

**NTPC Limited**

**Vendor Development Cell, CPG-1, Nava Raipur**

**Qualifying Requirement for Vendor Enlistment for Supply & installation of Fill material”  
for Various NTPC Stations (Category-1, non-Critical)**

A	CEG Details		
		CEG No.	OFF-10
		CEG DESCRIPTION	Supply & installation of Fill material
		BRIEF SOW	<b>Scope of work consists of</b> supply and installation of new fill material as per technical specifications, removal of old/damaged fill material and buyback/disposal of old fill material <b>(Detailed Scope of work and Standard Quality Plan attached for applicant compliance)</b>
		RESPONSIBILITY CENTRE	<b>CPG-1/ VDC</b>
<b>B</b>	<b>TECHNICAL CRITERIA OF QR:</b>		
B.1	<p>(a) The applicant should have supplied and installed PVC/PP ‘Film Fills/ Fill Sheets/ V-bar/Splash Fills’ in cooling tower(s) of capacity 15000 m3/hr or more during last five years prior to the date of submission of enlistment application.</p> <p><b>Supporting Documents:</b></p> <p>(b) ‘Purchase Order(s) / Purchase agreements and proof of execution (Invoice(s) / E-way Bills)/delivery challan Copy’ in support of Cooling Tower PVC/PP ‘Film Fills/ Fill Sheets/ V-bar/Splash Fills’ supplied by the applicant during last five years prior to the date of submission of enlistment application.</p> <p>(c) Refer Clause-9.0 of the Standard Terms &amp; Conditions STC.</p> <p>(d) PVC: Poly Vinyl Chloride and PP: Poly Propylene.</p>		
C	<p><b>Similar works means:</b> The applicant should have executed order(s) meeting technical criteria B.1.</p> <p><b>Notes: -</b></p> <p>1.In case applicant has executed reference work under two orders one for supply and one for services separately for the same work, combined value of both the orders shall be considered as a single order for the purpose of calculation of EC.</p> <p>2. in case, the reference order includes supply and installation of Nozzles and Drift Eliminators also, executed value of same shall be considered for purpose of calculation of EC.</p>		

**D Other Required Documents for Evaluating the Execution Capability (EC):**

**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: -**

1. **Three POs of the highest executed values of Credential Work Order(s) / similar works (refer SI.No. C)** during previous five years from the date of application. Copy of Invoice(s) / Completion certificate(s) from the concerned buyer(s) / Client(s) in support of successful execution of supply against the POs to be submitted.
2. Audited balance sheet including Profit & Loss statement for the previous three completed financial years reckoned from the date of application. In case the audited result for the preceding financial year is not available, certification of financial statements from a practicing-chartered accountant is to be uploaded. In case, applicant is not able to submit the certificate from practicing chartered accountant certifying its financial parameters, the audited results of the three consecutive financial years preceding the last financial years shall be considered for evaluating the financial parameters. Further, a certificate would be required from the CEO/CFO stating that the financial results are under audit as on date of application and certificate from the practicing chartered accountant certifying the financial parameters are not available.
3. In case the applicant is not able to furnish its audited financial statements on stand-alone entity basis, the unaudited unconsolidated financial statements of the applicant can be considered acceptable provided the applicant further furnishes the following documents for substantiation of its qualification.
  - (a) Copies of the unaudited unconsolidated financial statements of the applicant along with copies of the Audited consolidated financial statements of its Holding Company.
  - (b) A Certificate from the CEO/CFO of the Holding Company, as per the format enclosed in the bidding documents, stating that the unaudited unconsolidated financial statements form part of the Consolidated Annual Report of the company.

**Note:**

- (i) Maximum Three Credential Order(s) / Similar Work(s) shall be considered for calculation of the EC.
- (ii) "All other terms & conditions of enlistment are as per the STC available at VDC portal <https://vdc.ntpc.co.in>'.

	<b>(iii)</b> NTPC may ask for more / shortfall documents, if any.	
<b>E</b>	<b>QUALITY PLAN (IF APPLICABLE)</b>	<b>ATTACHED</b>
<b>F</b>	<b>Category of Enlistment</b>	<b>CATEGORY-1 (Up to 4 Crore)</b>

**COOLING TOWERS – SUPPLY AND INSTALLATION OF FILL MATERIAL**

**1.0 Scope of work:**

Scope of work consists of supply and installation of new fill material as per technical specifications, removal of old/damaged fill material and buyback/disposal of old fill material.

Film Fill packs / Splash fills (V-bars) / Any other type of fill material (specify as per site installation / requirement) required for .....no. of cells of cooling tower installed by M/s .....at NTPC .....

The type of fill to be supplied shall be of proven design. Necessary supporting data for this shall be provided for NTPC review and records before manufacturing of fill material. The fill material shall promote high rate of heat transfer, provide low resistance to air flow and maintain uniform water and air distribution throughout the fill volume.

Fill material height in Cooling tower varies from EL.....to EL.....m

**2.0 Technical Specifications:**

1) **Dimensional details of fill material:** The sizes of the splash fills/Film fills/any other type of fill material are as following: (Indenter should specify as per site installation / requirements)

*(a) Film Fill packs*

Volume of one set = .....m<sup>3</sup>

Fill pack Size - (Length x Breadth x Height) (different pack sizes may be specified by site as per installed fill packs)

Quantity required in one cell = .....set OR m<sup>3</sup>

Finished Thickness should be minimum 0.25 mm. Further, the edges of the fill shall be strengthened with higher finished thickness by double folding or by providing higher finished thickness of at least 0.275 mm throughout the edges of the fill.

Spacing (flute size) between two consecutive sheet of fill pack should be 17-19 mm

OR

*(b) Splash Fills (V- bar)*

CLAUSE NO.	TECHNICAL REQUIREMENTS
	<p>1. Length of splash bar (V-bar) = ..... (different lengths may be specified by indenter)</p> <p>2. Thickness of splash bar = 1.5 mm / 1.8 mm (or as per site requirement)</p> <p>3. Wire mesh: Size of the Grid, Grid Spacing &amp; Type of Grid</p> <p>4. PP clip (Bench Tie) / Nylon tie / Grid lock / Grid Support channel</p> <p>Approximate quantity in one cell: .....nos.</p> <p>OR</p> <p>(c) Any Other fill material (as per site installation / requirement)</p> <p>2) <b>Material of Construction of fill material:</b> The fill material shall be highly resistant to deterioration and shall be fire retardant</p> <p>(a) <u>Film Fill packs</u></p> <p>The fill material shall meet the requirements of CTI STD-136 and ASTM D792 Virgin PVC/PP U.V. Stabilized with titanium dioxide conforming to CTI-136 standard.</p> <p>Color of fill sheets –light grey (as per ISC no 631 of IS:5) or white. Black fills are not acceptable.</p> <p>OR</p> <p>(b) <u>Splash Fills</u></p> <p>The fill material shall meet the requirements of CTI STD-136</p> <p>Virgin PVC/PP U.V. Stabilized with titanium dioxide conforming to CTI-136 standard.</p> <p>Fills shall be white/cream/light grey. Black fills are not acceptable.</p> <p>Wire mesh – SS304/SS316L/ MSHDG</p> <p>PP clip / Nylon tie / MOC of Grid lock / Grid Support channel</p> <p>OR</p> <p>(c) Any Other fill material (as per site installation / requirement)</p> <p>3) Ultra-violet exposure for 500 hours on the PVC/PP material shall be carried out for this contract once as per ASTM-G 155 / ISO 4892 or</p>



- (g) Party has to maintain the working area neat and tidy. If cleaning is not maintained up to the satisfaction of EIC & felt necessary, NTPC reserve the right to get the required work done by other agency and back charge the cost to the supplier.
- (h) Material transportation within plant premises will be in agency scope.
- (i) If required, party may have to deploy its manpower on Sundays or holidays on round the clock basis as per job requirement and instruction of EIC without any extra cost. However, under normal circumstances they will be deployed during general shift timings.
- (j) Party has to submit all statutory documents regarding worker wage payment like PF, ESI, bank payment etc.
- (k) Contractor has to provide safety equipment as per statutory requirements like helmets, safety shoes, safety belts etc. to his working personnel.

**5.0 Bill of Quantities:**

Description	UoM	Quantity
Supply of fill packs / Splash fills (V-bar) of size..... including buyback / disposal of old fills (different sizes may be specified by indenter in separate line items as required)	Set / nos	As per site requirement
Removal of old fills & installation of new fills	No of cells	As per site requirement

**6.0 Terms & conditions (Indenter to specify relevant clauses as per type of fill material):**

- a) Quoted material price by agency shall include buyback/disposal price of the old removed fills outside plant premises in environment friendly way. Quotation only for material supply & installation of fills without buyback/disposal will not be considered.
- b) Party may assemble the fill sheets into packs at NTPC premises or bring ready to use fill packs to site (as applicable).
- c) In case packs are made at site from fill sheets, party has to bring all necessary T&P & consumables to site to make packs from the fill sheets (as applicable).
- d) Necessary scaffolding / boom lift / Scissor lift has to be erected / arranged up to the fill level to remove the existing fill packs. Remove the existing fill packs carefully so that no other cell internals get damaged.

CLAUSE NO.	TECHNICAL REQUIREMENTS			
	<p>e) Repair the structure if found bend or damaged &amp; get it checked by EIC/representative. Any Spares required for this will be provided by NTPC.</p> <p>f) All care has to be taken to ensure no debris or broken/loose fill material enter into the cold basin/Open Air Channel (OAC)</p> <p>g) Storage and safety of fill sheets at site will be responsibility of party (as applicable).</p> <p>h) Material testing &amp; acceptance:</p> <ul style="list-style-type: none"> <li>i. PDI will be done as per NTPC Standard Quality Plan (SQP).</li> <li>ii. Final Acceptance of material after inspection at site in pack forms only (as applicable).</li> </ul> <p>i) Payment terms: i) Material Supply: 90% of material cost will be released after receipt &amp; acceptance of material at site. Balance 10 % of the material supply will be released after completion of disposal of removed fills outside the plant premises.</p> <p>ii) Installation(replacement): 90% of installation cost will be released in parts (cell wise) after completion of installation work in individual cells. Balance 10% will be released after completion of disposal of removed fills outside the plant premises.</p> <p>j) Security Deposit: as per GCC</p> <p>k) Defect liability period:</p> <p>Material: 18 months from the date of supply or 12 months from the date of installation, whichever is earlier</p> <p>Services: 3 months from the date of installation</p> <p>l) Third Party Liability and workman compensation policy: as per GCC</p> <p>m) Contract Variation: as per GCC</p> <p>n) Time extension: Not allowed</p> <p><b>Site specific conditions (to be noted/incorporated by indenter):</b></p> <ul style="list-style-type: none"> <li>i. Contract period, Delivery period of material, installation schedule, safety amount and safety conditions, GeM report etc.</li> </ul>			
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CLAUSE NO.	TECHNICAL REQUIREMENTS			
	<p>ii. Supply &amp; installation of scaffolding / boom lift / scissor lift, as required. If required, separate line item may be created in proposal.</p> <p>iii. NTPC Circular no. 764 is applicable</p> <p>iv. Stations may indent some spare quantity for maintenance works. Quantity required as spare should be clearly brought out in proposal.</p> <p>v. If enlisted agency is not a fill material manufacturer, agency should source the material from manufacturer meeting Sub-QR mentioned in PR proposal.</p> <p><b>vi. Conditions regarding replacement of fills during running conditions (as required)</b></p> <p>a) Party has to take permit from EIC or representative of EIC before entering the cell.</p> <p>b) Fabricate and install framed wire mesh at cold water basin outlet channel to prevent broken fills arising out of existing fill packs from going to condenser. Material required for fabrication of wire mesh will be provided by NTPC.</p> <p>c) Party has to ensure closure of riser valves &amp; fan of the cell in which work has to be done.</p> <p>d) Necessary scaffolding has to be erected up to the fill level to remove the existing fill packs. Remove the existing fill packs carefully so that no other cell internals get damaged.</p> <p>e) This job has to be done during running of the tower hence proper platform has to be erected over the cold basin of the cell &amp; complete covering of both sides to ensure that no debris/loose sheets arising out of the job go into the cold basin.</p> <p>f) All care has to be taken to ensure no debris or broken/loose fill sheets enter into the cold basin while dislodging the existing fill packs.</p> <p>g) All the mud &amp; broken fill sheets falling on the platform &amp; sides of the basin are to be removed &amp; shifted to identified location immediately.</p> <p>h) Start erecting new fill sheets &amp; position properly.</p>			
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CLAUSE NO.	TECHNICAL REQUIREMENTS
	<p>i) Care has to be taken not to damage the structure while erecting fill sheets.</p> <p>j) Replace/repair any damaged component of the distribution system like nozzles, pipes if damaged during the job. Arrange the drift eliminators properly if disturbed during this job.</p> <p>k) Shift the old fills, mud &amp; other scraps arising out of the job to the location identified by EIC/Representative.</p> <p>l) Remove the platform after getting clearance from EIC/representative.</p> <p>m) After successful running of the cell, permit for next cell will be given. There may be a time delay of one or two days in between that.</p> <p>n) Repeat the same procedure in all cells of the tower.</p> <p>o) The wire mesh installed at the outlet has to be cleaned whenever there is level difference across it.</p> <p>p) Site cleaning to be done after total completion of the job.</p> <p>q) Total job in one cell has to be completed within ..... days. However, job may be taken up in two cells at a time depending on front availability.</p> <p>r) Any other condition not specified above.</p>





USSC-CPG1

PPG-QA



## Standardised Quality Plan

Item	CT Fills
SQP No.	CPG-QA-SQP-M-036
Rev	01

 NTPC	ITEM (material, class, grade, rating, range, size etc.)	<b>STANDARD QUALITY PLAN</b>				QP NO.: 0000-99 9QOM - S - 070		REVIEWED BY: <i>Satya Narayan</i>	APPROVED BY: <i>B. C. ROY</i>					
	<b>FILLS FOR COOLING TOWER</b>	CONFORMING TO CODE: CTI 136				Rev. No	01	Date	06.01.2020	SATYA NARAYAN				
		Page 1 Of 1							M KHALIQUZZAMA					
SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C / N				D*	M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D*	10.			11.

IN PROCESS INSPECTION AND FINAL INSPECTION															
A	PHYSICAL PROPERTIES	TENSILE STRENGTH AT YIELD	MAJOR	MECHANICAL	1 SAMPLE PER DAY		ASTM D638 / ASTM D882	CTI STD-136	TC	√	P	V	V/W	SEE NOTE - 1	
		FLEXURAL STRENGTH	MAJOR	MECHANICAL	1 SAMPLE PER DAY		ASTM D790	CTI STD-136	TC	√	P	V	V/W		Flexural Strength applicable for PVC only
		FLEXURAL MODULUS	MAJOR	MECHANICAL	1 SAMPLE PER DAY		ASTM D790	CTI STD-136	TC	√	P	V	V/W		
		IMPACT RESISTANCE - GARDNER /Notched Izod	MAJOR	MECHANICAL	1 SAMPLE PER DAY		ASTM D4226/D256	CTI STD-136	TC	√	P	V	V/W		
		HEAT DEFLECTION TEMPERATURE AT 264 psi (1.82 mPa)	MAJOR	PHYSICAL	1 SAMPLE PER DAY		ASTM D648 (ANNEALED)	CTI STD-136	TC	√	P	V	V/W		
		FIRE RETARDANT TEST	MAJOR	PHYSICAL	1 SAMPLE PER DAY		ASTM D 635	SELF EXTINGUISHING TYPE	TC	√	P	V	V/W		
		U.V. RESISTANCE TEST (500 HOURS OF UV EXPOSURE & THEN RETEST FOR IMPACT TEST)	MAJOR	U.V. TEST	1 SAMPLE PER CONTRACT ORDER		ASTM G155	CTI STD-136 TECHNICAL SPECIFICATION	TC	√	P	V	V	SEE NOTE - 2	
B	FINISHED FILLS	APPEARANCE, & FINISH	MAJOR	VISUAL	100%	RANDOM	NO BUBBLES, NO PIN HOLES		IR	√	P	W	W		
		THICKNESS, WIDTH	MAJOR	MEASURE	100%	RANDOM	APPROVED DRAWING / APPROVED DATA SHEET		IR	√	P	W	W		
<b>NOTE</b>															
1	THE REPRESENTATIVE SAMPLE FROM FINISHED PRODUCT (EVERY DAY PRODUCTION) SHALL BE TAKEN TO CONDUCT ROUTINE TESTS. EVERYDAY PRODUCTION SHALL BE SEGREGATED AND TAG MARKED WITH DATE OF PRODUCTION. NTPC INSPECTOR WILL SELECT RANDOMLY SAMPLE FROM FINISHED PRODUCT (IDENTIFIED WITH TAG OF DATE OF PRODUCTION, ONE SAMPLE FROM ANY DAY OF PRODUCTION LOT RANDOMLY SELECTED) AND WILL WITNESS ALL ROUTINE TESTS DURING FINAL INSPECTION.														
2	ONE REPRESENTATIVE SAMPLE SHALL BE RANDOMLY SELECTED BY NTPC, ONCE PER ORDER WHICH WILL BE TESTED FOR UV RESISTANCE AT THIRD PARTY LABORATORY COMPLYING WITH ISO/IEC-17025 ACCREDITED BY NABL OR SUCH ACCREDITING AGENCY.														

- 3 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.
- 4 Main Contractor Column may please be ignored.

**LEGEND:** \* RECORDS, IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.  
 \*\* M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE, CHP: NTPC SHALL IDENTIFIED IN COLUM "N"