TELENGANA STATE POWER GEN. CO. LTD

4X270 MW BHADRADRI TPS FGD PACKAGE

And

1X800 MW KOTHAGUDEM TPS STAGE-VII, U#12 FGD PACKAGE

TECHNICAL SPECIFICATION

FOR SIMPLEX STRAINER

Specification No.: PE-TS- 439/440-165-N005 (REV. 00)

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
PPEI BLDG., SEC-16A, PLOT NO. 25
NOIDA – 201301 (UP)

TITLE:	SPEC. NO.: **PE-TS-439/440-165-N005**
TECHNICAL SPECIFICATION **SIMPLEX STRAINER**	SECTION: I
	SUB-SECTION:
	REV. NO. **0** DATE APR-2022
	SHEET 1 OF **1**

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THIS TECHNICAL SPECIFICATION CONSISTS OF FOLLOWING SECTIONS:

CONTENTS

Notes:

1) For detailed list of documents to be submitted by bidder in their technical offer, please refer cl. no. 9.0 of Section-IA.

2) For detailed list of documents to be submitted by vendor after award of contract, please refer cl. no. 8.0 of Section-IA.

3) In case there is conflict in different clauses of specification, most stringent clause (as decided by BHEL / end customer) shall be followed, if no specific deviation is taken by bidder and accepted by BHEL during tender stage in that regard.

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TECHNICAL SPECIFICATION **SIMPLEX STRAINER**	SECTION: I
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SECTION - I

SPECIFIC TECHNICAL REQUIREMENTS

SUB-SECTION IA – Specific Technical Requirements
SUB-SECTION IB – Datasheet - A

TITLE:	SPEC. NO.: **PE-TS-439/440-165-N005**
TECHNICAL SPECIFICATION SIMPLEX STRAINER	SECTION: **I**
	SUB-SECTION: IA
	REV. NO. **0** DATE APR -2022
SPECIFIC TECHNICAL REQUIREMENTS	SHEET **1** OF 3

1.0 GENERAL:

1.1 This specification covers the design, material, construction features, manufacture, inspection, and testing at vendor's works and/or his sub-contractor's works with proper packing (sea worthy packing for export jobs) for delivery along with mandatory spares(if applicable), erection and commissioning spares(as applicable) complete with all accessories as per the requirements specified in the specification for 4X270 MW BHADRADRI TPS FGD PACKAGE project and 1X800 MW KOTHAGUDEM TPS STAGE-VII, U#12 FGD PACKAGE.

Note:
Simplex strainers have been detailed in Data Sheet-A, Section-1B. The bidder shall include complete supplies in his scope. Part supplies offered shall disqualify the bidder's offer. Evaluation shall be combined and further details shall be indicated in NIT.#

2.0 SCOPE OF SUPPLY:

This specification is intended to cover the design, manufacture, inspection/ testing at manufacturer's works, properly packed for transportation/delivery to site of Simplex Strainers for various types/sizes as specified in Datasheet–A.

2.1 The sizes, technical parameters, Material of Construction etc. of Simplex Strainers are covered in Data sheet-A.

2.2 The Simplex Strainers with removable strainer element shall be supplied complete with following accessories:

a) Quick opening/closing mechanism for quick withdrawal/insertion of strainer elements, bolted covers will not be accepted.

b) Outer shell/housing with Counter flanges for inlet/ outlet nozzles along with fixing nuts, bolts & gaskets.

c) Supporting legs for supporting the strainers on the floor.

d) Foundation bolts, nuts etc.

e) Removable strainer element.

f) Drain & Vent Valves

g) Final Painting and packing.

2.3 Bidder's scope of supply & services also includes the following:

a) Spares for Erection & Commissioning on as required basis, if any.

b) Set of special tools & tackles, if any.

c) Drawings, data, calculations, test reports/ certificates, O&M Manuals, As-built drawings, etc. as specified and as necessary.

2.4 WORKS EXCLUDED FROM BIDDER'S SCOPE:

a) Civil foundation.
b) Site Erection & Commissioning.
c) Differential Pressure Instruments.

3.0 The Quality Plan enclosed in the specification is for bidder's guidance only. The bidder shall Comply with these and other minimum requirements specified in the specification and shall furnish his own quality plan in the event of order based on guidance given in above, for Purchaser's approval

4.0 The Strainer shall meet the technical requirement of this Sub-Section as well as Datasheet A.

5.0 The quality of water handled by the strainers shall be as per water analysis enclosed with project enquiry.

6.0 It is mandatory for the bidder to submit along with the bid, the deviations if any – whether major or minor in the schedule of deviations only. In the absence of deviations listed in the "Schedule of Deviations", the offer shall be deemed to be in full conformity with the specification, "Not-with-standing" anything else stated elsewhere in the bidder's offer, datasheets, etc. The bidder's deviations or implied/ indirect deviations in data sheets, etc. shall not be binding on the purchaser.

7.0 The bidder shall guarantee the performance of the strainers along with the accessories for the duty conditions specified in the specification.

8.0 DRAWINGS/ DOCUMENTS DISTRIBUTION SCHEDULE:

Document submission schedule as per NIT. MDL shall be as follows

Primary Documents linked with manufacturing	
BHEL DRG NO	**DRG TITLE**
GA DRAWING	PE-V10-XXX-165-N001
QUALITY PLAN	PE-V10-XXX-165-N003
Secondary Documents NOT affecting manufacturing	
O&M MANUAL	PE-V10-XXX-165-N005

Drawings submitted shall be complete in all respects with revised drawing submitted incorporating all comments. Any incomplete drawing submitted shall be treated as non-submission with delays to bidder's account. For any clarification/ discussion required to complete the drawings, the bidder shall himself depute his personal to BHEL for across the table discussions/ finalizations/ submissions of drawings.

9.0 DRAWING/ DOCUMENTS TO BE SUBMITTED WITH THE BID:

a) Compliance certificate (duly signed and stamped).

b) Guarantee Schedule (duly signed and stamped).

c) GA & Cross-sectional drawings of Simplex Strainers with following: (shall be only for reference purpose, same shall be subject to approval during contract stage only).
- Bill of Material with material of construction
- Strainer details as per Datasheet A
- Stiffeners details (Nos., sizes etc)
- Empty Weights of Strainers
- Filled-up Weights of Strainers

d) Schedule of Deviation (As per NIT).

Apart from above no other drgs. /docs. /data sheets etc. are required to be submitted at bid stage and even if furnished shall not be taken cognizance of.

10.0 BIDDER TO COMPLY FOLLOWING AFTER PLACEMENT OF PO :

1. Supplier to submit detailed ' Bill of Material ' (BOM) at the time of drawing/document submission after placement of PO. Each item of the BOM to be uniquely identified with item code no. or item serial no.

2. Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BOM.

3. Supplier to also give the following undertaking in the BOM :

" The BOM provided herewith completes the scope (in content and intent) of material supply under PO No. ……., dated ……..
Any additional material which may become necessary for the intended application of the supplied item(s)/package will be supplied free of cost in most reasonable time. "

	TITLE : TECHNICAL SPECIFICATION DATA SHEET-A SIMPLEX STRAINER	SPEC. NO. PE-TS- 439/440-165-N005	
		SECTION : I	
		SUB-SECTION: IB	
		REV. NO. 00	DATE: APR 2022
SL.NO	PROJECT : 1X800 MW KOTHAGUDEM TPS STAGE-VII, U#12 FGD PACKAGE		

S.No.	DESCRIPTION	UNIT	1X800 MW KOTHAGUDEM TPS STAGE-VII, U#12 FGD PACKAGE
1.0	Nos. of Strainers required	NOS.	Two (2) Nos.
2.0	Type of Strainers Required		*Simplex Basket Type*
3.0	Capacity	cu.m/hr	176
4.0	Connecting Inlet/Outlet Pipe Size, NB	mm	250 NB
5.0	a) Design Pressure b) Design Temperature	kg/cm2 (g) Deg. C	10 60
6.0	a) Perforation Size		Wire mesh of 18 gauge & 8 mesh screen shall be provided for strainer basket. (Basket to be designed to suit the design differential pressure of 1.5 bar)
7.0	Maximum Permissible Pressure Drop under Clean condition	MWC	1.0 MWC at full flow
8.0	Location		Inside FGD ACW Pump House
9.0	Quality of Water Handled		Clarified Water with COC 5
10.0	Ratio of Clear Flow Area vis-à-vis Pipe Inlet Area	Nos.	4.0 (Screen (strainer) flow area shall be at least four times pipe sectional area. Flow area in any portion of Basket strainer assembly shall not be less than the pipe cross sectional area.)
11.0	**MATERIALS OF CONSTRUCTION**		
11.1	Body		Fabricated mild steel : IS-2062 (Tested quality) Inside and outside of basket body shall be protected with one coat of high build zinc phosphate primer and three coats of Chlorinated rubber paint to a total thickness of 200 microns.

	TITLE : TECHNICAL SPECIFICATION DATA SHEET-A SIMPLEX STRAINER	SPEC. NO. PE-TS- 439/440-165-N005	
		SECTION : I	
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SL.NO	PROJECT : 1X800 MW KOTHAGUDEM TPS STAGE-VII, U#12 FGD PACKAGE		

11.2	Strainer Element including stiffeners		SS 316
11.3	All Internal Fasteners		SS 316
11.4	All External Fasteners		High Tensile Steel (IS 1363)
11.5	Drain & Vent Valves		Body & Bonnet : Gun Metal
11.6	Counter Flanges		Carbon Steel IS 2062 Gr B
12.0	Flange/Counter Flange Drilling Standard		EN1092-1/ASME B16.5
13.0	Max. Permissible Weight of Strainer Basket required to be lifted by operators for routine cleaning of strainer	Kg	Shall not exceeds 20Kg
14.0	Max. Height of Strainer Basket excluding Handle (For ease of Handling)		Shall not exceed 1200mm
15.0	Min. Required Thickness of Strainer Housing/Body	mm	6.0
16.0	Platform to be provided all round (with hand railings) at strainers top (with ladder) for attending basket elements for cleaning by operator	(Y/N)	N
16.1	Width of all round platform	mm	NA
17.0	Two adjacent strainers of one unit, inter-connecting platform required (layouts enclosed)?	(Y/N)	N
18.0	Mandatory Spares (Enclosed)	(Y/N)	Not Applicable
19.0	Water Analysis (Enclosed)	(Y/N)	Y
20.0	Suitable reinforcement for strainer element shall be provided of MOC same as strainer element.	(Y/N)	Y

	TITLE : TECHNICAL SPECIFICATION DATA SHEET-A SIMPLEX STRAINER	SPEC. NO. PE-TS- 439/440-165-N005	
		SECTION : I	
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21.0	Basket Strainer shall be provided with lifting lugs and suitable mounting arrangement.	(Y/N)	Y
22.0	Suitable Vent and drain valves shall be provided for the strainers.	(Y/N)	Y

ANNEXURE–II

TREATED WATER QUALITY

(DESIGN ANALYSIS OF CLARIFIED WATER)

[After addition of 50 ppm Alum, 20 ppm Lime ,1 ppm Polyelectrolyte and 5 ppm Chlorine on 100% purity basis)]

DESIGN ANALYSIS OF CLARIFIED WATER:

CONSTITUENTS	As	CONTENT	
Calcium	$CaCO_3$	128.9	ppm
Magnesium	$CaCO_3$	53.52	ppm
Sodium	$CaCO_3$	73.44	ppm
Potassium	$CaCO_3$	1.02	ppm
Iron in Soln.	Fe	0.1	ppm
Hydrogen (FMA)	$CaCO_3$	-	ppm
TOTAL CATIONS (except iron)	$CaCO_3$	256.88	ppm
Bicarbonate	$CaCO_3$	143.4	ppm
Carbonate	$CaCO_3$	0.53	ppm
Hydroxide	$CaCO_3$	0.02	ppm
Sulphate	$CaCO_3$	59.85	ppm
Chloride	$CaCO_3$	50.82	ppm
Nitrate	$CaCO_3$	1.21	ppm
Phosphate	$CaCO_3$	-	ppm
Fluoride	$CaCO_3$	1.05	ppm
TOTAL ANIONS	$CaCO_3$	256.88	ppm
Reactive Silica	SiO_2	10	ppm
Total Suspended Solid	CaCO3	10 ppm for normal condition	15 ppm (overload condition)
Conductivity at 25 deg C		450	Microsiemens/cm (max)
pH value at 25^0 C	-	7.62	
Turbidity		Not to exceed 15	NTU (max) 10 NTU for normal condition

COC for CW/ACW system is 5.

	TITLE : TECHNICAL SPECIFICATION DATA SHEET-A SIMPLEX STRAINER	SPEC. NO. PE-TS- 439/440-165-N005	
		SECTION : I	
		SUB-SECTION: IB	
		REV. NO. 00	DATE: APR-2022
SL.NO	PROJECT : 4X270 MW BHADRADRI TPS FGD PACKAGE	4X270 MW BHADRADRI TPS FGD PACKAGE	

S.No.	DESCRIPTION	UNIT	
1.0	Nos. of Strainers required	NOS.	Two (2) Nos.
2.0	Type of Strainers Required		*Simplex Basket Type*
3.0	Capacity	cu.m/hr	1080
4.0	Connecting Inlet/Outlet Pipe Size, NB	mm	400 NB
5.0	a) Design Pressure b) Design Temperature	kg/cm2 (g) Deg. C	10 60
6.0	a) Perforation Size		2 mm
	b) Perforated Sheet thickness		To suit the design differential pressure of 1.5 bar but not less than 1.5 mm.
7.0	Maximum Permissible Pressure Drop under Clean condition	MWC	1.0
8.0	Location		Inside FGD Pump House
9.0	Quality of Water Handled		Clarified Water
10.0	Ratio of Clear Flow Area vis-à-vis Pipe Inlet Area	Nos.	4.0
11.0	**MATERIALS OF CONSTRUCTION**		
11.1	Body		Carbon Steel as per IS 2062 Gr B
11.2	Strainer Element including stiffeners		AISI 304

	TITLE : TECHNICAL SPECIFICATION DATA SHEET-A SIMPLEX STRAINER	SPEC. NO. PE-TS- 439/440-165-N005	
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11.3	All Internal Fasteners		SS 304
11.4	All External Fasteners		High Tensile Steel (IS 1363)
11.5	Drain & Vent Valves		Body & Bonnet : SA216-WCB – for Cast Steel, SA105&SA420 – for Forged Steel
11.6	Counter Flanges		Carbon Steel IS 2062 Gr B
12.0	Flange/Counter Flange Drilling Standard		EN1092-1/ASME B16.5
13.0	Max. Permissible Weight of Strainer Basket required to be lifted by operators for routine cleaning of strainer	Kg	Shall not exceeds 20Kg
14.0	Max. Height of Strainer Basket excluding Handle (For ease of Handling)		Shall not exceed 1200mm
15.0	Min. Required Thickness of Strainer Housing/Body	mm	6.0
16.0	Platform to be provided all round (with hand railings) at strainers top (with ladder) for attending basket elements for cleaning be operator	(Y/N)	N
16.1	Width of all round platform	mm	NA
17.0	Two adjacent strainers of one unit, inter-connecting platform required (layouts enclosed)?	(Y/N)	N
18.0	Mandatory Spares (Enclosed)	(Y/N)	Not Applicable
19.0	Water Analysis (Enclosed)	(Y/N)	Y

4X270 MW BHADRADRI FGD
WATER ANALYSIS

RAW WATER ANALYSIS

Sr.No	Parameters	Unit	Results
1.	Physical characteristics		
	Colour	Hazen	8.0
	pH at 25 °C	--	7.79
	Conductivity at 25 °C	µs/cms	400
	Dissolved solids	ppm	282
2.	Cations		
	Calcium Hardness	ppm as CaCO3	96
	Magnesium Hardness	ppm as CaCO3	52
	Sodium + Potassium	ppm as CaCO3	76.6
	Iron	ppm as CaCO3	**Traces**
	Total Cations	ppm as CaCO3	**224.6**
3.	Anions		
	M- Alkalinity	ppm as CaCO3	136.0
	Chlorides	ppm as CaCO3	72.0
	Sulphate	ppm as CaCO3	15.0
	Nitrates	ppm as CaCO3	**1.6**
	Total Anions	ppm as CaCO3	**224.6**
4.	Total Hardness	ppm as CaCO3	148
5.	P - Alkalinity	ppm as CaCO3	Nil
6.	Dissolved Silica	ppm as SiO2	1.1
7.	Colloidal Silica	ppm as SiO2	2.0
7.	Turbidity	NTU	250
8.	Total suspended solids	ppm	500

Note: Other parameters not indicated in Raw Water Analysis shall be considered as Nil

CLARIFIED WATER ANALYSIS

Sl.No.	Constituent	Units	Values
1.	Total Suspend Solids at outlet of clarifier.	ppm	10
2.	Turbidity	NTU	10

Note: The other parameters in Clarified water shall be remaining unchanged as present in Raw Water.

SECTION - II

STANDARD TECHNICAL REQUIREMENTS

SUB-SECTION IIA – Standard Technical Requirements
SUB-SECTION IIB – Standard Quality Plan

TITLE:	SPEC. NO.: **PE-TS-439/440-165-N005**
TECHNICAL SPECIFICATION **SIMPLEX STRAINER**	SECTION: **II**
	SUB-SECTION: IIA
	REV. NO. **0** DATE APR-2022
STANDARD TECHNICAL REQUIREMENTS	SHEET 2 OF **7**

1.0 GENERAL:

1.1 This specification covers the standard design, material, construction features, manufacture, inspection, and testing at vendor's works and/or his sub-contractor's works with proper packing (sea worthy packing for export jobs) for delivery along with mandatory spares(if applicable), erection and commissioning spares(as applicable) complete with all accessories as per the requirements specified in the specification. Subsequent sections presents the general guidelines and details of Simplex Strainers to be procured under the scope of this package.

2.0 CODES AND STANDARDS:

2.1 The design, manufacture, performance & testing of the Simplex Strainers complete with all accessories shall conform to the latest editions of the following relevant codes and standards.

- **IS/BS/DIN/US:** Standards regarding pressure vessels, pipes, flanges & others as necessary.
- **IS/BS/DIN/ASTM:** Standards for material specification & testing procedures.

2.2 In case of any conflict between the above codes/standards and this specification, the later shall prevail & in case of any further conflict in the matter, the interpretation of the specification by the BHEL engineer shall be final and binding.

3.0 DESIGN REQUIREMENTS:

3.1 Unless specified in the specification, necessary manufacturer's standard & proven models of the strainers shall be supplied.

3.2 The strainer shall be designed for streamlined flow with minimum pressure drop.

3.3 The strainer shall be horizontally mounted with in-line flange connection.

3.4 The strainer body shall be of robust construction and shall incorporate integral pads.

3.5 The Strainer element shall be made from perforated sheet with sheet thickness not less than 1.5 mm.
Adequate numbers of stiffeners of material each with minimum thickness 3mm and minimum width 20 mm to be provided to support the perforated sheet against the fluid pressure and impact of debris.
For any additional or alternative details of Strainer Elements, please refer Datasheet-A.

3.6 The strainer shall be provided with drain/blow off, air vent connection. Strainer shall be hydraulically tested to 1.5 times the design pressure.

3.7 Flanges shall conform to the standard indicated in the design data sheet. Undrilled flanges shall not be acceptable.

3.8 The welding procedure shall be as per the approved quality plan enclosed herewith.

3.9 The strainer shall be complete for safe, proper, & continuous operation. Mechanical stresses shall be kept within the allowable limits specified by relevant codes/standards.

3.10 In design, special attention shall be given to ease of maintenance, repair & cleaning.

3.11 Suitable corrosion allowances shall be provided where ever necessary.

3.12 Unless otherwise stated in Datasheet-A, the inlet & outlet of strainer shall be coaxial without any offset between the center lines of inlet and outlet pipes.

4.0 MATERIAL:

4.1 The material of construction of strainer and other components shall be as specified in Datasheet-A.

4.2 The materials of construction for various components specified in Data sheet-A are the minimum requirements and materials of construction not specified shall be similarly selected by the bidder for the intended duty which shall be further subject to purchaser's approval.

4.3 All materials used for manufacture of the "Simplex' strainer and its components shall be of tested quality. Relevant test certificates shall be made available to the purchaser before taking up fabrication work. In the absence of such certificates, the vendor shall arrange to carry out necessary tests required by the code at his cost.

5.0 CONSTRUCTIONAL FEATURES:

5.1 The strainers shall be floor mounted supplied with foundation bolts, nuts etc.

5.2 The strainers shall be provided with cover for providing access to the strainer cage for removal for cleaning. The opening/closing of the covers shall be quick opening mechanism; bolted covers will not be accepted. The quick opening/closing mechanisms shall be hinged type and basket strainers of Simplex Strainers shall be suitable for operating by one operator alone without any lifting/handling device. Each strainer chamber shall be provided with vent and drain connection.
The above shall be reviewed during drawing approval in the event of the order and shall be subject to BHEL approval. Further, same shall be demonstrated by the Bidder at site also after erection.

5.3 Strainer body shall be of robust construction designed to withstand the pressure as mentioned under data sheet – A. The body should be provided with pedestal / pads suitable for floor mounting. The body shall be provided with amply sized drain connection with drain valve to allow cleaning of the collected debris.

5.4 The strainer baskets shall be provided with handles for easy removal of the baskets. Design of strainer shall incorporate the strengthening stiffeners on the basket.

5.5 The strainer body shall be provided with suitable lifting lugs, eye bolts etc. to facilitate erection and maintenance.

5.6 Each strainer shall be enclosed in a protective cover to protect it from damage during shipping and installation.

6.0 WELDING:

6.1 Continuous welding is to be done at joints for perforated sheet, Retainer ring (Top ring/plate) and Bottom Disc. The minimum overlap for continuous welding for perforated sheet shall be minimum 10 mm.

6.2 Only TIG Welding is to be done and no arc welding is to be used for fabrication of Strainer Element.

7.0 CLEANING PROTECTION AND PAINTING REQUIREMENTS:

7.1 Pickling and passivation of SS parts is to be done after welding and dressing work.

7.2 Hydraulic tested equipment shall not be packed till the inside surface becomes dry.

7.3 PAINTING:

7.3.1 The surfaces of stainless steel, Gunmetal, brass, bronze and non-metallic components shall not be applied with any painting.

7.3.2 The steel surface to be applied with painting shall be thoroughly cleaned before applying painting by brushing, shot blasting etc as per the agreed procedure.

7.3.3 Internal surfaces shall be given a protective coating of coal tar based epoxy paint with a dry film thickness of minimum 200 microns.

7.3.4 For all the steel surfaces exposed to (outdoor installation) atmosphere, a coat of chlorinated rubber based zinc phosphate primer of minimum thickness DFT of 50 microns followed up with undercoat of chlorinated rubber paint of minimum DFT of 50 microns shall be applied. Then, intermediate coat consisting of one coat of chlorinated rubber based paint pigmented with Titanium di-oxide with minimum DFT of 50 microns and topcoat consisting of two coats of chlorinated rubber paint of approved shade and colour with glossy finish and DFT of 100 microns shall be provided. Total DFT of paint system shall not be less than 200 microns.

7.3.5 For all the steel surfaces inside the (indoor installation) building, a coat of red oxide primer of minimum thickness of 50 microns followed up with undercoat of synthetic enamel paint of minimum thickness of 50 microns shall be applied. The top coat shall consist of two coats each of minimum thickness of 50 microns of synthetic enamel paint and thus total thickness shall be minimum 200 microns

7.4 Particular care shall be taken to ensure that all sand and loose material is properly removed by fettling.

7.5 Ends shall be protected from external damage and sealed against the ingress of dirt.

7.6 A thin sheet steel circular blanking plate of a diameter 1/4” less than the bolt holes inner PCD shall be firmly fixed to the flange faces by the application of adhesive after first ensuring that the flange faces have been thoroughly degreased.

7.7 A thin coat of Evostick 613 adhesive shall be applied to the flange face and the blanking plate and then allowed to dry for 15-20 minutes. The coated face of the blanking plate should then be offered up to the face of the flange taking care that the plate is concentric with the flange. Firm pressure shall be applied to ensure intimate contact between plate and flange. One coat of carbon yellow slush shall then be applied over the face of the flange and blanking plate.

7.8 A wooden block should then be bolted to the flange using a minimum of four bolts.

7.9 In addition to the specified method for sealing the equipment, alternative method may be offered. These may be used subject to prior approval from BHEL.

7.10 Packing shall be sturdy and adequate to protect assemblies, components, and accessories from injury by corrosion, dampness, heavy rains, breakage and vibration encountered during transportation, handling and storage at the plant site.

8.0 INSPECTION & TESTING:

8.1 The manufacture shall provide inspection to establish and maintain the quality of workmanship in his works and that of his sub-contractors to ensure the mechanical accuracy of each component. He shall conduct all tests required to ensure that the equipment furnished shall conform to the requirements of applicable codes. All tests and test procedures proposed by the manufacturer shall be submitted to BHEL on the enclosed quality plan.

8.2 BHEL and/or customer's representative shall have access to inspect during manufacturing and at various stages of inspection. The final inspection shall be made by BHEL and/ or customer's representative to visit the supplier's work for final inspection. No material shall be dispatched unless inspected and/or approved by BHEL.

8.3 The following minimum tests shall be carried over on the finished strainers but not limited to-

a) Identification of material with test certificates as per Data Sheet-A.

b) Verification of dimensional ratings etc. as per the approved specifications and drawings/ catalogues including proof of marking.

c) Penetrant testing on all welds seems and exposed surfaces. The test procedures shall conform to the requirements of ASTME 165. Acceptance criteria shall be as per clause 14.1.2 of latest edition of EJMA. For exposed surfaces there shall be no visible defects.

d) All castings and forgings shall be free from blowholes, porosity, shrinkage defects, cracks or other defects. They have to be smooth and well cleaned.

e) Any defect which will not machine out during the final machining of casting / forging will be gauged out and repaired using an approved repair procedure and inspected to see that the defect is fully removed. Any indication of any defect in casting/ or forging which proved to penetrate deeper than 2 ½ % of the finished thickness of the forgings/ casting shall be reported to BHEL, giving location, length, width and depth and acceptability of the repair to be established before any rectification work is put in hand.

f) All ends shall be free from all burrs. Butt-welded or socket welded ends should be prepared by grinding as per standards and codes. Unacceptable defects for butt-welded and socket weld ends shall be removed by chipping and grinding to suit approved qualified welding procedure.

g) Hydraulic test shall be at 1.5 times the operating pressure.

h) Measurement of perforation size & sheet thickness shall be carried out before taking the strainer for assembly.

i) Qualification of relevant welding procedures and welders qualification as per ASTM sec. IX.

j) Examination of radiography including radiographic techniques, radiographic examination of the longitudinal seam. The test procedures shall be as per ASME sec. V.

k) Examination and approval of stress relieving charts/process is required.

l) Production of necessary certificates of actual test for the proven design as per the requirement for pressure drop and micron rating test.

m) A pre dispatch inspection will be carried out for all material/ component/ equipment/assemblies.

n) Verification of completeness and acceptance of all previous test, inspection and check performed and satisfactory documentation of the same.

o) Check for appearance and cleanliness.

p) Check for identification, painting, preservation and packing.

9.0 Packing procedure before dispatch

The purpose of this procedure is to outline the requirements and procedures for protecting the equipment's during shipment and preserving during the storage.

9.1 Preparation for Packing:

- After hydro testing, operation, all fluids e.g. water etc., shall be completely drained from all Strainer's parts, and the equipment blown dry.
- All material shall be cleaned internally and externally to remove, scale, rust fillings and any other foreign material.
- The Strainer shall be placed on a strong wooden base & bolted to the wooden base using the foundation holes for further transportation up to site.

9.2 Protection of parts:

- Strainer shall be packed in properly in high grad bubble plastic wrap for transportation, and long storage at site.
- All finished (or) machined (External C.S. Surfaces shall be protected against corrosion with corrosion resisting coating, which is easily removable (Compound shall be such that it will remain on the surface at temperature normally encountered during shipping & storage).
- All machined surfaces shall be protected from mechanical damage. All external unfinished carbon steel surfaces shall be sand blasted & shall be coated with rust preventive primer.

- Flanged opening if any shall be covered with blank flanges sealed with blank gasket of natural rubber or equivalent. Butt welded opening shall be closed with temporary closing covers. Internal threads shall be protected with metal plug sealed with Teflon tape (if applicable). External thread shall be protected with PVC sleeve.
- All the equipment shall be protected for entire period of dispatch, storage and erection against corrosion, incidental damage due to vermin, sunlight, rain, high temperature, humid atmosphere, rough handling in transit and storage. All MS parts which are not painted shall be provided with coating of grease.
- Clay Desiccant or such other moisture absorbing material in small cotton bags shall be placed and tied at various points on the equipment, wherever necessary.

9.3 Preservation

The equipment's shall be stored under closed/open space in packed condition until installation. The packages containing loose plates and gaskets are to be protected from extreme climatic conditions.

9.4 Photographs

Bidder to take photographs of all parts and sent to engineering deptt along with all inspection reports before final dispatch.

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 1 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6		7	8	9	D	10			11
					M	C/N								
1	RAW MATERIAL													
1.1	BODY,COVER FLANGES, TAPER PLATE, TOP & BOTTOM BASKET PLATE, DISHED ENDS (as applicable)	PHYSICAL, CHEMICAL PROPERTIES	MA	PHYS., CHEM. TESTS	ONE/HEAT		APPROVED CS DRAWING/ DATA SHEET	APPROVED CS DRAWING/ DATA SHEET	MTC/ NABL APPD LAB REPORT	√	P	V	-	CO-RELATION REQD. FOR ALL
1.2	PERFORATED SHEET	CHEMICAL COMPOSITION	MA	CHEM. ANALYSIS	ONE/ HEAT		APPROVED CS DRAWING/ DATA SHEET	APPROVED CS DRAWING/ DATA SHEET	MTC	√	P	V		CO-RELATION REQD. FOR ALL
		DIMENSIONS, PERFORATION SIZE	MA	MEASUREMENT	1% RANDOMLY		APPD. DRAWING/ DATA SHEET	APPD. DRAWING/ DATA SHEET	MTC/ IR	√	P	V		CO-RELATION REQD. FOR ALL
2.0	IN PROCESS CONTROL													
2.1	BODY MACHINING	SURFACE FINISH AND DIMENSIONS	MA	VISUAL, MEASUREMENT	100%		APPD. DRG.	APPD. DRG	IR		P	V	-	

BHEL						BIDDER/ SUPPLIER	
ENGINEERING			QUALITY			Sign & Date	
	Sign & Date	Name		Sign & Date	Name	Seal	
Prepared by:	Prashant NISHANT SHEKHAR	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI		
Reviewed by:	Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL		

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 2 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6 M	6 C/N	7	8	9	D	10			11
2.2	**FOR FABRICATED BODY** WELDING PROCEDURE SPECIFICATION	CORRECTNESS	MA	SCRUTINY	100%		IS:7307/ASME IX	IS:7307/ASME IX	FORMAT OF ASME	√	P	V	-	
	PROCEDURE & WELDER QUALIFICATION	WELD SOUNDNESS	MA	PHYSICAL TEST/RT	IS:7307/ IS:7301/ ASME IX		IS:7310/ASME IX	IS:7310/ASME IX	FORMAT OF ASME	√	P	V	-	
	WELD FIT - UPS	DIMENSION, ALIGNMENT, ORIENTATION	MA	MEASUREMENT, VISUAL	100%		WPS, APPROVED DRGS	WPS, APPROVED DRGS	IR	√	P	V	-	
	WELDING PROCEDURE SPECIFICATION	CORRECTNESS	CR	SCRUTINY	100%		ASME SEC IX	ASME SEC.IX	OW 482 OF ASME SEC IX	√	P	W/V	-	
	WELDING PROCEDURE QUALIFICATION	WELD SOUNDNESS	CR	PHYS. TEST	100%		ASME SEC IX	ASME SEC IX	OW 483 OF ASME SEC IX	√	P	W/V	-	NOTE 1
	WELDER PERFORMANCE QUALIFICATION	WELD SOUNDNESS	CR	RADIOGRAPHY	100%		ASME SEC IX	ASME SEC IX	OW 484 OF ASME SEC IX	√	P	V	-	

BHEL						BIDDER/ SUPPLIER	
ENGINEERING			QUALITY			Sign & Date	
	Sign & Date	Name		Sign & Date	Name	Seal	
Prepared by:	Prashant NISHANT SHEKHAR	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI		
Reviewed by:	Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL		

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	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 3 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6 M	6 C/N	7	8	9	D	10			11
	FIT-UP BUTT WELD	ALIGNMENT AND DIMENSIONS	MA	VISUAL	100%		APPD. WPS AND MANUFACTURING DRG.	APPD. WPS AND MANUFACTURING DRG.	MFR. LOG BOOK	√	P	V	-	
	FIT-UP OF SHELL FLANGE AND NOZZLE ASSEMBLY TO SHELL	ORIENTATION, ALIGNMENT AND DIMENSION	MA	VISUAL	100%		MFG. DRG	MFG. DRG	MFR LOG BOOK	√	P	V	-	
	WELD QUALITY (ALL WELDMENTS INCLUDING SCREEN ASSEMBLY)													
	ROOT RUN	**SURFACE DEFECTS**	MA	DPT	100%		ASME SEC. VIII DIV. I	ASME SEC. VIII DIV I	IR	√	P	V	-	
	COMPLETED BUTT WELDS	**1) SURFACE DEFECTS**	MA	DPT	100%	100%	ASME SEC. VIII DIV. I	ASME SEC VIII DIV. I	IR	√	P	V	-	
		2) INTERNAL DEFECTS	CR	RADIOGRAPHY TEST	10%		ASME SEC. VIII DIV. I	ASME SEC VIII DIV. I	RADIOGRAPHS /IR	√	P	W/V	-	*RADIOGRAPHS TO BE REVIEWED BY BHEL

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY					Doc No:			
	Sign & Date	Name		Sign & Date	Name	Sign & Date			Sign & Date	Name	Seal
Prepared by:	Prashant NISHANT SHEKHAR	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI	Seal		Reviewed by:			
Reviewed by:	Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL			Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 4 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6 M	6 C/N	7	8	9	D	10			11
	COMPLETED FILLET WELDS	**SURFACE DEFECTS**	MA	DPT	100%	100%	ASME SEC VIII DIV. I	ASME SEC VIII DIV. I	IR	√	P	W	-	
	WELD QUALITY (FABRICATED MAIN FLANGES & COUNTER FLANGES)	**SURFACE DEFECTS OF WELDMENTS**	MA	DPT	100%	100%	ASME SEC VIII DIV I	ASME SEC. VIII DIV I	IR	√	P	W	-	
		INTERNAL DEFECTS OF WELDMENTS	**CR**	RADIOGRAPHY TEST	10%		ASME SEC VIII DIV. I	ASME SEC VIII DIV. I	RADIOGRAPHS /IR	√	P	V	-	*RADIOGRAPHS TO BE VIEWED BY BHEL
		DIMENSIONS	**MA**	MEAS.	100%	100%	MFG. DRG/ APPD DRG.	MFG. DRG./APPD. DRG	STAGE INSPN. FLOW SHEET	√	P	W	-	
		STRESS RELIEVING	**MA**	SR	100%		ASME SEC IX	ASME SEC IX	IR	√	P	V	-	
2.3	CASING	DIMENSIONS INCLUDING QUALITY	**MA**	MEAS.	100%		MFG. DRG./APPD DRG.	ASME SEC. VIII DIV I	MFR. LOG BOOK	√	P	V	-	

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Sign & Date	Name		Sign & Date	Name	Seal			Sign & Date	Name	Seal
Prepared by:	Prashant NISHANT SHEKHAR	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI			Reviewed by:			
Reviewed by:	Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL			Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 5 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6 M	6 C/N	7	8	9	D	10			11
3	ASSEMBLY OF INTERNAL FITTINGS CARTRIDGE REINFORCEMENT	ORIENTATION, LOCATION OF TAPPING POINTS & FIXING OF INTERNALS	**MA**	VISUAL AND MEASUREMENT	100%		APPROVED DRAWING	APPROVED DRAWING	IR	√	P	V	-	
4	FINAL ASSEMBLY													
4.1	FINAL INSPECTION	COMPLETENESS, CLEANLINESS, DIMENSIONS	MA	VISUAL AND MEASUREMENT	100%	100%	APPROVED DRAWING	APPROVED DRAWING	IR	√	P	W	-	
		LEAK TIGHTNESS	CR	HYDRO TEST AT 1.5 DESIGN PRESSURE FOR 30 MINS.	100%	100%	TECHNICAL SPEC.	TECHNICAL SPEC.	IR	√	P	W	-	
		3)PICKLING & PASSIVATION	MA	VISUAL	100%		MFR STD PROCEDURE	APPD. PROCEDURE	TC	√	P	V	-	

BHEL						BIDDER/ SUPPLIER	
ENGINEERING			QUALITY			Sign & Date	
	Sign & Date	Name		Sign & Date	Name	Seal	
Prepared by:	Prashant NISHANT SHEKHAR	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI		
Reviewed by:	Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL		

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 6 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6 M	6 C/N	7	8	9	D	10			11
		4)CAPACITY TEST FOR WET LOAD	MA	PHYSICAL	10%	10%	REFER REMARKS	NO BREAKAGE / DAMAGE	TC	√	P	W	-	DRY SAND TO FULL VOLUME TO BE PUT IN STRAINER BASKET SHALL BE WETTED BY WATER TILL WATER STARTS SEEPING & LIFTING IT WITH REMOVABLE BAR/HANDLE FOR 5 MINUTES.
4.2	PAINTINGS	1) UNIFORMITY 2)SHADE	MI	VISUAL	100%		APPD. DRGS/ DATASHEET	APPD. DRGS/ DATASHEET	IR	√	P	V	-	
4.3	PACKING	PACKING QUALITY	MA	VISUAL	100%	100%	BHEL TECHNICAL SPEC./ PACKING PROCEDURE	BHEL TECHNICAL SPEC./ PACKING PROCEDURE	IR	√	P	W	-	

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Sign & Date	Name		Sign & Date	Name	Seal			Sign & Date	Name	Seal
Prepared by:	Prashant NISHANT	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI			Reviewed by:			
Reviewed by:	SHEKHAR Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL			Approved by:			

	MANUFACTURER/ BIDDER/ SUPPLIER NAME & ADDRESS	STANDARD QUALITY PLAN		SPEC. NO : PE-TS-XXX-165-N005	DATE: XX.XX.XXXX
		CUSTOMER :		QP NO.: PE-QP-999-165-N004	DATE: 28.12.2020
		PROJECT:		PO NO.:	DATE:
		ITEM: SIMPLEX/DUPLEX STRAINER	SYSTEM: ACW/DMCW	SECTION:	SHEET 7 of 7

S. No.	COMPONENT / OPERATION	CHARACTERISTIC CHECKED	CLASS	TYPE OF CHECK	EXTENT OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
											M	C	N	
1	2	3	4	5	6		7	8	9	D	10			11
					M	C/N								

LEGEND : M-VENDOR/SUB-VENDOR, C- BHEL OR BHEL NOMINATED THIRD PARTY, N-END CUSTOMER OF BHEL.
P- PERFORM, W- WITNESS, V-VERIFICATION.
MTC -Mill Test Certificate, TC-Test Certificate, IR: Inspection Report MA-Major, MI-Minor, CR-Critical.
*Records, identified with "TICK"(√) shall be essentially included by supplier in QA Documentation.

NOTES:

1. Verification by BHEL/BHEL Nominated agency where WPS. WPQ & PQR are approved by BHEL/NTPC or Third party inspection agency (Lloyds, TUV, EIL, Interteck or equivalent). Witness by BHEL/BHEL Nominated agency where WPS. WPQ & PQR are not approved by BHEL/NTPC or Third party inspection agency (Lloyds, TUV, EIL, Interteck or equivalent)
2. BHEL reserves the right for conducting repeat test, if required.
3. In case of foreign supplier, all test certificates shall be furnished by the supplier, duly witnessed/ verified by supplier's TPI.
4. Project specific Quality Plan to be developed based on customer requirement.
5. Material shall be packed suitably in order to avoid damage during transit and also during storage at site in tropical climate conditions.
6. For export job, packing shall be as per BHEL seaworthy packing specification.
7. Photographs of items duly placed inside the box just before the final packing and Photographs of the box just before dispatch to be sent to BHEL purchase group for review before issuing MDCC.
8. Latest revision/ year of issue of all the standards (IS/ ASME/ IEC etc.) Indicated in QP shall be referred.

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:	Prashant NISHANT SHEKHAR	P. AGARWAL/ N. SHEKHAR	Checked by:	Ashish Panigrahi	ASHISH PANIGRAHI
Reviewed by:	Vishal Kumar Yadav	VISHAL KR. YADAV	Reviewed by:	RITESH KUMAR JAISWAL	RK JAISWAL

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

TITLE:	SPEC. NO.: **PE-TS-439/440-165-N005**
TECHNICAL SPECIFICATION **SIMPLEX STRAINER**	SECTION: **III**
	SUB-SECTION:
	REV. NO. **0** DATE APR-2022
DOCUMENT TO BE SUBMITTED BY BIDDER	SHEET 1 OF **1**

SECTION - III

SCHEDULES

SUB-SECTION IIIA - GUARANTEE SCHEDULE

SUB-SECTION IIIB - COMPLIANCE CERTIFICATE

SUB-SECTION IIIC – DEVIATION SCHEDULE (AS PER NIT FORMAT)

TITLE:	SPEC. NO.: **PE-TS-439/440-165-N005**
TECHNICAL SPECIFICATION **SIMPLEX STRAINER**	SECTION: **III**
	SUB-SECTION:
	REV. NO. **0** DATE APR-2022
SCHEDULE OF PERFORMANCE GUARANTEES	SHEET 1 OF **1**

S.NO.	DESCRIPTION	UNIT	VALUE
FOR 4X270 MW BHADRADRI TPS FGD PACKAGE			
1.	Pressure drop across the Strainer (i.e. between inlet & outlet nozzle) under clean condition and Normal flow condition	MWC	
FOR 1X800 MW KOTHAGUDEM TPS STAGE-VII, U#12 FGD PACKAGE			
1.	Pressure drop across the Strainer (i.e. between inlet & outlet nozzle) under clean condition and Normal flow condition	MWC	

TITLE:	SPEC. NO.: **PE-TS-439/440-165-N005**
TECHNICAL SPECIFICATION **SIMPLEX STRAINER**	SECTION: **III**
	SUB-SECTION:
	REV. NO. **0** DATE APR-2022
COMPLIANCE CERTIFICATE	SHEET **1** OF **1**

The bidder shall confirm compliance with following by signing/ stamping this compliance certificate and furnish same with the offer.

a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions/ deviations with regard to same.

b) QP/ test procedures shall be submitted in the event of order based on the guidelines given in the specification & QP enclosed therein.

c) QP will be subject to BHEL/Customer approval in the event of order & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. Inspection/ testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc.

d) All drawings/data – sheets etc. to be submitted during contract shall be subject to BHEL/ Customer approval.

e) There are no other deviations with respect to specification other than those furnished in the 'Schedule of Deviations'.

f) The offered materials should be either equivalent or superior to those specified. Also for components where material is not specified it shall be suitable for intended duty. All materials shall be subject to approval in the event of order.

g) The commissioning spares (if any) are supplied on 'As Required Basis' & prices for same included in the base price (If bidders reply to this is "No commissioning spares are required" and if some spares are actually required during commissioning same shall be supplied by bidder without any cost to BHEL).

h) All sub vendors shall be as per BHEL/ Customer approved list.

i) Any special tools & tackles, if required, shall be in bidder's scope.