

CORRIGENDUM - 2 DTD.09.06.2021 TO BHEL PSSR TENDER REF: ENQ:20:PS:0005:PUR:36, DTD 18.05.2021

Tender reference No: ENQ:20: PS:0005:PUR:36 for Design, Manufacturing, Supply, Site Storage, Erection and Hydro testing of GRP Pipelines inside Plant boundary along with supervision of civil works for the project: Udangudi Supercritical TPP ST-I (2X660 MW).

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1	Various design Pressure class given in BOM –Annexure 1 where as in technical specs of Ranipet it is mentioned as PN 10 for sea water & sodium hypochlorite application (refer attachment). PI clarify shall we consider PN 10 or as given in BOM in front of individual Items.		Ranipet Tech Spec ROS : 6283 R02	Clause 3 - Technical Requirements - Sub Clause 4 (d)	7	For Ranipet Spec : Piping shall be of PN10 rating. Details indicated in BOM Annexure-1 is maximum design water pressure. It is also indicated in the Annexure-1 for selecting piping thickness based on PN10 rating.
2	Whether Un Equal tee and Equal tee will have flanges at branch or plain ends.		PEM Tech Spec PE-TS-435-100-M042 R03	Annexure 1 : Estimated BOM	26, 27	Un-Equal tees and Equal tees as mentioned in the BOQ (revised BOQ attached) may be supplied with plain ends. However, based on the piping layout drawing attached along with the specification, GRP flanges may be laminated with the tees wherever required to form a flanged joint (matching steel flange shall be supplied by BHEL). Similarly, in case of bends also, GRP flanges may be laminated with the bends wherever required to form a flanged joint. For details of flanged joints, clause No. 6.0 (b) of Technical Requirement (Spec No. PE-TS-435-100-M042) may also be referred. Vendor to ensure that adequate straight length is available in case of tees/ bends etc. so that a flanged joint may be formed at site, wherever required as per the layout drawing.
3	Whether Un Equal tee and Equal tee will have flanges at branch or plain ends.		Ranipet Tech Spec ROS : 6283 R02	Annexure 1 : Estimated BOM	11	Not applicable for Ranipet scope
4	We will not use silica as aggregate in structure for <300 mm dia pipe.	Other materials used in the manufacturing of pipe like aggregates, fillers and additives shall be in accordance with the relevant ASTM / AWWA standards.	PEM Tech Spec PE-TS-435-100-M042 R03	Clause 3 - Material Requirements - Sub Clause e	3 of 9	Noted. However, the same shall be subjected to Customer acceptance after award of contract
5	We will provide butt & wrap joint for <300 mm dia pipe	GRP pipes and fittings shall be joined with unrestrained sleeve couplings (Double REKA joint) or un-restrained double 'O' ring Bell-Spigot joints.	PEM Tech Spec PE-TS-435-100-M042 R03	Clause 6 - Jointing & Installation - Sub Clause a	5 of 9	Noted for PEM scope. However, the same shall be subjected to Customer acceptance after award of contract.
6	Scope for Gasket & bolt is not clear. i.e. supply is in BHEL's scope or in EPP's scope.	Flanged joints shall be used with EPDM gasket and Duplex SS bolts (suitable for sea water application).	PEM Tech Spec PE-TS-435-100-M042 R03	Clause 6 - Jointing & Installation - Sub Clause b	6 of 9	Scope is clearly defined in the PEM specification (Cl. 6.0 (b) of specification No. PE-TS-435-100-M042), i.e. Flanged joints shall be used with EPDM gasket and SS fasteners, which are to be supplied by Bidder (suitable for sea water application).

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7	1. We will provide without silica aggregate because sand is not applicable for small dia pipe (<300 mm dia). 2. And also silica as aggregate is not applicable for Sodium hypochlorite service.	Other materials used in the manufacturing of pipe like aggregates, fillers and additives shall be in accordance with the relevant IS / AWWA / ASTM standards.	Ranipet Tech Spec ROS : 6283 R02	Clause 4 - Material Requirments - Sub Clause d	7 of 10	Bidder to provide materials as per suitability meeting the relevant standards (ASTM/ AWWA)
8	1. We will provide butt & wrap joint because coupling or bell & spigot is not applicable for small diameter <300 mm dia pipe. 2. And also coupler & bell & spigot is not applicable for sodium hypochlorite service.	GRP pipes and fittings shall be joined with unrestrained sleeve couplings (Double REKA joint) or un-restrained double 'O' ring Bell-Spigot joints.	Ranipet Tech Spec ROS : 6283 R02	Clause 7 - Jointing & Installation - Sub Clause a	8	Bidder to follow specification.
9	Scope for Gasket & bolt is not clear. i.e. Supply is in BHEL's scope or in EPP's scope.	Flanged joints shall be used with EPDM gasket and SS316 bolts	Ranipet Tech Spec ROS : 6283 R02	3 to 7b	9	Gaskets & Fasteners to be supplied by the bidder
10	We can not find this item in Annexure I of SPEC.NO.ROS: 6283	90 ELBOW NB 1000 is mention in Sr. No. 2.15	BOQ_180	2.15		Specified document not available in the tender.
11	Acceptance norm :600 cps+/-20 %	Characteristics No. 2 – Viscosity –Acceptance norm :500 cps+/- 20 %	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1a ISO Phthalic Unsaturated Polyester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
12	Characteristics No. 3 – Acid value – Acceptance norm :11+/-4 mg KOH/gm	Characteristics No. 3 – Acid value –Acceptance norm :14+/-4 mg KOH/gm	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1a ISO Phthalic Unsaturated Polyester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.

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13	Characteristics No. 4 – Volatile content –Acceptance norm :37+/-3 % by mass	Characteristics No. 4 – Volatile content –Acceptance norm :38+/-3 % by mass	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1a ISO Phthalic Unsaturated Polyester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
14	Acceptance Norm : 9 to 13 mins	Characteristics No. 5 – Gel Time –Acceptance norm :12 to 16 minutes	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1a ISO Phthalic Unsaturated Polyester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
15	Characteristics No. 6 – Reactivity – Acceptance norm : <= 2	Characteristics No. 6 – Reactivity –Acceptance norm : <40 @ 25exothermic peak	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1a ISO Phthalic Unsaturated Polyester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
16	Characteristics No. 4 – Volatile content –Acceptance norm :42+/-2 % by mass	Characteristics No. 4 – Volatile content –Acceptance norm :40+/- 3 % by mass	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1b Vinyl Ester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
17	Acceptance Norm : 10 +/- 2 minutes (i.e. 8 to 12 minutes)	Characteristics No. 5 – Gel Time –Acceptance norm :12 to 16 minutes	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1b Vinyl Ester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
18	Characteristics No. 6 – Reactivity – Acceptance norm : <= 2	Characteristics No. 6 – Reactivity –Acceptance norm : <40 @ 25exothermic peak	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1b Vinyl Ester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
19	Characteristics No. 7 – Peak Exotherm–Acceptance norm :Minimum 140°C	Characteristics No. 7 – Peak Exotherm–Acceptance norm :160-200°C	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.1b Vinyl Ester Resin	18	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
20	Characteristics No. 4 – Conductivity– Acceptance norm :12.5 MS/m	Characteristics No. 4 – Conductivity–Acceptance norm :1.25 MS/m	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.2 Fiberglass	19	As written in the remarks column of Quality Plan, acceptance norms indicated in the QP may be modified by the supplier after approval of BHEL during contract stage. However, the same shall also be subjected to Customer acceptance.
21	Quantum of check: M- 1 sample from every lot of 30 MT C/N-2 samples from every lot of 60 MT	Quantum of check: M- 1 sample from every lot of 20 MT C/N-2 sample from every lot of 40 MT	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.3 Silica Sand	19	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.

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22	Quantum of check: M- 5% of received quantity for Characteristics 1 & 2 , 25% for Characteristics 3	Quantum of check: M- 100 % for Characteristics 1 , 2 & 3	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 1.4 Rubber Gasket	19	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.
23	GIL manufactures OD based pipes. Either OD or ID can be checked	Characteristics No. a- Outside/Inside Diameter	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 2.1	20	Noted. The same has already been reflected in Quality Plan as outside/inside diameter is mentioned
24	Not recommended in IS	Acetone test	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 2.7	20	Acetone test needs to be conducted as the same is a part of customer specification
25	Quantum of check: M- 1 sample /lot/size/grade(Lot = 100 lengths of pipes or part) C/N-1 sample /lot/size/grade (Min 2 samples of total PO quantity for each size & grade)	Quantum of check: M & C/N- 1 sample /lot/size/grade (Min 2 samples of total PO quantity for each size & grade)	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 2.8 & 2.9 LTS & HTS	20	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.
26	Quantum of check: Quantum of check: M & C/N- 1 sample /lot/size/grade (Lot = 100 lengths of pipes or part)	Quantum of check: M & C/N- For each size & grade,1 pipe out of 30 pipes	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 2.10 Stiffness & Deflection	21	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.
27	This is the proprietary information. Quantum of check: M & C/N- 1 sample /lot/size/grade (Lot = 100 lengths of pipes or part)	Characteristics – Composition Quantum of check: M & C/N- For each size & grade,1 pipe out of 30 pipes	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 2.11- GRP Pipes	21	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.

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28	GIL can provide test certificates of HDB & Strain corrosion type tests which GIL conduct internally after every 3 years on representative Dia. 600 mm, reports of which we can submit to you for your kind verification/review. Ring bending strain test & Specific ring creep stiffness test-GIL had conducted these tests on Dia. 600 mm for one of our reputed customer, reports (more than 3 years old) of which we can submit to you for your kind verification/review.	Characteristics - HDB , SCT , Ring Bending ,Specific ring creep stiffness test. In the remark column it is mentioned as Sampling for long term type tests as per relevant ASTM standard. Review/Verification of type test report, in case these tests have been carried out earlier (not more than 3 years old from bid submission date as defined in NIT) on the identical model/type/rating at an independent laboratory or witnessed by reputed customer or TPI agencies like Lloyds, TUV..... If above test reports/certificates are not available or not found satisfactory by BHEL/Customer. Then the required type tests to be carried out by the supplier & witnessed by BHEL/Customer.	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 2.12- Type tests	21	Please follow the Remarks column of the Quality Plan and any deviation is not allowed
29	Characteristics-Pressure test Quantum of check: M - 20 %	Characteristics-Pressure test Quantum of check: M - 100 %	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 3.1- Coupling	22	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.
30	Characteristics-Pipe joint tightness Quantum of check:	Characteristics-Pipe joint tightness	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 3.1- Couplin	22	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.
31	M & C/N- Any one size from the total ordered quantity.	Quantum of check: M & C/N- 2 nos/lot/size	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 3.1- Coupling	22	Quantum of check shall be followed as per Quality Plan attached along with BHEL-PEM specification.
32	Fittings are not checked for Barcol hardness as they are made from already Barcol hardness checked pipes.	Characteristics 4.4-Barcol hardness test	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 4.0- GRP Fittings	22	Noted. However, the same shall be subjected to Customer acceptance after award of contract
33	Not recommended in IS	Characteristics 4.5-Acetone test	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 4.0- GRP Fittings	22	Acetone test needs to be conducted as the same is a part of customer specification

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34	Fittings are not hydro tested as they are made from hydro tested pipes. For bends , lamination joint strength may be alternatively checked at shop by hydro testing of straight pipe (any one size pipe from the total ordered quantity) with lamination joint (as per mfr. Std.) at twice pressure class..	Characteristics 4.6-Pressure test of Fittings	PEM Tech Spec PE-TS-435-100-M042 R03 / QAP	QAP – Sr. No 4.0- GRP Fittings	22	Please follow the Remarks column of the Quality Plan and any deviation is not allowed.
35	b) Length- Pipes shall be supplied in nominal lengths of 12 meters as per requirements which may include 10 % assorted lengths also.	b) Length- Pipes shall be supplied in nominal lengths of 12 meters as per requirements	PEM Tech Spec PE-TS-435-100-M042 R03	Clause 2 : Design Requirements - Sub Clause b	10	Noted. The same is already a part of IS 14402 design standard
36	1. What pressure class to be considered for the GRP Pipes & Fittings		Ranipet Tech Spec ROS : 6283 R02 PEM Tech Spec PE-TS-435-100-M042 R03			For Ranipet Spec : Piping shall be of PN10 rating. Details indicated in BOM Annexure-1 is maximum design water pressure. It is also indicated in the Annexure-1 for selecting piping thickness based on PN10 rating. For PEM Spec : Design Pressure of piping system is already mentioned in Annexure-1 of Technical Specification. GRP pipes/ fittings shall have adequate pressure class based on the given design pressure. Bidder shall submit design calculations as per AWWA M45 & AWWA C950 to establish the adequacy of pipe size, pressure class and stiffness class selected for the GRP pipes & fittings.
37	2. RCC encasement to be considered as 150mm or 250mm.		Ranipet Tech Spec ROS : 6283 R02		12	The RCC encasement shall be 250mm as per Drg. 1-WT-040-01850 in Page no. 12 of 13

Note:-

All other Terms & Conditions remain unchanged. Bidders are requested to consider this Corrigendum as part of the Tender Specification and quote accordingly.

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Yasodha G
DM/Purchase