

"Schedule of quantities and rates" cum "Unprice bid format"							
Abstract sheet							
Name of the work: "Erection, Testing & Commissioning of Composite Work-Mechanical, Piping, Electrical, C&I work and Material Management Works" for "Demonstration of Methanol Firing in One GT at NTPC Kayamkulam, Kerala".							
Tender ref no. T0AXX00047 dated:27.09.2024							
Section No	Description	UOM	Qty	Rate in Rs.	Amount (in Rs.)	Weightage %	Remarks
A	Erection, Testing and Commissioning of Piping system (including valves, pipe Support Structures and others fitting): Receipt from BHEL store, transportation to site, inspection, obtaining statutory approvals/ certificates as applicable, pre-assembly, erection, alignment, welding, NDT, fixing of hangers & supports, chemical cleaning / pickling, oil flushing, water flushing, hydro testing & steam blowing including temporary piping and pumps required for testing, surface finish, supply & application of primer & finish paints of all the pipes including pipe fittings and support structures as per requirement / as given in the drawings including labeling & flow direction on the piping / over insulation & hangers and supports, pre-commissioning, commissioning, trial operation & handing over to customer and supply & application of final painting, etc. for all the piping systems of as per Technical specification and SOQR.	Set	1	88,13,284.86	88,13,284.86	78.992797	Detailed SOQ refer Section-A
B	Electrical and C&I work	Set	1	4,46,697.01	4,46,697.01	4.003711	Detailed SOQ refer Section-B
C	Fire protection and detection system Work	Set	1	37,579.59	37,579.59	0.336823	Detailed SOQ refer Section-C
D	Pre-Commissioning & Commissioning of Test Firing of one unit of Gas turbine by first naphtha and then Demonstration of Methanol firing in one unit of Rajiv Gandhi Combined Cycle Power Plant, Kayamkulam (2 X 115 MW + 1 X 120 MW) shall be single point responsibility of the contractor, completely covering the activities and services in respect of all the equipment & works specified and covered under the Technical specification as mentioned in the BHEL TCC Specification and NTPC customer specification (BIDDING DOCUMENT NO.: CS-0011-130A-9).	Set	1	18,59,512.29	18,59,512.29	16.666666	Detailed SOQ refer Section-D
	Total amount (Excluding Taxes)			1,11,57,074.00	1,11,57,074.00	100.000000	
	Bidder to confirm having quoted their price in BHEL NIC portal <a href="https://eprocurebhel.co.in">https://eprocurebhel.co.in</a> in the manner described in Note: 1 below, by writing "QUOTED" here						
Note:							
1	Bidders should quote only the percentage excess or less, wrt to the estimated value of Rs.1,11,57,074/- in the specified place in BHEL NIC Portal . They should not fill/quote/write anything in col. of Abstract sheet as well as abstract & individual sub sheets of Section- A,B,C &D. These rates & amount will be derived from the Total amount quoted (percentage excess or less) or weightage factor assigned against respective items indicated in weightage . (Bidder to quote the total price in BHEL NIC portal <a href="https://eprocurebhel.co.in">https://eprocurebhel.co.in</a> )						
2	The rate and amount are inclusive of all applicable taxes, except for the GST. For details of taxes, clause no. 13.0 of the SCC will be applicable.						

**"Schedule of qunatity and rates" cum "Unprice bid format"**

<b>Name of work:-“Erection, Testing &amp; Commissioning of Composite Work-Mechanical, Piping, Electrical, C&amp;I work and Material Management Works” for "Demonstration of Methanol Firing in One GT at NTPC Kayamkulam, Kerala".</b> <b>Tender Ref no.T0AXX00047 dated:27.09.2024</b>						
Sl.No.	Item Description	UOM	QTY.	unit rate (In Rs.)	Total Amount (In Rs.)	Weightage (%)
<b>A</b>	<b>Section-A ( Mechanical Works)</b>					
<b>A1</b>	<b>Section-A1 Piping work:</b>					
<b>1</b>	<b>Fabrication, Fittup, welding, Inspection, obtaining statutory approvals/ certificates as applicable, Testing (chemical cleaning / pickling, oil flushing/water flushing, hydro/pneumatic testing &amp; steam blowing) as applicbale including temporary piping and pumps required for testing, pre-commissioning, commissioning, trial operation &amp; handing over to customer for all the piping systems, All Stubs, including documentation work (Loop File) of as per Technical specification and SOQR. (Required Scaffolding, T&amp;P, Hydra, Consumables etc which required to do the above work are in contractor's scope)</b>					
<b>1.1</b>	<b>NIBR Piping</b>					
<b>1.1.1</b>	<b>CS Piping Fabrication and other works as describe above (Butt Weld), Thickness &lt; 10MM,</b>					
<b>i</b>	Pipe size 2" upto 6"	Inch Dia	<b>2,326</b>	₹ <b>1,216.96</b>	₹ <b>28,31,196.59</b>	<b>25.37580</b>
<b>ii</b>	Pipe size 8" to 14"	Inch Dia	<b>552</b>	₹ <b>1,216.96</b>	₹ <b>6,71,761.92</b>	<b>6.02095</b>
<b>1.1.2</b>	<b>CS Piping Fabrication and other works as describe above (Fillet Weld), Thickness &lt; 10MM,</b>					
<b>i</b>	Less than < 2"	Inch Dia	<b>442</b>	₹ <b>980.64</b>	₹ <b>4,33,050.62</b>	<b>3.88140</b>
<b>2.1.1</b>	<b>Erection of pipes and piping item (fitting, flange, gasket, stud nut etc.) of Various types of material, thickness and ratings: Receipt from BHEL store, transportation to site, inspection, pre-assembly, erection, alignment for all the piping systems including documentation work of as per Technical specification and SOQR. (Required Scaffolding, T&amp;P, Hydra, Consumables etc which required to do the above work are in contractor's scope)</b>					
<b>i</b>	Less than < 2"	Inch Metre	<b>313</b>	₹ <b>444.13</b>	₹ <b>1,38,923.86</b>	<b>1.24516</b>
<b>ii</b>	Pipe size 2" to 6"	Inch Metre	<b>3,598</b>	₹ <b>444.13</b>	₹ <b>15,98,135.19</b>	<b>14.32396</b>
<b>iii</b>	Pipe size 8" to 14"	Inch Metre	<b>1,656</b>	₹ <b>434.20</b>	₹ <b>7,19,035.20</b>	<b>6.44466</b>
<b>2</b>	<b>Valve all types: Erection, testing , pre-commissioning, commissioning, trial operation &amp; handing over to customer including documentation work as per Technical specification.(Required Scaffolding, T&amp;P, Hydra, Consumables etc which required to do the above work are in contractor's scope)</b>					
<b>2.1</b>	Size- Less than 2"	Nos	<b>13</b>	₹ <b>987.49</b>	₹ <b>12,837.37</b>	<b>0.11506</b>

Sl.No.	Item Description	UOM	QTY.	unit rate (In Rs.)	Total Amount (In Rs.)	Weightage (%)
2.2	Size-3"	Nos	4	₹ 1,876.01	₹ 7,504.04	0.06726
2.3	Size-4"	Nos	7	₹ 2,218.53	₹ 15,529.71	0.13919
2.4	Size-6"	Nos	7	₹ 2,899.74	₹ 20,298.18	0.18193
2.5	Size-10"	Nos	3	₹ 5,557.51	₹ 16,672.53	0.14943
<b>A2</b>	<b>Section-A2 : miscellaneous work:</b>					
<b>3</b>	<b>Non-Destructive Testing (NDT) Work: Inspection, obtaining statutory approvals/ certificates/work permit from BHEL and Customer as applicable and NDT of piping systems including documentation work as required and as per Technical specification. (Required Scaffolding, T&amp;P, Hydra, Consumables etc which required to do the above work are in contractor's scope)</b>					
3.1	Radiography for pipe joints as per specification of various sizes and material	Inch Dia	288	₹ 351.01	₹ 1,01,020.68	0.90544
3.2	Dye Penetration (DP) test check for fillet welds as per specifications.	Inch Dia	88	₹ 177.94	₹ 15,715.22	0.14085
4	Supply of paint, preparation of surfaces, and application of paint (As per the painting specification/ scheme), identification (Line numbering), lettering, colourbands, colour coding etc. as specified including rubdown and touch up wherever required, providing scaffolding for all heights, labour, material, tools & tackles, consumables, supervision etc. to complete the work in all respects as per BHEL painting spec, drawings and direction of Engineer-in-Charge for all types of uninsulated piping and insulated piping as specified including all pipes, fittings, flanges, etc. The identification marks of the piping & joints shall be noted before final painting					
4a	Painting shall be as per following : CS and AS -Thermally Uninsulated Piping Components Surface Preparation: The steel surfaces to be applied with painting shall be thoroughly cleaned before painting by wire brushing, air blowing, etc. Painting: One (1) Coat of epoxy resin based zinc phosphate primer of thickness 30 to 35 microns followed up with three (3) coats of epoxy resin based paint pigmented with titanium di-oxide with 25 microns as thickness of each coat. Total DFT: 110 microns	Sq.M	518	₹ 808.94	₹ 4,18,626.45	3.75212
5	Dismantling & removal of erected pipes including valves, pipe support structures and others fitting, and disposing of the dismantled items at the designated place as directed by BHEL site engineer.					
5a	Pipe Size-6"	InchMeter	180	₹ 748.37	₹ 1,34,706.60	1.20736
6	Receipt of structural steel pipe support material from BHEL store, fabrication,erection, NDT and painting as per painting schedule mentioned above in Sec.4a. Structural steel shall be supplied free of cost by BHEL. (Required Scaffolding, T&P, Hydra, Consumables etc which required to do the above work are in contractor's scope)	MT	4	₹ 38,482.76	₹ 1,53,931.04	1.37967

Sl.No.	Item Description	UOM	QTY.	unit rate (In Rs.)	Total Amount (In Rs.)	Weightage (%)
7	Charges for Material handling and Management work involving Receipt, unloading, verification, Stacking, Reshifting. Restacking, Documentation, material reconciliation and perservation of material at site -Including Hydra, T&P, Consumabales, Diesel, driver, Store keeper, Supervisor, Driver, rigger & Helper	Months	7	₹ 2,17,762.81	₹ 15,24,339.66	13.66254
	<b>Total sum for section-A (A1+A2)</b>				₹ 88,13,284.86	
<b>B</b>	<b>Section-B (Electrical and C&amp;I works)</b>					
<b>B1</b>	<b>Erection, Welding as applicable, installation, Testing &amp; Commisioning of below Items.</b>					
1	<b>EARTHING MATERIAL</b>					
i	35 x 6 mm GI Strip (GI Strip shall be supplied by BHEL in Standard length of 5-6 Mtrs) Note-Supply of zinc rich paint and application for welded joints of earthing strip shall be in contractor's Scope.	Mtr	250	₹ 72.53	₹ 18,133.44	0.16253
ii	8 Swg GI wire (Solid) (GI Wire shall be supplied by BHEL in Standard length of 100 mtr roll)	Mtr	350	₹ 32.34	₹ 11,319.01	0.10145
iii	65mm dia, 3000mm long Cu Pipe Electrode for electronics equipment Earthing with treated pits. Material (charcoal & salt etc.) required for treated earth shall be supplied by erection agency. Note-Supply of zinc rich paint and application for welded joints of earthing strip shall be in contractor's Scope.	Nos.	2	₹ 15,406.32	₹ 30,812.64	0.27617
2	<b>GI CABLE TRAY (Note:supply and application of Anti-rust primer and cold galvanization for welds at cable tray are in contractor's scope)</b>					
i	150mm (W), 2.5Mtr long, 2mm thick Perforated type GI cable tray with coupler plates and Nut-bolts	Nos.	140	₹ 130.09	₹ 18,212.20	0.16323
ii	50mm(W), 2.5Mtr long, 2mm thick Perforated type GI cable tray with coupler plates and Nut-bolts	Nos.	30	₹ 86.73	₹ 2,601.96	0.02332
iii	2.5 Mtr long, 2mm thick GI Cover for 150mm (W) Perforated type Cable Tray with self tapping screws	Nos.	70	₹ 130.09	₹ 9,106.10	0.08162
iv	2.5 Mtr long, 2mm thick GI Cover for 50mm (W) Perforated type Cable Tray with with self tapping screws	Nos.	30	₹ 86.73	₹ 2,601.96	0.02332
3	<b>LT POWER cable</b>					
i	1CX25Sqmm CU XLPE insulated Unarmoured Cable	Mtr	100	₹ 26.95	₹ 2,695.37	0.02416
ii	3CX2.5 Sqmm Cu XLPE insulated armoured Cable	Mtr	500	₹ 21.57	₹ 10,783.69	0.09665
iii	4CX25 Sqmm Al XLPE insulated armoured Cable	Mtr	500	₹ 28.63	₹ 14,313.99	0.12830
4	<b>CABLE GLANDS (Double compression NI Plated Brass)</b>					
i	Cable gland suitable for size 13mm-18mm	Nos.	15	₹ 52.03	₹ 780.52	0.00700
ii	Cable gland suitable for size 23.5mm-26mm	Nos.	10	₹ 52.03	₹ 520.35	0.00466
ii	Cable gland suitable for size 13mm-18mm (For Flexible cable)	Nos.	5	₹ 52.03	₹ 260.17	0.00233
5	<b>CABLE LUGS</b>					
i	2.5 SQ.MM TINNED CU LUG	Nos.	50	₹ 12.54	₹ 626.75	0.00562

Sl.No.	Item Description	UOM	QTY.	unit rate (In Rs.)	Total Amount (In Rs.)	Weightage (%)
ii	25 SQ.MM TINNED CU LUG	Nos.	100	₹ 12.54	₹ 1,253.51	0.01124
iii	25 SQ.MM AL LUG	Nos.	50	₹ 12.54	₹ 626.75	0.00562
6	<b>ILLUMINATION PACKAGE</b>					
i	Flameproof LED Well Glass fixture, 45WApprox	Nos.	2	₹ 671.93	₹ 1,343.85	0.01204
ii	Flameproof LED Flood Light Fixture, 120WApprox	Nos.	3	₹ 671.93	₹ 2,015.78	0.01807
iii	9M Long steel Tubular Flood Lighting pole	Nos.	2	₹ 6,719.18	₹ 13,438.37	0.12045
iv	Flameproof 4-Way Rectangular Lighting Junction Box suitable for Gas group IIC and Zone 1&2.	Nos.	2	₹ 977.34	₹ 1,954.68	0.01752
v	Flameproof AC outdoor type Lighting Panel suitable for Gas group IIC and Zone 1&2. (Approx. dimension:1000x300x1000MM)	Nos.	1	₹ 1,282.74	₹ 1,282.74	0.01150
vi	Modular type Surface mounted switch-socket outlet with 6/16A, 230V socket & 16A piano type switch and 6A, 3 Pin Plug.	Nos	4	₹ 488.67	₹ 1,954.68	0.01752
7	<b>UPS system</b>					
i	2kVA UPS with 30 Min Battery backup (Commercial grade, Approx. UPS dimension: 300x500x300MM, Battery dimension: 500x300x500MM)	Nos.	2	₹ 5,781.26	₹ 11,562.51	0.10363
8	<b>WALL MOUNTED DISTRIBUTION BOARD</b>					
i	63A Wall mounted Distribution Board (Approx. dimension:1000x300x1000MM)	Nos.	1	₹ 1,282.76	₹ 1,282.76	0.01150
9	<b>Structural Steel for Supports</b>					
i	Taking delivery from BHEL store, loading, transportation, unloading, installation, alignment, welding & fabrication of structural steel of cable tray supports and hookup material Structural steel (ISMC-100 Channels, ISA 50x50x6mm, Plate-6 mm thick, or similar steel sections) for Electrical, Control & Instrumentation cable tray supports, installation of field instruments and all structural work as mentioned in TCC, including dismantling & removal from site any temporary structure, also included supply of primer, paint and painting as per painting schedule/specification- as per approved drawings, all complete to the satisfaction of BHEL site engineer. (Required Scaffolding, T&P, Consumables etc which required to do the above work are in contractor's scope) Note-1: -Instrument supporting structures & instrument impulse line connections work- str steel, tubes, connectors, valves, manifolds, unions caps, reducers, nipples, tees, elbows, plugs, couplings, pipes, flanges, gaskets etc. (including testing & commissioning) Note-2: -Structural steel and items mentioned in note-1 for impulse piping shall be supplied free of cost by BHEL.	MT	3.6	₹ 38,482.76	₹ 1,38,537.94	1.24170
10	<b>Supply, Erection, Testing &amp; Commisioning of following Items shall be in contractor's scope.</b>					
i	Cable Tags 2 mm thick, 75mm long, 15mm width AL Strips with 16swg GI wire	Nos	100	₹ 8.14	₹ 814.01	0.00730
ii	GI Pipes of 100 mm diameter, medium duty, Class-“B” Type (threaded coupler at one end and both end threaded, min 75 microns galvanizing thickness	Mtrs	10	₹ 1,105.26	₹ 11,052.63	0.09906
iii	2 Mtr length, 112 Deg. angle bend pipe GI Pipes of 100 mm diameter, medium duty, Class-“B” Type (threaded coupler at one end and both end threaded, min 75 microns galvanizing thickness	Nos.	5	₹ 2,210.53	₹ 11,052.63	0.09906
iv	M8 nuts, washer & Bolts for earthing connection	Sets	100	₹ 7.05	₹ 705.00	0.00632

Sl.No.	Item Description	UOM	QTY.	unit rate (In Rs.)	Total Amount (In Rs.)	Weightage (%)
v	16 Swg saddle with 3mm thick saddle bars for holding earthing flat	Nos.	100	₹ 47.46	₹ 4,746.25	0.04254
vi	Fire break coating on Cables (Fire rating: 30 Min rating, Certified from UL/ FM / LPCB / CBRI / ERDA or equivalent Lab with NABL accreditation)	Sq.meter	3	₹ 996.71	₹ 2,990.14	0.02680
vii	Fireproof materials required for sealing of cable entry through conduits/trenches & through panels (Fire rating: 2 Hours, Certified from UL/ FM / LPCB / CBRI / ERDA or equivalent Lab with NABL accreditation)	Sq.meter	2	₹ 3,654.33	₹ 7,308.65	0.06551
viii	M10x90 long GI Anchor fastners	Nos.	300	₹ 110.70	₹ 33,210.00	0.29766
B2	<b>CONTROL AND INSTRUMENTATION (Erection, Welding as applicable, installation, Testing &amp; Commisioning of below Items)</b>					
1	Remote Seal Differential Transmitter	Nos.	2	₹ 1,445.30	₹ 2,890.60	0.02591
2	Pressure Switch	Nos.	3	₹ 770.84	₹ 2,312.52	0.02073
3	Instrumentation Signal Cables : 1Px1.5mm2 FRLS PVC/FRLS PVC OS	meter	1500	₹ 16.18	₹ 24,271.55	0.21754
4	PLC Panel to be supplied by BHEL PE&SD, erection & commissioned by erection agency.	Sets	1	₹ 47,321.31	₹ 47,321.31	0.42414
	<b>Total sum for section-B (B1+B2)</b>				₹ 4,46,697.01	
C	<b>Section-C :Fire protection and detection system. (Erection, Welding as applicable, installation, Testing &amp; Commisioning of below Items).</b>					
1	SS Hydrant Valve. Note-Inlet connection : 75mm NB Flanged Inlet (Drilling as per ANSI B16.5 150# FF) Outlet connection: 63mm Female Inst. Outlet as per IS:5290.	nos.	2	₹ 1,876.01	₹ 3,752.02	0.03363
2	Hose Box: Size: 750 mm x 600mm x 250mm , Hose Box shall be suitable for Pedestal mounting. For Pedestal mounted, Pad plates to be considered by Bidder. (Pedestal or stand is in the scope of BHEL) Including-Hose Pipe (15 M length) and Branch Pipe with Nozzle	nos.	2	₹ 1,282.74	₹ 2,565.48	0.02299
3	Spray System Components					
i	Deluge valve -100 NB, including Deluge valve local control panel - Size 450 mm (L) x 450 mm (W) x 150 mm (D), Note- Weight of DV along with trim kits apprx 100 kg	nos.	1	₹ 2,218.53	₹ 2,218.53	0.01988
ii	MVWS spray nozzle: Size of each MVWS nozzle: 15NB NPT(M)	nos.	46	₹ 246.87	₹ 11,356.14	0.10178
iii	QBD: Size of each QBD: 15NB NPT(M)	nos.	46	₹ 246.87	₹ 11,356.14	0.10178
iv	Solenoid valve- 15 mm :Size of each SOV: 15NB NPT(M)	nos.	1	₹ 987.49	₹ 987.49	0.00885
v	Y strainer - 100 NB	nos.	1	₹ 1,109.27	₹ 1,109.27	0.00994

Sl.No.	Item Description	UOM	QTY.	unit rate (In Rs.)	Total Amount (In Rs.)	Weightage (%)
4	Foam chamber with deflector: Size: Inlet size-65 NB, Outlet size – 100 NB End Connection: Flanged to ANSI B 16.5, #150. RF/FF and Foam coupling:Size: SS 304 – 63 mm inlet as per IS:903 End Connection: FFlanged connection of size 80 NB as per ANSI B 16.5 , 150#	nos.	1	₹ 1,876.01	₹ 1,876.01	0.01681
5	45 Ltr. Foam type Fire Extinguisher	nos.	2	₹ 589.50	₹ 1,179.00	0.01057
6	9kg DCP type Fire Extinguisher	nos.	2	₹ 589.75	₹ 1,179.51	0.01057
	<b>Total sum for section-C</b>				₹ 37,579.59	
D	<b>Section-D - Pre-Commissioing &amp; Commissioning works</b>					
1	Pre-Commissioing & Commissioning of Test Firing of one unit of Gas turbine by first naphtha and then Demonstration of Methanol firing in one unit of Rajiv Gandhi Combined Cycle Power Plant, Kayamkulam (2 X 115 MW + 1 X 120 MW) shall be single point responsibility of the contractor, completely covering the activities and services in respect of all the equipment & works specified and covered under the Technical specification as mentioned in the BHEL TCC Specification and NTPC customer specification (BIDDING DOCUMENT NO.: CS-0011-130A-9).	Lumsum	1	₹ 18,59,512.29	₹ 18,59,512.29	16.66667
	<b>Total sum for Section-(A ,B, C &amp; D) excluding GST</b>				₹ 1,11,57,074.00	100.00000