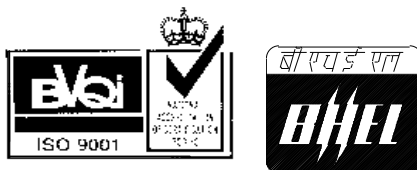


2X660 MW SURATGARH STPP


VOLUME –III

TECHNICAL SPECIFICATION FOR SELF CLEANING STRAINERS (SCS)

Specification No. : PE-TS- 392-165-N003 (REV. 0)



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

	TITLE : TECHNICAL SPECIFICATION FOR SELF CLEANING STRAINERS (SCS) PREAMBLE	SPEC. NO. PE-TS- 392-165-N003	
		VOLUME : III	
		REV. NO. 0	DATE : 22.04.14
		SHEET 1 OF 1	

1.0

The tender document contains three (3) volumes. The bidder shall meet the requirements of all the three volumes.

1.1

Volume -I CONDITIONS OF CONTRACT

This consists of four parts as below :

Volume - I A

: This part contains instructions to bidders for making bids to BHEL.

Volume - I B

: This part contains general commercial conditions of the tender and include provision that vendor shall be responsible for the quality of item supplied by their sub-vendors.

Volume - I C

: This part contains special conditions of contract.

Volume - I D

: This part contains commercial conditions for erection and commissioning site work, as applicable.

1.2

Volume - II TECHNICAL SPECIFICATIONS

Technical requirements are stipulated in Volume II which comprises of :

Volume - II A

: General Technical Conditions

Volume - II B

: Technical specification including drawings, if any

1.2.1

Volume - II B :

This volume is sub-divided into following sections:

Section - A

: This section outlines the scope of enquiry.

Section - B


: This section provides “Project Information”

Section - C

: This section indicates technical requirements specific to the contract, not covered in Section-D.

Section - D

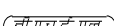
: This section comprises of standard technical specifications of equipments complete with data sheet A, B & C.
Data sheet-A specifies data and other requirements pertaining to the equipment.
Data sheet - B specifies data to be filled by the bidder (Data Sheet B is contained in Volume - III)
Data sheet - C indicates data documents to be furnished after the award of contract as per agreed schedule by the vendor (as applicable).

	TITLE : TECHNICAL SPECIFICATION FOR SELF CLEANING STRAINERS (SCS) PREAMBLE	SPEC. NO. PE-TS- 392-165-N003	
		VOLUME : III	
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1.2.2 **Volume - III TECHNICAL SCHEDULES**

This volume contains technical schedules and Data Sheets - B, which are to be duly filled by the bidder and the same shall be furnished with the technical bid as per instructions given in Document No.PES-100-901 in Volume-III.

2.0 The requirements mentioned in Section C/Data Sheets-A of Section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section -D.

	TITLE : TECHNICAL SPECIFICATION FOR SELF CLEANING STRAINERS (SCS) PREAMBLE	SPEC. NO. PE-TS- 392-165-N003	
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A	DETAILS TO BE FURNISHED ALONGWITH BID
A1.	COMPLIANCE CERTIFICATE
A2.	PERFORMANCE GAURANTEE SCHEDULE
A3.	TECHNICAL DEVIATION SCHEDULE
A4.	ELECTRICAL LOAD DATA
A5.	GA DRAWING OF SCS
A6.	SCHEDULE OF PRICES
A7.	SCHEDULES OF UNIT PRICES
B	DOCUMENTS TO BE SUBMITTED ON PLACEMENT OF LOI
B1.	DATASHEET – B
B2.	SCHEDULES AS PER LIST.



TITLE :
TECHNICAL SPECIFICATION FOR
SCS

SPEC. NO. PE-TS- 392-165-N003

VOLUME III

SECTION

REV. NO. 0


DATE 22.04.14

SHEET 1 OF 1

SECTION A

SHALL BE FURNISHED ALONGWITH BID

- COMPLIANCE CERTIFICATE
- PERFORMANCE GUARANTEE SCHEDULE
- TECHNICAL DEVIATION SCHEDULE
- ELECTRICAL LOAD DATA
- GA DRG OF SCS
- SCHEDULE OF PRICES
- SCHEDULE OF UNIT PRICES


	TITLE : COMPLIANCE CERTIFICATE FOR SELF CLEANING STRAINERS (SCS)	SPEC. NO.	PE-TS- 392-165-N003
	PROJECTS: 2x660 MW SURATGARH STPP	DATE:	22.04.14
		SHEET	1 OF 2

COMPLIANCE CERTIFICATE

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 with regard to same.
- b) There are no other deviations w.r.t. specification other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'
- c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/ Customer/Customer's Consultant approval and 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. Charges for 3rd party inspection (TUV/ equivalent) for imported components wherever required shall be included by bidder in the base price itself.
- d) Any drawing/ document/ data-sheet/ calculation/ Quality plan/ Instrumentation etc. submitted along with the offer shall be considered for reference only, same shall be subject to BHEL/ Customer/Customer's Consultant approval in the event of order.
- e) The offered materials shall be either equivalent or superior to those specified in the specification. For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.
- f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.
Prices for special tools & tackles, if any, shall also be included in the base price.
Recommended spares for 3 years shall be quoted separately with price indicated separately.
- g) Charges for Installation Checks, Commissioning of equipments, Trial runs and Performance Testing at site shall be included by bidder in the base price itself.
- h) All Instruments shall be located in the Instrument Rack to be supplied by bidder.

The instrument rack shall be installed for SCS with impulse piping, root valves, fittings, accessories, valve manifolds mounted on gauge racks etc. supplied by bidder accordingly.
- i) The main flanges for SCS shall be suitable for the forces and moments as per the specification.
- j) All inter-connecting piping, valves, flanges, counter-flanges, fittings, fasteners, reducer/expander & accessories etc. shall be in bidder's scope of supply.
- k) Provision for future installation of Cathodic protection with sacrificial anodes.
- l) The hydrostatic test pressure shall be 1.5 times the design pressure.
- m) All sub - vendors shall be subject to BHEL/ Customer/Customer's Consultant approval in the event of order.
- n) The Performance guarantees of equipments shall stand valid till the satisfactory completion of performance testing & its acceptance by BHEL/ Customer/Customer's Consultant.
- o) The orientation of piping around SCS shall be finalised during detailed Engg.

	TITLE : COMPLIANCE CERTIFICATE FOR SELF CLEANING STRAINERS (SCS)		SPEC. NO.	PE-TS- 392-165-N003
	PROJECTS: 2x660 MW SURATGARH STPP		DATE:	22.04.14
			SHEE	2 OF 2

p) Electrical/ C&I :

- All selected motor ratings have minimum 15 % margin over maximum continuous demand of the driven equipment including voltage and frequency variations, temperature rise and other factors.
- Supply of electrical viz. LT power cables, instrumentation and control cables, cable glands, lugs, cable trays etc. shall be as per specification. Their erection shall be done by BHEL
- The junction boxes for termination of DPT/ DPS/ Actuator LS/ solenoid valves are included in bidders scope. The instrumentation cable and cabling from instruments/ actuators to junction boxes is also included in bidders scope.
- Valve actuators and controls shall be provided as specified in Data Sheet-A and Project specific requirements as specified in Section C-2 & Section C-3
- Alarms/ annunciations/ instruments shall be finalised during detailed engineering in the event of order which shall be subject to BHEL/ Customer/Customer's Consultant approval and shall be without any commercial implications to BHEL.

	TITLE : SCHEDULE OF PERFORMANCE GUARANTEES FOR SELF CLEANING STRAINERS (SCS)	SPEC. NO. PE-TS- 392-165-N003	
		VOLUME : III	
		Sheet 1 of 1	Date- 22.04.14

S.NO.	DESCRIPTION	UNITS	2 X 660 MW SURATGARH STPP
1.	Pressure drop across the Self Cleaning Strainer (i.e. between inlet & outlet nozzle) under clean condition and Normal flow condition	MWC	

PARTICULARS OF BIDDER/ AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL

[illegible]



TITLE :
PRICE SCHEDULE FOR
SCS
2X660 MW SURATGARH STPP

SPEC. NO. PE-TS-392-165-N003

VOLUME III

SECTION

REV. NO. 0

DATE 22.04.14

SHEET 1 OF 1

1.0 Total price for design, manufacture, assembly, inspection, testing, packing for transportation and delivery, including final check up of installation, commissioning, trial run and PG testing of Four (4) sets of SCS complete in all respect including all accessories & auxiliaries as specified in technical specification and as necessary including mandatory spares, commissioning spares and special tools & tackles (as required) for erection & maintenance. Rs/USD/Euro (As applicable)

2.0 **Recommended spares** : Item-wise break up with item-wise price to be given as per "Schedule of Recommended Spares" enclosed under Vol. III of technical specification. Rs/USD/Euro (As applicable)

Note : 1) Indicate all duties, taxes etc. stating whether included/ excluded in above price.
2) Recommended spares are only for reference. These are not to be considered for evaluation and ordering purpose at present. These may be used for future ordering if required.



TITLE :
UNIT PRICE SCHEDULE FOR
SCS
2X660 MW SURATGARH STPP

SPEC. NO. PE-TS-392-165-N003

VOLUME

III

SECTION

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0

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SHEET 1 OF 1

1.0 Unit Prices :

Unit price for design, manufacture, inspection and testing, packing and delivery of SCS for one set complete with all accessories except for clause no. 2, 3 & 4 below. Rs/USD/Euro (As applicable)

2.0 Lump sump price for 40 m debris discharge pipe Rs/USD/Euro (As applicable)

3.0 Lump sum price for 2 sets (per project unit) of SCS Rs/USD/Euro (As applicable)

- Installation checks, Commissioning
- PG test

4.0 Mandatory Spares (As per annexure) Rs./USD/Euro (As applicable)

- Lump sum price

Note :

- Total price based on unit prices as given above (at sl. No. 1, 2, 3 & 4) shall tally with the total price given in "Schedule of prices" elsewhere. In case of discrepancy the lowest of the two shall be considered for order. Bidder to note that the price mentioned in the "Schedule of prices" and "Schedule of unit prices" shall be binding for evaluation purpose.
- Unit prices quoted by the bidder, as above, shall be binding for any quantity variation which is at discretion of Purchaser.

Annexure

List of Mandatory spares for SCS

I. Mandatory Spares (C&I Items)

S No.	Field Instruments/ Elements /Equipment (Gauges, Switches, transmitters etc.)	Quantity for both units
1	Local gauges (including PG, DPG etc.)	10 % For each type,size and range or minimum 2 No. whichever is higher.
2	Field Switches (including PS, DPS etc)	10 % For each type,size and range or minimum 2 No. whichever is higher.
3	Transmitters (incl PT, DPT etc.)	10 % For each type,size and range or minimum 2 No. whichever is higher.
4	Junction Box	10 % For each type,size and range or minimum 2 No. whichever is higher.
5	Panels, local panels, System/Marshalling cabinets	
5.1	Fuses	100 Nos. of each type and rating
5.2	Miniature Ckt.Breaker(MCB)	20 Nos. of each type and rating
5.3	Male/Female parts of pre-fabricated cables	12 Nos. of each type
5.4	Space Heater	10 % For each type,size and range or minimum 2 No. whichever is higher.
5.5	Smoke detector	10 % For each type,size and range or minimum 2 No. whichever is higher.
5.6	Terminal Blocks	20 % of total quantity
5.7	Terminals in Terminal blocks	20 Nos. of each type
5.8	Cable clamps	10 Nos. of each type
5.9	Blowers	2 No
5.10	Cabinet Cooling Fans	8 Nos. of each type/rating

Note: Wherever % is indicated for mandatory spares, the quantity shall be calculated for % of supply for total quantity for 2 units of 2x660 MW Suratgarh, unless otherwise specified. The quantity to be reckoned for % indicated shall rounded off to the next higher whole number. For example if the % arrived is 0.2, the quantity to be supplied shall be 1 and if it is 5.1 then quantity supplied shall be 6.

II. Mandatory Spares (Electrical Items)

1	LT Motors(AC/DC)	Quantity for both units
1.1	Motor	1 No of each type
1.2	Bearings	1 Set of each type
1.3	Cooling fan	3 Nos. of each type



TITLE :
TECHNICAL SPECIFICATION FOR
SCS

SPEC. NO. PE-TS- 392-165-N003

VOLUME III

SECTION

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SHEET 1 OF 1

SECTION B

SHALL BE FURNISHED ON PLACEMENT OF LOI

- DATASHEET B
- LIST OF SCHEDULES



TITLE :
TECHNICAL SPECIFICATION FOR
SCS

SPEC. NO. PE-TS- 392-165-N003

VOLUME III


SECTION

REV. NO. 0


DATE 22.04.14

SHEET 1 OF 1

SECTION B1
DATASHEET B

	TITLE :	SPECIFICATION NO.
	DATA SHEET - B	VOLUME : III - B
	SELF - CLEANING FILTER	SECTION : B
	(Backwash Type)	REV. NO. 00 DATE :
		SHEET 1 OF 3

SL.NO.	DESCRIPTION	UNIT	DATA/ PARTICULARS
1.0	GENERAL		
1.1	No. of filters required	Nos.	
1.2	Inlet connection	mm Nb	
1.3	Outlet connection	mm Nb	
1.4	Filter type/ duty		
1.5	Location		
1.6	Liquid handled		
2.0	DESIGN DATA		
2.1	Operating pressure	Bar (g)	
2.2	Design pressure	Bar (g)	
2.3	Design temperature	Deg. C	
2.4	Flow rate through filter		
	a) Normal		
	b) Maximum		
2.5	Design differential pressure for filter section/ screen	Bar (g)	
2.6	Max. Size of solid particle likely to enter the filter	mm	
2.7	Type of suspended matter likely to enter the filter		
2.8	Differential pressure measuring system set pressure		
	• For initiating flushing/ backwashing	mbar	
	• For alarm/ annunciation	mbar	

	TITLE :	SPECIFICATION NO.
	DATA SHEET - B	VOLUME : III - B
	SELF - CLEANING FILTER	SECTION : B
	(Backwash Type)	REV. NO. 00 DATE :
		SHEET 2 OF 3

SL.NO.	DESCRIPTION	UNIT	DATA/ PARTICULARS
--------	-------------	------	-------------------

3.1	Pressure drop across the filter (i.e. between inlet and outlet connection)	mbar	
-----	--	------	--

a) Clean condition

b) Partially (50%) choked condition

c) During flushing operation

d) After flushing operation

3.2	Debris discharge flow during flushing period		
-----	--	--	--

3.3	Flushing period	Minutes	
-----	-----------------	---------	--

3.4	Debris/ sludge removal capacity	m ³ /hr	
-----	---------------------------------	--------------------	--

4.0	MATERIALS OF CONSTRUCTION		
-----	----------------------------------	--	--

4.1	Filter body/ housing		
-----	----------------------	--	--

4.2	Filter screen/ section		
-----	------------------------	--	--

4.3	Supporting cage		
-----	-----------------	--	--

4.4	Differential measuring system		
-----	-------------------------------	--	--

4.5	Flushing/ backwashing unit		
-----	----------------------------	--	--

4.6	Backwash rotor shoes		
-----	----------------------	--	--

4.7	Internal hardware		
-----	-------------------	--	--

4.8	Pipes		
-----	-------	--	--

4.9	Shaft		
-----	-------	--	--

5.0	COUNTER FLANGES		
-----	------------------------	--	--


5.1	Materials :		
-----	-------------	--	--

a) Flanges

b) Bolts & Nuts

c) Gaskets

5.2	Drilling Standard		
-----	-------------------	--	--

	TITLE :	SPECIFICATION NO.
	DATA SHEET - B	VOLUME : III - B
	SELF - CLEANING FILTER	SECTION : B
	(Backwash Type)	REV. NO. 00 DATE :
		SHEET 3 OF 3

SL.NO.	DESCRIPTION	UNIT	DATA/ PARTICULARS
--------	-------------	------	-------------------

6.0 PAINTING

6.1 External Surface

1. Surface preparation
2. Primer
3. Final paint

6.2 Internal Surface

- a) Surface preparation
- a) Primer
- b) Final paint

7.0 SHOP TEST

7.1 Hydrostatic test

- a) Test Pressure bar (g)
- b) Test duration min.

7.2 Leakage test

- a) Test Pressure bar (g)
- b) Test duration min.

SPEC.NO. TCE.5750A-H-500-001		TATA CONSULTING ENGINEERS LIMITED		VOLUME IV SECTION:D13	
PART B		RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET-B MOTORS & ACTUATORS			SHEET 1 OF 6
ENQUIRY/SPECIFICATION NO.:			BIDDER:		
SL. NO.	DESCRIPTION	UNITS	BIDDERS DATA		
1.0	Application				
2.0	Manufacturer				
3.0	Country of Origin				
4.0	Applicable Standards				
5.0	Efficiency Category(For Energy Efficient Motors only)				
6.0	Rated a) Output b) Speed c) Frame size	kW RPM			
7.0	Type of Duty (IS 325 or equivalent)				
8.0	Supply Conditions				
	(a) Allowable variation in				
	(i) Voltage AC/DC				
	(ii) Frequency				
	(iii) Combined				
	(b) Permissible unbalance in supply voltage				
NOTES TO BIDDER			SIGNATURE OF BIDDER & DATE		
1. ITEMS WHICH DEViate FROM THE SPECIFICATION SHOULD BE MARKED WITHIN ASTERISK (*) AND DETAILS TO BE GIVEN IN SCHEDULE OF DEVIATIONS. 2. THIS DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.			<div>ISSUE R1</div>		

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PART B		RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET-B MOTORS & ACTUATORS			SHEET 2 OF 6
ENQUIRY/SPECIFICATION NO.:			BIDDER:		
9.0	Guaranteed Efficiency of motor a) At full load b) At duty point At no load				
10.	Guaranteed Power factor of motor a) At full load b) At duty point At no load				
11.0	Current at a) Starting b) Full load c) Duty point Full load & 70 % of rated supply voltage.				
12.0	Rated voltage a)HT motors b)LT motors c)UPS supplied d)Single phase e)DC motors				
13.0	Number of phase				
14.0	Rated frequency for AC motor	Hz			
15.0	Normal winding connection	Star / Delta			
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ENQUIRY/SPECIFICATION NO.:			BIDDER:							
16.0	Method of starting a)AC motors b) DC motors									
17.0	Temperature rise above ambient of 50 deg. by Resistance method									
18.0	Type of duty									
19.0	Duty designation									
20.0	Synchronous speed a) Constant speed b) Variable speed (for VFD)									
21.0	Starting time at specified minimum starting voltage	Sec								
22.0	Starting torque (as % of FLT)									
23.0	Pull out torque (as % of FLT)									
24.0	Location considered – Hazardous area division									
25.0	Atmosphere considered- Chemical/Dusty/Salt laden									
26.0	Weather motor is suitable for VFD drive									
27.0	Details of bearing									
28.0	VOID									
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PART B		RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET-B MOTORS & ACTUATORS			SHEET 4 OF 6					
ENQUIRY/SPECIFICATION NO.:			BIDDER:							
29.0	Whether CT for differential protection required									
30.0	Whether vibration detectors required									
31.0	Details of winding / space heaters									
32.0	Details of accessories a) Fans b) Temperature gauge c) Bearing d) Cooling motors e) Cooling water parameters f) Heaters g) Lube oil system details									
33.0	Maximum size & number of cables that can be accommodated in motor terminal box.									
34.0	Thermal capability curve to be attached									
35.0	Relay co-ordination guide to be attached									
36.0	Min. voltage required under starting conditions to accelerate driven equipment to rated speed.	Volts								
37.0	Locked rotor current withstand time (safe stall time) at 110 % rated voltage a) At rated temp. (hot) b) When cold	sec sec								
38.0	Stator thermal time constant	Sec								
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PART B		RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET-B MOTORS & ACTUATORS			SHEET 5 OF 6		
ENQUIRY/SPECIFICATION NO.:			BIDDER:				
39.0	Permissible no. of equally spread starts per hour a) Normal service conditions b) In quick succession with cold M/C at room temp. c) Hot restarts						
40.0	Method of Starting and maximum starting current inclusive of tolerances AC HT Motors a) DOL b) Soft starters AC LT Motors c) DOL d) Star Delta e) Star Delta with series resistance f) Star Delta with rotor resistance g) Soft Starters DC Motors a) Soft starters b) Any other	450 % above 1500 kW & 600 % all other. 200 % .600 % 200 % 200% 200% 200% 200% 200%					
<div> <div>NOTES TO BIDDER</div> <div> <p>1. ITEMS WHICH DEVIATE FROM THE SPECIFICATION SHOULD BE MARKED WITHIN ASTERISK (*) AND DETAILS TO BE GIVEN IN SCHEDULE OF DEVIATIONS.</p> <p>2. THIS DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.</p> </div> </div>						<div>SIGNATURE OF BIDDER & DATE</div> <div> <div>ISSUE R1</div> </div>	

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PART B	RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET-B MOTORS & ACTUATORS		SHEET 6 OF 6
ENQUIRY/SPECIFICATION NO.:		BIDDER:	
NOTES TO BIDDER 1. ITEMS WHICH DEVIATE FROM THE SPECIFICATION SHOULD BE MARKED WITHIN ASTERISK (*) AND DETAILS TO BE GIVEN IN SCHEDULE OF DEVIATIONS. 2. THIS DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.		SIGNATURE OF BIDDER & DATE <div style="border: 1px solid black; padding: 5px; width: 100px; float: right;"> ISSUE R1 </div>	

SPEC.NO. TCE.5750A-H-500-001	TATA CONSULTING ENGINEERS LIMITED		VOLUME IV SECTION:D15
PART B	RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET B CONTROL PANELS		SHEET 1 OF 2
ENQUIRY/SPECIFICATION NO.:		BIDDER:	
1.0	Manufacturer's name		
2.0	Make and type of panel		
2.0	Indoor/Outdoor application		
3.0	Thickness of sheet steel (CRCA)	mm	
	(a) Frame		
	(b) Door		
	(c) Cover (side, top and bottom)		
4.0	Degree of protection provided (as per IS:2147 or equivalent)		
5.0	Bill of Material for the various equipment giving make, type, ratings etc. enclosed	Yes/No	
6.0	Colour of finish paint		
	(a) Outside		
	(b) Inside		
7.0	Bus bars for power devices (when applicable)		
	(a) Material	(PVC Insulated/ Bare)	
	(b) Continuous current rating	A	
8.0	Control Wiring/Power Wiring		
NOTES TO BIDDER		SIGNATURE OF BIDDER & DATE	
1 ITEMS WHICH DEVIATE FROM THE SPECIFICATION SHOULD BE MARKED WITHIN ASTERISK (*) AND DETAILS TO BE GIVEN IN SCHEDULE OF DEVIATIONS. 2 THIS DATA SHEET SHALL BE FILLED UP COMPLETELY AND A COPY SHALL BE ENCLOSED WITH EACH COPY OF THE BID.		<div>ISSUE R1</div>	

SPEC.NO. TCE.5750A-H-500-001	TATA CONSULTING ENGINEERS LIMITED		VOLUME IV SECTION:D15
PART B	RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET B CONTROL PANELS		SHEET 2 OF 2
ENQUIRY/SPECIFICATION NO.:		BIDDER:	
9.0	Panel details		
	(a) Material of conductor and size	Cu/Al mm ²	
	(b) Conductor –	solid/Stra nded	
	(a) Mounting	Wall/floor	
	(b) Weight	Kg	
	(c) Dimension (approx.) L X B X M	Mm	
	(d) Cable entry	Top/ bottom	
NOTES TO BIDDER		SIGNATURE OF BIDDER & DATE	
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SPEC.NO. TCE.5750A-H-500-001		TATA CONSULTING ENGINEERS LIMITED		VOLUME IV «Section»:D16																																	
PART B		RRVUNL, 2 x 660 MW Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET B CABLES AND CABLE CARRIER SYSTEM		SHEET 1 OF 6																																	
ENQUIRY/SPECIFICATION NO.:			BIDDER:																																		
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SPEC.NO. TCE.5750A-H-500-001		TATA CONSULTING ENGINEERS LIMITED		VOLUME IV «Section»:D16	
PART B		RRVUNL, 2 x 660 MW Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET B CABLES AND CABLE CARRIER SYSTEM		SHEET 3 OF 6	
ENQUIRY/SPECIFICATION NO.:			BIDDER:		
1.9	Short circuit capability for 1 Sec (HT & LT Power Cable)	kA rms			
1.10	Maximum dielectric stress at core screen	KV/cm			
1.11	Max. overall diameter of cables	mm			
2.0	Cable Terminations & Joints				
2.1	Name of manufacture				
2.2	Applicable standards				
2.3	Nominal (Ph -Ph) system voltages	kV			
2.4	AC Withstand voltage (Ph-ground)	kV			
	• Time duration	Min.			
2.5	Partial discharge at 2 Uo	pC			
2.6	Impulse withstand, 1.2 / 50 µs	kV			
2.7	Load cycle test				
a)	Each cycle – heating duration	Hrs			
b)	Temperature	deg. C			
c)	Cooling duration	Hrs			
d)	No. of cycles				
NOTES TO BIDDER			SIGNATURE OF BIDDER & DATE		
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SPEC.NO. TCE.5750A-H-500-001		TATA CONSULTING ENGINEERS LIMITED		VOLUME IV «Section»:D16	
PART B		RRVUNL, 2 x 660 MW Super-Critical TPS, Stage- V, Units 7 & 8, at Suratgarh, Rajasthan DATA SHEET B CABLES AND CABLE CARRIER SYSTEM		SHEET 4 OF 6	
ENQUIRY/SPECIFICATION NO.:			BIDDER:		
e)	Continuous phase to ground voltage withstand	kV			
2.8	Thermal withstand short circuit current 1 sec	kA			
2.9	Dynamic short circuit withstand	kAp			
2.10	Type test report for all the tests enclosed as specified	Yes / No			
2.11	Kit Particulars				
a)	Material of the tubing / moulded party				
b)	Method of stress control				
c)	Method of environmental seal				
d)	List of items included in the kit				
	• For terminations				
	• For joints				
e)	Whether heating device included	Yes/No			
	• How many such device included	Qty			
f)	Allowable kit storage temperature	deg. C			
g)	Kit shelf life	Years			
NOTES TO BIDDER			SIGNATURE OF BIDDER & DATE		
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TITLE :
TECHNICAL SPECIFICATION FOR
SCS

SPEC. NO. PE-TS- 392-165-N003

VOLUME III

SECTION

REV. NO. 0

DATE 04.12.2013


SHEET 1 OF 1

SECTION B2
LIST OF SCHEDULES


CHECKLIST - LIST OF SCHEDULES

Sl. No.	Form No.	Description	Tick Applicable Forms
1.	PEM-6024	Schedule of Drawings/Catalogues submitted with Bid.	✓
2.	PEM-6025@	Schedule of Occurrence of Key Events of Delivery, Erection & Commissioning	
3.	PEM-6026	Schedule of Equipment Manufacture. Despatch and Shipment to Site.	✓
4.	PEM-6027	Schedule of Weights & Dimensions.	
5.	PEM-6028@	Schedule of Performance Guarantee	
6.	PEM-6030	Inspection Schedule	✓
7.	PEM-6031	Schedule of Cement and Steel and Quarterly Cement Requirement.	
8.	PEM-6032	Schedule of Quarterly Requirement of Reinforcing Bars and Structural Steel.	
9.	PEM-6033@	Bill of Quantities (Civil Works)	
10.	PEM-6035	Schedule of Bidder's Proposed Construction/ Site Fabrication Facilities.	
11.	PEM-6036	Schedule of Deviations.	✓
12.	PEM-6040	Schedule of Declaration	✓
13.	PEM-6041	Quality Plan	✓
14.	PEM-6042	Vendor's Drawings/ Documents Schedule	✓
15.	PEM-6043@	Schedule of Occurrence of Key Events for Civil/Structural Works	
16.	PEM-6046	Inspection Request.	✓
17.	PEM-6051 @	Schedule of Prices.	✓
18.	PEM-6052@	Schedule of Unit prices	✓
19.	PEM-6053	Schedule of Prices for Commissioning & Mandatory Spares.	✓
20.	PEM-6054	Schedule of Prices for Recommended Spares.	✓
21.	PEM-6055	Schedule Prices for Erection and Maintenance Tools & Tackles.	✓
22.	PEM-6057	Schedule of Daily & Overtime Rates.	
23.	PEM-6058	Schedule of Hire charges for Construction/ Site Fabrication Facilities.	


For Forms marked with @ certain information to be filled by DEs before issuing to bidder.

	SCHEDULE OF DRAWINGS/CATALOGUES SUBMITTED WITH BID	SPECIFICATION NO:	
		VOL III	
		SHEET..... OF.....	
Section C/D enclosed with the specification indicate the drawings / catalogues to be furnished with the bid. The bidder in addition to furnishing the same, can also include any other drawings / catalogues which he may desire to submit with the bid. This schedule duly lists out such drawings as enclosed by the bidder with the bid.			
DRAWING/ CATALOGUE NUMBER	DESCRIPTION	NUMBER OF SHEETS	


PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				COMPANY SEAL
NAME	DESIGNATION	SIGNATURE	DATE	

	SCHEDULE OF EQUIPMENT, MANUFACTURE, DESPATCH AND SHIPMENT TO SITE			SPECIFICATION NO:	
				VOL III	
				SHEET..... OF.....	
Equipment/Major Bought-out items	Time for Manufacture/ Procurement from Date of issues of Letter of intent (Weeks)	Time for Test Dismantling Packing & Ready for Despatch (Weeks)	Time required from Shipment to Site (Weeks)	Total Time from Date of Issue of Letter of intent to Shipment to Site (Weeks)	
We, the undersigned hereby undertake to meet the schedule in weeks from manufacture, dispatch and shipment of each equipment and procurement of major boughtout items as listed above.					


PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE					
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL	

	SCHEDULE OF WEIGHTS & DIMENSIONS		SPECIFICATION NO:
			VOL III
			SHEET..... OF.....
The bidder shall state below the weights and dimensions of various packages for shipment covering the complete scope.			
Description of Package(S)		Dimension (in meters)	Weight (in tones)

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL

	INSPECTION SCHEDULE			SPECIFICATION NO	
				VOL III	
				SHEET..... OF.....	
S No.	ITEM/COMPONENT	PLACE & ADDRESS OF TEST / INSPECTION	SCHEDULE D DATE OF INSPECTION	DURATION OF TEST / INSPECTION (IN DAYS)	
This schedule shall be in the line with specification and quality plan requirements. The information in this form shall be furnished after receipt of LOI/PO.					

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL

	TITLE * SCHEDULE OF DEVIATIONS () From Conditions of Contract (Volume – 1) () From General Technical Conditions (Volume – II A) () From Technical Specifications (Volume –II B)	SPECIFICATION NO
		VOL III
		SHEET..... OF.....
We the undersigned hereby certify that the above mentioned are the only deviations.		

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

	TITLE * SCHEDULE OF DECLARATIONS	SPECIFICATION NO
		VOL III
		SHEET..... OF.....

* Bidder shall include this schedule both in technical and Price offers

DECLARATION

Icertify that all the technical data and information pertaining to this specification are correct and are true representation of the equipment/system covered by our format proposal number Dated and there is no deviation to the specification.

I hereby certify that I am duly authorized representative of the Bidder's company whose name appears above my signature.

Biders Company Name

Authorised representative's
Signature

Name


Bider's Name

The bidder hereby agrees to fully comply with the requirements and intent of this specification for the price indicated

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	

6: 150402MS / P < PM FORM

Bid FORM No. PEM — 6041-0

		QUALITY PLAN									
		CUSTOMER		PROJECT		SPECIFICATION		SECTION		VOLUME III	
		BIDDER / VENDOR		TITLE		NUMBER		TITLE		NUMBER	
SYSTEM		ITEM		ACCEPTANCE NORM		FORMAT OF RECORD		AGENCY		REMARKS	
SHEET		OF		TYPE / METHOD OF CHECK		EXTENT OF CHECK		REFERENCE DOCUMENT		P W V	
COMPONENT / OPERATION		CHARACTERISTIC CHECK		CAT.		3		4		5	
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BHEL

PARTICULARS

NAME

SIGNATURE


DATE

BIDDER / VENDOR


BIDDER'S / VENDOR'S COMPANY SEAL

(Form No. PEM-6042 7)

1. In absence of correlation with the test certificate(s) (e.g. material identification) samples shall be drawn by BHEL and all tests as per relevant specifications shall be carried out in their presence or in recognized Government Laboratory
2. When materials and components are initially identified and stamped by BHEL QS engineer, the identification marks shall be preserved till despatch. Wherever this is not possible, the identification mark shall be transferred to the components in the presence of BHEL QS Engineer unless otherwise agreed.
3. For castings and forgings integral test specimens shall be provided. When this is not possible for casting, they shall be poured in the presence of BHEL QS Engineer unless otherwise, if witnessing of test by BHEL is called for.
4. When welders qualified by reputed inspection agencies or statutory bodies are not available, qualification tests shall be conducted in the presence of BHEL QS Engineer.
5. This Quality Plan is liable to be modified as per the requirements of approved drawings and changes in technical specifications/drawings. If there are contradictions in respect of column 7 & 8 between this Quality Plan and the approved drawings specifications, the latter shall prevail.
6. Wherever inspection by BHEL's Purchaser/Third Party/Statutory authorities are mandatory, this shall be complied with.
7. Inspection reports, log sheets, test reports/certificate, etc. shall be furnished to BHEL at the appropriate stages or at the time of final inspection, as required.
8. This Quality Plan is also applicable to spares, if any, under scope of supply of Vendor.
9. The quality plan shall be submitted in septuplicate (7 Copies).

	*SCHEDULE OF PRICES FOR COMMISSIONING AND MANDATORY SPARES						SPECIFICATION NO		
							VOL III		
							SHEET..... OF.....		
<p>*Unpriced schedule shall also be furnished along with Part A- Schedule in technical bid</p> <p>The bidder shall indicate here the quantity required for erection / commissioning and mandatory spares for equipment as listed in Section C / Section – D. If the listed spares are not adequate then the bidder shall indicate those and additional spares considered necessary by him.</p>									
Type	Manufacturer's Drawing No / Part of spare	Description	Material	Quantity per Unit / Equipment	Quantity Recommended	If Set, Nos. Per Set	Delivery Period (Weeks)	Unit Price (Rs.)	Total Price (Rs.)
Erection & Commissioning									
Mandatory Spares									
Additional Spares Mandatory Erection / Commissioning									

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

	*SCHEDULE OF PRICES FOR RECOMMENDED SPARES						SPECIFICATION NO		
							VOL III		
							SHEET..... OF.....		
<p>*Unpriced schedule shall also be furnished along with Part A- Schedule in technical bid</p> <p>The bidder shall give below a list of spares recommended for three years (or as otherwise specified in section – C) for trouble free performance of the equipment / system offered.</p>									
S. No.	Manufacturer's Drawing No / Part of spare	Description	Material	Quantity per Unit / Equipment	Quantity Recommended	If Set, Nos. Per Set	Delivery Period (Weeks)	Unit Price (Rs.)	Total Price (Rs.)

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE					COMPANY SEAL
NAME		DESIGNATION	SIGNATURE	DATE	

	TITLE * SCHEDULE OF PRICE FOR ERECTION AND MAINTENANCE TOOLS & TACKLES	SPECIFICATION NO
		VOL III
		SHEET..... OF.....

***Unpriced schedule shall also be furnished along with Part A- Schedule in technical bid**

The bidder shall be given below the list of erection and maintenance tools and tackles as offered by him. This shall also include the customer's list of maintenance tools. If specified in Section – C / Section - D

S. No	DESCRIPTION OF TOOLS & TACKLES	QUANTITY OFFERED	UNIT PRICE (Rs.)	TOTAL PRICE (Rs.)

NOTE : The hire charges for vendors equipment called for in this schedule shall include the cost of consumables, operation services, descriptions, wear and tear as well as vendor's over head and profit (These rates will be payable by customer to the vendor, only if the customer's requires the use of this equipment for carrying out his own work out side the scope of this contract).

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	

COMPANY SEAL