

TENDER SPECIFICATION

Ref: BHEL/PSSR/SAS/SCT/T-10/2021-22

Date: 06.07.2021

ESP R&M works at Unit.No.1,3 & 4 at NALCO, Damanjodi SPP
(Balance works)

AT

NALCO-Damanjodi, Steam cum Power Plant Alumina Refinery,
Orissa

VOLUME-II

PRICE BID



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

Services After Sales Division - , Ek Tara Building

39, Sarojini Devi Road, Secunderabad-500 003.

PRICE BID

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PRICE BID

PART-A

Instruction to Bidders:

1. The quantity indicated in the BOQ in Part C of Price Bid is approximate only and is liable for variation. Payment will be as per actual quantity executed and as certified by BHEL Engineer.
2. Tenderers are requested to affix their company seal and authorized signature in all pages.
3. Bidders shall quote 'Total Amount' in the format enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender and upload the same under 'Packet details - > Tender covers -> Finance '(Cover Type Description – Price Bid)' and same shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope of work defined in specification and in accordance with terms & conditions of the tender. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/formats will not be entertained.
4. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
5. Based on the quantities of individual item and the 'Total amount' as mentioned above, unit rate of individual item shall be derived. This unit rate shall be rounded off to four decimal places.
6. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per Sl No.5 above.

Part C : Bill of Quantities				
Ref: BHEL/PSSR/SAS/SCT/T-10/2021-22			Date:06.07.2021	
Description of works: ESP R&M works at Unit.No.1,3 & 4 at NALCO, Damanjodi SPP (Balance works)				
Sl.No.	Description of work	UOM	Qty	4
I	ERECTION WORKS			
1	Material Handling			
(a)	Unloading of material from trailer/vegans etc. DB/Stock register entry and preparation of MRC duly signed by BHEL and Customer.	1,452.05	MT	0.0088082
(b)	Stacking at storage yard/stores and verified as per trailer/wagon loading advice slip/Packing slip.	1,471.66	MT	0.0025506
(c)	Verification, restacking and preparation of short supplies MDR,SAR,etc and duly signed by BHEL resident manager with respect to availability and proper maintenance of records upto last date of billing period	3,609.46	MT	0.0015639
(d)	Final Reconciliation of the materials and submission of all relevant documents and submission of final bill and duly certified by BHEL Resident Manager	1,452.05	MT	0.0006292
2	Dismantling			
2A	Dismantling of inlet & outlet duct Components, Gates/ Dampers, HVR, Insulation Etc and transporting to BHEL/ Customer stores/ Storage yard with in the customer plant. Inlet duct 3 nos and outlet duct 3 nos.			
(a)	Satisfactory Completion of Dismantling of Ducts in all respects.	4.00	Passes	0.0431313
(b)	Shifting of dismantled materials to dump yard/Scrap yard/ Other area as directed by BHEL/NALCO.	4.00	Passes	0.0025371
(c)	Cleaning of structures after dismantling and cleared for new erection, Area Cleaning, Temporary Structures Cutting/ Removal and return of scrap.	4.00	Passes	0.0025371
(d)	Completion of contractual obligation	4.00	Passes	0.0025371
2B	Dismantling of ESP pass items like insulators, Heating elements, Inner & Outer roof, LR ,TR beams, Side casing Walls, Funnel etc. and transporting to BHEL/ Customer Stores/ Storage yard with in the customer plant.			
(a)	Satisfactory Completion of Dismantling in all respects.	5.00	Passes	0.0560707

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(b)	Shifting of dismantled materials to dump yard/Scrap yard/ Other area as directed by BHEL/NALCO.	5.00	Passes	0.0032983
(c)	Cleaning of structures after dismantling and cleared for new erection, Area Cleaning, Temporary Structures Cutting/ Removal and return of scrap.	5.00	Passes	0.0032983
(d)	Completion of contractual obligation.	5.00	Passes	0.0032983
2C	Dismatling of ESP for Unit 1,3 & 4 like structural, Components, Internals, EE, CE, rapping & drive mechanisms, hopper, ALI, all electrical Panels/ Cables/ trays/ transmitters/ heaters, platforms, Ammonia dosing system etc.,. And transporting to BHEL/customer stores/ Storage yard with in the customer plant			
(a)	Satisfactory Completion of Dismantling in all respects.	5.00	Passes	0.1056717
(b)	Shifting of dismantled materials to dump yard/Scrap yard/ Other area as directed by BHEL/NALCO.	5.00	Passes	0.0062160
(c)	Cleaning of structures after dismantling and cleared for new erection, Area Cleaning, Temporary Structures Cutting/ Removal and return of scrap.	5.00	Passes	0.0062160
(d)	Completion of contractual obligation	5.00	Passes	0.0062160
3	Upgradation			
(a)	On pre assembly wherever applicable (if not applicable, this portion shall be clubbed with placement in position)	2,131.00	MT	0.0503699
(b)	Placement In Position	2,234.17	MT	0.0704114
(c)	Alignment	2,237.75	MT	0.0528930
(d)	Welding/ Bolting / Fixing	2,238.41	MT	0.0705447
(e)	Completion of Hoppers along with all doors, heating elements, poking doors etc.	2,238.42	MT	0.0176363
(f)	Completion of inner,outer roof,insulator housing, rectifier transformers, Pent House mono rails, Hoists etc.	2,238.41	MT	0.0176362
(g)	Erection of emitting and collecting rapping system with all drives	2,238.41	MT	0.0176362
(h)	Air & Gas tightness Test	2,238.41	MT	0.0070545

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Sl.No.	Description of work	UOM	Qty	4
(i)	Gas Distribution Test	2,792.00	MT	0.0087992
(j)	Charging Of ESP Fields	2,238.41	MT	0.0105817
(k)	PG Test Completion	2,792.00	MT	0.0043996
(l)	Trial Operation Of ESP	2,238.41	MT	0.0035272
(m)	Painting	2,792.00	MT	0.0087992
(n)	Area Cleaning, Temporary Structures Cutting/ Removal and Return Of Scarp	2,792.00	MT	0.0043996
(o)	Punch List Points/ Pending Points Liquidation	2,792.00	MT	0.0043996
(p)	Material Reconciliation	2,238.41	MT	0.0035272
(q)	Completion of contractual obligation.	2,238.41	MT	0.0035272
4	<i>Erection of Parallel Pass</i>			
(a)	On pre assembly wherever applicable (if not applicable, this portion shall be clubbed with placement in position)	806.24	MT	0.0190567
(b)	Placement In Position	882.48	MT	0.0278119
(c)	Alignment	882.48	MT	0.0208590
(d)	Welding/ Bolting / Fixing	884.66	MT	0.0278805
(e)	Completion of Hoppers Along with all doors, heating elements, poking doors etc.	923.00	MT	0.0072722
(f)	Completion of inner, outer roof insulator housing, Rectifier transformers, Pent House mano rails, Hoists etc.	923.00	MT	0.0072722
(g)	Erection of emitting and collecting rapping system with all drives	923.00	MT	0.0072722
(h)	Air & Gas Tightness Test	923.00	MT	0.0029089
(i)	Gas Distribution Test	923.00	MT	0.0029089
(j)	Charging Of ESP Fields	923.00	MT	0.0043633
(k)	PG Test Completion	923.00	MT	0.0014544
(l)	Trial Operation Of ESP	923.00	MT	0.0014544
(m)	Painting	923.00	MT	0.0029089
(n)	Area Cleaning, Temporary Structures Cutting/ Removal and Return Of Scarp	923.00	MT	0.0014544

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Sl.No.	Description of work	UOM	Qty	4
(o)	Punch List Points/ Pending Points Liquidation	923.00	MT	0.0014544
(p)	Material Reconciliation	806.24	MT	0.0012704
(q)	Completion of contractual obligation.	806.24	MT	0.0012704
5	<i>Dismantling Ash Handling System</i>			
5A	Ash handling system: Dismantling of wet ash handling system and dry ash handling system for Pass -A of Units # 1&3 shall be in the scope of contractor.			
(a)	Satisfactory Completion of Dismantling of ASH handling system Works in all respects.	2.00	Unit	0.0045030
(b)	Shifting Of Dismantled Material to dump yard/Scrap yard/other area as directed by BHEL/NALCO.	2.00	Unit	0.0002649
(c)	Cleaning Of Structures after Dismantling and Cleared for new erection,Area cleaning ,Temporary Structure Cutting/Removal And Return of Scrap.	2.00	Unit	0.0002649
(d)	Completion of Contractual obligation.	2.00	Unit	0.0002649
5B	Ash handling system: Dismantling of wet ash handling system and dry ash handling system for Pass -B of Units # 1,3&4 shall be in the scope of contractor. (Terms of payment:AA)	3.00	Unit	0.0079465
6	<i>Reconnection of Ash Handling</i>			
6A	Ash handling system: Dismantled dry ash handling system shall be re-connected with new hopper erected incl.painting wherever required for pass -A of units#1&4.			
(a)	Completion of Re-Erection.	1.00	Unit	0.0045030
(b)	Cleaning of ash after dismantling.	1.00	Unit	0.0004238
(c)	Painting.	2.00	Unit	0.0002119
(d)	Trail operation test.	2.00	Unit	0.0001060
(e)	Testing and punch list point.	2.00	Unit	0.0002119
(f)	Completion of Contractual obligation.	1.00	Unit	0.0001060
6B	Ash handling system: Dismantled dry ash handling system shall be Re-connected with new hopper erected incl.painting wherever required for pass -B of units#1&4.	2.00	Unit	0.0105953

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Sl.No.	Description of work	UOM	Qty	4
7	<i>Ducts, Gates & Dampers</i>			
(a)	Pre-assembly.	320.37	MT	0.0142014
(b)	Placement in position.	371.84	MT	0.0296689
(c)	Alignment and welding.	371.84	MT	0.0098897
(d)	Restoration of flue gas conditioning system/Ammonia Dosing System.	501.00	MT	0.0008883
(e)	Completion of leak test and permanent supports.	371.84	MT	0.0032965
(f)	Charging of ducts.	371.84	MT	0.0026372
(g)	Trial operation of unit.	501.00	MT	0.0008883
(h)	Area cleaning, Temporary structures cutting/ Removal and Return of scrap.	501.00	MT	0.0008883
(i)	Punch list points/ Pending points Liquidation.	501.00	MT	0.0008883
(j)	Material Reconciliation.	501.00	MT	0.0008883
(k)	Completion of contractual obligation.	320.37	MT	0.0005681
8	<i>Insulation</i>			
(a)	Completion Of Required Scaffoldings, Huck Welding and lagging Of wool	245.54	MT	0.0277703
(b)	Cladding Including Completion Of Final Sheeting Work	245.54	MT	0.0128171
(c)	Material Reconciliation.	245.54	MT	0.0012817
(d)	Completion of contractual obligation.	245.54	MT	0.0008545
9	<i>Electrical Works</i>			
9A	Erection, Testing & Commissioning of Electrical Items (Supplied by BAP/ Ranipet, EDN, RMSG) as per SOW in pass A of Unit#1 and Unit#3 (Terms of payment:BB)	2.00	Unit	0.0282542
9B	Erection, Testing & Commissioning of Electrical Items (Supplied by BAP/ Ranipet, EDN, RMSG) as per SOW in pass B of Unit#1 and Unit#3 (Terms of payment:BB)	2.00	Unit	0.0282542

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Sl.No.	Description of work	UOM	Qty	4
9C	Erection, Testing & Commissioning of Electrical Items (Supplied by BAP/ Ranipet, EDN, RMSG) as per SOW in pass C of Unit#1 and Unit#3 (Terms of payment:BB)	2.00	Unit	0.0282542
9D	Erection, Testing & Commissioning of Electrical Items (Supplied by BAP/ Ranipet, EDN, RMSG) as per SOW in pass A of Unit#4			
(a)	Gas Distribution Test	1.00	Unit	0.0002119
(b)	PG Test	1.00	Unit	0.0002119
9E	Erection, Testing & Commissioning of Electrical Items (Supplied by BAP/ Ranipet, EDN, RMSG) as per SOW in pass B of Unit#4 (Terms of payment:BB)	1.00	Unit	0.0211907
II	Control Panel shifting, other misc electrical works in ESP control room for Unit#1 & Unit#3 (Terms of payment:CC)			
	1. Disconnecting old Cables (power, control, feedback) from Old EC panels and Junction boxes. a. EC panel power cables 2Cx95 Sq.mm. —28 nos. b. EC panel control cables 10Cx1.5 Sq.mm. — 14 nos. c. EC panel feedback cables 4Cx1.5 Sq.mm. —14 nos. d. EC panel feedback cables 3Cx1.5 Sq.mm. —14 nos. e. Junction Box 3.5Cx50 Sq.mm. — 01 no. f. Junction Box 4Cx16 Sq.mm. — 02 nos. g. Junction Box 4Cx4 Sq.mm. — 03 nos. h. Junction Box 4Cx6 Sq.mm. — 02 nos. i. Junction Box 12Cx1.5 Sq.mm. — 01 no. j. Junction Box 3C x2.5 Sq.mm. --15 nos.			
	2. Disconnection /Removal of earth flats (02 nos. for each panel) from 14 old EC panels(pass-A&B).			
	3. Shifting of pass-A&B EC panels and junction boxes (06 nos.) along with required modification			

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Sl.No.	Description of work	UOM	Qty	4
	<p>4. Reconnecting of Old Cables(power, control, feedback) to Old EC panels and Junction boxes.</p> <p>a. EC panel power cables 2Cx95 Sq.mm. —28 nos.</p> <p>b. EC panel control cables 10Cx1.5 Sq.mm. — 14 nos.</p> <p>c. EC panel feedback cables 4Cx1.5 Sq.mm. —14 nos.</p> <p>d. EC panel feedback cables 3Cx1.5 Sq.mm. —14 nos.</p> <p>e. Junction Box 3.5Cx50 Sq.mm. — 01 no.</p> <p>f. Junction Box 4Cx16 Sq.mm. — 02 nos.</p> <p>g. Junction Box 4Cx4 Sq.mm. — 03 nos.</p> <p>h. Junction Box 4Cx6 Sq.mm. — 02 nos.</p> <p>i. Junction Box 12Cx1.5 Sq.mm. — 01 no.</p> <p>j. Junction Box 3C x2.5 Sq.mm. —15 nos.</p> <p>5. Reconnecting earth flats (02 nos. for each panel) from 14 old EC panels(pass-A&B).</p> <p>6. Jointing of cables in EC Panels and JB's if required:</p> <p>a. EC panel power cables 2CX 95 Sq.mm.—28 nos.</p> <p>b. EC panel control cables 10CX1.5 Sq.mm. — 14 nos.</p> <p>c. EC panel feedback cables 4Cx 1.5 Sq.mm.—14 nos.</p> <p>d. EC panel feedback cavles 3Cx 1.5 Sq.mm.—14 nos.</p> <p>e. Junction Box 3.5Cx50 Sq.mm. — 01 no.</p> <p>f. Junction Box 4Cx16 Sq.mm. — 02 nos.</p> <p>g. Junction Box 4Cx4 Sq.mm. — 03 nos.</p> <p>h. Junction Box 4Cx6 Sq.mm. — 02 nos.</p> <p>i. Junction Box 12Cx1.5 Sq.mm. — 01 no.</p> <p>j. Junction Box 3C x2.5 Sq.mm. —15 nos.</p>	Unit	2	0.0055675

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Sl.No.	Description of work	UOM	Qty	4
	<div>7. Disconnecting of old cables (Power, control, feedbak) in Old ACP panel. a. EOH power cable: 3Cx10 Sq.mm. --01 no. Collecting and Emitting electrode motors power cables: 3Cx6 Sq.mm.-- 14 nos. c. Collecting and Emitting electrode motors control cables: 10Cx1.5 Sq.mm.-- 06 nos. d. Support insulator heater power cable: 3Cx35 Sq.mm.-- 01 no. e. Support insulator heater control cable: 3Cx1.5 Sq.mm.-- 01 no. f. Shaft insulator heater power cable: 3Cx10 Sq.mm.-- 01 no. g. Hopper heater power cables: 3Cx10 Sq.mm.-- 07 nos. h. Hopper heater control cables: 10Cx1.5 Sq.mm.-- 02 nos.</div> <div>8. EC panel power cables re-routing from Old LTMSB panel to new ESP Switchgear panel for pass-A: 2Cx95 Sq.mm.-- 07 nos.</div> <div>9. Termination of old cables (power, control, feedback) in old ACP panel a. EOH power cable: 3Cx10 Sq.mm. --01 no. b. Collecting and Emitting electrode motors power cables: 3Cx6 Sq.mm.-- 14 nos. c. Collecting and Emitting electrode motors control cables: 10Cx1.5 Sq.mm.-- 06 nos. d. Support insulator heater power cable: 3Cx35 Sq.mm.-- 01 no. e. Support insulator heater control cable: 3Cx1.5 Sq.mm.-- 01 no. f. Shaft insulator heater power cable: 3Cx10 Sq.mm.-- 01 no. g. Hopper heater power cables: 3Cx10 Sq.mm.-- 07 nos. h. Hopper heater control cables: 10Cx1.5 Sq.mm.-- 02 nos.</div> <div>11. Testing and trial run of old equipments of pass-A with new Switchgear panel(ACP).</div>			
III	Pending Punch points : Pending works for Duct and ESP of Unit#4			

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Sl.No.	Description of work	UOM	Qty	4
1	Specific for PASS – A			
(a)	Illumination of Pass-A of Unit#4.	Lumpsum	1	0.0006357
(b)	IOS for Unit#4 Pass- A of Unit#4.	Lumpsum	1	0.0002119
(c)	Erection of Interlock JB	Lumpsum	1	0.0002119
(d)	Removal of Scaffolding.	Nos.	150	0.0001539
2	Common for PASS – A & B			
(a)	Erection of hoist (Common)	Lumpsum	1	0.0002119
(b)	Re-erection of dismantled structure of outlet duct.	Lumpsum	1	0.0002055
Total Weightage				1