

**RATE SCHEDULE CUM BOQ FOR ELECTRICAL / INSTRUMENTATION WORKS**  
**FOR 2 X 220 MWe UNITS AT RAPP, KOTA**

Tender No. BHEL:NR(SCT): RAPP-KOTA: C & I:380					
Sl. No	ITEM DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL PRICE
<b>1</b>	<b>Erection, Testing &amp; Commissioning (ETC) of TG C&amp;I systems and protection system items as given below &amp; preparing all relevant procedures, documents, as built drawings, database of C&amp;I &amp; preparing pre-commissioning / commissioning documents &amp; handing over to BHEL / its Customer</b>				
1.1	PLC Panel Size: 2200 x 800 x 800 mm; 1000 kg each approx. For scope of work refer clause 4.0 of Annexure-I	Nos.	16		
1.2	Relay Cabinet and Marshalling Panels Size: 2200 x 800 x 600 mm; 400 kg each For scope of work refer clause 4.0 of Annexure-I	Nos.	64		
1.3	PC Based Engineering/Operator/Diagnostic and Gateway Stations along with accessories like keyboard, mouse, monitor, printer, interconnecting power and control cables, furniture etc.	sets	10		
1.4	Local Signal Processing Cabinets Size: 470 x 420 x 230 mm; 300 kg each For scope of work refer clause 4 of Annexure-I	Nos.	20		
1.5	<b>FIELD AND MASTER JUNCTION BOXES</b> <b>For scope of work refer clause 8.0 of Annexure-I</b>				
1.5.1	10/20 terminal Instrument JB	Nos.	150		
1.5.2	50 terminal JB	Nos.	50		

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1.5.3	100 terminal JB	Nos.	40		
1.5.4	200/ 400 Marshalling JB	Nos.	10		
1.6	<b>INSTRUMENT SUPPORT STANDS/ RACKS FOR INSTRUMENTS</b> For scope of work refer clause 13.3 of Annexure-I	Nos.	170		
1.7	<b>PUSH BUTTON/ LOCAL CONTROL STATIONS FOR ELECTRICAL DRIVES</b> For scope of work refer clause 8 of Annexure-I	Nos.	50		
1.8	<b>FIELD INSTRUMENTS (LIKE PRESSURE / TEMPERATURE / LEVEL / FLOW GAUGES / SWITCHES / TRANSMITTERS RTSS etc.</b> For scope of work refer clause 5 of Annexure-I	Nos.	1400		

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1.9	<p><b>Turbovisory instruments consisting of following –The job involves: fixing of the instruments, fixing of signal conditioning accessories (as applicable), interconnection between the field instruments/signal conditioning instruments/panels. The tentative quantity is given below.</b></p> <p><b>i) Axial Shift pick ups: 3 Nos.</b>  <b>ii) Speed sensors:7 Nos.</b>  <b>iii) Rotor angle measuring probe:1 No.</b>  <b>iv) Bearing/Shaft vibration pickups:32 Nos.</b>  <b>v) Absolute expansion pick up:1 No.</b>  <b>vi) HP rotor Flexure measurement:2 Nos.</b>  <b>vii) Relative expansion:2 Nos.</b></p> <p><b>Any additional instruments which are not mentioned but required for completion of the turbovisory system shall be carried out within the quoted rate</b></p>	sets*	2		
2	<p><b>Erection, Testing &amp; Commissioning (ETC) Static Excitation Equipment System and associated items as given below &amp; and preparing all relevant procedures, documents, reports, AutoCAD drawings, database and preparing pre-commissioning / commissioning documents &amp; hading over to BHEL / its Customer.</b></p>				
2.1	<p>AVR including Field Breaker, Field Flashing and Suppression Cubicles - Overall Dimension:6030 x 1204 x 2303 mm; 5000 kg</p>	sets*	2		
2.2	<p>3 phase dry type excitation transformer with overall approximate dimensions of 3070 X 2070 X 3155mm and weight of 8000kg maximum IP21</p>	sets*	2		

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2.3	Local control panel	Nos.	2		
<b>3</b>	<b>LAYING AND TERMINATION OF LT POWER CABLES FOR STATIC EXCITATION SYSTEM</b> <b>1100V grade, XLPE/FRLS, Unarmoured cables</b> <b>For scope of work refer clause 12 of Annexure-I</b>				
3.1	1 C x 630 sq. mm, Al	Mtrs	650		
3.2	1 C x 630 sq. mm, Cu	Mtrs	400		
<b>4</b>	<b>LAYING AND TERMINATION OF CONTROL &amp; INSTRUMENTATION CABLES</b> <b>For scope of work refer clause 12 of Annexure-I</b>			40000	
4.1	2 / 3 Core / 1 Pair / 1 Triad Cable ( armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtrs	5000		
4.2	4 / 5 Core / 2 Pair ( armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtrs	5000		
4.3	7 / 8 Core / 4 Pair / 2 Triad Cable ( armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtrs	6000		
4.4	10 - 16 Core / 8 Pair Cable ( armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtrs	6000		
4.5	17 - 24 Core / 12 Pair Cable ( armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtrs	6000		
4.6	25 - 36 Core / 16 Pair Cable ( armoured / un-armoured) Core size upto 2.5 Sq. mm	Mtrs	6000		
4.7	25 pair X 1.5 sq mm	Mtrs	6000		

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<b>5</b>	<b>LAYING AND TERMINATION OF FIBER OPTIC CABLE/ FTP CABLE</b> For scope of work refer clause 12 of Annexure-I	Mtrs	1000		
<b>6</b>	<b>GI CHANNELS/ CONDUITS</b> For scope of work refer clause 13 of Annexure-I				
6.1	25 mm size heavy duty GI Conduits, with accessories like couplers, bends, inspection boxes	Mtrs	2000		
6.2	Upto 50 mm wide GI light channe (> 50 mm wide)	Mtrs	1000		
6.3	Upto 100 mm wide GI light channe (> 50 mm wide)	Mtrs	600		
6.4	Upto 150 mm wide GI light channe (> 100 mm wide)	Mtrs	400		
<b>7</b>	<b>SS PIPES/ CU TUBES</b> For scope of work refer clause 6 & 7 of Annexure-I				
7.1	14 mm OD x 2mm SS Pipes	Mtrs	6000		
7.2	18 mm OD x 2.5 mm SS Pipes	Mtrs	1100		
7.3	Cu Tube, 8 mm OD	Mtrs	1000		
<b>8</b>	<b>EARTHING MATERIAL</b> For scope of work refer clause 14 of Annexure-I				

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8.1	400 sq. mm FRLS Unarmoured Cu cable ( for electronic earthing)	Mtrs	400		
8.2	50 sq. mm FRLS Unarmoured Cu cable ( for electronic earthing)	Mtrs	400		
8.3	80 x 10 mm Cu Flat ( for electronic earthing)	Mtrs	6		
8.4	50 x 6 mm GI Flat	Mtrs	320		
8.5	25 x 3 mm GI Flat	Mtrs	600		
8.6	8 swg GI wire	Mtrs	1400		
8.7	2.5 sq. mm Cu Wire	Mtrs	4200		
9	Air Accumulator Tanks Weight: 100 kg approx.	Nos.	16		
10	Fixing of loose supplied hand switches(control switches) in the control desk and termination of loose wires.	Nos.	120		
<b>11</b>	<b>COMMISSIONING OF EQUIPMENT ERECTED BY OTHERS (AS PER REQUIREMENT AS MAINLY THESE WORKS ARE IN THE SCOPE OF ERECTOR)</b>				
11.1	Motorised Valves (Bi-directional)	Nos.	10		
11.2	Callibration / commissioning of regulating Control Valves with positioners / LS / PFT	Nos.	10		

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11.2	Callibration of SOV operated pneumatic trip Valves	Nos.	10		
11.3	Motors (LT Drives)	Nos.	10		
11.4	Generator System RTDs (only checking)	Nos.	10		
<b>12</b>	<b>Fabrication / Erection of structural steel</b>	MT	3		
				<b>TOTAL</b>	
<b>NOTES</b>					
<b>a)</b>	All dimensions are in mm unless otherwise specified.				
<b>b)</b>	Dimensions indicated are based on primary drawings and are subject to variation.				
<b>c)</b>	The quantities indicated against each item above are tentative and are liable to vary depending upon the site requirement. The contractor has to erect / commission actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be adjusted on the basis of quantities actually erected at site & payment will also be regulated for the same. The contractor confirm that unit rate quoted above takes care of such variations during execution stage.				
<b>d)</b>	The bidders shall enter both 'Unit Rate' & 'Amount'. In case of any mismatch between 'Amount' calculated based on ' Unit Rate' & 'Amount' as entered, the higher of the two shall be considered for evaluation. But for award of work lower of the two shall be applicable.				
<b>e)</b>	The rates shall be entered in figures as well as in words. In case of difference in rates between words and figures, the lesser of the two will be treated as valid rate.				
<b>f)</b>	In case of omission in quoting any rate, the evaluation will be done considering the highest quoted rate obtained against that item. But the work , if awarded, will be on the lowest quoted rate obtained against that item.				
				<b>Seal and Signature of Tenderer</b>	