

NTPC LTD
CPG-1/Raipur

VENDOR DEVELOPMENT CELL

Sub: Qualifying Requirement (QR) for Vendor Enlistment for “Application of paint on steel structures, pipelines & equipment” for various NTPC Stations” Under OFF-07

A)	MEG DETAILS		
	1.0	MEG NO.	OFF-07
	2.0	MEG DESCRIPTION	Application of paint on steel structures, pipelines & equipment” for various NTPC Stations
	3.0	RESPONSIBILITY CENTRE	CPG-1/ VDC
B)	<p>Technical Criteria:</p> <ol style="list-style-type: none"> 1. The applicant should have executed the work of application of paint on metallic surfaces for height not less than 15-meter within the preceding last five (5) years from the date of application. 2. The applicant should have executed the work of application of paint on metallic surfaces for a minimum value of Rs. 4 lakhs in a single PO/award/contract within the preceding last five (5) years from the date of application. 		
C)	<p>Other Documents to be uploaded: In addition to the documents required in support of Qualifying Requirements as stated at B) above, following documents are also required to be uploaded by the applicants applying for enlistment: -</p> <p>QR1. Three POs of the highest executed values of similar works during previous five years from the date of application. Copy of Invoice / Completion certificate from the concerned buyer/s in support of successful execution of supply against the POs to be submitted.</p> <p>QR2. Audited balance sheet including Profit & Loss statement for the previous three completed financial years reckoned from the date of application. In case the audited documents are not ready / available, then certified copy by a registered practicing Chartered accountant may be submitted.</p> <p>QR3. NSIC / SSI / MSME registration certificate.</p> <p>QR4. PF and Service Tax registration certificate</p> <p>QR 5. Any other documents in addition to the above which the applicant wants to submit.</p> <p>NTPC can ask more documents if felt necessary. Also, all documents/ facilities can be verified/ assessed if required.</p>		

D)	Similar Works	Similar work means applicant should have executed paint application work (s) on metallic surfaces within the preceding last five (5) years from the date of application.
E)	BRIEF SCOPE OF WORK	The scope of work includes application of paint on internal/external surfaces of pipelines, tanks, equipment and metallic structures in Boiler area, TG area, Ash handling plant, Water treatment plant, Coal handling plant, CW pump house, Make-up water pump house and anywhere on steel surfaces in NTPC plant. Supply and erection of 'Scaffolding' / 'Manlift or boom lift' will be in the scope of applicant.
F)	QUALITY PLAN	ATTACHED
G)	Category of Enlistment	CATEGORY-1



1.0 SCOPE OF WORK

The scope of work includes application of paint on internal/external surfaces of pipelines, tanks, equipment and metallic structures in Boiler area, TG area, Ash handling plant, Water treatment plant, Coal handling plant, CW pump house, Make-up water pump house and anywhere on steel surfaces in NTPC plant. Painting work may be required to carry out up to a height ofm.

2.0 PAINT MATERIALS (NTPC SCOPE)

The following painting system(s) has to be applied. Supply of paints is in NTPC scope. The system may consist of two (2)/ three (3) coats of necessary Dry Film Thickness (DFT):

Table 1 (Indentors may add more tables as per painting systems adopted for various areas/equipment):

Type of coat	Type of paint	Required DFT (in microns)
First coat		
Second coat/under coat		
Top coat		
Total Dry Film Thickness		

3.0 SURFACE PREPARATION

Before taking up the surface preparation work, the extent of work involved and the methodology for thorough cleaning of the surface shall be jointly assessed by the agency and NTPC. Accordingly, following suitable cleaning methods for surface preparation based on the surface condition may be carried out by the agency prior to painting:

- a) Hand tool cleaning: Prior to blasting / power tool cleaning, surfaces shall be free from any foreign matter such as, loosely adhering paint, weld flux, rust or thick rust scale, oil, grease, salt etc. Suitable hand tools like scrappers, brushes,



abrasive pads, chisels, knives and chipping hammers are to be mobilized by the agency. If required, water washing for removal of the salt contamination from the surface shall be done.

b) Power tool cleaning: Agency has to provide suitable power tools (pneumatic or electrically operated) tools to obtain required level of surface profile depending upon the condition of surface.

Glossy area of sound previous coatings need not be removed but should be mechanically abraded to create a surface profile to increase coating adhesion.

c) Blast cleaning: Surface preparation by copper grit blasting to achieve required surface profile depending upon the condition of surface.

Surface preparation either through Power tool cleaning or Blast cleaning shall be carried out depending upon approach of areas and metallic surface condition.


d) Surface condition immediately before painting: After the preparation of the surface to an acceptable standard of cleanliness and profile, steelwork should not be allowed to deteriorate. Re-rusting can occur very quickly. Any re-rusting of the surface should be removed by re-blasting.

e) After the surface preparation, first coat, second coat and/or topcoat should be applied. The maximum interval coat timing shall be as per manufacturer's standard data sheet or NTPC approved procedure.

f) Paint Application Requirement:

Painting shall be performed when the relative humidity of the air is less than 85% or as per manufacturer's specifications. In addition, paints shall not be applied under the following conditions:

- i. When the surface temperature is greater than 60°C.
- ii. When the air temperature is less than approximately 5°C.
- iii. When there is likelihood of an unfavorable change in weather conditions within two hours after painting.
- iv. When there is a deposition of moisture in the form of rain, condensation, frost, etc., on the surface.

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<p data-bbox="284 360 331 394">4.0</p>	<p data-bbox="443 215 1465 293">v. The applicator shall continue to track wet film thickness (WFT) during application so that correct DFT is obtained after curing and drying.</p> <p data-bbox="379 360 651 394">AGENCY'S SCOPE</p> <ol data-bbox="395 465 1465 1962" style="list-style-type: none"> 1. Before start of application of paint, painting methodology/procedure to be finalized and approval of EIC to be obtained. 2. Transportation of paints from central stores or any other location in plant to place of work is in the scope of agency. Paint materials should be stored at demarcated place in clean, cool and dry condition. Fire extinguishers should be available at place of paint storage. 3. Blasting machines, compressors and their accessories, blasting abrasive, power tools, scrappers, Gloves, Brushes, wire brushes, emery paper, buffing machines and buffing wheels, sand paper, cotton waste, markin cloth to be arranged by the agency at his own cost. For spray-painting, spray nozzles and mixing containers etc. are in agency's scope. 4. Agency has to arrange for required lettering templates towards naming etc. During letter writing, if spelling mistakes occur, contractor has to redo the lettering and no extra cost will be paid for the same. Hence, contractor has to clarify clearly before the application. 5. Machines and equipment like, compressor, nozzles, hoses etc. shall be in good order, calibrated and proven to give required performance. The compressed air should be free from moisture and oil mist. There should be a regular check on the pressure vessel, hose, compressor, and drying units. 6. For water washing, water tankers, pump, hose, nozzles etc. shall be arranged by the agency. Water shall be provided by NTPC to agency free of cost. 7. Dry film thickness meter with valid calibration certificate, Wet film thickness gauges, Motorized stirrer for paint mixing, Psychrometer for measurement of RH and all other instruments, tools and tackles required for the job and 			
<p data-bbox="336 2029 496 2078">NTPC WR-II HQ RAIPUR</p>	<p data-bbox="671 2040 986 2067">TECHNICAL SPECIFICATIONS</p>	<p data-bbox="999 2029 1275 2078">CEG FOR PAINTING APPLICATION CONTRACT</p>	<p data-bbox="1331 2051 1449 2078">Page 3 of 8</p>	





Quality inspection.


- 8. Agency should estimate the available area and calculate the required quantity of paint before mixing the paint.
- 9. Contractor has to maintain records for cleaning of surface, DFT checking of old paint before applying new paint, DFT checking of every coat. The agency shall maintain register on daily basis and should be available at the site for verification.
- 10. Agency should return the empty containers to NTPC stores through MRN. The paint reconciliation statement indicating the paint drawn from stores, paint consumed, and empty drums return should be submitted on fortnightly basis to EIC. Paint consumption may be calculated considering below table. The table shows the approximate coverage efficiencies expected for various surfaces and application conditions.


Application Method				
Surface	Coating Efficiency			
	Brush/Roller	Airless Spray/Interior	Airless Spray/Exterior	Airless Spray/Windy Conditions
New Smooth Steel	0.87	0.78	0.68	0.49
Blast Cleaned Steel	0.83	0.74	0.65	0.46
Power Tool Cleaned Steel	0.79	0.70	0.61	0.44
Blasted Steel – lightly pitted	0.79	0.70	0.61	0.44
Blasted Steel – heavily pitted	0.74	0.70	0.58	0.41
Rough Concrete or Masonry	0.61	0.66	0.47	0.34

- 11. Taking connections from Employer’s terminal points (for electricity) to

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	<p>respective work locations. Required electrical fixtures, cables, bulbs, flood lights, fittings etc. is in agency's scope.</p> <p>12. Protection of areas like name plates, view glasses, indicators, level gauges, bolts and nuts, joints etc. on the equipment shall be taken care of before painting. Special care to be taken to see that the identification bands and inscriptions are not disturbed while doing the painting jobs. Polyethylene sheets, papers and any other protection covers is in scope of agency.</p> <p>13. Cleaning of the unpainted surfaces like nameplates etc. after completion of painting, as required.</p> <p>14. For all bought out materials, tools and plants, agency shall maintain invoice/ voucher and take CISF gate entry pass before entering in to the plant. A copy of all bought out materials, tools & plants shall be submitted to the EIC prior to start the work for approval.</p> <p>15. The agency has to deploy experienced and adequate labour force of required skill in different categories such as unskilled, semi-skilled, skilled, highly skilled etc., so as to execute the works Safely, Timely and simultaneously in all the areas of work with best Quality.</p> <p>16. Since the responsibility for the quality, workmanship and accuracy of any work being carried out lies with the agency, the agency should ensure that no work is done without the presence of his competent representative at the work spot.</p> <p>17. Safety appliances like Full Body Harness safety belts (double lanyard), Safety helmets, Safety boots, and Gas masks required for the safety of the workmen and tools like Pulley blocks, Steel wire ropes, Manila ropes, Painter Goggles and gloves will have to be provided by the agency at his cost. The agency has to provide Safety Net also at his own cost as per requirement and as per decision of Engineer-In-Charge.</p> <p>18. Prior to the start of the day to day activities agency to prepare "Job Safety</p>			
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5.0	<p>Analysis” to identify potential hazards and implement preventive measures for doing work safely.</p> <p>19. The platform system is the crucial Spl. T&P of this entire work which will assist in painting work and also in speeding up the job & meet the time schedule meticulously. It shall be suitable for the job requirement and shall be arranged by the agency.</p> <p>The system may consist of scaffolding, hanging platforms, cradles, temporary lifts or combination of such systems meant to give safe approach to work areas.</p> <p>No bamboo scaffolding is permitted.</p> <p>The SOW by the agency for the platform system includes:</p> <ol style="list-style-type: none"> a) Transportation of the entire platform system components up to site, erection of the system for approach of various areas. b) Proper maintenance of the platform system throughout the execution period of the work. Repairs, if any, are to be immediately attended without hampering the work. c) Dismantling of the platform system after completion of the work and transporting back. d) All the temporary holes or cavities made for the purpose of fasteners /anchors etc., during the process of erection of platform system should be refilled suitably after the completion of work as per instructions of EIC. <p>NTPC SCOPE</p> <ol style="list-style-type: none"> 1. Electrical supply shall be provided free of cost at Employer’s terminal points. However, additional connection with necessary fittings, cables, hoses shall 			
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6.0	<p>have to be done by the agency.</p> <p>2. Water for cleaning, if required, shall be provided by NTPC to agency without any charge.</p> <p>3. The colour coding scheme of NTPC shall be followed and the scheme will be provided by NTPC.</p> <p>PERFORMANCE GUARANTEE</p> <p>The agency shall guarantee successful performance of painting system for a period of Minimum 6 months from the date of completion of the job. During guarantee period, rust index will be Ri4 as per ISO 4628-3.</p> <p>There should be joint inspection schedule by the agency and NTPC. Any defects like pinpoint rusting, blistering, peeling, flaking, inter-coat delamination, cratering, cracking etc. observed during the guarantee period shall be made good by the agency at no extra cost to the owner. The defects identified shall be rectified within one month from the date of joint inspection. No payment shall be made for the rectification works carried out during warranty period.</p> <p>Documentation: All the inspection work at various hold points is to be well documented. The daily inspection sheet, any repair work, and issues related to the work, photograph, test result, calibration documents, resolution of disputes, Non-Conformity Report, project summary etc. shall be part of it.</p>			
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7.0	<p>NOTES FOR INDENTORS (Site specific)</p> <ul style="list-style-type: none"> a) Indentor may refer OGN-OPS-SYST-028 for additional requirements of paint application works, if any. b) Indentor has to add other terms and conditions like Manpower deployment, Security Deposit, contract period, extension of contract, Payment terms, Deviation limits, safety etc. c) Indentor has to specify maximum height for paint application works. d) Surface profile to be obtained through power tool cleaning (St 3 or lower) or blast cleaning (Sa 2.5 or lower) shall be specified based on steel surface condition. e) Performance guarantee of minimum 6 months is specified. Indentor may specify more duration for performance guarantee. f) Indentor may specify suitable penalty towards cost of paint if consumed excessively by contractor. g) Indentor may specify suitable penalty towards cost of paint consumed during rectification works carried out in warranty period. h) Provision of Boom Lift / Man lift may be considered instead of Scaffolding system for height works. Work through boom lift is carried out safely and speedily. Separate line item for arranging boom lift may be added, if required. i) If scaffolding is to be used for height works, cost of scaffolding may be considered while preparing estimates. 			
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INDICATIVE FQP FOR STEEL PAINTING WORKS

SL. NO.	ITEMS / STAGE AND CHARACTERISTICS TO BE CHECKED.	METHOD OF CHECK	INSTRUMENTS	CLASS	FREQUENCY	REF. DOC & ACCEPT. NOR MS	FORMAT OF RECORD	REMARKS	
									SYSTEM
NTPC LIMITED		STEEL PAINTING WORKS				FQP			
		STRUCTURES, PIPE LINES, EQUIPMENTS, MAIN PLANT AND MISCELLANEOUS AREA							
1.0	Detailed paint application procedure by agency	Review	verification	B	100%	As per PO tech spec and Mfr's paint catalogue	Painting procedure	Prior to start of the work, vendor has to submit to NTPC for review /approval.	
2.0	Men, Tools & Consumables								
2.1	Equipment / Instruments / Testing Instrument's Calibration Certificate Verification	Visual / Verification	Visual	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
2.2	Skilled Manpower (Painter, Painting Supervisor / Engineer etc.) Verification (If Required) Sample Painting on Test Specimen for Painter	Visual / Verification	Skilled / Experience Certificate	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
3.0	In Process Inspection								
3.1	Painting/Repainting Location should be clearly identified and recorded	Visual / Verification	Visual	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
3.2	Erecting Scaffolding and Approach to ensure thorough surface cleaning, Painting and Inspection	Visual / Verification	Visual	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
3.3	Surface preparation by suitable mechanism like power tool cleaning / blast cleaning (removal of dust, grease,oil, rust)	Verification	comparison	A	100%	PO Tech Spec./ NTPC approved procedure	Site Register	At random by FQA	
3.4	Paint Consumption Record	Physical	Records & Doc. Review	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register	To be maintained Area-wise/NTPC EIC Instruction	
3.5	Primer Coat Application	Physical	Visual / Measurement	A	Random	PO Tech Spec./ NTPC approved procedure	Site Register	Ensure application of paint within stipulated time schedule (100% by execution & random by FQA)	
3.6	Maintaining Time Interval between Primer coat to Under coat	Maintain	Visual	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
3.7	Under Coat Application	Physical	Visual / Measurement	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
3.8	Maintaining Time Interval between Under coat to Top coat	Maintain	Visual	B	100%	PO Tech Spec./ NTPC approved procedure	Site Register		
3.9	Top Coat Application	Physical	Visual / Measurement	B	Cover 100% Areas	PO Tech Spec./ NTPC approved procedure	Site Register		
3.10	Identifying with date of completion of final painting on the structure / location/equipment	Verification	Visual	B	one location	PO Tech Spec./ NTPC approved procedure	Site Register	To be maintained Area-wise/NTPC EIC Instruction	
4	Final Inspection								
4.1	Final Painting Thickness (After Application of final Coat)	Physical	Visual / Measurement	A	Random	PO Tech Spec./ NTPC approved procedure	Site Register	100% measured by Agency, Random Cross-check by EIC. Random witnessed by FQA	
4.2	Rust Index Ri4 as per ISO-4628-3, After six month(min)/PO warranty period	Physical	Visual	A	Cover 100% Areas	PO Tech Spec./ NTPC approved procedure	Report/Site register	100% measured by Agency, Random Cross-check by EIC. Random witnessed by FQA	
Legend:- A. Critical = Agency Engineer+Execution + FQA B. Major = Agency Engineer+ Execution C. Minor = Agency Quality Supervisor/Engineer		MTC - Manufacturer's Test Certificates SR - Site Register IR - Inspection Reports							
Note : 1) Original Paint Thickness, after Primer, after Intermediate and after final coat, paint thickness should be recorded 2) Before every coat/every time specified, environment (Temp/Humidity/Dew Point) as per PO/Paint Mfr's recommendations are to be maintained and recorded									
		AGENCY		PREPARED & REVIEWED BY			APPROVED BY :		
Signature / Date									
Name									

Note: Reference and Acceptance norms shall be derived from following in the same sequence-
 1) NTPC Approved drawing / data sheet 2) NTPC tech specs 3) Purchase Order 4) Relevant national standard
 5) Relevant International standard 6) Manufacturer's standard 7) Good Engineering practices