity
2331		Note : One set consists of quantity required for complete replacement for one hoist of each type & capacity	
2332			
2333	2.07.00	EOT CRANES-MAIN TG HALL / BFP (AS APPLICABLE)	
2334	1.0	EOT CRANES-Main TG Hall / BFP (as applicable)	
2335	1.1	Mechanical: Main TG Hall	
2336	1.1.1	Bearings for long travel wheels	1 Set (Requirement for one Crane)
2337	1.1.2	Bearings for cross travel wheels	1 Set (Requirement for one Crane)
2338	1.1.3	Bearings for Gear Boxes for each type of Hoist & travel (Main and aux hoist (if applicable), LT and CT travel))	1 Set (Requirement for one Crane)

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2339	1.1.4	Brake Liner for all the brakes (main and aux hoist, LT and CT travel))	2 Sets (Requirement for two Crane)
2340	1.1.5	Hydraulic thruster for all Brakes (Main and aux hoist, CT and LT travel)	1 Set (Requirement for one Crane)
2341	1.1.6	Oil Seals (both main and aux hoist, CT and LT)	2 Sets (Requirement for two Crane)
2342	1.1.7	Brake springs for all brakes (both main and aux hoist, LT and CT travel)	1 Set (Requirement for one Crane)
2343	1.2	Electrical:	
2344	1.2.1	Solenoid Coils for Brakes	2 sets
2345	1.2.2	MCBs/MCCBS/Fuse links for the whole crane	1 set
2346	1.2.3	Contactors and overload Relays for Motors of the EOT	1 set of each type, size & rating
2347	1.2.4	Timers of each type, size & rating	1 set
2348	1.2.5	Limit Switches for	
2349	a.	Main Hoist	1 set
2350	b.	Aux. Hoist	1 set
2351	c.	Cross Travel	1 set
2352	d.	Long Travel	1 set
2353	1.2.6	Master Controller for Aux. Hoist	1 set each
2354	1.2.7	Drive for MH, AH, CT<	1 no. of each type& rating
2355	1.2.8	Motor for MH, AH, CT& LT	1 no. of each type& rating
2356			
2357	2.08.00	COMPRESSED AIR SYSTEM	
2358		AIR COMPRESSORS / ADP /COMPRESSOR HOUSE	
2359	1.0	Oil free Screw Air Compressor (as applicable)	
2360	1.1	Complete HP Stage with HP element.	1 No.
2361	1.2	Complete LP stage with LP element	1 No.
2362	1.3	All Bearings	100% of installed qty
2363	1.4	Packing set	150% of installed qty
2364	1.5	Axial thrust bearing	100% of installed qty
2365	1.6	Timer gears	1 set
2366	1.7	Suction and discharge valves	2 sets
2367	1.8	LP stage Pinion	1 No.
2368	1.9	HP stage Pinion	1 No.
2369	1.10	Air and Oil Filter Kit	200% of installed qty
2370	1.11	After cooler Safety Valve (if applicable)	1 No.
2371	1.12	Inter Cooler Safety Valve (if applicable)	1 No.
2372	1.13	Safety valve springs & gaskets	4 sets
2373	1.14	Gear case breather filter element	200% of installed qty
2374	1.15	Drain valve kit	1 set
2375	1.16	Oil pump complete assembly	1 set
2376	1.17	Oil Pump kit	2 Nos.
2377	1.18	Oil pump & motor bearing	100% of installed qty
2378	1.19	After cooler drain valve kit (if applicable)	1 No.
2379	1.20	Inter cooler drain valve kit (if applicable)	1 No.
2380	1.21	Air receiver drain/moisture trap	100% of installed qty
2381	1.22	'O' Rings for oil cooler	8 Nos.
2382	1.23	Moisture separators for Aftercooler (if applicable)	2 Nos.
2383	1.24	Moisture separators for Intercooler (if applicable)	2 Nos.
2384	1.25	Set of gasket and O-rings for all parts and joints	4 sets of each
2385	1.26	HP Element Exchange kit	4 set
2386	1.27	LP Element Exchange kit	4 set
2387	1.28	Suction Filter with complete kit	200 % of installed qty
2388	2.0	Centrifugal Compressor (as applicable)	
2389	2.1	Pinion Shaft Journal Bearing Assembly	2 Sets
2390	2.2	Thrust Bearing Assembly	100% of installed qty
2391	2.3	Shaft Seals for Air-Oil (All stages)	2 Sets
2392	2.4	Set of Gasket & O rings	2 Sets for each compressor
2393	2.5	Air Filter Elements	4 Sets for each compressor
2394	2.6	Lub Oil System	
2395	2.6.1	Main oil pump complete	1 No
2396	2.6.2	Aux. oil pump complete	1 No
2397	2.6.3	Complete coupling for Main & Aux. oil pump, spacer	1 No
2398	2.7	Cartridge filter elements with gaskets and seals	4 Sets
2399	2.8	Motor Bearings	2 sets
2400	2.9	Drain / Moisture Trap	2 Set for each compressor
2401	2.10	Oil Cooler Gaskets & Seals	150% of installed qty

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2402	3.0	AIR DRYING PLANT FOR IA SYSTEM (Twin tower Type) (As applicable)	
2403	3.1	Pre filter element (Ceramic candle or as applicable)	200% of installed qty
2404	3.2	After filter element (Ceramic candle or as applicable)	200% of installed qty
2405	3.3	Heater element (if applicable)	1 sets
2406	3.4	Blower bearing (if applicable)	1 sets
2407	3.5	Blower motor bearing (if applicable)	2 sets
2408	3.6	Valves & Valve Actuators (pneumatic/hydraulic)	2 sets
2409	3.7	Heater coil for temperature stabilization (for HOC type) (as applicable)	2 sets
2410	3.8	Valves (within the compressor house having actuators) along with actuator	2 Nos. of each type / rating / size
2411	4.0	COMPRESSOR HOUSE CRANE	
2412	4.1	All bearings	100% of installed qty
2413	4.2	Brake assembly and its liners	100% of installed qty
2414	4.3	Wire rope	1 complete length.
2415	4.4	Rope guide & rope tightner	100% of installed qty
2416	5.0	MEASURING INSTRUMENTS FOR AIR COMPRESSOR	
2417	5.1	Electronic Transmitters	
2418	a)		2 Nos. of each type and model
2419	5.2	Temperature elements	2 Nos. of each type and model
2420	5.3	(RTD's* of each type and length	2 Nos. of each type and length
2421	5.4	Thermocouples of each type like K-type, R-type, metal etc. and length *	2 Nos. of each type and length
2422	5.5	Thermowell	2 Nos. of each type and length
2423	5.6	Temperature transmitters (if applicable)	2 Nos of each type
2424	5.7	Process Actuated Switch Devices Includes alltypes of Pressure, differential pressure, flow, temperature, differential temperature, level switch Devices	2 Nos. of each type and model
2425	5.8	Dew Point meters	1 No.
2426	6.0	MICROPROCESSOR BASED/PLC BASED CONTROL/ELECTRONIC BASED CONTRAL PANEL (IF APPLICABLE)	
2427	6.1	Fully programmed controller of electronic modules of each type (as applicable)	1 No.
2428	6.2	Power supply module (if applicable)	1 No.
2429	7.0	Rotary drum type Air drying plant for Instrument Air system (As applicable)	
2430	7.1	Drive assembly consisting of motor, gear boxes, drive shaft & coupling	1 set
2431	8.0	a) Service air compressor motor	1 no.
2432		b) Instrument air compressor motor	1 no.
2433			

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2434	2.09.00	AIR CONDITIONING AND VENTILATION SYSTEM	
2435	1.0	Screw Compressor Chilling Machine for each type/rating/model	
2436	1.1	Oil filter - O ring	2 Sets
2437	1.2	Refrigerant filter	4 Sets
2438	1.3	Master solenoid valve	2 Nos.
2439	1.4	Master solenoid valve coil	2 Sets
2440	2.0	Pumps (for each model)	
2441	2.1	Pump Bearing	100% of installed qty
2442	2.2	Pump Motor Bearing	100% of installed qty
2443	2.3	Shaft Sleeve	2 set for each type of pump
2444	2.4	Screw compressor chilling unit motor	1 no.
2445	3.0	Air handling unit (for each model)	
2446	3.1	V-belts for AH U Blower	100% of installed qty
2447	3.2	AHU Blower bearing	100% of installed qty
2448	3.3	Blower motor bearing	100% of installed qty
2449	3.4	Filters at suction and discharge of all AHUs	50% of installed population for each type/rating
2450	4.0	Cooling Tower (for each model)	
2451	4.1	Nozzles for cooling towers	20 Nos.
2452	4.2	Float valve assembly	1 No.
2453	4.3	Fan Bearings	100% of installed qty
2454	4.4	Motor bearings	100% of installed qty
2455	5.0	Air Washer Units (for each type)	
2456	5.1	Supply Air fans	
2457	5.1.1	V-belts for Supply air fans	100% of installed qty
2458	5.1.2	Supply air fan bearings	100% of installed qty
2459	5.2	Air Washer pump	
2460	5.2.1	Impeller for Pump	1 no of each type.
2461	5.2.2	Pump Shaft	1 no of each type
2462	5.2.3	Pump Bearing	100% of installed qty
2463	5.2.4	Shaft Sleeves	1 Set
2464	5.2.5	Gland Packings for pumps/Mechanical seal	200% of installed qty
2465	5.3	Spray nozzles	5% of total population or 100 numbers whichever is higher.
2466	5.4	Air Washer Pump inlet water strainer	2 No.
2467	5.5	Brass suction screen/strainer for air washer tank	1 Set
2468	5.6	Fabric filters	2 Set (Quantity to suit one no. of air washer)
2469	5.7	Metallic filters	2 Set (Quantity to suit one no. of air washer)
2470	6.0	Electrical Actuators	
2471	6.1	Actuators	1 No. of each type, model and rating.
2472	6.2	Motor for Centrifugal fan for air washer unit	1 No of each rating
2473	7.0	Unitary air filtration unit (for each type)	
2474	7.1	Supply Air fans	
2475	7.1.1	V-belts for supply air fans	2 Sets
2476	7.1.2	Supply air fan bearings	100% of installed qty
2477	7.2	UAF Pump	
2478	7.2.1	Pump bearings	100% of installed qty
2479	7.2.2	Impeller for pump	1 no.
2480	7.2.3	Pump Shaft	1 no.
2481	7.2.4	Shaft sleeves	1 Set
2482	7.2.5	Gland Packings for pumps/Mechanical seal	200% of installed qty
2483	7.2.6	Nylon Filter	1 Set (Quantity to suit one no. of UAF unit)
2484	7.2.7	Spray nozzles	5% of total population or 50 Numbers whichever is higher.
2485	7.2.8	UAF Pump inlet water strainer	1 No.
2486	7.2.9	Brass suction screen/strainer for unitary air filtration tank.	1 Set
2487	7.2.10	Motor for Centrifugal fan for UAF	1 No
2488	8.0	VENTILATION SYSTEM	
2489	8.1	V-Belt	1 set of each type
2490	8.2	Pre-filter element of pressurizing fans	2 sets of each type & size
2491	8.3	Foundation Rubber pads	1 set of each type & size
2492	8.4	Bearings	100% of installed qty
2493	8.5	Plummer Blocks	1 set of each type & size
2494	8.6	Motor	1 each type and Rating
2495			
2496	2.10.00	CW & ACW, ECW AND RAW WATER SYSTEM	
2497	1.0	Mechanical Items (Quantity indicated is for each type, size & rating)	
2498	1.1	CW Pump (Vertical Turbine or Volute type) - Contractor to consider the following items whichever is applicable.	
2499	1.1.1	Shaft sleeves	2 sets
2500	1.1.2	Complete set of bearings / bushes of pump (all bearings/ bushes / line bearings) including thrust bearing as applicable.	2 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2501	1.1.3	Pump shafts line bearings/ bushes only (line bearings / bushes for impeller shaft, intermediate shafts, drive shaft, bowl bearing)	2 set
2502	1.1.4	Bearing of motor (all bearings including thrust bearing as applicable)	2 set
2503	1.1.5	Thrust bearing collar of pump / motor as applicable	2 set
2504	1.1.6	Wearing rings or equivalent for impeller (if applicable)	2 set
2505	1.1.7	Wearing rings or equivalent for Casing/ Bowl (if applicable)	2 set
2506	1.1.8	Impeller Shaft and Line shafts with fasteners (as applicable)	2 set
2507	1.1.9	All shaft Couplings with fasteners (as applicable)	2 set
2508	1.1.10	Complete Coupling assy, between pump and motor incl. coupling Guard	1 set
2509	1.1.11	Bushes with fasteners for the all Couplings as applicable	2 set
2510	1.1.12	Motor to Pump Coupling bushes if applicable	2 set
2511	1.1.13	Mechanical seal or/and gland packing as applicable for the pumps	2 set
2512	1.1.14	Thrust bearings Pads	2 sets
2513	1.1.15	Impeller with impeller nut	1 set
2514	1.1.16	Oil Seal Ring (if applicable)	3 sets
2515	1.1.17	Deflectors (if applicable)	2 sets
2516	1.1.18	Cooling coil for bearing housing of pump / motor as applicable	2 set
2517	1.2	Seal Water pumps (for Volute type CW pumps only)	
2518	1.2.1	Impeller with nuts	1 set
2519	1.2.2	Shaft (s) with fasteners	2 sets
2520	1.2.3	Shaft Sleeves	2 sets
2521	1.2.4	Wearing rings - Impeller as applicable	2 sets
2522	1.2.5	Wearing Rings - Casing as applicable	2 set
2523	1.2.6	Bearings for the pump and Drives	100% of installed qty
2524	1.2.7	Thrust bearings if applicable	100% of installed qty
2525	1.2.8	Pump & Drive Coupling with all fasteners & coupling Guards	1 set
2526	1.2.9	All shaft Couplings with fasteners (as applicable)	1 set
2527	1.2.10	Pin and Bushes for the all Couplings as applicable	2 set
2528	1.2.11	Gland Packing / Mechanical seal as applicable	2 set
2529	1.3	Drainage Water pumps (for Volute type CW pumps only)	
2530	1.3.1	Impeller with nuts	1 set
2531	1.3.2	Shaft(s) with fasteners	1 set
2532	1.3.3	Shaft Sleeves	2 sets
2533	1.3.4	Wearing rings - Impeller as applicable	1 set
2534	1.3.5	Wearing Rings - Casing as applicable	1 set
2535	1.3.6	Bearings for the pump and Drives	2 sets
2536	1.3.7	Thrust bearings, thrust bearing collar if applicable	1 set
2537	1.3.8	Pump & Drive Coupling with all fasteners & coupling Guards	1 set
2538	1.3.9	All shaft Couplings with fasteners (as applicable)	1 set
2539	1.3.10	Pin and Bushes for the all Couplings as applicable	1 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2540	1.3.11	Gland Packing / Mechanical seal as applicable	1 set
2541	1.3.12	Motor for Drainage water Pump	1 No.
2542	1.4	Butterfly valves of all Sizes (Quantity indicated is for each type / size /rating)	
2543	1.4.1	Valve discs.	1 set
2544	1.4.2	Shaft	1 no
2545	1.4.3	Bearing	100% of installed qty
2546	1.4.4	Gear box units for valve (if applicable)	1 set
2547	1.4.5	Gear box internals with shaft (if applicable)	1 set
2548	1.4.6	Bearings & 'O-ring for gear box unit (if applicable)	1 set
2549	1.5	Complete valve assembly- All types of valves of Sizes 500 NB and Below	1 no of each type, size & rating for total population < 10 nos;
2550	1.6	Spares for Electro-hydraulic actuators	
2551	1.6.1	Complete actuator excluding the oil tank, accumulator cylinders, counterweight, and power pack.	1 no
2552	1.6.2	Complete power pack	1 set
2553	1.7	Complete assembly of rubber expansion joints (including bolts & nuts)	1 set of each type /size / rating
2554	1.8	ARV's for CW & Raw water system	10 nos. for each type, size & rating
2555	1.9	Lubrication Water Pumps (CW/Raw Water as applicable)	
2556	1.9.1	Impeller with nuts and other accessories	1 Set
2557	1.9.2	Impeller Shaft with fasteners	1 Set
2558	1.9.3	Shaft Sleeves	1 Set
2559	1.9.4	Wearing rings - Impeller (if applicable)	1 Set
2560	1.9.5	Wearing Rings - Casing (if applicable)	1 Set
2561	1.9.6	Pump bearings	1 Set
2562	1.9.7	Thrust bearings	1 Set
2563	1.9.8	Pump & Drive Coupling compl. assy. & coupling Guards	1 Set
2564	1.9.9	Pump to drive coupling bushes with fasteners	1 set
2565	1.9.10	Gland, Packing & Gland Assembly / Mech. seal as applicable	1 Set
2566	1.9.11	Motor for lubrication water Pumps	1 No of each type
2567	1.10	Submersible Pumps (Quantity indicated is for each type / size / rating)	
2568	1.10.1	Impeller	1 set
2569	1.10.2	Pump shaft	50% of installed qty or 1 set whichever is higher.
2570	1.10.3	Mechanical Seal	50% of installed qty or 1 set whichever is higher.
2571	1.10.4	Oil Seal	2 set
2572	1.11	CRANE (Quantity indicated is for each type / size /rating)	
2573	1.11.1	Bearings for long travel wheels	1 set
2574	1.11.2	Bearings for cross travel wheels	1 set
2575	1.11.3	Brake liners for all the Brakes	1 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2576	1.11.4	Hydraulic thrusters for Brakes	1 set
2577	1.11.5	Wire rope with rope guide for Crane	Rope with 1 length and 1 rope guide
2578	1.11.6	Electrical Items of Crane	
2579	a)	Carbon brushes and brush holders for motors	1 set of each rating/Size
2580	b)	Solenoid coils for all brakes	1 set of each rating/Size
2581	c)	Contactors and Overload relays for motors	1 set of each rating/Size
2582	d)	Set of MCB/MCCB/fuses/Fuse links for the whole crane	1 set
2583	e)	Limit switches for main hoist, long travel & Cross travel	1 set
2584	f)	Motors of the EOT	1 no. of each type, size & rating
2585	g)	Timers of each type, size & rating	1 set
2586	h)	Master Controller for Aux. Hoist,	1 set
2587	i)	Resistance Box	1 No of each type.
2588	1.12	Mono-rail Hoist Assembly (Quantity indicated is for each type / size /rating)	
2589	1.12.1	Bearings	1 set
2590	1.12.2	Brake liners for all the Brakes	1 set
2591	1.12.3	Wire rope with rope guide for Hoist	Rope with 1 length and 1 rope guide for each hoist
2592	1.12.4	Electrical Items of Crane	
2593	a)	Solenoid coils for all brakes	1 set
2594	b)	Overload relays for motors	1 set
2595	c)	Limit switches	1 set
2596	d)	Motors	1 no. of each type, size & rating
2597	2.0	CW Chemical Treatment	
2598	2.1	Horizontal Centrifugal Pumps-Acid Unloading Pump	
2599	2.1.1	Impeller	1 Set
2600	2.1.2	Wearing rings - Impeller (if applicable)	2 Set
2601	2.1.3	Wearing rings - Casing (if applicable)	2 Set
2602	2.1.4	Shaft	2 Set
2603	2.1.5	Shaft Sleeves	2 Set
2604	2.1.6	Mechanical Seal	2 Set
2605	2.1.7	Coupling between Pump & Drive, bushes, pins with all fasteners & coupling Guards	1 Set
2606	2.1.8	Pump bearings	2 Set
2607	2.1.9	Motor with Bearings	2 Set
2608		Note: One set consists of quantity required for complete replacement for one pump	
2609	2.2	Horizontal Centrifugal Pumps- Dilution Water pumps	
2610	2.2.1	Impeller	1 Set
2611	2.2.2	Wearing rings - Impeller (if applicable)	2 Set
2612	2.2.3	Wearing rings - Casing (if applicable)	2 Set
2613	2.2.4	Shaft	2 Set
2614	2.2.5	Shaft Sleeves	2 Set
2615	2.2.6	Mechanical Seal	2 Set
2616	2.2.7	Coupling between Pump & Drive, bushes, pins with all fasteners & coupling Guards	1 Set
2617	2.2.8	Pump bearings	2 Set
2618	2.2.9	Motor with Bearings	2 Set
2619		Note: One set consists of quantity required for complete replacement for one pump	
2620	2.3	ACID DOSING PUMPS	
2621	2.3.1	Diaphragms	200% of installed qty
2622	2.3.2	Coupling between Pump & Drive, bushes, pins with all fasteners & coupling Guards	1 Set
2623	2.3.3	Pump & Motor Unit assembly	1 Set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2624		Note: One set consists of quantity required for complete replacement for one pump of each type /Rating	
2625	2.4	SCALE / CORROSION INHIBITOR DOSING PUMPS	
2626	2.4.1	Complete Pump & Motor Assembly	1 Set
2627	2.5	DISPERSANT DOSING PUMPS	
2628	2.5.1	Complete Pump & Motor Assembly	1 Set
2629	2.6	Agitators	
2630	2.6.1	Agitator Assembly with Motor & Gear Box - Scale /corrosion preparation Tank	1 Set
2631	2.6.2	Agitator Assembly with Motor & Gear Box - Dispersion Tank	1 Set
2632	2.7	ANY OTHER PUMPS	
2633	2.7.1	Complete Pump & Motor Assembly	1 set for each type of pump
2634	2.8	Auxiliary Water Pumps (includes all water system pumps)	
2635			
2636	2.8.1	Vertical / Horizontal Pumps - (For each Type & Size)	
2637	a)	Complete Bowl assembly	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2638	b)	Impeller (s) with locking nut	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2639	c)	Shafts set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2640	d)	Casing wearing (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2641	e)	Impeller wear ring (s)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2642	f)	Shaft Sleeves set	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2643	g)	Shaft Coupling set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2644	h)	Shaft nuts & keys	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2645	i)	Lantern rings	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2646	j)	Bell mouth liner	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2647	k)	Bearings & Thrust bearings with thrust pads (For both pump & motor)	200% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2648	l)	Pump motor coupling set with ratchet & pin	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2649	m)	Motor of each type	1 Set
2650	n)	All Gaskets	100% of installed qty
2651	o)	Stuffing box / Seals	1 Set
2652	2.9	Horizontal Centrifugal Pumps (For each Type & Size)	
2653	2.9.1	Shaft	50% of installed quantity for each type & size of pump or minimum 1 no. whichever is higher
2654	2.9.2	Shaft Sleeve	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2655	2.9.3	Impeller	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2656	2.9.4	Impeller locking nut & bolt	20% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2657	2.9.5	Impeller wear ring	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2658	2.9.6	Casing wear ring	30% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2659	2.9.7	Oil seal set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2660	2.9.8	Oil Deflector	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2661	2.9.9	Oil ring set	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2662	2.9.10	Gland Packing	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2663	2.9.11	Lantern Ring	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher
2664	2.9.12	Mechanical Seal Assly (set used for assly of one pump)	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher
2665	2.9.13	Stationary / Carbon Packing and "O" Ring for Mechanical Seal	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
2666	2.9.14	Oil Level Gauge	50% of installed quantity for each type & size of pump or minimum 1 no whichever is higher	
2667	2.9.15	Coupling	30% of installed quantity for each type & size of pump or minimum 1 set whichever is higher	
2668	2.9.16	Rubber bush for coupling	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher	
2669	2.9.17	O-Ring	50% of installed quantity for each type & size of pump or minimum 1 set whichever is higher	
2670	2.9.18	Suction Strainer Element	20% of installed quantity for each type & size of pump or minimum 1 set whichever is higher	
2671	2.9.19	Bearing for both pump & motor	100% of installed quantity for each type & size of pump or minimum 1 set whichever is higher	
2672	2.9.20	Motor of each type	1 Set	
2673	2.10	Pumps: Unloading/Transfer/N-pit		
2674	2.10.1	Impeller with locking nut for each type	1 set	
2675	2.10.2	Wearing rings - Impeller for each type (if applicable)	1 set	
2676	2.10.3	Wearing rings - Casing for each type (if applicable)	1 set	
2677	2.10.4	Shaft set for each type	50% of installed qty. or min. 1 set whichever is higher.	
2678	2.10.5	Shaft Sleeves for each type	1 set	
2679	2.10.6	Stuffing box for each type	1 set	
2680	2.10.7	Coupling between Pump & motor, bushes, pins with all fasteners & coupling Guards	1 set	
2681	2.10.8	Pump bearings for each type	100% of installed qty.	
2682	2.10.9	Gland , Packing & Gland Assembly/Mechanical seal assy, for each type	100% of installed qty	
2683	2.10.10	Diaphragm Pump for injection & dosing	1 complete pump set of each type	
2684	2.10.11	Diaphragms for injection & dosing	200% of installed qty	
2685	2.10.12	Y Strainers	1 no. Minimum of each type	
2686	2.10.13	Relief Valves	1 no. Minimum of each type	
2687	2.10.14	Fume Absorber	1 no. Minimum of each type	
2688	2.10.15	Motor and motor bearings of each type	100% of installed qty	
2689	2.10.16	Valves		
2690	i)	Diaphragm Valves of All types	1 no of each type, size & rating for total population < 10 nos	
2691	ii)	Diaphragms	150% of installed qty	
2692	iii)	NRV (Flap type and Dual Plate Type)	Minimum 1 no. each type, size & rating	
2693				
2694	2.11.00	FIRE FIGHTING SYSTEM		
2695	Sl. No	ITEM DESCRIPTION	QUANTITY	
2696	1	PUMPS	Booster Hydrant	Booster/Jockey Spray*
2697	1.1	Impeller	1 Set	1 Set
2698	1.2	Pump bearing (Incl. thrust brg., journal brg., line shaft brg.)	100% of installed qty.	100% of installed qty.
2699	1.3	Pump shaft	1 Set	1 Set
2700	1.4	Wearing rings	2 Sets	2 Sets
2701	1.5	Shaft Sleeve	2 Set	2 Set
2702	1.6	Bushings	2 Sets	2 Sets
2703	1.7	Bearing housing (If provided)	1 Set	1 Set
2704	1.8	Coupling bolts & nuts (with bushes)	1 Set	1 Set
2705		Above quantity/items are required for each type and rating of pumps being supplied under the contract		
2706		* if applicable		
2707	2.0	DIESEL ENGINE (1 set means item required for 1 diesel engine)	Booster Hydrant	Booster/Jockey Spray*
2708				
2709	2.1	Sprayers/Injector	1 Sets	1 Sets
2710		Pistons	1 Set	1 Set
2711	2.2	Piston rings & sealing rings	2 Sets	2 Sets
2712		Inlet valve assembly	1 Set	1 Set
2713	2.3	Exhaust valve assembly	1 Set	1 Set
2714	2.4	Springs	2 Set	2 Set
2715	2.5	Packings and gaskets	2 Set	2 Set
2716	2.6	Fuel oil filter elements with seals	6 Sets	4 Sets
2717	2.7	Fuel oil filter assy	1 Set	1 Set
2718	2.8	Lub. oil filter elements with seals	8 Sets	4 Sets
2719	2.9	Scrapper rings	2 Set	2 Set
2720	2.1	Solenoid coil for fuel valve	2 No.	2 No.
2721	2.11	Corrosion inhibitor (if provided)	1 Set	1 Set
2722	2.12	Big end & small end bearing of connecting rod	1 Set	1 Set
2723	2.13	Speedometer (if applicable)	1 No.	1 No.
2724	2.14	Speedometer wire (if applicable)	1 No.	1 No.
2725	2.15	Rubber hoses of water line with mounting clamps	2 Set	2 Set
2726	2.16	Cranking starter assembly complete	1 Set	1 Set
2727	2.17	Lub. oil and fuel oil hoses with end connectors	2 Set	2 Set
2728	2.18	Water pump belts	2 Sets	2 Sets
2729		Above quantity/items are required for each type and rating of diesel engine being supplied under the contract		
2730	3.0	Motors (for each type & rating)		
2731	3.1	Bearing	1 set	
2732	3.2	Motors (HT / LT)	1 No of each type & rating	
2733	4.0	Gear Box (Diesel engine)		
2734	4.1	Bearing	1 set	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2735	4.2	Gears (Drive and driven)	1 set
2736	4.3	Lub oil heat exchanger	1 set
2737	4.0	FIRE HOSES WITH COUPLINGS	
2738	4.1	7.5m long fire hoses (internal) with end connectors	8 Nos. or 20% of installed qty. whichever is higher
2739	4.2	15m long fire hoses (internal) with end connectors	30 Nos. or 20% of installed qty. whichever is higher
2740	4.3	15m long fire hoses (external) with end connectors	30 Nos. or 20% of installed qty. whichever is higher
2741	5.0	BRANCH PIPES WITH NOZZLES	
2742	5.1	Nozzles with branch pipes & quick coupling ends (internal)	20 Nos. or 20% of installed qty. whichever is higher
2743	5.2	Nozzles with branch pipes & quick coupling ends (external)	20 Nos. or 20% of installed qty. whichever is higher
2744	6.0	DELUGE VALVE ASSEMBLIES	
2745	6.1	Complete deluge valve assembly along with internals and accessories	
2746	6.1.1	150 NB	5 Sets or 20% of installed qty. whichever is higher
2747	6.1.2	100 NB	15 Sets or 20% of installed qty. whichever is higher
2748	6.1.3	80 NB	5 Set or 20% of installed qty. whichever is higher
2749	6.2	Clapper assembly complete (consisting of clapper seat rubber, screws, etc.)	
2750	6.2.1	150 NB	5 Sets or 20% of installed qty. whichever is higher
2751	6.2.2	100 NB	15 Sets or 20% of installed qty. whichever is higher
2752	6.2.3	80 NB	5 Set or 20% of installed qty. whichever is higher
2753	6.3	Solenoid coils	
2754	6.3.1	150 NB	5 Sets or 20% of installed qty. whichever is higher
2755	6.3.2	100 NB	15 Sets or 20% of installed qty. whichever is higher
2756	6.3.3	80 NB	5 Set or 20% of installed qty. whichever is higher
2757	7.0	VALVES (GATE/GLOBE/BUTTERFLY/NRV)	
2758	7.1	Complete valves	10% of population of each type & size
2759	7.2	Reduction gear operator (Gate/Butterfly)	10% of population of each type & size
2760	7.3	Flap/door with pin (NRV)	10% of population of each type & size
2761	7.4	Disc (butterfly)	5% of population of each type & size
2762	7.5	Gate (Gate valve)	5% of population of each type & size
2763	7.6	Stem (all types)	5% of population of each type & size
2764	7.7	Seat rings (all types)	10% of population of each type & size
2765	7.8	Flap rings (NRV)	10% of population of each type & size
2766	7.9	Gaskets	20% of population of each type & size
2767	7.10	Bearing/ Bushing (Butterfly valve)	50% of population of each type & size
2768	7.11	Motorized actuator of butterfly valve 300 NB	2 No.
2769	8.0	BASKET STRAINERS / Y-TYPE STRAINERS for HVW/MVW SYSTEM	
2770	8.1	Strainer elements with o-rings and stiffeners.	
2771	8.1.1	Basket strainer	
2772	8.1.1.1	300 NB	10% of population
2773	8.1.1.2	200 NB	10% of population
2774	8.1.2	Y- Type strainer	
2775	8.1.2.1	150 NB	10% of population
2776	8.1.2.2	100 NB	10% of population
2777	8.1.2.3	80 NB	10% of population
2778	9.0	MVW SPRAY SYSTEM	
2779	9.1	Spray Nozzles	10% of each type & size
2780	9.2	QB Detectors	20% of each type
2781	10.0	HVW SPRAY SYSTEM	
2782	10.1	Spray nozzles	10% of each type & size
2783	10.2	QB Detectors	20% of each type
2784	10.3	Spot /Heat detectors(for boiler burner front area and Battery room)	20% of each type
2785	11.0	HYDRANT VALVE	
2786	11.1	Hydrant valve complete (internal) single headed with instantaneous female coupling	30% of installed qty
2787	11.2	Hydrant valve complete (external) single headed with instantaneous female coupling	30% of installed qty.
2788	11.3	Hydrant valve complete(double headed) with instantaneous female coupling	30% of installed qty.
2789	11.4	Water monitor sets with nozzle branch pipe etc.	10 % of installed qty.
2790	11.5	Spindle with nuts of Hydrant valve	30% of installed qty.
2791	11.6	Bonnet, gland nut, rubber assembly of hydrant valve	30% of installed qty. for each item
2792	11.7	Seat, check nut, washer assembly of hydrant valve	30% of installed qty.
2793	11.8	Rubber washer for female coupling	30% of installed qty.
2794	11.9	Instantaneous female coupling assembly complete for hydrant valve	30% of installed qty.
2795	11.1	Lock pin assembly for hydrant valve	30% of installed qty.
2796	12.0	FIRE DETECTORS	
2797	12.1	Multi sensor detectors (Addressable)	30% of installed qty.
2798	12.2	Indicators assembly for smoke detectors provided in false ceiling (Response indicator)	30% of installed qty.
2799	12.3	LHS cable for coal conveyors	30% of installed qty.
2800	12.4	LHS cable for cable galleries	30% of installed qty.
2801	12.5	Manual pull stations	20 Nos. of each type
2802	13.0	INFRA RED DETECTORS	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2803	13.1	IRD unit with local control unit, purging unit, other accessories (for complete replacement)	30% of installed qty.
2804	14.0	PORTABLE EXTINGUISHERS	
2805	14.1	Pressurized water type (9 lit. cap.)	20% of installed qty.
2806	14.2	Foam type (9 lit. cap. IS: 15683)	20% of installed qty.
2807	14.3	CO2 type (4.5 kg. Cap. IS: 15683)	20% of installed qty.
2808	14.4	Dry Chemical powder (6 kg. Cap. IS: 15683)	20% of installed qty.
2809	15.0	MOBILE EXTINGUISHERS	
2810	15.1	Foam type (60 lit. cap. IS: 16018)	20% of installed qty.
2811	15.2	CO2 type (22.5 kg. Cap. IS: 16018)	20% of installed qty.
2812	15.3	Dry Chemical powder (50 kg. Cap. IS: 16018)	20% of installed qty.
2813	16.0	INERT GAS EXTINGUISHING SYSTEM	
2814	16.1	Nozzles	2 Nos. of each size/type
2815	16.2	Automatic & Manual release system	1 No. of each size/type
2816	16.3	Cylinder valve with safety pressure relief device	2 No. of each size/type
2817	16.4	Flexible hoses(if applicable)	5 Nos. of each size/type
2818	16.5	Solenoid coils	2 Nos. of each size/type
2819	16.6	Gas cylinder	5 Nos. of each size/type
2820	17.0	FIRE ALARM PANEL & REPEATER FIRE ALARM PANEL	
2821	17.1	Power supply modules	2 No. of each type & rating
2822	17.2	Fuses	100% of population
2823	17.3	Indicating lamps	100% of population
2824	17.4	Lamp holders	10% of population
2825	17.5	Push Buttons	10% of population
2826	17.6	Selector Control Switches	10% of population
2827	17.7	Auxiliary relays/Contractors	10% of population
2828	17.8	Annunciation window lamps	10% of population
2829	17.9	Control cards for annunciation facia, fire detection system, gas extinguishing etc of each type	10% of population
2830	17.10	Processor modules, Control modules, loop cards modules, isolator cards,	2 No. of each type
2831	17.11	LCD display of each type unit of panel and Fire display panel	1 No.
2832	17.12	Interface unit / modules for non-addressable devices, auxiliary / output relay modules, control modules, supervisory control modules and any other electronic modules, all type of Detectors	50 Nos. of each type
2833	17.13	Power supervision relay (if applicable)	4 Nos. of each type.
2834	17.14	Fire screen / alarm buzzer	1 No. of each type
2835	17.15	Power supervision relay (if applicable)	4 Nos. of each type.
2836	17.16	Manual call points (MCP)	10% or 50 Nos of each type and model whichever is more
2837	17.17	Cable, special cable etc.	10% or 5 Nos of installed cables whichever is more
2838	SPARES requirement for any equipment/system not specified above, the Contractor should supply the spares for the supplied system/sub-system/instruments of 10% or minimum 1 nos. of each items OR as per the manufacturer's recommendation		
2839			
2840	2.12.00	PIPING	
2841	1.0	PIPING	
2842	1.1	Low Pressure Piping	
2843	1.1.1	Valves all sizes (Population= All Units)	10% of the total population of each type, size, and class OR minimum 2 nos. of each type size & class whichever is more
2844		NOTE: 1. If there is one no valve only of particular type, class, and size then only one no is required. 2. Wherever valves are specified as mandatory spare, complete valve along with actuator and all other accessories which are the part of original supply shall also be supplied.	
2845			

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2846	2.13.00	ELEVATOR	
2847	1.0	ELEVATOR for each type and rating	
2848	1.1	Friction block	2 nos.
2849	1.2	Guide roller of each type	20% of total population or 3 nos. of type whichever is higher
2850	1.3	Contactors of each type	2 nos.
2851	1.4	Control transformer	1 no. of each type
2852	1.5	Time device	2 nos. of each type
2853	1.6	Rectifiers	2 nos. of each type
2854	1.7	Overcurrent relay	2 nos. of each type
2855	1.8	Auxiliary relay	3 nos. of each type
2856	1.9	Resistor	3 nos. of each type
2857	1.10	Fuses of each rating	20% of the total population
2858	1.11	Limit switches of each type	3 nos.
2859	1.12	Push button	3 nos. of each type
2860	1.13	Contact device (if applicable)	3 nos. of each type
2861	1.14	Brake motor	2 nos. of each type
2862	1.15	Transmitters	2 nos. of each type
2863	1.16	Switches of each type	3 nos.
2864	1.17	Receiver	2 nos. of each type
2865	1.18	Bearings of each type & size	2 nos.
2866	1.19	Roller of each type	3 nos.
2867	1.2.1	Brake	
2868	a)	Tool to brake	1 No.
2869	b)	Fan	1 No.
2870	c)	Magnet coil with housing pads	2 Nos.
2871	d)	Brake pads	6 Nos.
2872	e)	Adjusting sleeve	2 Nos.
2873	f)	Fixed brake disc	2 Nos.
2874	1.2.2	Worm Gear	
2875	a)	Worm gear	1 No.
2876	b)	'O' ring	2 nos. of each type
2877	c)	Sealing ring	2 nos. of each type
2878	1.2.3	Door Front	
2879	a)	Bearing	2 Nos.
2880	b)	Roller	3 Nos.
2881	c)	Bushing	2 Nos.
2882	1.2.4	Limit Cams	
2883	a)	Sensor	1 No.
2884	b)	Switch	2 Nos.
2885	c)	Switch arm	2 Nos.
2886	1.2.5	CAB	
2887	a)	Guide roller	50% of the total ones installed each type or minimum 1 no. whichever is higher
2888	b)	Switch	1 No.
2889		Sliding Door	
2890	a)	Rollers	4 nos. of each type
2891		Machinery	
2892	a)	Guide roller	2 nos.
2893	b)	Pinion	1 no.
2894	c)	Rubber inserts	6 nos.
2895	d)	Grove ring	6 nos.
2896	e)	Brake motor	1 no.
2897		Cable trolley	
2898	a)	Ball bearing	2 nos. of each type
2899	1.2.6	BRAKE ASSEMBLY	
2900	a)	Brake Assembly complete	01 nos
2901	b)	GEAR ASSEMBLY	
2902	c)	Gear Assembly complete	01 nos
2903			
2904	2.14.00	MANDATORY SPARES FOR CHIMNEY ELEVATOR	
2905	1.0	BRAKE ASSEMBLY	Qty
2906	1.1	Brake Assembly complete	1 No.
2907	2.0	GEAR ASSEMBLY	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2908	2.1	Gear Assembly complete	1 No.
2909	3.0	DOOR FRONT	
2910	3.1	Bearing	3 Nos.
2911	3.2	Roller	3 Nos.
2912	3.3	Bushing (if applicable)	2 Nos.
2913	4.0	LIMIT CAMS	
2914	4.1	Sensor	3 Nos.
2915	4.2	Switch arm	3 Nos.
2916	5.0	CAB	
2917	5.1	Guide roller	100% of the total ones installed each type or min. 1 no. whichever is higher
2918	5.2	Switch	3 Nos.
2919	6.0	SLIDING DOOR	
2920	6.1	Rollers (if applicable)	4 Nos. each type
2921	7.0	MACHINERY	
2922	7.1	Guide roller	2 Nos.
2923	7.2	Pinion	2 Nos.
2924	7.3	Rubber inserts (if applicable)	12 Nos.
2925	7.4	Groove ring (if applicable)	6 Nos.
2926	7.5	Brake motor	1 No.
2927	8.0	CABLE TROLLEY BEARING (if applicable)	
2928	8.1	Bearing	3 Nos. of each type
2929	9.0	ELECTRICAL EQUIPMENTS	
2930	9.1	Contactors	1 No. of each type
2931	9.2	Auxiliary transformer	1 No.
2932	9.3	Relays	1 No. of each type & rating
2933	9.4	Switch	2 Nos. each type
2934	9.5	Rectifier	3 Nos.
2935	9.6	Limit switch	3 Nos. each type
2936	9.7	Transmitter (if applicable)	1 No. if applicable
2937	9.8	Receiver (if applicable)	1 No. if applicable
2938	9.9	Battery charger	1 No.
2939	9.10	Push Buttons	3 Nos. of each type
2940	9.11	Timers	2 Nos. of each type & rating
2941	9.12	Main drive motor	1 Set with control system
2942			
2943	2.15.00	ELECTRIC HOIST	
2944	1.0	Electric Hoists for each type and capacity	
2945	1.1	Brake linings	2 sets of each type
2946	1.2	Rope guide & rope tightner	1 no. of each type
2947	1.3	Limit switch	2 nos. of each type & size
2948	1.4	Gear box/gear set	2sets of each type
2949	1.5	Motor/geared motor	1 no of each type & rating
2950	1.6	Drum bearing	1set of each type & rating
2951			
2952	2.16.00	SUMP PUMP	
2953	1.0	Sump Pump	(Qty. shown are for each type and size)
2954	1.1	Complete pump assembly with pump, motor, coupling base etc	1 Set
2955	1.2	Impeller with key & nut	2 set of each size & type
2956	1.3	Oil seal	4 nos. of each size
2957	1.4	Coupling bolt with bushes	2 set of each type
2958	1.5	Pump shaft	2 no. of each size
2959	1.6	Shaft sleeve	2 sets of each size
2960	1.7	Bearing bush	2 sets of each size
2961	1.8	Set of bearings	2 Sets
2962			
2963	3.00.00	ELECTRICAL	
2964		Following minimum electrical spares shall be provided for 800MW unit	
2965	1.0	GENERATOR & AUXILIARIES	
2966	1.1	Gaskets of all type (one set should include all types and sizes of gaskets for one generator, hydrogen seals for TG and EE hydrogen coolers)	1 Set each
2967		(a) Insulating packer below slot wedges	50% of slot nos.
2968		(b) Ripple springs	50%
2969	1.2	(c) Insulating material below the retaining rings	
2970		(i) Liners	1 Set each
2971		(ii) civil spacers	1 Set each
2972	1.3	Generator bearings for TE and EE (complete with torous, intermediate pieces and all other fixing/assembly material required to complete one TG unit except housing)	1 Set each
2973		a) Oil guard rings spare for TE and EE bearings	1 Set each
2974	1.4	b) Inner & Outer Oil Catcher for TE and EE Bearings	1 Set each
2975	1.5	Brush holder of each type (one set should include all types and sizes of brush holder for one generator exciter) (details of quantity) (for static excitation only)	1 set
2976	1.6	Carbon brush (details of quantity) (for static excitation only)	3 set
2977	1.7	Slip ring with bush	1 no.
2978	1.8	Stator winding bars and connections (one set comprising of two bars of each variant)	4 set

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
2979	1.9	Slot wedges	100%
2980			
2981	1.10	Hydrogen seals rings TE, EE	2 sets each (1 machined end and one unmachined end.)
2982	1.11	Set of Teflon Hoses with connectors (for stator water cooling system)	Half (1/2) the no. of slots of one generator
2983	1.12	Retaining rings (unmachined)	1 pair set
2984	1.13	Stator wedges of (one set comprises 25% of each variant of one unit)	1 set
2985	1.14	Packing liners for stator bars (one set comprises 25% of each variant of one unit)	1 set
2986	1.15	Generator Rotor fan / compressor blades assembly	1 Set
2987	1.16	H2 Seal ring body	1 set of each
2988	1.17	Sealing rubber cord & fasteners set for both side	1 set of each
2989	1.18	Static Excitation system (if applicable)	
2990		a) Static rectifier element with heat sink and fuse assembly system requirement	100% of complete one unit.
2991		b) Relays	1 no. each type
2992		c) Electronic control cards	1 no. of each type
2993		d) Excitation Transformer (Dry type)	1 no.
2994		e) Shunt trip and closing coil for field circuit breaker	Two sets
2995		f) Initial excitation diode	Two Sets
2996		g) Cooling Fan	one Set of each type and rating
2997		h) DC field breaker	1 no.
2998		i) Field flashing breaker	1 no
2999		j) Field Flashing Transformer	1 no.
3000		k) Over voltage suppressor (Thyristor based)	1 set
3001		l) Control transformer of each type/rating	1set
3002		m) Diode with fuses	25% of one unit
3003		n) Pulse Transformer	25% of one unit
3004		o) TSG unit	One (1) Set
3005	1.19	Brushless Excitation system (if applicable)	
3006		a) Relays	1 no. each type
3007		b) Electronic control cards	1 no. of each type
3008		c) Control transformer of each type/rating	1set
3009		d) Diode with fuses	25% of one unit
3010		e) Thyristor assembly with semiconductor fuses	100% for one channel.
3011		f) DC field breaker complete	1 no.
3012		g) Field flashing breaker complete	1 no
3013		h) Rotating Diode assembly with heat sinks, RC network and Fuses	25% of Unit
3014		i) Over voltage suppressor (Thyristor based)	1 set
3015		j) Field Flashing Transformer	1 no.
3016		k) Control transformer of each type/rating	1set
3017		l) Exciter complete assembly including PMG , Main exciter & rotating diode wheel etc.	1set
3018		m) Exciter Cooler	1set
3019	1.20	Complete HMI, Laptops for DVR Excitation System	01 no. of each type
3020	1.21	Licensed Software & Programmes / programmed EPROMs with necessary hardware/software keys for multiple use.	1 set
3021	1.22	Network switches / Ethernet switches with connectors, cables and all accessories complete.	01 no. of each type
3022	1.23	MCCB of each type and rating	2 Nos
3023	1.24	Transducers for field voltage and field current	1 No each
3024	1.25	PMG (Permanent magnet generator) spares as recommended by Manufactures	1 set
3025	1.26	Field Breaker Spares (Closing, tripping coils, Auxiliary and main contacts, etc. as recommended by manufacturer)	One (1) Set
3026	1.27	Rotor Earthing Brush holder	1 Set
3027	1.28	Rotor Earthing Brush	4Nos.
3028	1.29	Brush holder for Rotor Ground Fault detection System	1Set
3029	1.30	Brush for Rotor Ground Fault detection System	4Nos.
3030	1.31	Complete Set of Gaskets/Rubber Cord for End- shield (for TE & EE)	1Set
3031	1.32	HV Bushing (Phase and Neutral)	1 Set
3032	1.33	Man-hole Cover	1Set
3033	1.34	Current Carrying Bolt	1 Set of each type and rating
3034	1.35	Gas System	
3035		a) Diaphragm valve	1 no. of each type.
3036		b) Gas valves of all type & sizes (other than item no. C)	1 no. of each type & size
3037		c) Valves for H2 & CO2 manifolds	2 nos.
3038		d) Safety valve	2 nos.
3039		e) H2 gas regulator from cylinder to manifold	3 nos.
3040		f) CO2 gas regulator from cylinder to manifold	1 nos.
3041		g) Temperature, Pressure and temperature pressure switch	1 no. of each type
3042		h) Bearings & seals for fan and gas drier	1 set
3043		i) Thermostat for gas drier	1 no.
3044		j) Desiccant for gas drier	1 complete fill
3045		k) Thermometers	1 no. of each type and range
3046		l) Filter for gas analyser	2 set
3047		m) Refrigeration type Hydrogen dryer assembly complete	1 Set
3048		n) Hydrogen Cooler complete	1 Set
3049		o) Compressor for gas dryer	1 Set complete for one unit.
3050		p) Pressure reducer each type & rating	1 No each
3051	1.36	Seal Oil System	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3052		a) Complete motor and Pump assembly for AC seal oil pump	1 no. of each type
3053		b) Motor pump set for DC seal oil pump	1 set
3054		c) Pump and motor bearings	1 set
3055		d) Screw pump (bearings rotating elements)	1 set
3056		e) Vacuum pump spares (1 set bearing rotor with shaft, gas ballets valve gaskets. 'O' rings, felt filters, other filter elements)	1 set (if applicable)
3057		f) Differential pressure regulator	1 no.
3058		g) Non-return shut off valves	1 no. of each type
3059		h) Float valve	1 no. of each type
3060		i) Non-return valve	1 no. of each type
3061		j) Filter elements	2 nos.
3062		k) Vacuum pressure gauge	2 nos.
3063		l) Differential pressure gauge	1 no.
3064		m) Bellow for differential pressure regulator	2 set
3065		n) Vacuum valves of all sizes and types	1 no. each
3066		o) Flow indicator	1 set
3067		p) Level signalling device	1 set
3068		q) Valves for Stator water cooling system (one set comprises of one no of each variant) All types Filter element of stator water cooling system	1 set
3069	1.37	Seal Oil Pressure Measuring Equipment	
3070		a) Amplifier circuit board	1 no.
3071		b) Calibration circuit board	1 no.
3072		c) Sensor module	1 no.
3073		d) 'O' rings	1 no.
3074		e) Isolating cocks of different type (Details to be given)	1 set
3075		f) Pressure transmitter	1 no.
3076		g) Limit valve monitor	1 no.
3077	1.38	Stator Water Cooling System	
3078		a) Pump	1 no.
3079		b) Motor	1 no.
3080		c) Float for level regulator	1 nos.
3081		d) All types of filter elements	2 sets
3082		e) S.S. 3 way cock	1 no.
3083		f) All type of valves in stator water cooling system (details to be given)	1 set/ 1 no. of each size & type
3084		g) Ferro-dynamic indicator	1 set
3085		h) Level signaling device	1 set
3086		i) Specific resistance measuring	1 set
3087		j) Insulators for stator water header	1 set
3088		k) Pressure gauge (details to be given)	1 set /1 no. of each type and size
3089		l) Valves for Stator water cooling system (one set comprises of one no. of each variant)	1 set
3090		m) gaskets for pressure water line	1 set
3091	1.39	Local panels for T.G	
3092		a) Indicating instruments type	1 no. each size
3093		b) Pressure and temperature switches	20% of the total population or minimum 2 nos.
3094		c) Indicating lamps	100% of the population
3095		d) Liquid Level Indicator	2 nos.
3096	1.40	Generator Circuit Breaker	
3097		a) Closing Spring & tripping spring	1 set
3098		b) Closing coil & tripping coil	1 set
3099		c) Spring charging motor	1 no.
3100		d) Fixed & moving contact	1 set
3101		e) Pressure switch & pressure gauge	1 set
3102		f) Limit switches	2 no. of each type
3103		g) Auxiliary contact assembly	1 no.
3104		h) Fixed & Moving arcing contact	1 Set
3105		i) Auxiliary contact of Circuit breaker	1 set
3106		j) Gasket	1 Set
3107		i) Support Insulator	1 Set
3108		k) Complete interrupting chamber with surge capacitor, disconnect switch, earth switches of one pole	1 No.
3109		l) Surge Capacitor	1 Set
3110		m) Auxiliary Switches	1 set
3111		n) Density monitor	1 Set
3112		o) SF6 Filters	1 set
3113		p) Valves	1 set
3114		q) Motor for disconnect & earth switch	1 set
3115	1.41	GCB control panel	
3116		a) Control switches	1 no. of each type
3117		b) Selector switches	1 no. of each type
3118		c) Indication lamps	10% of each type & rating
3119		d) Auxiliary relays	10% of each type & rating

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3120		e) Control fuses	20% of each type & rating
3121	2.0	GENERATOR TRANSFORMER	
3122	2.1	HV Bushing with metal parts and gaskets	1 set
3123	2.2	LV bushing with metal parts and gaskets	1 set
3124	2.3	HV Neutral bushing with metal parts and gaskets	1 set
3125	2.4	WTI with contacts	1 No
3126	2.5	OTI with contacts	1 No
3127	2.6	Pressure relief device	1 No
3128	2.7	MOG	1 No
3129	2.8	Buchholz relay complete	1 No
3130	2.9	Set of gaskets	1 set
3131	2.10	Set of valves	1 set
3132	2.11	Cooler fan with motor	1 No
3133	2.12	Oil pump with motor	1 No
3134	2.13	Air cell for conservator	1 No
3135	2.14	Sudden Pressure relay	1 No
3136	2.15	Set of Tap changer contacts	1 set
3137	2.16	Oil flow indicator	1 set
3138	2.17	Breather with silica gel	1 set
3139	2.18	RTD for WTI and OTI	1 no. each
3140	2.19	Transducers (CCU) for WTI and OTI	1 no. each
3141	2.20	Transducer for remote Tap Position indication	1 no.
3142	2.21	Limit switch for tap changer tripping	1 no.
3143	2.22	10% of all switchgear items of MK Box.	1 set
3144	2.23	HV CT	1 no. of each type
3145	2.24	Anything not mentioned in the list but required as a mandatory spare	10% of installed qty. or 1 no. whichever is higher
3146		Note : 1 set consists of quantities required for 1 complete transformer. 1 Set also means all three phases.	
3147	3.0	MANDATORY MAINTENANCE AND TESTING EQUIPMENT FOR TRANSFORMER	
3148	3.1	High vacuum type oil purifying equipment of 6000 litres/hr. capacity	1 No.
3149		a) Type	Weather proof mobile and outdoor type high vacuum oil filtration plant.
3150		b) Capacity	6000 litres/hr.
3151		c) Processing temperature (direct heating of oil prohibited)	60oC (max.)
3152		d) Capability of plant on a single pass basis	
3153		i) Removal of moisture	From 100 ppm to 3 ppm
3154		ii) Removal of dissolved gas content	From 10% by vol. to 0.1% by Vol.
3155		iii) Improvement of dielectric strength	From 20 kV to 70 kV
3156		e) Filtration pore diameter	0.5 microns or less
3157		f) Vacuum pumping system	Two independent vacuum pumping combination, one for degassing chamber and other for transformer oil evacuation and creating high vacuum in tank. The blank off vacuum of each pumping system shall be 10-3torr or less.
3158		g) Operating voltage	440/400 Volt, 50 Hz, 3 phase, 4 wire supply.
3159	4.0	GENERATOR BUS DUCT AND NEUTRAL GROUNDING EQUIPMENT	
3160	4.1	Generator bus duct (IPBD)	
3161	4.2	Bus Support Insulator	10 % OF EACH TYPE AND RATING OF TOTAL POPULATION.
3162	4.3	Flexible equipment terminal Connector complete with Hardware for:	
3163		a) Generator	3 set * (Single Phase)
3164		b) Generator Transformer	3 set * (Single Phase)
3165		c) Generator bushing	1 set
3166		d) Generator capacitor	1 no
3167		e) Unit Transformer	3 set * (Single Phase)
3168		f) VT & SP Cubicle Tap off	3 set * (Single Phase)
3169	4.4	Seal off bushings suitable for:	
3170		a) Main run	1 no.
3171		b) Tap off run	1 no.
3172		c) individual Tap off run	1 No.
3173		* Set means complete requirement for one (1) phase	
3174	4.5	Current Transformer, VT & SP Cubicle, Expansion Bellow	
3175	4.6	Current transformer	
3176	4.7	Main Run CT's	
3177		a) Overall differential	3 nos.
3178		b) Generator Relaying	3 nos.
3179		c) Generator metering and EHG	3 nos.
3180		d) AVR System	3 nos.
3181		g) EHG System	3 nos.
3182	4.8	Tap Off CT's	
3183		a) Overall Differential	3 nos.
3184		b) UT Differential	3 nos.
3185		c) UT overcurrent	3 nos.
3187		a) VT for metering, relaying and EHG	3 nos.
3188		b) VT for performance test and EHG	3 nos.
3189		c) VT for EHG and AVR system	3 nos.
3190		d) VT primary fuse	6 nos.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3191		e) VT secondary Fuse	12 nos.
3192		f) Lightning arrester	1 no.
3193		g) Surge Capacitor	1 no.
3194	4.10	Expansion Bellow of each type and rating	3 Sets
3195	4.11	Neutral grounding equipment	
3196	4.12	Flexible connectors	2 sets
3197	4.13	Neutral grounding transformer	1 no.
3198	4.14	Neutral Grounding Resistor (NGR)	1 set
3199	5.0	STATION TRANSFORMER	
3200	5.1	Set of gaskets	One (1) Set
3201	5.2	Bushing of each type	One (1) Set
3202	5.3	CT	One (1) No of each type
3203	5.4	Cooler fan	One (1) No
3204	5.5	Oil pump with motor	One (1) No
3205	5.6	Pressure relief device/valve	One (1) No
3206	5.7	Oil flow indicator	One (1) No
3207	5.8	set Buchholz relay	One (1) No
3208	5.9	WTI with contacts	One (1) No
3209	5.10	OTI with contacts	One (1) No
3210	5.11	set of valves of each type	One (1) No
3211	5.12	Remote tap position indicator with transducer	One (1) No
3212	5.13	RTD with RWTI	One(1) No
3213	5.14	Cooler fan with motor and starter	20% of installed qty.
3214	5.15	Thermometer	One(1) No
3215	5.16	Breather	One(1) No
3216	5.17	Prismatic oil gauge with LOLA	One(1) No
3217	5.18	Gas collecting Device	One(1) No
3218	5.19	Air cell (oil preservation equipment)	One(1) No
3219	5.20	Flat / Ring / Box spanner set	One(1) No
3220	5.21	Set of Tap changer contacts	1 set
3221	5.22	Bushing CT of each type	1 set.
3222	5.23	Oil flow indicator.	1 set
3223	5.24	Oil surge relay.	1 set
3224	5.25	Breather with silica gel	1 set
3225	5.26	RTD for WTI and OTI	1 no. each
3226	5.27	Transducers (CCU) for WTI and OTI	1 no. each
3227	5.28	Transducer for remote Tap Position indication	1 no.
3228	5.29	Limit switch for tap changer tripping	1 no.
3229	5.30	10% of all switchgear items of MK Box	1 set
3230	5.31	Anything not mentioned in the list but required as a mandatory spare	10% of installed qty. or 1 no. whichever is higher
3231		Note : 1 set consists of quantities required for 1 complete transformer. 1 Set also means all three phases.	
3232	6.0	UNIT TRANSFORMERS	
3233	6.1	HV Bushing with metal parts and gaskets	1 Set
3234	6.2	LV bushing with metal parts and gaskets	1 Set
3235	6.3	WTI with contacts	1 No
3236	6.4	OTI with contacts	1 No
3237	6.5	Pressure relief device	1 No
3238	6.6	MOG	1 No
3239	6.7	Buchholz relay complete	1 No
3240	6.8	Set of gaskets	1 set
3241	6.9	Set of valves	1 set
3242	6.10	Cooler fan with motor and starter	3 Nos
3243	6.11	Air cell for conservator	1 No
3244	6.12	Set of Tap changer contacts	1 set
3245	6.13	Sudden Pressure relay	1 No
3246	6.14	Set of Tap changer contacts	1 set
3247	6.15	Oil pump with motor	1 set
3248	6.16	Oil flow indicator	1 set
3249	6.17	Oil surge relay	1 set
3250	6.18	RTD for WTI and OTI	1 no. each
3251	6.19	Bushing CT of each type	1 set
3252	6.20	Transducers (CCU) for WTI and OTI	1 no. each
3253	6.21	Transducer for remote Tap Position indication	1 no.
3254	6.22	Limit switch for tap changer tripping	1 no.
3255	6.23	10% of all switchgear items of MK Box	1 set
3256	6.24	Flat / Ring / Box spanner set	One(1) Set
3257	6.25	Anything not mentioned in the list but required as a mandatory spare	10% of installed qty. or 1 no. whichever is higher

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3258		Note : 1 set consists of quantities required for 1 complete transformer. 1 Set also means all three phases.	
3259	7.0	PROTECTION SYSTEM FOR GENERATOR, GT, UT, ST and SYNCHRONISING SCHEME	
3260	7.1	Generator Integrated Protection relay (G1)	1
3261	7.2	Generator 100% stator earth fault relay (64G)	1
3262	7.3	Generator out of step protection relay (78 G)	1
3263	7.4	Generator back up Impedance relay (If not covered in Generator Integrated protection relay) (21G)	1
3264	7.5	Generator rotor earth fault relay (64 F)	1
3265	7.6	Overall differential protection relay (87 GT)	1
3266	7.7	Generator voltage balance protection relay (PT fuse failure relay) (60 G)	1
3267	7.8	Generator Transformer V/f protection relay (61 G)	1
3268	7.9	Synchronising check relay (25)	1
3269	7.10	Generator transformer differential relay (87 T)	1
3270	7.11	Generator transformer H.V. side restricted e/f relay (64 GT)	1
3271	7.12	Generator transformer H.V. side back up IDMT relay (51 NGT)	1
3272	7.13	Generator transformer H.V. side back up over current relay (51 GT)	1
3273	7.14	Unit transformer differential relay (87 UT)	1
3274	7.15	Unit transformer H.V. side over current relay with high set unit.	1
3275	7.16	Local breaker back up protection relay For Generator transformer breaker	1
3276		Under voltage relays to be used in loss of excitation scheme (27 G)	
3277	7.17	(If not provided in Generator integrated protection relay G1)	1
3278	7.18	Pole discrepancy relay	1
3279	7.19	Master trip relay (86 G)	2 nos. of each type
3280	7.20	Auxiliary relays used in the scheme each type	2 nos. of each type and rating
3281	7.21	Timer used in the scheme each type	1 no. of each type and rating
3282	7.22	Aux. CTs/ VTs used in the scheme each type	1 no. of each type and rating
3283	7.23	Switches used in the scheme each type	1 no. of each type and rating
3284	7.24	Indicating lamps	5 No. of each color
3285	7.25	Double voltmeter of each range	1 no.
3286	7.26	Double frequency meter	1 no.
3287	7.27	Synchronizing lamp	1 no.
3288	7.28	Indicating meters of each type & range	1 no.
3289	7.29	Semaphore indicator	5 no.
3290	7.30	annunciation window lamps/LEDs of each type	30% of installed quantities
3291	7.31	Any other protection relay which are not indicated above but used in the scheme.	1 No. each
3292	7.32	Synchroscope	1 no. of each type
3293	7.33	Trip Circuit supervision relay	5 sets
3294	7.34	Voltmeter of each ranges	5 sets
3295	7.35	Ammeter of each ranges	5 sets
3296	7.36	MW meter of each ranges	1 set
3297	7.37	MVAR meter of each ranges	1 set
3298	7.38	MWH Meter of each make and model	1 no.
3299	7.39	Frequency Meter of each make and model	1 no.
3300	7.40	MW Transducer of each make and model	2 nos.
3301	7.41	MVAR Transducer of each make and model	2 nos.
3302	7.42	Summation MVAR Transducer	1 no.
3303	7.43	ABT meter as installed	1 No
3304	7.44	MFM as installed	1 No.
3305		Note:- 1. All protection relays supplied as mandatory spares must be of same make and model as installed ones. 2. Separate/individual relay is not required for those protections which are already covered in Generator Integrated Protection relay.	
3306	8.0	HV BUS DUCTS	
3307	8.1	Bus insulators	20 % of each type & voltage class
3308			
3309	8.2	Set of seal-off bushings	3 Sets
3310	8.3	Set of 3 phase, Aluminium flexibles	3 Sets
3311	8.4	Set of three phase, Copper flexible	2 Sets
3312	8.5	Drain plug with cap	6 Nos
3313	8.6	Silica Gel Breathers	3 Nos
3314	8.7	Gaskets of each type (20 mtrs. Set)	4 Sets
3315	8.8	Belleville washers	50 Nos
3316	8.9	Rubber bellows	4 Sets
3317	8.10	Densal or equivalent compound	1 Kg
3318	8.11	Space heaters complete set	2 Sets
3319	Note	The above spares shall be for each type and voltage class of busduct, 1 Set also means all three phases.	
3320	9.0	HV SWITCHGEAR (11 kV, 6.6 kV & 3.3 kV)	
3321	9.1	Spring charging motor complete	15 nos of each type
3322	9.2	Shunt trip coil	25 nos of each type
3323	9.3	Closing Coil	25 nos of each type
3324	9.4	Current transformer of each type & ratio	3 nos of each type
3325	9.5	Potential transformer of each type & ratio	3 no of each type
3326	9.6	Relays	
3327		a) each type & rating (anti-pumping relay also included)	1 no of each type
3328		b) Aux. relays / Lock out relays/ TIMERS	2 nos of each type

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3329	9.7	Moving contact assembly of each installed rating	4 sets
3330	9.8	Stationary (fixed) contact	4 sets
3331	9.9	Bus seal-off bushings	2 nos of each type
3332	9.10	Bus bar support insulators	20 % of each type & voltage
3333			class
3334	9.11	Limit switches of each type	10 nos.
3335	9.12	Closing spring	3 nos of each type.
3336	9.13	Tripping spring	3 nos of each type.
3337	9.14	Control switches	3 nos of each type.
3338	9.15	Selector switches	3 nos of each type.
3339	9.16	Isolation switch for the control supply	3 nos of each type.
3340	9.17	Operating mechanism rod for each rating	3 nos
3341	9.18	Set of gaskets of each rating	4 sets
3342	9.19	Ammeter of each type & range	min. 10% of total requirement or 1 no (whichever is greater)
3343	9.20	Voltmeter of each type & range	min. 10% of total requirement or 1 no (whichever is greater)
3344	9.21	Circuit breaker aux. contact assembly	6 nos of each type & rating
3345		a) Indicating lamps	60 nos.
3346		b) Indicating lamp covers of all colours, lamp resistors & holders	10 % of installed quantity
3347		a) Fuse base and holder of each type & rating	6 nos. of each type
3348		b) Fuse of each rating	12 nos. of each type.
3349	9.22	Maintenance tools and accessories for maintenance (bidder to list)	3 sets.
3350	9.23	Carbon brushes for spring charging motor (if applicable)	20 sets
3351	9.24	Isolating contact(Fixed and moving)	1 set of each rating
3352	9.25	Terminal blocks	12 nos.
3353	9.26	Arc chute (if applicable for each rating)	3 nos.
3354	9.27	SF6 cylinders with SF6 gas filled along with nozzle for filling the gas if applicable	3 nos.
3355	9.28	Bearings for spring charging motor	6 sets
3356	9.29	Multiple pin plug contact assy. With cables (male & female)	6 nos.
3357	9.30	Guide for moving contact set	6 sets (complete)
3358	9.31	Interphase barrier	3 nos. for each type
3359	9.32	Pressure gauge (for SF6 breaker)	2 nos.
3360	9.33	Contactors with HRC fuses	10 % of each type and rating
3361	9.34	Aux. contactors	10 % of each type and rating
3362	9.35	Control supply transformers (If applicable)	1 no of each type.
3363	9.36	Breaker Trolley	1 no. with each panel
3364	9.37	Complete Circuit Breaker	One (1) no. of each type & rating.
3365	9.38	Complete pole of breaker	1 no of each type and rating 2% of each type and rating of installed qty. shall be considered.
3366	9.39	Transducers	5 no. of each type
3367	9.40	Surge arresters/protectors for all 3.3 kV, 6.6 kV and 11 kV HT motor feeders	min. 10% of total installed quantities or 03 no (whichever is greater)
3368	9.41	Bus bar flat pieces	24 meters of each size.
3369	9.42	Bus bar angles/formed pieces for breaker	5 no.
3370	9.43	Maintenance tools and accessories for Maintenance (bidder to list)	2 Sets.
3371	9.44	MFMS as installed	10% of installed quantity
3372	9.45	Core Balance CT of each rating	10% of installed quantity
3373	9.46	Online temperature monitoring system	1 Set
3374	9.47	Mandatory spares for Bus Transfer scheme for 11kV, 6.6kV & 3.3kV switchgear	1 No. each type of cards, 1 No. of contactor, relays, timers etc of each type
3375	10.0	LV SWITCHGEAR	
3376	10.1	Complete pole of breaker	1 no of each type and rating
3377	10.2	Spring charging motors	6 nos.
3378	10.3	Aux. contact set of each type and rating	6 set.
3379	10.4	Limit switches	6 nos.
3380	10.5	Arc chutes	4 nos.
3381	10.6	Fixed contact set of each type and rating	3 sets
3382	10.7	Moving contact set of each type and rating	3 sets
3383	10.8	Arcing contact	6 sets
3384	10.9	Charging spring	3 nos.
3385	10.10	Current transformer (metering) of each rating	3 nos.
3386	10.11	Current transformer (protection) of each rating	3 nos.
3387	10.12	Closing coil of each type and rating	10nos.
3388	10.13	Trip coil of each type and rating	10 nos.
3389	10.14	CT for O/L relays	1 no of each type and rating.
3390	10.15	Voltage Transformers of each type and ratio	3 nos.
3391	10.16	Control supply transformer	1 no each rating.
3392	10.17	Ammeter of each type & range	min. 10% of total requirement or 1 no (whichever is greater)
3393	10.18	Voltmeter of each type & range	min. 10% of total requirement or 1 no (whichever is greater)
3394	10.19	Relays	1 no of each type and rating
3395	10.20	Contactors	1
3396		a) Vacuum Contactor Complete	5 Nos of each rating
3397		b) Power contactor complete	5 Nos of each rating

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3398	10.21	Coil of above contactors	10 nos each
3399	10.22	Air break switches	10 % of each rating.
3400	10.23	DP air break switches (DC)	2 nos. each
3401	10.24	Control & selector switches	5 % of each type and size.
3402	10.25	Control fuses & neutral links	30 % of population for fuses, 10 % of population for link.
3403	10.26	Indicating lamps of each colour	20 % of installed quantity of each colour
3404	10.27	Bus bar support insulators (each type)	20 % of installed quantity
3405	10.28	Bus duct flexible connectors	1 no of each type.
3406	10.29	Primary disconnect in MCC (Male/ female contact)	1 set of each rating.
3407	10.30	Push buttons	10 % of each type.
3408	10.31	Power fuses	50 % of each type.
3409	10.32	Electronic overload relays	6 nos. of each rating and size.
3410	10.33	Indication Lamp Holders complete	20 % of installed quantity.
3411	10.34	Maintenance tools and accessories for Maintenance (bidder to list)	2 nos.
3412	10.35	Terminal blocks	10 % of installed quantity.
3413	10.36	Bus bar aluminium flat pieces	12 meters of each size.
3414	10.37	Bus bar angles/formed pieces for breaker	1 no.
3415	10.38	Complete ACB	1 no. each type and rating
3416	10.39	Transducers	5 nos. of each type and rating
3417	10.40	Switch fuse unit of each rating	min. 10% of total requirement or 1 no (whichever is greater)
3418	10.41	Breaker Trolley	1 no. with each panel
3419	10.42	MFM as installed	10% of each type and rating
3420	10.43	Aux. relays / Lock out relays/ TIMERS	10% of each type and rating
3421	10.44	MCCB	10% of each type and rating
3422	10.45	MPCB	10% of each type and rating
3423	10.46	MCB	10% of each type and rating
3424	11.0	AUXILIARY TRANSFORMERS	
3425	11.1	Each rating of HV, LV and Neutral bushing	1 set of each type of bushing
3426	11.2	Winding temperature indicator for each rating of transformer.	1 No.
3427	11.3	Tap changer contacts for each rating of transformer.	1 Set
3428	11.4	Magnetic oil gauge / oil level indicator with contacts as applicable for each rating of transformer.	1 No.
3429	11.5	Oil temperature indicator with contacts for each rating of transformer	1 No.
3430	11.6	Buchholz Relay for each rating of transformer.	1 No.
3431	11.7	Float with contact for Buchholz Relay for each rating of transformer	1 No.
3432	11.8	Set of gaskets (other than that with bushing) for each rating of transformer	1 No.
3433	11.9	Set of valves for each rating of transformer	1 Set
3434	11.10	Pressure relief device for each rating of transformer (as applicable).	1 No.
3435	11.11	NGR	1 No.
3436	11.12	RTD for WTI and OTI	1 no. each
3437	11.13	Complete Auxiliary Transformer (with NGR)	1 no. of highest rating (kVA) on each voltage level.
3438	11.14	LV TRANSFORMERS	
3439	11.15	Limb of complete LT and HT of temperature sensing devices	1 Set
3440	11.16	Bushing (if provided as a separate item on transformers offered) HV, LV and LV Neutral.	3 Nos.
3441	11.17	Tap changer Contacts	1 set.
3442	11.18	Thermistor /RTD with associated leads complete for one transformer.	1 set
3443	11.19	Terminal box insulator for LV and HV side	1 set of each type
3444	11.20	Complete Dry type Transformer	1 no.of highest rating (kVA) on each voltage level
3445	11.21	Neutral Grounding Resistors	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3446	11.22	Insulator	10 Nos each type and rating
3447	11.23	Flexible connectors for neutral grounding equipment	2 sets. each type and rating
3448	11.24	Current transformer	3 Nos. each type and rating
3449	12.0	MOTORS (HT/LT/DC)	
3450	12.1	A. 11 kV, 6.6 kV & 3.3 kV Motors	
3451	12.2	Complete Spare Motor:	
3452		a) MD BFP	1 No.
3453		b) CE Pump	1 No.
3454		c) CW Pump	1 No.
3455		d) ID Fan	1 No.
3456		e) FD Fan	1 No.
3457		f) PA Fan	1 No.
3458		g) Coal Mill	2 No.
3459		h) Other HT Motors of Main Plant	1 No. of each type and rating
3460		i) HT Motors of BOPs	1 No. of each type and rating
3461		j) HT Motors of CHP	1 No. of each type and rating
3462		k) HT Motors of AHP	1 No. of each type and rating
3463		l) HT Motors of FGD	1 No. of each type and rating
3464	12.3	Termination kits (if elastimold type)	2 Nos. of each type
3465	12.4	Termination kits (end connection)	20 Nos.
3466	12.5	Temp. indicators	10 Nos.
3467	12.6	Vibration indicators	10 Nos.
3468	12.7	Terminal box Teflon glands	20 Nos.
3469	12.8	Phase segregated terminal boxes	2 Nos.
3470	12.9	Heaters	4 sets
3471	12.10	Couplings	1 set each (motor and driven equipment)
3472	12.11	Bearings (DE and NDE) for each type and rating of motors	4 sets
3473	12.12	Terminal box insulator for HV side	1 set of each type
3474	12.13	B. 415 V Motors	
3475	12.14	Complete Spare Motor:	
3476		a) LT Motors of Main Plant	10% of each type and rating or 1 no. whichever is higher.
3477		b) LT Motors of Main Plant (LOP motors)	2 Nos. of each type
3478		c) LT Motors of BOPs	10% of each type and rating or 1 no. whichever is higher.
3479		d) LT Motors of CHP	10% of each type and rating or 1 no. whichever is higher.
3480		e) LT Motors of AHP	10% of each type and rating or 1 no. whichever is higher.
3481		f) LT Motors of FGD	10% of each type and rating or 1 no. whichever is higher.
3482		g) Soot Blowers	10 Nos. of each type and rating
3483		h) Rapping Motors	10 Nos. of each type and rating
3484		i) DM Plant & other Water Treatment Plants	2 No. of each type and rating
3485	12.15	Terminal plates	10 Nos. each for small motors up to 30 kW & 4 Nos. each for more than 30 kW
3486	12.16	Heaters	2 sets
3487	12.17	Greasing arrangements	4 sets each type of motor
3488	12.18	Bearings (DE and NDE) for each type and rating of motor	4 sets
3489	12.19	C. DC Motors	
3490	12.20	Complete Spare Motor: EOP, JOP, SOP, Scanner Fan	1 No. of each type
3491	12.21	Carbon brushes	10 sets each type
3492	12.22	Brush assemblies	2 sets each type
3493	12.23	Terminal blocks	2 sets each type
3494	12.24	Heaters	2 sets each type
3495	12.25	Pulleys	2 sets each type
3496	12.26	Bearings (DE and NDE) for each type and rating of motor	4 sets
3497	13.0	BATTERY	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3498	13.1	Battery cell against battery bank installed at various locations	10 nos.
3499	13.2	MT cell container of each type	10 nos.
3500	13.3	Level indicator	6 nos.
3501	13.4	Vent plugs	12 nos.
3502	13.5	Inter-cell connector with hardware	5% or 5 Nos. whichever is more for each set of battery bank.
3503	13.6	Nuts, bolts and washer	12 sets
3504	13.2	Battery Chargers	
3505	13.2.1	Electronic Cards (with all components mounted)	1 set of each type and rating.
3506	13.2.2	Semi-conductor fuse, HRC Fuse, Fuse Links and Glass Fuses	3 nos. of each type and rating
3507	13.2.3	SCR assembly	3 sets of each type and rating
3508	13.2.4	Blocking Diode	6 sets of each type and rating
3509	13.2.5	Potentiometer	3 sets of each type and rating.
3510	13.2.6	Rectifier Transformer	1 No. of each type & rating
3511	13.2.7	Control Transformers	1 No. of each type & rating
3512	14.0	ELECTRICAL ACTUATORS WITH NON-INTEGRAL STARTERS	
3513	14.1	Complete Actuator (with bush)	20% or 1 no. of each type, class, size and model whichever is more.
3514	14.1.1	Power unit for modulating actuator	10% or 2 nos. of each type, whichever is more.
3515	14.1.2	DC-DC unit/power pack units	10% or 2 nos. of each type, whichever is more.
3516	14.1.3	Electronic cards	10% or 5 nos. of each type, whichever is more
3517	14.1.4	Brake assembly	10% or 2 nos. of each type, whichever is more
3518	14.1.5	Brake coils	10% or 2 nos. of each type, whichever is more
3519	14.1.6	Position feedback transmitters	10% or 2 nos. of each type, whichever is more.
3520	14.1.7	Electromechanical control unit with switches including torque switching heads	10% or 2 nos. of each type, whichever is more
3521	14.1.8	Torque and limit switch assembly of each unit	20% or 4 nos. of each type, whichever is more.
3522	14.1.9	Auxiliary Contact	1 no each type and rating
3523	14.1.10	Motor	1 no each type and rating
3524	14.1.11	Complete Seal kit	1 Set for each type and rating
3525	14.1.12	Complete O-Ring Set	1 Set for each type and rating
3526	14.1.13	Hand wheel	20% or 1 no. of each type, class, size and model whichever is more.
3527	14.1.14	Hand wheel retainer flange	20% or 1 no. of each type, class, size and model whichever is more.
3528	14.1.15	Clutch fork assembly	20% or 1 no. of each type, class, size and model whichever is more.
3529	14.1.16	Worm wheel	20% or 1 no. of each type, class, size and model whichever is more.
3530	14.1.17	Actuator bearings	20% or 1 no. of each type, class, size and model whichever is more.
3531	15.0	EARTHING SYSTEM	
3532	15.1	GI Flats	20% of each size & type
3533	16.0	ILLUMINATION SYSTEM	
3534	16.1	Illumination System	
3535	16.1.1	a) LED Light Fixtures (complete with accessories)	20% of each Type & Rating
3536	16.1.2	b) Control gear box complete	10 Set
3537	16.1.3	c) Spares for high mast tower	1 Set
3538	16.1.4	d) Mandatory spares for DC Emergency lighting	20% of each Type & Rating
3539	16.1.5	e) MCB, ELCB & RCCB	10% of each type and ratings.
3540	16.1.6	d) Timer/photo cell with control Unit (wherever applicable)	10% of each type
3541	16.2	Chimney Aviation Lighting	
3542	16.2.1	a) Aviation Lamps	6 Nos.
3543	16.2.2	b) Power supply cards	6 Nos.
3544	16.2.3	c) Electronic flasher cards	3 Nos.
3545	16.2.4	d) Timer/photo cell with control Unit (wherever applicable)	3 Nos.
3546	16.3	Cooling Tower Aviation Lighting	
3547	16.3.1	a) Aviation Lamps	6 Nos.
3548	16.3.2	b) Power supply cards	6 Nos.
3549	16.3.3	c) Electronic flasher cards	3 Nos.
3550	16.3.4	d) Timer/photo cell with control Unit (wherever applicable)	3 Nos.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3551	17.0	VFD SYSTEM	
3552	17.1	HT VFD TRANSFORMER (If applicable)	
3553	17.1.1	Secondary Bushings with metal parts and gaskets	1 no. each rating
3554	17.1.2	Winding temperature indicator with alarm & trip contacts	1 no.
3555	17.1.3	Oil temperature indicator with alarm & trip contacts	1 no.
3556	17.1.4	Magnetic oil level gauge	1 no.
3557	17.1.5	Pressure relief device	1 no.
3558	17.1.6	Diaphragm for explosion vent	1 no.
3559	17.1.7	Buchholz relay/sudden pressure relay	1 no.
3560	17.1.8	Silica gel charge	1 no.
3561	17.1.9	Pressure gauge (applicable for sealed tank)	1 no. each type
3562	17.2	HT VFD SYSTEM	
3563	17.2.1	HV Bushing with metal parts and gaskets for VFD Transformer	1 No. of each rating
3564	17.2.2	LV Bushing with metal parts and gaskets for VFD Transformer (if applicable)	1 No. of each rating
3565	17.2.3	WTI with contacts for VFD transformer Electronic cards	1 No. of each rating
3566		Control modules	
3567	17.2.4	I/O module	1 nos. of each type & rating
3568		Power supply modules	
3569	17.2.5	Power device (Thyristor, IGBT etc.)	1 Set of devices in one bridge leg
3570	17.2.6	Over voltage limiter and surge suppressor networkSemi conductor fuses for Power device (Thyristor, IGBT etc.)	1 Set
3571	17.2.7	Power & Control fuse	25% of installed quantity
3572	17.2.8	Control Transformer	1 nos. of each type & rating
3573	17.2.9	Contact/Breaker	1 no.
3574	17.2.10	CT/VT	1 nos. of each type & rating
3575	17.2.11	Indicating lamps	100% of each type & rating
3576	17.2.12	Auxiliary contactors & relays	1 no. of each type & rating
3577	17.2.13	Panel mounted meters	1 no.
3578	17.2.14	Indicating lamp holder full set	15% of each type and colour
3579	17.2.15	Firing cards	4 Nos.
3580	17.2.16	Ignition transformers	10 Nos.
3581	17.3	LT VFD System	
3582	17.3.1	Electronic cards	
3583	17.3.2	Control modules	1 no of each type & rating
3584	17.3.3	I/O modules	1 no of each type & rating
3585	17.3.4	Power supply modules	1 no of each type & rating
3586	17.3.5	Thyristor gate module including gate transformer	100% of one channel
3587	17.3.6	Exciter module	1 no.
3588	17.3.7	Complete Thyristor bridge leg	1set
3589	17.3.8	Over voltage limiter and surge suppressor network	1set
3590	17.3.9	Semiconductor fuses for thyristor	25% of installed quantity
3591	17.3.10	Power and control fuses	1 no. of each type & rating
3592	17.3.11	Control transformer	1 no. of each type & rating
3593	17.3.12	Contact/breakers	1 no. of each type & rating
3594	17.3.13	CT/VT	1 no. of each type & rating
3595	17.3.14	Indicating lamps	100% of each type and rating
3596	17.3.15	Auxiliary contactors and relays	1 no. of each type & rating
3597	17.3.16	Indicating lamp holder full set	10% of each type and color
3598	18.0	ROOF TOP SOLAR SYSTEM	
3599	18.1	Solar PV Modules	1 % of total population
3600	18.2	Inverter of string of highest size of supplied capacity	1 no.
3601	18.3	Flexible solar DC Cable of supplied rating	500 m
3602	18.4	DC side surge arrester (if applicable)	1 no.
3603	18.5	Y- Connector (Male-Female)	50 set
3604	18.6	Electronic Cards for Inverter	One (1) set
3605	19.0	DIESEL GENERATORS	
3606	19.1	Alternator	
3607	19.2	a) carbon brushes for Generator and self-starter motor	Six (6) set
3608	19.3	b) current transformers of rating	One (1) set
3609	19.4	c) instruments of each range	One (1) set
3610	19.5	d) relays of each type	One (1) set
3611	19.6	e) timers	One (1) set
3612	19.7	f) indicating light	One (1) set
3613	19.8	g) fuses of each rating	Two (2) set
3614	19.9	h) space heaters with thermostat & isolating switch	One (1) set
3615	19.10	i) cubicle illuminating lights	One (1) set
3616	19.11	j) terminal blocks	One (1) set
3617	19.12	Diesel Engine	
3618	19.13	a) fuel injection nozzles	Two (2) set
3619	19.14	b) Crank shaft with standard size journals	One (1) set
3620	19.15	c) main bearings	One (1) set
3621	19.16	d) big-end bearings	One (1) set
3622	19.17	e) Diesel filter packs	Twenty four (24)
3623	19.18	f) Mobile oil filter packs	Twenty four (24)

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3624	19.19	g) V-belt for radiator fan	Six (6)
3625	19.20	h) Fuel injector	Two (2)
3626	19.21	i) Fuel injection piping	One (1) set
3627	19.22	j) Ring gear for fly wheel	One (1) set
3628	19.23	k) Starter (Spare)	One (1) set
3629	19.24	l) Gaskets & packing	1 set
3630	19.25	m) Valve springs	1 set
3631	19.26	n) Fuel pump complete	1 set
3632	19.27	o) Battery charging rectifier diodes	4 Nos.
3633	19.28	p) Solenoid coil for each solenoid operated valve or relay used	2 each
3634	19.29	q) Diodes forward for alternator	3 No.
3635	19.30	r) Diodes reverse for alternator	3 No.
3636	19.31	s) Lube oil pump assembly/rotating assembly/impeller/shaft	1 set
3637	19.32	t) Voltage transformers	1 No. of each type
3638	19.33	u) Bidder shall provide suitable nozzle tester, barring bar, slings, eyebolts and other special equipment necessary for servicing the engine.	1 set
3639	19.34	AMF Panel	
3640	19.35	a) Protective relay	1 No. of each type
3641	19.36	b) Auxiliary relay	1 No. of each type
3642	19.37	c) Timer	1 No. of each type
3643	19.38	Excitation Panel	
3644	19.39	a) Electronic card	1 No. of each type
3645	19.40	b) Auxiliary relay	1 No. of each type
3646	19.41	c) Access	1 No. of each type
3647		Note- All the above DG set Spares shall be provided on each rating of DG set	
3648	20.0	COMMUNICATION SYSTEM	
3649	20.1	Spares of different types and ratings of equipment, accessories used including 1 set of electronic cards.	1 No. of each type
3650	20.2	EPABX & TELEPHONE SYSTEM	
3651	i.	a. Electronic card & power supply card of each type & model for PC/OWS.	1 set or 10% whichever is more.
3652	ii.	UPS & charger	
3653	a.	As per Manufacturer's Recommendation for Three Years Continuous Operation or minimum quantities indicated as below (whichever is more)	
3654	b.	Fuses/Semiconductor Fuses	300% of installed of each type, current rating with each panel /board
3655	c.	Miscellaneous parts for the power supplies such as SCRS, transistors, resistors, diodes, light bulbs, static switches, blocking diodes etc.	Minimum of 15% or at least four (whichever is more) of each type model and rating of SCR and power diodes, power transistors shall be included
3656	d.	Electronic cards for Battery health Monitoring System for UPS and DC control power supply system separately.	10% or at least two nos. (whichever is more) of each type
3657	e.	Electronic Modules like Rectifier control card, inverter control card, Driver card, IGBT Module, DC-DC converter card or any other card as listed in approved BOM for UPS, AC supply & 24 V DC supply etc.	1 Set of each type & rating
3658	f.	Miniature Circuit breakers for AC and DC supply.	20 % of installed or 10 Nos of each type (whichever is more) for ACDB and DCDB.
3659	g.	Digital/Analog panel meters/indicators	5% or 2 no. of each type (whichever is more)
3660	h.	CT's, VT's chokes, AC/DC isolators, contactors, timers, relays.	10% or 2 nos. of each type and rating, (whichever is more)
3661	i.	Cooling Fans in UPS & 24 V DC charger panels	20% or 2 nos. of each type and rating, (whichever is more)
3662	j.	Following accessory equipment for the battery shall be furnished :	
3663	a)	Cell lifting facilities	Two sets of each type.
3664	b)	Assembly wrenches	
3665	c)	Vent plug hydrometer d) Vent plug thermometer	
3666	e)	Supply of corrosion-preventive grease.	
3667	k.	Electronic modules of each type & rating for UPS and DC control power supply system.	10% or One set (whichever is more) of each type, model & rating with each set consisting of at least one number of each type of electronic module for inverters, chargers, static switch, stabiliser etc. as per approved BOM.
3668	l.	MCCB for UPS & 24 V DC charger panels and ACDB, DCDB.	20 % of installed or 5 Nos of each type (which ever is more)
3669	m.	Battery cells complete with contactor, cover plates etc.	Ten (10) percent of each type & Size installed
3670	n.	Rectifier & controller modules for 24 V DC charger system	Ten (10) percent of each type & Size installed
3671	iii.	Interfacing cables & Power cords	Ten (10) percent or 1 sets (Whichever is more) of each type/model.
3672	iv.	Different types and ratings of equipment, accessories used including electronic cards & Power supply card.	1 set or 10% (whichever is more), of each type & model.
3673	20.3	PUBLIC ADDRESS SYSTEM	
3674	20.4	Handsets	
3675	i	Handset with cord for outdoor station	10 nos. Of each type.
3676	ii	Handset with cord for indoor station (desk for mounted)	2 nos. Of each type.
3677	iii	Handset with cord indoor flush mounted	1 no. Of each type.
3678	iv	Portable handset	1 no. Of each type.
3679	20.5	Loudspeakers	
3680	(i)	Outdoor horn type loudspeaker	10 nos. Of each type.
3681	(ii)	Indoor cone type loudspeaker	2 nos. Of each type.
3682	(iii)	Cradle switch	2 nos. of each type
3683	(iv)	Push button of all types and models	2 nos. of each type
3684	(v)	Amplifier PCB with all components mounted for wall mounted Handset station	10% of each type
3685	(vi)	Extension Amplifier PCB with all components mounted for all wall mounted handset station (in case different from (v) above)	2 nos. of each type

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3686	(vii)	JB's of Handset	2 nos. Of each type.
3687	(viii)	JB's of Loudspeaker	2 nos. Of each type.
3688	(ix)	Electronic modules of all types	10 % of each type
3689	(x)	Interfacing cables & Power cords	Ten (10) percent or 2 sets (Whichever is more)
3690	21.0	POWER & CONTROL CABLES	
3691	21.1	11 kV Grade power cables	10% of installed quantity of each type and size
3692	21.2	6.6 kV Grade power cables	10% of installed quantity of each type and size
3693	21.3	3.3 kV Grade power cables	10% of installed quantity of each type and size
3694	21.4	1.1 kV Grade power cables	10% of installed quantity of each type and size
3695	21.5	1.1 kV Grade control cables	10% of installed quantity of each type and size
3696	21.6	Trailing /EPR – Power & Control Cables	10% of installed quantity of each type and size
3697	21.7	Any other Voltage grade cables and special cables	10% of installed quantity of each type and size
3698	21.8	Cabling accessories	10% of installed quantity of each type and size
3699	22.0	TRANSFORMER OIL	
3700	22.1	Transformer Oil	10% of installed quantity of each type
3701	23.0	400 kV SWITCHYARD	
3702	23.1	400KV GIS	
3703	23.1.1	400 kV GIS (For the following items each type & rating to be repeated)	
3704	i)	Trip coils for circuit breaker	4 No.
3705	ii)	Closing coils for circuit breaker	4 No.
3706	iii)	Gaskets	6 Set
3707	iv)	Motor for circuit breaker operating mechanism (If applicable)	2 No.
3708	v)	Valve block with drive cylinder for circuit breakers	2 Set
3709	vi)	Motor for earthing switch	1 No.
3710	vii)	Motor for disconnectors	1 No.
3711	viii)	Operating mechanism for disconnectors	1 Set
3712	ix)	Operating mechanism for earthing switch	1 Set
3713	x)	SF6 gas cylinder with 40 kgs of SF6 gas	3 No.
3714	xi)	Control switch and auxiliary relay	4 No.
3715	xii)	MCB (as applicable)	4 No.
3716	xiii)	Current Transformers	1 Set
3717	xiv)	400 kV SF6 Air Bushing	3 No.
3718	23.1.2	400 kV Capacitive Voltage Transformers (For the following items each type & rating to be repeated)	
3719	i)	400 kV CVT	3 No.
3720	ii)	Oil Seals	1 Set
3721	iii)	Insulators	1 No.
3722	iv)	Gaskets (all sizes used)	1 Set
3723	v)	Oil filling, draining and sampling plugs	1 Set
3724	vi)	Oil level gauge	2 No.
3725	23.1.3	SWITCHYARD EQUIPMENT ACCESSORIES (For the following items each type & rating to be repeated)	
3726	i)	400 kV Glazed Brown Insulator	2 Set
3727	ii)	SF6 gas pressure Relief Devices, 3 No. of each type	2 set
3728	iii)	SF6 Pressure gauge with coupling device cum switch or density monitors and pressure gauge, as applicable (1 no. of each type)	1 Set
3729	iv)	Molecular filter for SF6 gas with filter bags (1set - 20% total quantity of absorber bags used in GIS)	1 Set
3730	v)	Covers with all accessories necessary to close a compartment in case of dismantling of any part of the Enclosure to ensure the sealing of the compartment for 1 phase enclosure (3 Nos. of each type)	1 Set
3731	vi)	Locking device to keep the Dis-connectors and Earthing switches in close or open position in case of removal of the driving mechanism (If applicable)	3 No.
3732	vii)	Bus support insulator of each type for single phase enclosure (6 Nos. of each type)	1 Set
3733	viii)	SF6 to air bushing for 1 phase enclosure	2 Nos
3734	ix)	Relay of each type & rating	1 Nos.
3735	X	All types of Corona shield (3 Nos. of each type)	1 Set
3736	Xi	Window scope/ Observing window, 3 Nos. of each type (if applicable)	1 Set
3737	23.1.4	LA 400 kV side	3 no.
3738	23.1.5	Local Control Panel	100% spares for 1 panel
3739	23.1.6	Complete module for 400 kV Breaker	1
3740	23.1.7	Complete module for 400 kV LA (With Earth Switch)	1
3741	23.1.8	Complete module for 400 kV LA (Without Earth Switch)	1
3742	23.1.9	Complete module for 400 kV CT	1
3743	23.1.10	Complete module for 400 kV PT	1
3744	23.1.11	SF6 Gas	10% of total filled qty.
3745	23.1.12	Duct Insulator	10% of total installed qty.
3746	23.1.13	Set of Gaskets, O rings	5 set
3747	23.1.14	SF6 gas filling kit	1 set
3748	23.1.15	CRM, DCRM kit with transducer of appropriate breaker fittings	1 set for each GIS & AIS
3749	23.1.16	AIS (400 kV)	
3750		a. Complete set of 1 no. of single phase disconnect or including main circuit, enclosure and driving mechanism -	One (1) Set
3751		b. Complete Circuit Breaker 1 phase pole of each type & rating complete with interrupter, main circuit and enclosure with operating mechanism -	One (1) Set
3752	23.1.17	SAS Including CRPs for GIS & AIS	
3753		a. Bay Control unit (complete with all components) -	Two (2) Nos.
3754		b. Numerical Relays comprising various bay protection units, Bus Bar and Islanding Scheme	One (1) No. of each type.
3755		c. Numerical Relays comprising GRP -	One (1) No. of each type
3756		d. Switchgear control unit -	two (2) no of each.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3757		e. Merging unit	two (2) no of each.
3758		f. Cards/modules of Generator Disturbance Recorder, Line DR (if stand-alone)	One (1) No. of each type.
3759		g. Energy Meter (ABT meter) class: 0.2s -	One (1) no. of each type.
3760		h. Terminal Blocks	5 nos. of each type, make, model and rating.
3761		i. MCBs	1no of each type, make and model used in the system.
3762		j. Relays other than Numerical Relays –	One (1) no of each type of total population (min One (1) no.).
3763		k. Transducers	One (1) no. of each type.
3764		l. Auxiliary CT/PT	One (1) no. of each type.
3765		Note: -1) The above SAS spares shall be applicable for each SAS – GIS & AIS.	
3766		2) Set means complete replacement for one circuit breaker and one isolator of each type	
3767		3) For CT, CVT and surge Arrestor number (nos.) means complete replacement of one pole/phase of the equipment.	
3768	24.0	CHP PROCESSES RELATED ELECTRICAL SPARES	
3769	24.1	STACKER RECLAIMER	
3770	24.2	PCRD - Drive and Driven Sprocket with Chain	1 No.
3771	24.3	CCRD - Drive and Driven Sprocket with Chain	1 No.
3772	24.4	Thruster Brake Actuator with Motor	
3773	a)	Complete Thruster Brake Actuator with Motor	1 No
3774	b)	Thruster Brake Motor for LT	1 No
3775	c)	Thruster Brake Motor for Slew	1 No
3776	d)	Thruster Brake Motor for Boom Conv.	1 No
3777	e)	Thruster Brake Motor for Int. Conv.	1 No
3778	f)	Carbon Brush Assembly for PCRD.	1 No
3779	g)	Carbon Brush Assembly for CCRD.	1 No
3780	24.5	Position Limit Switch with die cast Al enclosure: Heavy duty, IP65, 2NO+2NC Model: HLS/JB/II Make: Same as installed	5 Nos
3781	24.6	HRC fuse	20 Nos
3782	24.7	Thyristor Drive for Slewing	1 No
3783	24.8	Electronic Modules/Card (1 no. each Card/Modules used in the system)	1 No
3784	24.9	Speed Sensor-Encoder-Absolute Type Model No GHMMX 020 8EA2 Make: Baumer	1 No
3785	24.10	Semi-conductor Fuse for Power Thyristor	10 No
3786	24.11	Local Control Station (LCS)	
3787	a)	DOL LCS with Start PB, Stop PB & Local Permissive Lamp	1 No
3788	b)	RDOL LCS with Fwd & Rev. Start PB, Stop PB & Local Permissive Lamp	1 No
3789	c)	VFD LCS with Fwd & Rev. Start PB, Speed Increase & Decrease PB, Stop PB & Local Permissive Lamp	1 No
3790	d)	DOL LCS for Rail Clamp with RC Open & Close PB & Local Permissive	1 No
3791	e)	Emergency Stop LCS	1 No
3792	24.12	Pendulum Limit Switch	
3793	a)	Pendulum Limit Switch for PCRD	1 No
3794	b)	Pendulum Limit Switch for CCRD	1 No
3795	24.13	Belt Weigher for SCR	
3796	a)	Load Cell	1 No
3797	b)	Tacho Unit	1 No
3798	c)	Electronic Modules/Card for Feed Rate Controller	1 No
3799	d)	Feed Rate Card for Belt Weigher	1 No
3800	e)	Special Fuse	2 Nos.
3801	24.14	CONVEYOR	
3802	a)	Local Control Stations	5 Nos
3803	b)	Magnetic Separator	
3804	1.	Insulating Stud of the Magnet	2
3805	2.	Power Diode for the Bridge Rectifier	2
3806	3.	Semi-conductor Fuse for Power Diode	6
3807	24.15	Rack & Pinion Gate	
3808	a)	Limit switch	10 Nos
3809	b)	Rollers with bearings	10 No
3810	c)	Drive Motor	1
3811	d)	Sprockets	1
3812	e)	Local Control Station	1
3813	f)	Thermofisher make Belt Conveyor Belt Weigher	
3814	g)	Load Cell	1
3815	h)	Tacho Unit	1
3816	i)	Electronic Modules/Card for Feed Rate Controller	1
3817	j)	PCBA Mother board	1
3818	k)	PCBA Analog IO board	1
3819	l)	Speed sensor	1
3820	m)	DC input BD	1
3821	n)	Display LCD	1
3822	o)	Power supply	1
3823	f)	Special Fuse	2
3824	24.16	TRAVELLING TRIPPER	
3825	a)	Travel Drive Motor	1
3826	b)	CRD Drive Motor	1
3827	c)	Thruster Brake Actuator with Motor	0
3828	d)	Pendulum Limit Switch	1
3829	e)	Trailing Cable	0
3830	f)	Carbon Brush Assembly for CRD	1
3831	g)	Rail Clamp Actuator with Motor	1 No

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3832	h)	Travel Limit Switch	2 Nos
3833	i)	Input Shaft with Pinion & Gear(TTR)	1 Nos
3834	j)	Flap Gate Actuator	2 Nos
3835	24.17	WAGON TIPLER	
3836		In-motion Weigh Bridge	
3837	a)	Digitizer Main Board	1 No
3838	b)	Track switches Non-Contact type	2 Nos
3839	c)	Power O/P Card - 4 relay	1 Nos
3840	24.18	Electronic Card for CHP System	10% of total installed capacity of each type and rating.
3841	25.0	LOCAL PUSH BUTTON STATION (LPBS)	10% of each type
3842	26.0	RECEPTACLES	10% of each type
3843	27.0	FOTE System (Fibre optics telecommunication)	
3844	27.1	Fibre optics cable	10 % of installed quantity of each type.
3845	27.2	FOTE Accessories	10 % of installed quantity of each type.
3846	27.3	OPGW Associated accessories	10 % of installed quantity of each type.
3847	27.4	FOTE Panel spares	10 % of installed quantity of each type.
3848	28.0	ENERGY MANAGEMENT SYSTEM (EMS)	
3849	28.1	Ethernet Switch of each type / model /configuration (mounted in Switchgears / Data concentrator Panels)	10% of total quantity (minimum 1No.)
3850	28.2	Optical Fibre Cable terminal equipment of each type such as LI Us along with associated Patch cords & connectors	10% of total quantity (minimum 1No.)
3851	28.3	Power supply modules of each type & rating (mounted in Switchgears / Data concentrator Panels, as applicable)	10% of total quantity (minimum 1No.)
3852	28.4	LOTO (Lock-out Tag-out) system for HT and LT Switchgear Panels	
3853	28.5	Mandatory spares for LOTO system as per OEM list	10 % of installed quantity of each type.
3854	28.6	Mandatory Spares (as per OEM list) for Electrical Power & Control Panels of various sub system of Main Plant and Balance of Plants (BOPs)	10 % or minimum 1 no. of installed quantity of each type and rating.
3855			
3856	4.00.00	CONTROL & INSTRUMENTATION	
3857	4.01.00	DISTRIBUTED CONTROL SYSTEM (DCS)	
3858	1	HMI Devices	
3859	A	Work station/PC station/servers	
3860		(i) OWS with licensed software loaded along with monitor & LVS work station with licensed software	Ten (10) percent or Two numbers (02) (Whichever is more) of each type/model with complete accessories & monitors.
3861		(ii) LVS workstation with licensed software	Ten (10) percent or Two numbers (02) (Whichever is more) of each type/model with complete accessories & monitors.
3862		(iii) PC Stations with licensed software	Ten (10) percent or Two numbers (02) (Whichever is more) of each type/model with complete accessories & monitors.
3863		(iv) Engineering Servers/Historian servers /other servers/ information Workstation with licensed software	Ten (10) percent or Two numbers (02) (Whichever is more) of each type/model with complete accessories & monitors.
3864		(v) Server of station LAN	1 no
3865		(vi) Programmer cum documentation station along with licensed software	1 no. of each type and model
3866		(vii) Utility/Engineering OWS with licensed software loaded along with monitor	Ten (10) percent or Two No. (Whichever is more) of each type/model with complete accessories & monitors.
3867		(viii) Plug-in type keyboard & Mouse	Ten (10) percent or 10 nos. of each type/model (Whichever is more).
3868	B	LVS	
3869		(i) LVS complete with projectors, accessories etc.	2 nos
3870		(ii) Power supply modules	4 nos
3871		(iii) All other types of electronic modules/cards for LVS cube etc..	4 nos. of each type / model
3872		(iv) LVS controller unit complete	2 nos
3873		(v) Projectors	4 nos.
3874		(vi) Laser light source	1 Number of light source of each type per LVS
3875		(vii) Prefab special cables for LVS	5 nos of each type
3876		(viii) LED Kits.	100% (Installed) spares of each type & size.
3877		(ix) LVS Filters	20% spare or min 2 nos.
3878		(x) Cooling modules of each type for LVS	1 nos. or 10% whichever is more
3879		(xi) Conference hall mic.	5 no. of each type
3880		(xii) Conference hall speakers.	5 no. of each type.
3881		(xiii) Projection Engine	1 no. of each type.
3882	C	Printers	
3883		(i) Colour laser printer (A4)	1 no
3884		(ii) Print head assembly for A4 colour laser printer and other printers	2 nos of each type and model
3885	D	Network Components	
3886		(i) Switch/repeaters/hubs/firewalls for DDCMIS including Station LAN etc.	2 nos. of each type and model
3887		(ii) Power supplies, modems, routers electronic modules, media converter (if applicable), connectors patch card, antenna etc	2 nos. of each type and model
3888		(iii) Any other device/equipment not covered under above items but required to make system complete	2 nos. of each type and model
3889	E	Miscellaneous items	
3890		(i) Hard disk drive unit of each type as offered in offer complete with disks and other accessories	5 nos.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3891		(ii) Bulk Storage drive unit	Twenty (20) percent or Two nos. (Whichever is more) of each type/model.
3892		Portable HDD and DVD	10 NOS. of each type & rating.
3893		(iii) Graphic processors modules/Card for work station/server	2 nos. of each type and model
3894	F	Matrix KVM switch	
3895		(i) Matrix KVM switch	2 nos. of each type and model
3896		(ii) Computer connections (CPU end)	16 nos. of each type and model
3897		(iii) User console	16 nos. of each type and model
3898	G	KVM switch along with associated cables	Ten (10) percent or Two nos. (Whichever is more) of each type/model.
3899	H	GIU	1 no. of each type and model
3900			
3901	I	Other HMIPIS devices required for Unified HMIPIS which are not covered in above items like protocol converters, stations with software, gateway etc.	1 no. of each type and model
3902	J	Any other device/items for HMIPIS system which are not covered in above items but are required to make the system complete	1 no of each type and model
3903	2	Cables and Connectors.	
3904		(i) Prefab interconnecting cables with connectors	2 no. of each type and length.
3905		(ii) System bus cable with connectors	2 no. of each type and length.
3906		(iii) I/O bus cable with connectors for remote I/O units	2 no. of each type and length.
3907		(iv) Loose Connectors	10 nos. (sets) of each type
3908	3	Power Supply Modules & Power Packs for control system	20% of qty Installed of each category/model/type or at least 2 No. of each type/model (Whichever is more).
3909	4	Electronic modules of each type model and model for control system, Data communication system, Master and Slave Clock etc. (This shall include all type of cards like I/O cards, Remote I/O cards, communication/Interface cards, controller cards, CPU module or Card, logic cards, etc.)	20% of qty Installed of each category/type/model or at least 3 No. of each type/model (Whichever is more)
3910	5	Bus coupler/Interface hardware / other communication devices	20% of each type and model or minimum 2 nos. whichever is more.
3911	6	Relays, Interposing relay	10% of each type and model or minimum 2 nos. whichever is more
3912	7	Batteries used for battery backup of RAMs (If applicable)	10% of each type and model or minimum 2 nos.
3913			whichever is more.
3914	8	Fuses	200 % of each type and rating
3915	9	Cooling fans for Power supply and cabinets	10 % of each type and model
3916	10	Intelligent mini UPS for workstation server, PCs, LVS, L3 switch	1 no. of each size and rating
3917	11	For all items of data bus system (including field accessories) except data bus cables	20% or 2 Nos. of each type, model and rating whichever is more subject to maximum of 40 Nos of each type.
3918	12	All type of cable	10% of total length used in the project.
3919	13	Network Devices and accessories	
3920	A	Network Switches	10% of each type make, models, etc
3921	B	Media Converter	15 set of each type make, models, etc
3922	14	Time Synchronisation Equipment- Master Clock System: As per manufacture's Recommendation for Three Years Continuous Operation or minimum quantities indicated as below (whichever is more)	
3923	A	All type of Electronic cards	Ten (10) percent or 2 nos (whichever is more) of Installed of each type and rating
3924	B	Signal Conditioner cards	Ten (10) percent or 2 nos (whichever is more) of Installed of each type and rating
3925	C	Slave clocks of each type used for Master slave clock system	Ten (10) percent or 5 nos (whichever is more) of Installed of each type and rating
3926	D	Cubicle power supply modules and Booster unit	Ten (10) percent or 2 nos (whichever is more) of Installed of each type and rating
3927	E	GPS Antena	01 Nos
3928	F	GPS Master clock system	01 Nos
3929	15	Printers and their parts :	
3930	A	Printer toners for all printers	Ten (10) percent of qty installed or 3 no. of each type printer toners (whichever is more) of each type.
3931	B	Line impact heavy duty DMP printer head of the total quantity	2 nos. of 132 colums of each type
3932	C	Color laser printer (A4)	2 nos. of each type
3933	D	Drum for A3 sized scanner cum copies, printer	2 nos. of each type
3934	16	Monitors	
3935	A	80" LED Monitor	2 No
3936	B	24" LED monitor	5 nos
3937	17	RJ 45 connector with box of each type	10% or Five no. (Whichever is more) of each type/model
3938	18	Hooters, Buzzers, Cooling fans of each type.	10% or Five no. (Whichever is more) of each type/model
3939	19	Interface cables	10% or Five no. (Whichever is more) of each type/model
3940	20	Power supply modules (AC to DC convertors)	10% or Five no. (Whichever is more) of each type/model
3941			

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3942	4.02.00	MICROPROCESSOR BASED / PLC BASED /ELECTRONIC BASED CONTROL PANEL (IF APPLICABLE)	
3943	1.	Microprocessor based control system applicable)/ PLC Control System	
3944	2.	Complete set including integral microprocessor based control system along with system & application software and special cables.	10% or 1 no. whichever is more
3945	3.	Electronics modules of each type and model for control system (This shall include all type of cards like I/O cards, controller cards, CPU modules or card, Logic Cards., Communication modules etc.	20% or 2 nos of each type and model whichever is more.
3946	4.	Interconnecting cable	10% of each type and size
3947	5.	Cooling Fan in PLC system/cabinet	2 Nos
3948	6.	Indication Lamps of all types	200%
3949	7.	Keyboards & mouse	5 Nos of each type
3950	8.	Printer and their parts	
3951	9.	Colour laser printer (A4)	1 No
3952	10.	Long term storage unit	1 No
3953	11.	HMI/PLS Devices	
3954	12.	Work station with licensed software loaded along with monitor	2 Nos of each type and model
3955	13.	Engineering Servers/Historian servers /other servers/ Information Workstation with licensed software	1 Nos of each type and model
3956	14.	Network components like Switch/ repeaters/ hubs/ media converter etc. (as Applicable)	2 nos of each type and model.
3957	15.	Bulk Storage drive unit	2 nos
3958	16.		
3959	17.	Relay based Control Panels	
3960	18.	LEDs for indicating lights	100% of qty installed.
3961	19.	Control circuit fuses Semiconductor Fuses	300% of installed of each type, current rating.
3962	20.	MCB/MCCB	Ten percent spare replacement of each current rating required shall be furnished
3963	21.	Cooling Fans of each type, model and rating.	20% or 2 nos. of each type and rating, (whichever is more).
3964	22.	Relays modules & contactors.	20% spare of qty Installed of each type & rat ing.
3965	23.	Push buttons, ILPBs of each type. (complete with contact elements)	Ten (10) percent or 2 nos (whichever is more) of each type and color
3966	24.	Electric meter like Ammeters, Voltmeters etc.	Ten (10) percent or 2 nos (whichever is mo re) of each type
3967	25.	Control switches	5 nos. of each type and rating
3968	26.	Selector switches	1 no. of each type and rating
3969	27.	Any special meter	1 no. of each type and rating
3970	28.	Power supply modules.	Ten (10) percent or 2 nos (whichever is more) of each type
3971	29.	Control supply transformers	1 no. of each type and rating
3972			
3973	4.03.00	POWER SUPPLY SYSTEM	
3974		Un-interrupted Power Supply System and DC Control Power Supply System	
3975		Recommendation for Three Years Continuous Operation or minimum quantities indicated as per manufacture's below (whichever is more)	
3976	1.	Fuses/Semiconductor Fuses	300% of installed of each type, current rating with each panel /board
3977	2.	Miscellaneous parts for the power supplies such as SCRS, transistors, resistors, diodes, light bulbs, static switches , blocking diodes etc	Minimum of 15% or atleast four (whichever is more) of each type model and rating of SCR and power diodes, power transistors shall be included
3978	3.	Electronic cards for Battery health Monitoring System for UPS and DC control power supply system separately. .	10% or at least two nos. (whichever is more) of each type
3979	4.	Electronic Modules like Rectifier control card, inverter control card, Driver card, IGBT Module, DC-DC converter card or any other card as listed in approved BOM for UPS, AC supply & 24 V DC supply etc.	1 Set of each type & rating
3980	5.	AC/DC isolator, contactors, timers, relays	10% of each type and rating.
3981	6.	Miniature Circuit breakers for AC and DC supply.	20 % of installed or 10 Nos of each type (which ev er is more) for ACDB and DCDB.
3982	7.	Digital/analog panel meters/indicators	5% or 2 no. of each type (whichever is more)
3983	8.	CT's, CVT's VT's chokes, AC/DC isolators, contactors, timers, relays.	10% or 2 nos. of each type and rating, (whichever is more)
3984	9.	Cooling Fans in UPS & 24 V DC charger panels	20% or 2 nos. of each type and rating, (whichever is more)
3985		following accessory equipment for the battery shall be furnished	
3986	10.	a) Cell lifting facilities	
3987		b) Assembly wrenches	
3988		c) Vent plug hydrometer	Two sets of each type.
3989		d) Vent plug thermometer	
3990		e) Supply of corrosion - preventive grease.	

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
3991	11.	Electronic modules of each type & rating for UPS and DC control power supply system.	10% or One set (whichever is more) of each type, model & rating with each set consisting of at least one number of each type of electronic module for inverters, chargers, static switch, stabiliser etc. as per approved BOM.
3992	12.	MCCB for UPS & 24 V DC charger panels and ACDB, DCDB.	20 % of installed or 5 Nos of each type (which ever is more)
3993	13.	Battery cells complete with contactor, cover plates etc.	Ten (10) percent of each type & Size installed
3994	14.	Rectifier & controller modules for 24 V DC charger system	Ten (10) percent of each type & Size installed
3995	15.	Battery health Monitoring system Electronic Cards and Interface cards.	20 % of installed or 5 Nos of each type (whichever is more)
3996			
3997	4.04.00	Hardwired Annunciation System	
3998	1	logic modules, group card modules, power supply modules, Hooters and any other electronic module / cards.	20% spares of each type installed
3999	2	un-engraved window boxes complete with LED etc.	5% spares of each size installed
4000	3	LEDs for annunciation facia windows and LEDs box assemblies offered for the project	20% of qty installed
4001	4	Lamps & Fuses	50 nos each type and rating
4002	5	Push buttons	1 no of each type
4003	6	Annunciator hooter	One (1) No. of each type
4004			
4005	4.05.00	Panels, local panels, System /Marshalling cabinets	
4006	1.	Control desk and Control Panels: -	
4007	2.	Devices mounted on Control desk	Ten (10) percent or 2 nos' (whichever is more) of each type
4008	3.	LEDs for indicating lights shall be furnished.	100%
4009	4.	control circuit fuses	One hundred percent spare replacement of each current rating required
4010	5.	MCB/MCCB	Ten percent spare replacement of each current rating required
4011	6.	Push buttons, ILPBs.(complete with contact elements)	Ten (10) percent or 2 nos (whichever is more) of each type and color.
4012	7.	Cooling Fans	20% or 4 nos. (whichever is more) of each type, model and rating.
4013	8.	Electric meter.	Ten (10) percent or 2 nos (whichever is more) of each type
4014	9.	Power supply modules.	Ten (10) percent or 2 nos (whichever is more) of each type
4015	10.	Male/female parts of pre-fabricated cables	10 nos. of each type
4016	11.	Space Heater	10% of total quantity but minimum 1 no
4017	12.	Smoke Detector	10% of total quantity but minimum 1 no
4018	13.	Terminal Blocks	20% of total quantity
4019	14.	Terminals in Terminal blocks	10 nos of each type
4020	15.	Cable clamps	5 nos of each type.
4021	16.	Blowers	1no
4022			
4023	4.06.00	MEASURING INSTRUMENTS	
4024		Common Measuring Instruments (For All System)	
4025	1	Indicators, Recorders, Electrical Metering and Skid Mounted Instruments	
4026	A	Indicators, recorders and meters offered from each model for the project. These instruments shall be supplied with three sets of blank scales.	10 % of Installed of each type/Model or a minimum of one number for each model and type, whichever is more
4027	B	For skid mounted instruments	10% of total number of instruments for each Type and model or a minimum of one number for each model and
4028	C	Panel and Wall mounted Indicators	10% of total number of instruments or a minimum of one number for each type, model, range etc. whichever is more
4029	2	Transmitters	
4030	A	Temperature Transmitters and Electronic Transmitters of all type, range and model no. (For Pressure, DP, Temp, Flow, Level), Process Transmitters, Radar type level transmitter, 3D type level Transmitter with local display, Magnetic/Electromagnetic flow meter with local display, mass flow meter with local display., Process meters, Junction Box, Position Transmitter, Transducer or any other instrument etc.	10% of total number of instruments/transducers offered for each model and type, rating or a minimum of one number for each model, rating and type , whichever is more.
4031	3	Temperature elements	
4032	A	Thermocouple/RTD elements	100% of flue gas temp, coal air mixture temp, boiler/TG metal temp thermocouples and 5% for other applications of total duplex thermocouple element assemblies and duplex RTD assemblies (with head assembly, terminal block and nipple) of each type and length whichever is more. The element assembly shall be suitable for direct replacement in the corresponding thermowell.
4033	B	Thermowells	10% for each type of temperature sensors or a minimum of one for each type & size, whichever is more.
4034	C	Thermo well for all applications	10% of each type and length

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4035	4	Process actuated switch Devices - As applicable for each package as per following:	10% of total nos. or 1 no. of each make, model, range and type whichever is more
4036		1. Temperature Switches	
4037		2. Differential pressure Switches	
4038		3. Pressure switches	
4039		4. Flow switches	
4040		5. Level Switches	
4041		6. Safety Protection Switches	
4042	5	Pressure, Differential Pressure, Flow, and temperature gauges	20% of the total or minimum 2 nos of each type/rating/model
4043		Level Gauges	a) 10% or 2 nos. whichever is more of each type of illuminators with holder and reflector.
4044			b) 20% or 5 nos. whichever is more of each type of bulb.
4045			c) 10% or 2 nos. whichever is more of each type of bi-color rollers.
4046			d) 10% or 2 nos. whichever is more of each type of glass along with pair of gaskets (cushion & wet gaskets).
4047			e) 10% or 2 nos. whichever is more of each type of gaskets for gauge cocks/valve bonnet/ packing.
4048		f) 10% or 2 nos. whichever is more of each type scale.	
4049	6	All type of Rotameters & Sight Flow Indicator.	10% for each type, size and range but minimum 2 no
4050	7	PD type flow transmitters with local display	1 no. of each range type and model
4051	8	Guided wave RADAR for Hot well application	1 no.
4052	9	Guided wave RADAR for LP heaters	1 no. for each of the LP heaters
4053	10	Impact head type flow element	20% or 2 nos. of each make and type, whichever is more
4054	11	Ultrasonic type flow measurement	20% or 2 nos. of each make and type, whichever is more
4055	12	Ultrasonic type level transmitter	50% of each type and length, including sensors
4056	13	Any other instruments not indicated in the tender P&ID but required for control, monitoring and operation of the equipment / plant / systems	10% or 2 nos. of each type whichever is more
4057	14	Flue Gas Analyzers ,CEMS & SCR	
4058	a)	Flue gas analyser instruments for SO ₂ , NO _x , CO ₂ , CO analyser and Flue Gas Flow Transmitter	
4059	b)	Analyzer for SO ₂ , NO _x , CO ₂ , CO.	1 no. complete analyser of each type and model.
4060	c)	Flow Transmitter	1 no. of each type
4061	d)	Electronic Module	10% of each type
4062	e)	gaskets/O-rings	4 nos. of each type, model, rating and size
4063	f)	Diaphragms	2 nos. of each type
4064	g)	Filter and light sources	2 nos. of each type
4065	h)	Heater/cooler assemblies	2 nos. of each type
4066	i)	Solenoid assembly	2 nos. of each type
4067	j)	Temp. Sensor and heater assembly	20% or 2 nos. of each type and model whichever is higher
4068	k)	Complete Probe with shield assembly	1 no. of each type
4069	l)	Manifold	1 no. of each type and size
4070	m)	Cooling fans	1 no. of each type, size and rating
4071	n)	Air flow meter	1no
4072	o)	Calibration gases of all types and ranges. For hot- extractive/Dilution extractive/In -situ (cross-duct) type analysers	One year supply
4073	p)	Heavy duty Blower Assembly	1 no. of each type, size and rating
4074	q)	Calibration Cells	1 no. of each type
4075	r)	Opacity analyser	
4076	s)	Stack Opacity monitors/ ESP /SPM / RPM	1 nos. complete instrument of each make and type
4077	t)	Electronic Card Assemblies of each type	10%
4078	u)	Light source bulb and filters	100%
4079	v)	Air blower and filter unit	10%
4080	w)	Tribo electric analyser	
4081	x)	ESP Dust emission monitor instrument	2 nos. complete Instrument of each Type
4082	y)	Sensor Assembly	10%
4083	z)	Electronic card assembly of each type	10%
4084	aa)	Probe extension Enclosure cover	2 nos.
4085	bb)	Mercury Analyser	
4086	cc)	Flue gas analyser instruments for mercury analyser	1 no complete Instrument
4087	dd)	Electronic Card Ass. of each type	10%
4088	ee)	Set of gaskets/O -rings	2 set
4089	ff)	Consumables like filter elements light sources etc.	100%
4090	gg)	Calibration gases of all types and ranges	One year supply
4091	hh)	AAQMS	
4092	ii)	SO ₂ analyser	
4093	jj)	SO ₂ analyser instrument	1 no complete Instrument.
4094	kk)	Electronic Card Assemblies of each type Electronic card assembly/ PCBs, moisture/condensate monitor, power supply modules	10% or minimum 2 nos of each type and model whichever is higher.
4095	ll)	Set of Gaskets' "O" rings	4 Nos. of each type
4096	mm)	Heater Assembly / Thermistor	20%
4097	nn)	Air flow meter	1 no
4098	oo)	Consumables like filter elements light sources etc.	100%
4099	pp)	Complete Probe with shield assembly (Not applicable for Insitu - path).	1 no. of each type and model
4100	qq)	Solenoids	2 nos. of each type, model and rating
4101	rr)	Filters, light source, sensor, detector, etc.	1no of each type/rating
4102	ss)	Calibration gases, Calibration cell and other consumables for calibration: - of all types and ranges	2 Nos. of cylinders of each type of calibration gas
4103	tt)	Heavy duty blower assembly	1 no. of each type, size and rating.
4104	uu)	NO-NO ₂ -NO _x analyser	
4105	vv)	NO-NO ₂ -NO _x analyser instrument	1 no complete Instrument of each Type.
4106	ww)	Electronic Card Assemblies of each type	10%

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4107	xx)	set of Gaskets' "O" rings	2 sets
4108	yy)	Heater Assembly / Thermistor	20%
4109	zz)	Air flow meter	1 no
4110	aaa)	Consumables like filter elements light sources etc.	100%
4111	bbb)	Calibration gases of all types and ranges	One year supply
4112	ccc)	CO analyser	
4113	ddd)	Co analyser instrument	1 no. complete Instrument.
4114	eee)	Electronic Card Assemblies of each type	10%
4115	fff)	set of Gaskets' "O" rings	2 sets
4116	ggg)	Heater Assembly / Thermistor	20%
4117	hhh)	Consumables like filter elements light sources etc.	100%
4118	iii)	Calibration gases of all types and ranges	One year supply
4119	jjj)	Dust monitor/Analyser	
4120	kkk)	Dust monitor analyser instrument	1 no. complete Instrument.
4121	lll)	Electronic Card Assemblies of each type	10%
4122	mmm)	set of Gaskets' "O" rings	2 sets
4123	nnn)	Air flow meter	1 no.
4124	ooo)	Heater Assembly / Thermistor	100%
4125	ppp)	Consumables like filter elements light sources etc.	One year supply
4126	qqq)	Calibration gases of all types and ranges	
4127	rrr)	Mercury Analyser	
4128	sss)	Mercury analyser instrument	1 no. complete Instrument.
4129	ttt)	Electronic Card Assemblies of each type	10%
4130	uuu)	set of Gaskets' "O" rings	2 sets
4131	vvv)	Air flow meter	1 no.
4132	www)	Consumables like filter elements light sources etc.	100%
4133	xxx)	Calibration gases of all types and ranges	One year supply
4134	yyy)	Ozone Analyser	
4135	zzz)	Ozone analyser instrument	1 no. complete Instrument.
4136	aaaa)	Electronic Card Assemblies of each type	10%
4137	bbbb)	set of Gaskets' "O" rings	2 sets
4138	cccc)	Consumables like filter elements light sources etc.	100%
4139	dddd)	Calibration gases of all types and ranges	One year supply
4140	eeee)	Oxygen Analyzer (Low & High Temp.)	
4141	ffff)	Flue gas analyser instruments for O2 analyser	2 nos. complete Instrument of each Type
4142	gggg)	Electronic card assembly/PCBs, power supply modules	10%
4143	hhhh)	Set of Gaskets /O-rings/ seals	2 set
4144	iiii)	Temp. Sensor	20%
4145	jjjj)	Air flow meter	1 no
4146	kkkk)	Consumables like filter elements light sources etc.	100%
4147	llll)	Calibration gases of all types and ranges, Calibration cell and other consumables for calibration: - of all types and ranges	2 Nos of cylinders for each type of calibration gas
4148	mmmm)	Filters	4 Nos of each type and model
4149	nnnn)	Calibration gases of all types and ranges.	
4150	oooo)	Rota meter/Air flow meter	2 nos. of each type, model and rating
4151	pppp)	FGD (SOx)	
4152	qqqq)	Analyzer for SOx, pH	2 nos. of each type and model
4153	rrrr)	Electronic card assembly/ PCBs, moisture/condensate monitor, power supply modules	2 Nos. of each type
4154	ssss)	Set of gaskets/O-rings/ seals	4 Nos. of each type
4155	tttt)	Temp. Sensor	2 Nos. of each type
4156	uuuu)	Heater assembly, Cooler assembly	2 Nos. of each type
4157	vvvv)	Complete Probe with shield assembly (Not applicable for Insitu- path).	1 no. of each type and model
4158	wwww)	Solenoids	2 nos. of each type, model and rating
4159	xxxx)	Filters, light source, sensor, detector, etc.	1no of each type/rating
4160	yyyy)	Calibration gases, Calibration cell and other consumables for calibration: - of all types and ranges	2 Nos. of cylinders of each type of calibration gas
4161	zzzz)	Heavy duty blower assembly	1 no. of each type, size and rating.
4162			
4163	4.07.00	PROCESS CONNECTION PIPING (FOR IMPULSE PIPING/TUBING, SAMPLING PIPING / TUBING AND AIR SUPPLY PIPING AS APPLICABLE)	
4164	1.	Erection hardware mounted in field, LIE & LIR	
4165	2.	Instrument valves, manifold, fittings, impulse pipe, impulse tubes, drains pipes etc.	Ten (10) percent of each type, rating, model number and size of devices.
4166	3.	Condensate pots of each type & Size installed	Ten (10) percent of total number of installed or four numbers whichever is higher
4167	4.	Manifold 2 way, 3 way, 5 way valve manifolds	Ten (10) percent of each type & Size installed
4168	5.	Fittings	Twenty (20) percent of each type & Size installed
4169	6.	Purge meters	Ten (10) percent of each type & Size installed
4170	7.	Air Filter cum Regulator	Ten (10) percent of each type, make and model installed
4171	8.	MCB, and Power sockets used in LIE/LIR.	Ten (10) percent of each type
4172	9.	Fuses used in LIE/LIR.	Fifty (50) percent of each type and rating
4173			

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION	
4174	4.08.00	INSTRUMENTATION CABLE, INTERNAL WIRING & ELECTRICAL FIELD		
4175	1	Pre-fabricated cable with connector of each type (other than DCS application) (if applicable)	2 nos. of each type	
4176	2	Other cables (Instrumentation and Control cable)	10% or 500 mtrs whichever is more for each type, pair and size of actual supplied quantity	
4177				
4178	4.09.00	CONTROL VALVES, ACTUATORS & ACCESSORIES (FOR ALL SERVICES)		
4179	1	Pneumatic and electro-hydraulic actuator assembly	No. complete set of each type, model and rating with stem packing	
4180	2	Diaphragms, O' rings, seals etc. of all types make etc	100%	
4181	3	Solenoid valves (if applicable)	1 No.	
4182	4	Positioner units /smart positioners (complete unit) & accessories (link assembly)	1 set of valve positioner for each control valve.	
4183	5	Pneumatic air-filter Regulator of each type, make rating etc.	2 Nos. of each type	
4184		Feedback Position transmitter unit	10% for each type and range and model	
4185	6	Air lock relays	1 No. of each type, model and rating	
4186	7	I/P Converter	20% for each type and range but minimum 2 no each type and model	
4187	8	Junction Box.	2 nos	
4188		Mechanical spares for each type of control valves.	1 Set of each items.	
4189		actuator stem		
4190		valve stem		
4191		stem connector		
4192	9	(a) spindle		
4193		(b) Metal seat		
4194		(c) Seat Ring		
4195		(d) Spindle		
4196		(e) Actuator Soft / seal Goods kit		
4197	10	Tubing and fitting for all pneumatic drives	50% of installed capacity.	
4198				
4199	4.10.00	CONTROL DAMPERS AND POWER CYLINDER (FOR EACH TYPE/MODEL OF DAMPER):		
4200	1	Actuator diaphragm	100%	
4201	2	HAD,CAD and SAD air damper power cylinder	01 nos of each type and model no.	
4202	3	Positioner units /smart positioners (complete unit) & accessories (link assembly)	1 set of valve positioner for each control valve.	
4203	4	Pneumatic air-filter Regulator of each type, make rating etc.	2 Nos. of each type	
4204	5	Feedback Position transmitter unit	10% for each type and range and model	
4205	6	O-rings set	2 no. of each size for positioner	
4206	7	Feedback linkage	1 no of each type	
4207	8	Packing and gaskets	1 no. of each type	
4208				
4209	4.11.00	PNEUMATICALLY OPERATED, ISOLATION, BLOCK VALVES, ACTUATORS & ACCESSORIES		
4210	1	Pneumatic actuator assembly	1 No. of each type, model and rating	
4211	2	Diaphragms, O' rings, seals etc. of all types make etc	100%	
4212	3	Limit switches (complete unit) & accessories (link assembly)	1 No.	
4213	4	Pneumatic air-filter/Regulator of each type, make rating etc.	2 Nos.	
4214				

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4215	4.12.00	ELECTRICAL ACTUATORS	
4216	1	Actuators	1 no. of complete set of each type and rating
4217	2	Power unit for modulating actuator	2 nos. of each type
4218	3	DC-DC unit/ Power Units	2 nos. of each type
4219	4	Electronic cards	2 nos. of each type
4220	5	Position feedback transmitters	2 nos. of each type
4221	6	Control Unit	2 nos. of each type
4222	7	Torque And limit switch assembly of each unit	2 nos. of each type
4223	8	Electronic PCB of all types	10% of each type & model
4224	9	Absolute Encoder (replaceable part)	5% of each type & model
4225	10	Electronic Torque sensor	5% of each type & model
4226			
4227	4.13.00	Solenoid Valve	
4228	1	Solenoid valve	1 no. of each type and rating
4229	2	Solenoid Valve Coil	10% of each type and rating but minimum 1 no
4230			
4231	4.14.00	CONTROL AND INSTRUMENTATION (APPLICABLE FOR STEAM GENERATOR AND AUXILIARIES INCLUDING FUEL OIL PRESSURISATION AND HEATING SYSTEM, DOZING System, ECW, FGD, De-NOx)	
4232	1.	Flame Monitoring System	
4233	2.	Complete Flame Scanner Assembly including scanner head assembly, scanner housing, and fiber optic cables.	20 % or 4 nos., whichever is more
4234	3.	Flame Scanner Lens.	20% or 4 nos. whichever is more.
4235	4.	Electronic cards including power supply modules for scanners	10% or 2 nos. of each type whichever is more.
4236	5.	Power Supply Modules	10% or 2 nos. of each type whichever is more.
4237	6.	Coal Feeders	
4238	7.	Calibration Motor	10% or 2 nos. whichever is more.
4239	8.	Correction Motor	10% or 2 nos. whichever is more.
4240	9.	Motion monitor	10% or 2 nos. whichever is more.
4241	10.	Speed pick-up	10% or 2 nos. whichever is more.
4242	11.	Load Cell	10% or 2 nos. whichever is more.
4243	12.	Electronic cards & Power Supply cards	10% or 2 nos. whichever is more.
4244	13.	Clutch (if applicable)	10% or 2 nos. whichever is more.
4245	14.	Local indication lamps	10% or 2 nos. whichever is more.
4246	15.	Panel meters	10% or 2 nos. whichever is more.
4247	16.	Limit switch assembly for coal-on-belt, no coal flow, shear pin failure, etc.	10% or 2 nos. whichever is more.
4248	17.	Coupling (eddy current type etc., VFD as applicable)	10% or 2 nos. whichever is more.
4249	18.	Relay/Contactor of each type make and model and rating	10% or 2 nos. whichever is more.
4250	19.	Electromatic Safety Valves/ Electromatic Ball valve Pressure switches and solenoid Valves.	
4251	20.	Pressure switches, local PB stations and solenoid Valves	10% or 2 nos. of each type whichever is more.
4252	21.	Furnace Temperature Probes Thermocouple	2 Nos.
4253	22.	Acoustic Pyrometers	
4254	23.	Signal Processor and interface modules	10% or 2 nos. of each type and model whichever is more
4255	24.	Sensors and Transceivers	20% or 2 nos. of each type and model which is more.
4256	25.	All electronic cards including power packs	10% or 2 nos. of each type and model whichever is more
4257	26.	Seal kit for Sound Generator	10% or 2 nos. of each type and model whichever is more
4258	27.	Furnace and Flame Viewing System	
4259	28.	Flame Cameras	10% or 2 nos. of each type whichever is more.
4260	29.	Electronic Modules	10% or 2 nos. of each type whichever is more.
4261	30.	Coal Bunker Level Indicating System	
4262	31.	Sensors of each type	20% or 2 nos. of each type and model whichever is more.
4263	32.	Electronic Cards of each types, model	10% or 2 nos. of each type and model whichever is more.
4264	33.	Power supply module	10% or 2 nos. of each type and model whichever is more.
4265	34.	Panel indicators/displays for Bunker Level	20% or 2 nos. of each type whichever is more.
4266	35.	Solenoids for SG pneumatic drives/valves.	20% or 2 nos. of each type whichever is more.
4267	36.	Solenoid valves.	20% or 2 nos. of each type whichever is more.
4268	37.	Diaphragms	20% or 2 nos. of each type whichever is more.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4269	38.	Conductivity type level monitoring system (for drip legs)	
4270	39.	Electrodes	50% of population of each type and model.
4271	40.	Electronic Cards	20% or 2 nos. of each type and model whichever is more
4272	41.	Lamps/LEDs of display units	100%
4273	42.	Mill and Air heater Fire detection system.	
4274	43.	Thermocouple	10% or 1 no. whichever is more
4275	44.	Process actuated switches	10% or 1 no. whichever is more
4276	45.	Any other instruments (If applicable)	10% or 1 no. whichever is more
4277	46.	Electronic cards	20% or 1 no. whichever is more
4278	47.	Any other control system (if applicable)	10% or 1 no. whichever is more
4279	48.	Acoustic steam Leak Detection system (ASLD)	
4280	49.	Processor and Interface modules	10% or 1 no. of each type and model, whichever is more.
4281	50.	Sensors and Transceivers	10% or 1 no. of each type and model, whichever is more.
4282	51.	Consumables like batteries, fuses etc.	for two years operation of Acoustic Steam leak detection
4283	52.	Level monitoring system for Coal bunker, fly ash silo and ESP hopper (first field to third field)	
4284	53.	Acoustic 3D Level scanner	2 nos. of each type, make and model
4285	54.	Local indicator	2 nos
4286	55.	Any other instruments (If applicable)	1 nos
4287	56.	Any other control system (If applicable)	1 nos
4288	Bidder to supply 10% or 1 no. (whichever is more) of each type of sensors, instruments, analysers, special instruments, Electronic cards, instrumentation fittings, mechanical fittings etc. for any other electronic system, feeder control cabinets, hydra -step (EWLI), Separator level control System, Vibration Monitoring System, CCTV, C&I Lab Instruments, On line Carbon in Ash analyser system, On line Coal mass flow/speed measurement system, Solid flow meter, 3 D Acoustic type level transmitters, Station LAN, MIS, Viscosity Meter, Hydrogen Instruments etc.		
4289			
4290	4.15.00	VIBRATION MONITORING AND ANALYSIS SYSTEM	
4291	1	Vibration pickups with cable	10% of total quantity for each type & range but minimum 1 no
4292	2	Power Supply modules	10% of total quantity for each rating but minimum 1 no
4293	3	Vibration monitor	10% of total quantity for each type but minimum 2 no
4294	4	Any other Electronic module	10% of total quantity for each type but minimum 1 no
4295			
4296	4.16.00	ESP CONTROL SYSTEM	
4297	1.	ESP Control system	
4298		(a) Push buttons for	
4299		(i) TR set controller	10 nos. Of each type & rating
4300		(ii) Others	5 nos. Of each type & rating
4301		(b) Indicator lamps	10 nos. Of each type & rating
4302		(c) Control fuse	10 nos. Of each type & rating
4303		(d) Power fuse	10 nos. Of each type & rating
4304		(e) Thyristor fuse	2 nos. Of each type & rating
4305		(f) Thyristor of transformer controller rectifier	4 nos. Of each type & rating
4306	2.	Ash level indicator for ESP	10 nos. Of each type & rating
4307		Opacity monitor	2 Nos.
4308	3.	Power supply modules for remote control unit of opacity monitor	2 nos. Of each type, make & model.
4309	4.	Transformer rectifier set (Complete)	3 no. of each type and rating
4310	5.	High Frequency/Mid Frequency Transformer Rectifier set (If applicable)	
4311		a) Complete HFTR/MFTR Set	3 nos.
4312		b) Gaskets for HFTR sets (One set means complete replacement for all TR sets, one ESP pass)	1 set
4313		c) Control system	
4314		1.) High voltage unit	One set.
4315		2.) Power electronic unit	One set.
4316		3.) Board for power Electronic Controller Unit	One no.
4317		4.) Cooling fans	One no.
4318		5.) Measurement module for HV unit	One no.
4319		6.) Fuses	One set.
4320			
4321	4.17.00	INSTRUMENTATION CABLE AND INTERNAL WIRING	
4322	1	Pre-fabricated cable with connector of each type (other than DCS application) (if applicable)	2 nos. of each type
4323	2	Other cables (Instrumentation and Control cable)	5% or 500 mtrs whichever is more for each type, pair and size of actual supplied quantity.
4324	3	System bus cable with connectors	2 no of each type and length
4325	4	Bus couplet/ interface hardware and other communication devices.)	10% of each type and model
4326	5	I/O bus cable with connectors for remote I/O units	2 no of each type and length
4327			
4328	4.18.00	STEAM WATER ANALYSIS SYSTEM	
4329	1	Pressure reducing elements for sample flow.	10% spare of qty installed or 3 nos. (Whichever is more).
4330	2	Ion exchange columns with resin as utilized with cation conductivity analysers	Four Nos. and 12 sets or No. of sets required for complete one year operation, whichever is more of replacement
4331	3	Conductivity cells as utilized with conductivity monitors	Ten (10) nos. of each type
4332	4	pH flow-through type cells used with pH monitors	Ten (10) nos. of each type
4333	5	Chemical reagents for all type of analysers	12 months continuous operation of all analysers from date of taking over or completing of COD whichever is later.
4334	6	Chemical reagents for colorimetric silica analyzers	12 months continuous operation of all analysers from date of taking over or completing of COD whichever is later.
4335	7	Electronic Modules	Two (2) no. for each type of Analyser.
4336	8	Power supply sub assemblies	10% or two no. (Whichever is more) for each type of

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4337	8	Power supply sub assemblies	Analysers.
4338	9	Pressure gauge, solenoid valves, temperature gauge, Back Pressure regulating valves, 3 way grab valves, needle valves, isolation valves, PRV, flow switch, flow indicator and temperature switch, erection hardware's valves in SW AS & water Chemistry analyser for plant water system.	10% for each type and range but minimum Two (2) no. of each type
4339	10	panel mounted type sample pressure gauges, sample temp gauges and sample flow indicators	10% for each type and range but minimum Two (2) no. of each type
4340	11	Temp. switch/flow switch/temp. controller/temp.gauge/pressure gauge each for the chilled water system.	10% for each type and range but minimum Two (2) no. of each type
4341	12	Flow assembly and measuring chamber for each of the following analysers	One no. for each analyser of each type.
4342		a. Dissolved Oxygen	
4343		b. Sodium	
4344		c. Silica	
4345		d. Hydrazine	
4346		f. Chloride	
4347		g. Turbidity	
4348		h. pH	
4349		i. Conductivity.	
4350	13	Complete Primary coolers and secondary coolers with assembly.	Two (2) No of each type & rating.
4351	14	Filters	Two nos. of filters along with forty nos. of filter elements.
4352	15	Sample probes	Ten nos. or minimum 1 no. of each type whichever is more
4353	16	Sample shut-off valves	2 nos. of each type.
4354	17	Sample blow down valves	4 nos. of each type.
4355	18	Solenoid valves	2 nos. of each type.
4356	19	Safety relief valves	2 nos. of each type.
4357	20	isolation valves used for pressure indicator and flow indicator isolation	6 nos. of each type.
4358	21	Back pressure valves.	2 nos. of each type.
4359	22	Grab sample valves.	2 nos. of each type.
4360	23	Quick disconnection type valves.	4 nos. of each type.
4361	24	Sample temp. control valves (3 way type) and Thermal shut off valve.	2 nos. of each type.
4362	25	all type of valves	2 nos. of each type.
4363	26	Rubber tubes & capillary tubes of all types & sizes	100%
4364	27	Lamps of all types, size & rating	100%
4365	28	Flexible Tygon tubing for grab sampling	1 set
4366			
4367	4.19.00	OTHER TG AND TDBFP RELATED SYSTEM	
4368	1.	Electro-Hydraulic Converter /Servo unit/ proportional valve for main turbine Blocking unit for main turbine (as applicable) Position feedback transmitter of EHC & Position feedback transmitter of Stop Valves & Control Valves for main turbine (as applicable)	1 Set
4369	2.	Electro-Hydraulic Converter /Servo unit/ proportional valve for LPBP Blocking Unit for LPBP Position feedback transmitter for LPBP Positioner for LPBP	1 Set
4370	3.	Electro-Hydraulic Converter /Servo unit/ proportional valve for HPBP Blocking Unit for HPBP Position feedback transmitter for HPBP Positioner for HPBP	1 Set
4371	4.	High pressure hoses for HPBP, High Pressure LPBP etc	2 complete sets
4372	5.	Electro-Hydraulic Converter /Servo unit/ proportional valve for BFP Drive Turbine Blocking unit for BFP Drive Turbine (as applicable) Position feedback transmitter of EHC & Position feedback transmitter of Stop Valves & Control Valves for BFP Drive Turbine	10% for each type, range and Immersion length but minimum 2 no
4373	6.	Turbine Supervisory System for both TG & BFP Turbine	
4374	7.	Power Supply assemblies of all types	10% or 2 nos. of each type whichever is more
4375	8.	Temperature Sensing elements	10% or 2 nos. of each type whichever is more
4376	9.	CJC assemblies of all types	10% or 2 nos. of each type whichever is more
4377	10.	Local gauges/transmitters of all types, range, model no. etc. for Temperature, pressure, DP, differential expansion, axial shift etc.	10% or 1 no. of each type whichever is more
4378	11.	Process Actuated Switch Devices of all types, range, model no. etc. for pressure, DP, temperature, flow, level, proximity/speed etc.	10% or 1 no. of each type, whichever is more
4379	12.	Electronic Cards/PCB's/interface units/special cables etc. of each type of measurement used in TSI. If prefab cable or prefab extension cable is used same should be supplied in proportion	10% or 4 nos. of each type whichever is more.
4380	13.	Instrument valves of all types like isolating, 2/3/5 way valve manifolds, hi pressure reducing, safety relief, each type of solenoid valves etc.	10% or 2 nos. of each type, model etc.; whichever is more.
4381	14.	Sensors of all types, range, model etc. for vibration, eccentricity, proximity, differential expansion, axial shift, EHC position, Stop/Control valve position, speed sensors and any other measurements etc.	10% or 4 nos. of each type whichever is more.
4382	15.	Speed Monitoring related system for TG, TD-BFP & MDBFP	
4383	16.	Power Supply assemblies of all types	2 Nos. of each type and rating
4384	17.	Electronic Cards/PCB's/interface units etc. of all	2 Nos. of each type and
4385	18.	Speed sensor * If prefab cable or prefab extension cable is used same should be supplied in proportion.	2 Nos. of each type and rating
4386	19.	Load Transducers, frequency transducers & any other transducers (as applicable)	2 Nos.
4387	20.	Auto Synchroniser	1 No.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4388	21.	Solenoid valves in the Electrohydraulic governing & protection circuit of main turbines, BFP turbines, HPBP & LPBP Solenoid valves to be used in extraction NRVs (as applicable)	10 % or 1 no. of each type and model whichever is more.
4389	22.	Vibration Monitoring System and TSS for TG & TD -BFP	
4390	23.	Sensors of all types, make etc. for with special cables, Power supply modules, Relay, Driver/Interface Module, and electronic modules used for vibration monitoring system.	20% or two no. (Whichever is more) of each type and rating
4391	24.	Pre-fab sensor cable and connectors of all types, makes,range	20% of total quantity installed
4392			
4393	4.20.00	COMMUNICATION SYSTEM	
4394	1	PUBLIC ADDRESS SYSTEM	
4395		Handset with cord for outdoor station	10 nos. Of each type.
4396		Handset with cord for indoor station (desk for mounted)	2 nos. Of each type.
4397		Handset with cord indoor flush mounted	1 no. of each type
4398		Portable handset	1 no. of each type
4399	2	Loud speakers	
4400		Outdoor horn type loudspeaker	10 nos. Of each type.
4401		Indoor cone type loudspeaker	2 nos. of each type
4402		Cradle switch	2 nos. of each type
4403		Push button of all types and models	2 nos. of each type
4404		Amplifier PCB with all components mounted for wall mounted Handset station	10% of each type
4405		Extension Amplifier PCB with all components mounted for all wall mounted handset station	2 nos. of each type
4406		JB's of Handset	2 nos. of each type
4407		JB's of Loud speakers	2 nos. Of each type.
4408		Electronic modules of all types	10 % of each type
4409		Interfacing cables & Power cords	Ten (10) percent or 2 sets (Whichever is more) of each type/model.
4410			
4411	4.21.00	SPECIFIC C&I MANDATORY SPARES FOR WATER SYSTEM AREA (CW, ACW, ECW, RAW WATER, CT , CHLORINATION,WTP AREA ETC.) ANALYZER & CHEMICAL DOSING SYSTEM	
4412		Analysers for DM & PT Plant	
4413	1	pH /Conductivity/turbidity Analyzer	
4414		Flow Through type cell and Electrode	1 no. of each type
4415		Electronic Transmitter unit without sensor	1 no. of each type
4416		Pre-fabricated cable with connector	1 set
4417	2	Residual Chlorine Analyzer	
4418		sensor	1 no. of each type
4419		Transmitter	1 no. of each type
4420		Pre-fabricated cable with connector	1 set
4421		All chemical Reagents for 12-month operation (Supply to be staggered as per the shelf life)	1 set
4422	3	Silica Analyser	
4423		Main PCB Assembly	1 no. of each type
4424		Power supply cards (if applicable)	1 no. of each type
4425		Rubber Tubes and capillary Tubes	1 set
4426		Pre-fabricated cable with connector	1 set
4427		Solenoid valves	1 set
4428		All chemical Reagents for 12 month operation (Supply to be staggered as per the shelf life)	1 set
4429	4	Sodium Analzer	
4430		Main PCB Assembly	1 no. of each type
4431		Power supply cards (if applicable)	1 no. of each type
4432		Rubber Tubes and capillary Tubes	1 set
4433		Pre-fabricated cable with connector	1 set
4434		Solenoid valves	1 set
4435		All chemical Reagents for 12 month operation (Supply to be staggered as per the shelf life)	1 set
4436			
4437	4.22.00	CONDENSATE POLISHING UNIT (CPU) ANALYZER	
4438	1	Complete PH Analyzer (including Flow through type cell	1 Set of each type
4439	2	Complete Conductivity Analyzer (including Flow through type cell and Electrode, electronic Transmitter unit, Pre-fabricated cable with connector as minimum)	1 Set of each type
4440	3	Complete Silica Analyzer (including sensing unit, Electronic Transmitter unit, Pre-fabricated cable with connector Rubber Tubes & Capillary Tubes, solenoid valves, as minimum) along with sample sequencing unit	1 Set of each type
4441	4	Complete Turbidity Analyzer (including sensing unit, Electronic Transmitter unit, Pre-fabricated cable with connector as minimum)	1 Set of each type
4442	5	Dissolved O2 Analyzers (including sensing unit, Electronic Transmitter unit, Pre-fabricated cable with connector as minimum) (if applicable)	1 Set of each type
4443			

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4444	4.23.00	SPECIFIC C&I MANDATORY SPARES FOR CHP, AHP, LIMESTONE & GYPSUM HANDLING SYSTEM DOSING SYSTEM	
4445	1	CONVEYORS	
4446		Belt Sway Switch assy	5 % of each type
4447		Pull cord switch assy.	15 % of each type
4448		Zero speed switch assy.	15 % of each type
4449		Chute Block switch assy.	15% of each type
4450		Position switches for trippers, paddle feeders	10% of each type
4451		Sensor/probe for zero speed switch	20% (min. 1 no)of each type and speed range
4452		Micro/limit switch of pull cord switch, belt sway switches, chute block switches, Motor terminal block with studs for all motors	20% (min. 1 no)of each type and speed range
4453		Belt watch Trip indicators:	20% (min 01 no.) of each type
4454	2	TRAVELLING TRIPPER	
4455		Brake assembly for traverse drive complete	2 sets
4456		Set of limit switches	2 nos. of each type
4457		Cable tension switches with lead	2 sets of each type
4458		Anti-collision device	1 set of each type
4459		Motor terminal block with studs for all motors	1set. of each rating and type of motor
4460		Festoon roller assembly	2sets
4461		Cable reel drive motor complete	1 no.
4462		Flexible Trailing cable (power & control)	1 length each type (largest)
4463		Carbon brushes for slip ring current collector of cable reeling drum (CRD)	2 sets
4464	3	BELT WEIGHER	
4465		Set of Electronic cards	2 nos. of each type
4466		Load Cells	4 nos. of each type
4467		Display Unit	2 nos. of each type
4468		Speed sensor	1 nos. of each type
4469		Cables for load cells & speed sensor	2 sets
4470		Transducer, if applicable	2 nos. of each type
4471		Complete belt weigher assy. with control and display units	1 set
4472	4	CONTROL PANEL	
4473		(Wagon tippler control desk, hoists, dust suppression system, sump pumps, fluid couplings etc.)	
4474		Control supply transformers	1 no. of each type & rating
4475		Relays and timer	1 no. of each type & rating
4476		Contactors	1 no. of each type & rating
4477		Ammeters	1 no. of each type & rating
4478		Voltmeters	1 no. of each type & rating
4479		LEDs	5 nos. of each type & rating
4480		Control switches	1 no. of each type
4481		Selector switches	1 no. of each type
4482		Push button (complete with contact elements)	1 no. of each type & colour
4483		Auxiliary contactors	1 complete set
4484		Control fuse base with carrier 1 complete set for panel	1 complete set
4485		Any special meter	1 no. of each type
4486		Bi-metallic overload relay	2 complete sets
4487	5	VIBRATION MONITORING SYSTEM (If Applicable)	
4488		Vibration pick up	2 Nos
4489		Pick up cable	1 length
4490		Vibration monitor module and other cards	1 no. of each type
4491		Power supply	1 no.
4492		Relays	2 no. of each type
4493		Indicating lamps / LEDs	5 nos. of each colour
4494	6	DUST SUPPRESSION,SERVICE WATER, POTABLE WATER, COOLING WATER (for hydraulic coupling or any other purpose), DUST EXTRACTION SYSTEM	
4495		Tone frequency transmitter	1 set. of each type
4496		Tone frequency receiver	1 set. of each type
4497		Control Cards	1 set. of each type
4498			
4499		CCTV System	
4500		As per manufacture's Recommendation for Three Years Continuous Operation or minimum quantities indicated as below (whichever is more)	
4501	1.	PTZ camera	20 nos.
4502	2.	Explosion proof camera	1 nos.
4503	3.	Fixed Camera	5 nos.
4504	4.	Electronic cards	One No. of each type
4505	5.	PTZ controller	One No. of each type
4506	6.	Electronic modules used for server system	10% or Two No. of each type (whichever is more)
4507	7.	Special cables & connector	(5 sets) of each type
4508	8.	Cartridges for air filter	Two No. of each type
4509	9.	Relay	5 nos. or 10% (whichever is more) of each type
4510	10.	Power supply modules of each type	5 nos. of each type
4511	11.	Camera of each type used for Plant Security and surveillance system.	Two no. of each type
4512	12.	Network switches, media convertor, interface card and any other communication Hardware.	10% or Two No. of each type (whichever is more)
4513	13.	Camera/Database Server	1 no
4514	14.	Work station with monitor with complete accessories.	1 no.
4515	15.	Client Work Stations with monitor	1 no.

ROW NO	SL No.	PARTICULARS	Quantity/SET/LOT/TYPE/RATING/DEFINITION
4516	16.	Media converter	5 nos
4517	17.	Network Switches	2 nos each type and model
4518	18.	Field/edge switches	5 Nos.
4519	19.	L2 switch	2 Nos.
4520	20.	L3 switch	1 No
4521	21.	I/O module for Fire Alarm interfacing (if applicable)	2 nos. of each type
4522	22.	Camera mounting arrangement.	2 nos. of each type

TOTAL

NOTES

Quantity mentioned in percentage (%) is the % of total installed.
If percentage comes as fraction, next higher integer should be considered for the purpose of quantity required.
Also Refer DTT types for which price is to be quoted

Mandatory Spares list /DTT

Sl. No	Equipment	Voltage rating	Name of Item	Unit
1	1600 KVA DTT	11/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
2	1600 KVA DTT	11/0.433	Bushing HV	3 Nos.
3	1600 KVA DTT	11/0.433	Bushing LV & LVN	
4	1600 KVA DTT	11/0.433	Tap changer Contacts	1 set.
5	1600 KVA DTT	11/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
6	1600 KVA DTT	11/0.433	Terminal box insulator for LV and HV side	1 set of each type
7	1600 KVA DTT	11/0.433	Support insulator set for HV and LV	1 set.
8	1600 KVA DTT	6.6/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
9	1600 KVA DTT	6.6/0.433	Bushing HV	3 Nos.
10	1600 KVA DTT	6.6/0.433	Bushing LV & LVN	
11	1600 KVA DTT	6.6/0.433	Tap changer Contacts	1 set.
12	1600 KVA DTT	6.6/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
13	1600 KVA DTT	6.6/0.433	Terminal box insulator for LV and HV side	1 set of each type
14	1600 KVA DTT	6.6/0.433	Support insulator set for HV and LV	1 set.
15	2000 KVA DTT	6.6/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
16	2000 KVA DTT	6.6/0.433	Bushing HV	3 Nos.
17	2000 KVA DTT	6.6/0.433	Bushing LV & LVN	
18	2000 KVA DTT	6.6/0.433	Tap changer Contacts	1 set.
19	2000 KVA DTT	6.6/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
20	2000 KVA DTT	6.6/0.433	Terminal box insulator for LV and HV side	1 set of each type
21	2000 KVA DTT	6.6/0.433	Support insulator set for HV and LV	1 set.
22	2000 KVA DTT	3.3/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
23	2000 KVA DTT	3.3/0.433	Bushing HV	3 Nos.
24	2000 KVA DTT	3.3/0.433	Bushing LV & LVN	
25	2000 KVA DTT	3.3/0.433	Tap changer Contacts	1 set.
26	2000 KVA DTT	3.3/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
27	2000 KVA DTT	3.3/0.433	Terminal box insulator for LV and HV side	1 set of each type
28	2000 KVA DTT	3.3/0.433	Support insulator set for HV and LV	1 set.
29	2500 KVA DTT	6.6/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
30	2500 KVA DTT	6.6/0.433	Bushing HV	3 Nos.
31	2500 KVA DTT	6.6/0.433	Bushing LV & LVN	
32	2500 KVA DTT	6.6/0.433	Tap changer Contacts	1 set.
33	2500 KVA DTT	6.6/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
34	2500 KVA DTT	6.6/0.433	Terminal box insulator for LV and HV side	1 set of each type
35	2500 KVA DTT	6.6/0.433	Support insulator set for HV and LV	1 set.
36	2500 KVA DTT	6.6/0.433	Complete Dry Type Transformer	1 no of highest rating (KVA) on
37	2500 KVA DTT	3.3/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
38	2500 KVA DTT	3.3/0.433	Bushing HV	3 Nos.
39	2500 KVA DTT	3.3/0.433	Bushing LV & LVN	
40	2500 KVA DTT	3.3/0.433	Tap changer Contacts	1 set.
41	2500 KVA DTT	3.3/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
42	2500 KVA DTT	3.3/0.433	Terminal box insulator for LV and HV side	1 set of each type
43	2500 KVA DTT	3.3/0.433	Support insulator set for HV and LV	1 set.
44	2500 KVA DTT	3.3/0.433	Complete Dry Type Transformer	1 no of highest rating (KVA) on each voltage level
45	2500 KVA DTT	11/0.433	Limb of complete LT and HT of temperature sensing devices	1 Set.
46	2500 KVA DTT	11/0.433	Bushing HV	3 Nos.
47	2500 KVA DTT	11/0.433	Bushing LV & LVN	
48	2500 KVA DTT	11/0.433	Tap changer Contacts	1 set.
49	2500 KVA DTT	11/0.433	Thermistor /RTD with associated leads complete for one transformer.	1 set
50	2500 KVA DTT	11/0.433	Terminal box insulator for LV and HV side	1 set of each type
51	2500 KVA DTT	11/0.433	Support insulator set for HV and LV	1 set.
52	2500 KVA DTT	11/0.433	Complete Dry Type Transformer	1 no of highest rating (KVA) on each voltage level