NTPC LTD

VEC, RAIPUR

Subject: Qualifying requirement for Vendor Enlistment for Supply and Installation of Fills in Cooling Tower(s)

A	**CEG No.**	OFF-10 A(Cat-I, 50 Lakh to 4.0 Cr)
	Brief description of MEG	Supply and installation of Fills in Cooling Tower(s)
	Responsibility Centre	VEC
	Brief scope of work	Supply and Installation of new fills and disposal/buyback of old Fills. Note: The detail scope of work & other Terms & conditions would be specified separately in the Tender against the specific requirements
	ENLISTMENT PROCESS	1) Subject enlistment is for enlistment of vendors for "Supply and installation of Cooling Tower fills" (Refer Annexure-I for scope of work). 2) Applicants who meet QR criteria at Sl. No. B shall only be enlisted. 3) Enlisted vendors as per their execution capability (EC) will be issued tender enquiries for station specific packages. The scope of work of these tenders will generally comprise as detailed in Annexure-I (scope of work) under the station specific tender(s). (Refer Annexure-I for scope of work).
B	**TECHNICAL CRITERIA OF QUALIFYING REQUIREMENT(QR):** 1. The applicant should be a manufacturer of 'Poly Vinyl Chloride (PVC) or Poly Propylene (PP)' fills for industrial Cooling Tower(s). 2. The applicant should have executed work of Supply and Installation of 'Fills' in Cooling Tower(s) having minimum executed value **Rs 50 lakhs (Fifty lakhs)**, in any single order during last five years as on the last date of submission of the application for enlistment. **Notes:** i. For the purpose of QR evaluation, Fills (mentioned at Sl. no. 1 & 2 above) mean Film fill pack/ Film fill sheet/ V-bar/ Grid fill/Splash fill/Trickle grid/Golden grid along with all accessories. ii. The word "Executed" mentioned above means that the Applicant should have achieved the criteria specified above, even if the total contract is started earlier and/or is not completed/closed. iii. Reference work executed by the Applicant as a Sub-Contractor may also be considered provided the Certificate issued by Main Contractor is duly certified by owner specifying the scope of work executed by the sub-contractor in support of qualifying requirements. iv. Value means 'executed value' of the PO excluding taxes. Where PO value is composite (i.e., including taxes etc.), the applicant has to give break up of composite PO value mentioning executed value, taxes etc.	

	v. In case, the Applicant has executed the Reference work under two orders one for supply and one for services separately for the same Installation/Plant, combined value of both the orders shall be considered as a single order for the purpose of evaluation.
C	Documents to be submitted as proof of meeting the stipulated Qualifying Requirements: i. Latest annual report OR Udyam / NSIC / SSI / MSME registration certificate / BIS license /ISO certificate / Certificate of registration from the concerned excise department / Material Dispatch Clearance Certificate (MDCC) / any other statutory document as a proof of being manufacturer of the required material. ii. PO / Invoice / client's completion certificate/RA bill/Final deviation statement/ Delivery challan copy in support of Supply and Installation of Fills by the applicant during last five years as on the last date of submission of the application for enlistment.
D	**Capacity & Capability assessment:** The Employer reserves the right to undertake Physical Assessment of the Capacity and Capability of the Applicant regarding Manufacturing and Testing facilities etc., should the circumstances warrant for such assessment in the overall interest of the Employer.
E	**Other Documents to be uploaded**: In addition to the documents required in support of Qualifying Requirements as stated above, following documents are also required to be uploaded by the applicants applying for enlistment: - 1. Three POs of the highest executed values of **similar works**. However, only those POs shall be considered for arriving Execution Capability where executed work of 'supply and installation of cooling tower fills' have minimum executed value Rs 50 lakhs (Fifty lakhs). Copy of completion certificate/RA bill from the concerned client in support of successful execution of works against each of the POs to be submitted. NTPC may ask for more / shortfall documents, if any. 2. Audited balance sheet including Profit & Loss statement for the previous three completed financial years reckoned as the last date of submission 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 the last 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.
	Notes: **(i)** **Similar Works** means- As per Sl. no. B.2 above read in conjunction with Sl.no. B (Notes). **(ii)** Maximum Three Credential Order(s) of Similar Work(s) shall be considered for calculation of the EC. **(iii)** "All other terms & conditions of enlistment are as per the STC available at VEC portal https://vdc.ntpc.co.in'.

ANNEXURE-1
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 enclosed along with the supply of 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

The bidder shall submit test report of an independent reputed laboratory for thermal Characteristic and pressure drop Correlation of the offered fill OR technology provider test report or collaborator test curve/report.

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) <u>Film Fill packs</u>

Volume of one set = ……..m3

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 m3

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)

1. Length of splash bar (V-bar) = …… (different lengths may be specified by indenter)
2. Thickness of splash bar = 1.5 mm / 1.8 mm (or as per site requirement)
3. Wire mesh: Size of the Grid, Grid Spacing & Type of Grid
4. PP clip (Bench Tie) / Nylon tie / Grid lock / Grid Support channel

   Approximate quantity in one cell: ……nos.

   OR

(c) Any Other fill material (as per site installation / requirement)

2) **Material of Construction of fill material:** The fill material shall be highly resistant to deterioration and shall be fire retardant

(a) Film Fill packs

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.

Color of fill sheets –light grey (as per ISC no 631 of IS:5) or white. Black fills are not acceptable.

OR

(b) Splash Fills

The fill material shall meet the requirements of CTI STD-136

Virgin PVC/PP U.V. Stabilized with titanium dioxide conforming to CTI-136 standard.

Fills shall be white/cream/light grey. Black fills are not acceptable.

Wire mesh – SS304/SS316L/ MSHDG

PP clip / Nylon tie / MOC of Grid lock / Grid Support channel

OR

(c) Any Other fill material (as per site installation / requirement)

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 equivalent and Impact resistance test before and after UV exposure shall be conducted as per CTI-136. Impact resistance after UV test shall be equal to or more than 90% of the impact resistance as specified in CTI STD-136. The above type test shall be carried out by the contractor at reputed third-party laboratory.

4) Routine tests shall be as per NTPC Standard Quality Plan.

3.0 NTPC Scope

NTPC shall provide place for cleaning of old fills, electric point & lighting arrangement for crushing these fills into small pieces and also for gluing of sheets to make Fill Packs with lighting arrangement as free of cost. NTPC shall also provide a designated space for dumping of dust, mud etc. (eliminated from old fills) within its premises.

Free electricity at nearby available location shall be provided by NTPC free of cost. However, party has to make its own arrangement to draw power from that location to the work area at its own cost.

4.0 Contractor Scope

(a) Before submitting offer, agency may visit site for any clarification and to ensure correct fitment & interchangeability of fill materials in the existing cell structures.

(b) The disposal of old fills outside NTPC premises is to be done strictly in compliance of the environmental norms prevalent at that time. Party will be held responsible for any violation of statutory rules & regulations governing the same.

(c) Party has to indemnify NTPC for any future obligations/claims/liabilities arising out of improper disposal of fill materials, if asked for.

(d) All related expenses whatsoever is in on account of agency. Loading and unloading of compression machine/cutting machine/crushing machine and transportation charges has to be borne by the party. Transportation of old/new fills/bidder's personnel inside or outside plant boundary is to be born by the party.

(e) The required processing of the old fills to be done at location identified by the EIC.

(f) All the material shall be taken out of the company premises against valid gate pass only after weighment. Deployed Vehicles should have valid relevant papers. The driver of such vehicles should have valid license for operating the same.

(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.

e) Repair the structure if found bend or damaged & get it checked by EIC/representative. Any Spares required for this will be provided by NTPC.

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)

g) Storage and safety of fill sheets at site will be responsibility of party (as applicable).

h) Material testing & acceptance:

i. PDI will be done as per NTPC Standard Quality Plan (SQP).

ii. All tests shall be conducted as per SQP, by supplier at their own facility or NTPC approved laboratory or as mentioned in the bid document, at their own cost. Test report only, from manufacturer or NTPC approved LAB shall be acceptable.

iii. Final Acceptance of material after inspection at site in pack forms only (as applicable).

i) Payment terms: i) Material Supply: 90% of material cost will be released after receipt & 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.

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.

j) Security Deposit: as per GCC

k) Defect liability period:

Material: 12 months from the date of installation

l) Third Party Liability and workman compensation policy: as per GCC

m) Contract Variation: as per GCC

n) Time extension: Not allowed

Site specific conditions (to be noted/incorporated by indenter):

i. Contract period, Delivery period of material, installation schedule, safety amount and safety conditions, GeM report etc.

ii. Supply & installation of scaffolding / boom lift / scissor lift, as required. If required, separate line item may be created in proposal.

iii. NTPC Circular no. 764 is applicable

iv. Stations may indent some spare quantity for maintenance works. Quantity required as spare should be clearly brought out in proposal.

v. Conditions regarding replacement of fills during running conditions (as required)

a) Party has to take permit from EIC or representative of EIC before entering the cell.

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.

c) Party has to ensure closure of riser valves & fan of the cell in which work has to be done.

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.

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 & complete covering of both sides to ensure that no debris/loose sheets arising out of the job go into the cold basin.

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.

g) All the mud & broken fill sheets falling on the platform & sides of the basin are to be removed & shifted to identified location immediately.

h) Start erecting new fill sheets & position properly.

i) Care has to be taken not to damage the structure while erecting fill sheets.

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.

k) Shift the old fills, mud & other scraps arising out of the job to the location identified by EIC/Representative.

l) Remove the platform after getting clearance from EIC/representative.

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.

n) Repeat the same procedure in all cells of the tower.

o) The wire mesh installed at the outlet has to be cleaned whenever there is level difference across it.

p) Site cleaning to be done after total completion of the job.

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.

r) Any other condition not specified above.

USSC-CPG1 PPG-QA

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

	ITEM (material, class, grade, rating, range, size etc.)	STANDARD QUALITY PLAN CONFORMING TO CODE: CTI 136	QP NO.: 0000-99 9QOM – S - 070	REVIEWED BY:	APPROVED BY
एनटीपीसी NTPC	FILLS FOR COOLING TOWER		Rev. No 01 Date 06.01.2020	SATYA NARAYAN	B. C. ROY
			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					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	
		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	SEE NOTE - 1
		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	

NOTE

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, INDENTIFIED 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"