

2X660 MW SURATGARH STPS, STAGE-V / MISC PUMPS (VERTICAL)

Ref No. : PE/PG/SG5/E-4264/13

Date: 30.01.2014

CORRIGENDA / ADDENDA-5

Tender Enquiry no.: PE/PG/SG5/E-4264/13

Date: 16.12.2013

All bidders are requested to note the following points regarding subject tender:

1. IE2 LT motors can be acceptable. However, Starting current shall be limited to 600% (inclusive of 20% tolerance) of full load current as per technical specification.
2. Datasheet A of Technical Specification, Vol II B, Section D has been revised w.r.t. motor efficiencies inline with point no. 1 above for subject tender. Revised datasheet is enclosed.

Bidders are requested to quote the subject tender accordingly.

With Regards,

For & on behalf of BHEL



Rohit Juneja
ENGINEER/PG-II-1

Please reply to:

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DATA SHEET - A

SPECIFICATION NO.: PE-TS-392-100-N002

MISCELLANEOUS PUMPS (Vertical Pumps)

REV. NO.: 01

DATE : 20.11.2013

2 X 660 MW SURATGARH STPS UNIT 7 & 8

VOLUME : II B

SECTION D

Sl. No.	DESCRIPTION	ACW Pumps	River/ Raw Water Intake Pumps	Raw Water Pumps	Ash Water Make up Pumps	Plant Potable/ Filtered Water Pumps	AHP Seal Water Pumps	CW Make Up Pumps	Plant Service Water Pumps
VERTICAL PUMPS(GROUP-II)									
1.0	SERVICE								
1.1	Total no. of pumps for Project	5	5	3	3	2	2	3	2
1.2	No. of working & standby pumps	(2W per unit) +1 common Standby	(4W+1S) for station	(2W+1S) for station	(2W+1S) for station	(1W+1S) for station	(1W+1S) for station	(2W+1S) for station	(1W+1S) for station
1.3	Liquid Handled (ref. water analysis enclosed herein)	Clarified Water	Raw Water	Raw Water	Raw Water	Clarified water	Clarified water	Clarified water	Clarified water
1.4	Location	CW/ACW P/H	River water Intake P/H	Raw Water P/H		Filtered Water P/H			
1.4.1	Indoor / Outdoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
1.5	Duty	Continuous	Continuous	Continuous	Continuous	Intermittent	Continuous	Continuous	Intermittent
1.6	Specific gravity	1	1	1	1	1	1	1	1
1.7	No. of pumps working in parallel	2	4	2	2	-	-	2	-
1.8	System design pressure (kg/sqcm)	7.5	10	10	10	10	10	10	15
2.0	DESIGN PARAMETERS								
2.1	Design capacity each, M ³ /hr	1550	2150	2050	375	25	150	1725	300
2.2	Total dynamic head (MWC) (At Bowl, excluding Pumps Internal frictional losses upto discharge)	40	50	30	30	53	30	16	91
2.3	• Suction Pressure(MWC)	Submerged Suction	Submerged Suction	Submerged Suction	Submerged Suction	Submerged Suction	Submerged Suction	Submerged Suction	Submerged Suction
	• Floor Level- for Pump Mounting	(+) 2.2 M	RL (+) 189.0 M	RL (+) 194.5 M	RL (+) 194.5 M	(+) 0.0 M	(+) 0.0 M	(+) 0.0 M	(+) 0.0 M
	• Min. W.L	(-) 0.3 M	RL (+) 184.0 M	RL (+) 185.2 M	RL (+) 185.2 M	(-) 5.0 M	(-) 5.0 M	(-) 5.0 M	(-) 5.0 M
	• Max. W.L.	(+) 0.7M	RL (+) 187.6 M	RL (+) 193.5 M	RL (+) 193.5 M	(-) 1.5 M	(-) 1.5 M	(-) 1.5 M	(-) 1.5 M
	• Sump Invert Level	(-) 2.4 M	RL (+) 181.0 M	RL (+) 182.7 M	RL (+) 182.7 M	(-) 7.5 M	(-) 7.5 M	(-) 7.5 M	(-) 7.5 M
	• Crane Hook Level	(+) 15.15 M	RL (+) 194.0 M	RL (+) 199.5 M	RL (+) 199.5 M	(+) 5.0 M	(+) 5.0 M	(+) 5.0 M	(+) 5.0 M
• Crane Capacity Available	40 Ton	5 Ton	5 Ton	5 Ton	5 Ton	5 Ton	5 Ton	5 Ton	
2.4	Design Temperature (°C)	60	60	60	60	60	60	60	60
2.5	Maximum permissible speed of pump (RPM)	1500	1500	1500	1500	3000	1500	1500	1500
2.6	Max. limit on shut off head Corresponding to pump TDH (MWC) at 52.5 Hz	Not to exceed 70 MWC	Not to exceed 95 MWC	Not to exceed 95 MWC	Not to exceed 95 MWC	Not to exceed 95 MWC	Not to exceed 95 MWC	Not to exceed 95 MWC	Not to exceed 140 MWC
2.7	Pump Discharge - above floor / below floor	Above floor							
2.8	Discharge pipe (ODXTHK).(mmxmm)	508 X 8	610 X 8	610 X 8	273 X 6.3	115 x 5.4	219.1 X 6.3	508 X 8	273 X 6.3
2.9	Operating range	30-130% of design duty point flow							
2.10	Motor rating	Motor rating (at 50 deg. C ambient) shall be either above the power requirement at any condition of the entire characteristic curve of the pump (viz. 0-130%) or 16% extra of the power required at the design point, whichever is maximum.							
2.11	Permissible tolerance in rated capacity & TDH	no negative tolerance							
2.12	Permissible tolerance in efficiency at rated capacity(%)	no negative tolerance							
2.13	Performance/Design Standard	HIS							
3.0	CONSTRUCTION FEATURES								
3.1	Pump type	Vertical Turbine Type	Vertical Turbine Type	Vertical Turbine Type	Vertical Turbine Type	Vertical Turbine Type	Vertical Turbine Type	Vertical Turbine Type	Vertical Turbine Type
3.2	Impeller type	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
3.3	Casing type	Vertical turbine type							
3.4	Coupling type	Flexible	Flexible	Flexible	Flexible	Flexible	Flexible	Flexible	Flexible
3.5	Sealing arrangement	Self Water/Gland packing	Self Water/Gland packing	Self Water/Gland packing	Self Water/Gland packing	Self Water/Gland packing	Self Water/Gland packing	Self Water/Gland packing	Self Water/Gland packing
3.6	Type of Lubrication	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water	Oil/ Grease/ Self Water
3.7	Pump characteristics	Non Overloading type & stable	Non Overloading type & stable	Non Overloading type & stable	Non Overloading type & stable	Non Overloading type & stable	Non Overloading type & stable	Non Overloading type & stable	Non Overloading type & stable
3.8	Drain Plugs, vent, lifting lugs, etc.	Required							
4.0	MATERIALS OF CONSTRUCTION								
4.1	Casing & Suction Bell	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260
4.2	Column Pipe	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated	MS FAB. IS-2062 Gr B epoxy coated
4.3	Minimum column pipe thickness, mm	10 mm	10 mm	10 mm	8 mm	8 mm	8 mm	10 mm	8 mm
4.4	Impeller	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8
4.5	Shaft/ Line Shaft	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410
4.6	Shaft Sleeves	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened	ASTM A 276 Type 410 Hardened
4.7	Shaft Coupling	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410	ASTM A 276 Type 410
4.8	Wearing rings	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8	ASTM -A351- CF8
4.9	Wetted fasteners	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M
4.10	Fasteners (others)	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M	ASTM A 193/ 194- B8M/8M
4.11	Gland plate	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260	CI to IS 210 FG 260
4.12	Lantern Ring	SS 304	SS-304	SS-304	SS-304	SS-304	SS-304	SS-304	SS-304
4.13	Intermediate stage bearings	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell	Cutless Nitrile rubber in SS Shell
4.14	Mech. seal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4.15	Gland Packing (Asbestos Free)	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
4.16	Base/ Sole Plate	Fabricated Steel to IS 2062 with epoxy coated (minimum 10 mm thickness)							
4.17	Connecting Pipe material (for deciding counterflange material)	Piping upto 150NB shall be Carbon Steel ERW, IS:1239 (Heavy Grade) and piping 150 NB and above shall be Carbon Steel (IS:2062), rolled and welded conforming to IS:3589.							
5.0	MANDATORY SPARES	Bidder to furnish the recommended spares list separately for further ordering by customer.							
5.1	Pumps								
5.1.1	Bearings	2 sets	2 sets	2 sets	2 sets	2 sets	2 sets	2 sets	2 sets
5.1.2	Gland packing	1 set	1 set	1 set	1 set	1 set	1 set	1 set	1 set
5.1.3	Couplings	1 set	1 set	1 set	1 set	1 set	1 set	1 set	1 set
5.1.4	Coupling pads/ Bushings	1 set	1 set	1 set	1 set	1 set	1 set	1 set	1 set



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5.2	Motors								
5.2.1	Motor of each type & rating	NA	NA	NA	1 No.	1 No.	1 No.	1 No.	1 No.
5.2.2	Motor Bearings	NA	NA	NA	1 Set	1 Set	1 Set	1 Set	1 Set
5.2.3	Space Heater (If Applicable)	NA	NA	NA	1 No.	1 No.	1 No.	1 No.	1 No.
5.2.4	Motor cooling fan	NA	NA	NA	3 Nos.	3 Nos.	3 Nos.	3 Nos.	3 Nos.
6.0	Bid Evaluation								
6.1	Bid evaluation rate	Rs. 3 Lacs/KW	Rs. 3 Lacs/KW	Rs. 3 Lacs/KW	Rs. 3 Lacs/KW	NA	Rs. 3 Lacs/KW	Rs. 3 Lacs/KW	NA
6.2	Maximum permissible efficiency for Bid evaluation								
6.2.1	Pump Efficiency	86	86	87	84	-	72	87	-
6.2.2	Motor Efficiency	93	93	93	93	-	91.4	94.3	-

Notes :									
1	Material of construction for other components not specified above shall be similarly selected in line with the above for the duty intended and subject to approval.								
2	For HT motor driven pumps , bidder shall provide key slots of dimensions 30mm L x 15 mm W x 3mm D on each pump shaft or some other suitable location which shall be confirmed during detail engineering by BHEL.								
3	Material of construction for other components not specified above shall be similarly selected in line with the above for the duty intended and subject to approval.								
4	Wherever SS material is coming in contact with non SS material, suitable isolation (rubber etc.) shall be provided to avoid galvanic corrosion.								