



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

बॉयलर ऑग्निलरीज प्लांट,

इन्दिरा गाँधी इंडस्ट्रियल कॉम्प्लेक्स,
रानीपेट - 632 406 (तमिलनाडु)

फोन (Phone) : 04172 – 284132

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

BOILER AUXILIARIES PLANT,

Indira Gandhi Industrial Complex,

RANIPET– 632 406 (Tamil Nadu)

फैक्स (Fax) : 04172 – 241131

PURCHASE DEPARTMENT

Enquiry 4240469E dt:02.08.2014 Due on 26.08.2014

TITLE	Quantity (Set)	Contact Details	Annexures
R78425530000 DUST DENSITY MONITOR WITHOUT RCU AS PER TECH SPECIFICATION TECI:DDM:GEN:REV 02 & PROJECT SPECIFIC DATA SHEET ECI:DDM:IPCL- HALDIA:REV 00.THE BIDDER SHALL FURNISH SCHEDULE –A,B,C,D ALONG WITH THE OFFER DULY FILLED UP	6	Shri. Srikanth Ch Engineer /Purchase BHEL-BAP Ranipet-632406, TN Email: srikanthch@bhelrpt.co.in tvgopal@bhelrpt.co.in , psureshkumar@bhelrpt.co.in Contact Numbers: 04172-284132/284621/284972 Fax: 04172-241131	1. Annexure-A (Commercial terms and conditions (import & indigenuous) and guidelines for Indian Agent) - 8 Pages. 2. Annexure-B (tender terms and conditions) -10 pages 3. Annexure-C (Specification TECI:DDM:GEN:REV 02 and project specific data sheet ECI:DDM:IPCL- HALDIA:REV 00, Annexure- A,B,C,D of to be filled by vendor) – 23 pages

Note:

- You are requested to quote the enquiry reference and date in all your future correspondences. This is only a request for quotation, not an order. Interested parties are requested to submit their offer in two part bid.
- Attention is drawn towards the Pre qualifying requirement (PQR) stated in Annexure-B standard terms and conditions under clause A) note 01,02).

BHEL's Commercial terms & conditions and annexures can be downloaded from BHEL website (<http://www.bhel.com>) or www.tenders.gov.in or <http://eprocure.gov.in/cppp/> . All corrigenda or any addendum to this enquiry shall be published in www.bhel.com only

Tenders should reach us before 14:00 hrs on the due date.

Techno-Commercial bids (With out price) will be opened at 14:30 Hrs on the due date.

Tenders will be opened in the presence of the tenderers who have submitted their offers and who may like to be present.(An authorization letter should be enclosed attached as mentioned in annexure-B)

पंजीकृत कार्यालय : बीएचईएल हाउस, सीरी फोर्ट, नई दिल्ली – 110 049, भारत

Regd. Office: BHEL House, Siri Fort, New Delhi - 110 049, INDIA

Essential Commercial Terms and Conditions (To be filled in full and to be submitted along with offer)

Sl.No	Buyers preference	Sellers Acceptance
1.	PRICE :Firm till completion of order.[offer with Price Variation Clause is not acceptable]	Deviations not acceptable
2.	DELIVERY TERMS (FOB Seaport /FCA Airport)	
3.	Freight& Insurance	
4.	Delivery Period	
5.	Validity of offer (minimum of 90 days from the date of price bid opening/Reverse auction)	
6.	Approximate weight and dimension of the goods.	
7.	Name of nearest Sea Port/Airport	
8.	Payment Term (100% by unconfirmed irrevocable Letter of Credit by a first class bank in India (Within 120 days Interest free credit, Indian Bank charges to BHEL A/C. Foreign Bank charges to Sellers account.)	Please confirm without any deviations
9.	Name your bankers on whom the L/C Negotiation can be restricted with swift code	
10.	Deviation Report on buyers' specifications enclosed if any	
11.	Confirmation L.D. clause as indicated in Enquiry [penalty for delayed delivery as per IMPORTANT NOTE] @ 0.5% per week subject to a maximum of 10 % for the delayed delivery.	Please confirm without any deviations
12.	Details of Indian office/agent if any	
13.	Indian agency commission if any (to be quoted clearly and payable in Indian rupees)	
14.	Original Manufacturers name with Country of Origin	
15.	Country of Origin & Confirmation for the submission of Country of Origin Certificate	
16.	Performance Bank Guarantee 10% of contract value is required with validity period of 12 months from the date of commissioning (or) 18 months from the date of deptsach which ever is earlier plus three months claim period is also required [PBG shall be from BHEL consortium of banks]	
17.	Guarantee Clause: The materials are to be guaranteed for satisfactory performance for period of 12 months from the date of commissioning/putting in to use or 18 months from the date of dispatch whichever is earlier and if any defect is noticed during the above period, the same shall be rectified/replaced free of cost on FOR Destination basis within a reasonable time.	
18.	Risk Purchase Clause: The purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the seller has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute thereof. The seller shall be liable for all losses and extra expenditure which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rates of LD clause agreed.	Please confirm without any deviations
19.	Installation Supervision and Commissioning Vendor's scope	
20.	O&M MANUAL-As per enquiry specifications 15 COPIES	.
21.	Confirmation for the Submission of Test Certificate	

Note:1) Offer will be evaluated on the basis of Total landed cost to BHEL at the Final destination for a complete set.

2)All applicable Taxes and duties as per Indian Laws will be deducted from the payment to be made to vendors after placement of Purchase Order.

Date:

Name & designation of the seller

REQUIREMENT OF TECHNICAL DETAILS /CONFIRMATION
(To be filled in full and to be submitted along with offer)

S.NO	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
01	SPECIFICATION TECI:DDM:GEN:REV 02	Clause wise / Point wise confirmation to be given in TOTO for all specifications & to be submitted along with offer.	
02	DATA SHEET / DRGS	Filled Data Sheet and vendor's Drawings are to be submitted along with offer.(if applicable).	
03	QUALITY PLAN	To confirm applicable QP will be followed. (OR) Your Quality Plan to be submitted for our review & approval along with offer.	
04	SPECIFICATION DEVIATION DISPOSITION REPORT (SDDR)	Attached SDDR to be filled & submit along with offer. (Even NO deviation is taken, NIL report to be submitted).	

(To be submitted along with the offer)

SPECIFICATION DEVIATION DISPOSITION REPORT			
Specn		Item	
Enq.No & Date			
Vendor Name			
SPECN			
Page	Clause	Details Of Deviation With Reason	Disposition By Bhel
Signature Of Vendor			Reviewed By
“ AGREED DEVIATION “		APPROVED BY	
if any to be incorporated in the PO in the event of order.			

Date:

SIGNATURE WITH SEAL

Essential Commercial Terms and Conditions (To be filled in full and to be submitted along with offer)

DESCRIPTION	BHEL Requirement	Suppliers Confirmation
PRICE	Firm till completion of order.	
DELIVERY TERMS	F.O.R. DESTINATION (BHEL Stores Ranipet)	
PACKING & FORWARDING	To be included. (if extra indicate in %)	
FREIGHT & INSURANCE	To be included. (if extra indicate in %)	
EXCISE DUTY in %	To be indicated by supplier. (CENVAT copy to be provided along with supply)	
SALES TAX in %	To be indicated by supplier. (Concessional form C / XVII will be given)	
OCTROI	If any, to supplier's account only.	
PAYMENT	100% within 90 days of receipt & acceptance of material at our end.	
DELIVERY PERIOD	To be indicated by supplier as per enquiry	
L.D.CLAUSE: As indicated in Enquiry (as per IMPORTANT NOTE) @0.5% per week, max of 10 % for the delayed delivery.		
OFFER VALIDITY	Minimum 90 days from the date of price bid opening .	
INSPECTION BEFORE DESPATCH	Will be done at vendor's Works before Dispatch by BHEL / BHEL's Authorized Inspection Agency / BHEL's customer	
TEST CERTIFICATE	Required	
Risk Purchase clause: Your confirmation to our standard risk purchase clause that alternatively the Purchaser at his option will be entitled the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute there for. The supplier shall be liable for any loss which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in clause 10 above.		
BHEL Standard Guarantee Clause: Your confirmation to our standard Guarantee clause that the materials are to be guaranteed for satisfactory performance for a period of twelve months from the date of commissioning / putting into use (or) eighteen months from the dispatch which ever is earlier and if any defect is noticed during the above period, the same shall be rectified/replaced free of cost on Ranipet/ Destination basis within a reasonable time. To this effect a Guarantee certificate should be sent along with the dispatch documents in the event an order		
Performance Bank Guarantee 10% of Purchase Order value is required with validity period of 12 months from the date of commissioning (or) 18 months from the date of despatch which ever is earlier plus three months claim period is also required [PBG shall be from BHEL consortium of banks and in BHEL prescribed format](List and format Enclosed)		
O & m MANUALS: 15 Copies of O & M manuals in hard copy and three sets of in soft copy (CD) shall be submitted in the event of ordering.		

NOTE : 1. The above format shall be completely filled and deviation if any shall be clearly spelt out. The columns which are not applicable shall be mentioned as "Not Applicable". No column should be left blank

2. Indigenous items should be supplied by the Principal or authorized stockist/dealers only (for which Principal has to furnish the relevant documents along with the offer) and not by the traders/agents.

Date:

Name & designation of the seller

REQUIREMENT OF TECHNICAL DETAILS /CONFIRMATION
(To be filled in full and to be submitted along with offer)

S.NO	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
01	SPECIFICATION for TECI:DDM:GEN:REV 02	Clause wise / Point wise confirmation to be given in TOTO for all specifications & to be submitted along with offer.	
02	DATA SHEET / DRGS	Filled Data Sheet and vendor's Drawings are to be submitted along with offer. (if applicable).	
03	QUALITY PLAN	To confirm applicable QP will be followed. (OR) Your Quality Plan to be submitted for our review & approval along with offer.	
04	SPECIFICATION DEVIATION DISPOSITION REPORT (SDDR)	Attached SDDR to be filled & submit along with offer. (Even NO deviation is taken, NIL report to be submitted).	

(To be submitted along with the offer)

SPECIFICATION DEVIATION DISPOSITION REPORT			
Specn			Item
Enq.No & Date			
Vendor Name			
SPECN			
Page	Clause	Details Of Deviation With Reason	Disposition By Bhel
Signature Of Vendor			Reviewed By
" AGREED DEVIATION "			APPROVED BY
if any to be incorporated in the PO in the event of order.			

Date:

SIGNATURE WITH SEAL



ANNEXURE – B to OPEN TENDER: 4240469E dt:02.08.2014
FOR SUPPLY OF OPACITY MONITOR
DUE ON 26.08.2014
STANDARD TERMS & CONDITIONS
(FOR GUIDANCE TO THE SUPPLIERS)

A] Submission of Offer

Sealed tenders super-scribed with Tender Number, Due Date, Item Name & Supplier's Name and Validity of the Offer shall be addressed to Manager / Purchase (Steel), Bharat Heavy Electricals Limited, Ranipet – 632 406, Tamilnadu, INDIA, so as to reach him on or before the date and time specified in the tender. It shall contain two sealed covers in one envelope.

Sealed envelope super-scribed, with Tender Number, Item Name, Tender Due Date & Supplier's Name, Validity of the offer/s containing:

Cover I: Techno-Commercial and Unpriced Bid

Sealed Cover super-scribed "Cover I – Techno-Commercial and Unpriced Bid" containing:

- a) **Complete technical Offer** with details, catalogues, as applicable.
- b) **Un-priced bid** (i.e. Bid without the Price),
- c) **Filled-in BHEL's Standard Terms & Conditions** for Procurement of opacity monitors enclosed with the Tender Document,
- d) **All relevant enclosures** of above documents / formats, if any.
- e) **Deviation summary** submitted in two parts – giving the summary of technical deviations separately and the commercial deviations separately, if any and
- f) **Shipping weight and cubage** (length, width & height) size of packing, including special shipping arrangements that may be required. If containerization is planned details of requirements like flat bed containers, open top containers, Standard 20' / 40' containers - number of containers required etc.
- g) **Supporting documents** to substantiate equivalent material specifications / sections, where quoted for.
- h) **Clientele list** with their full address including detail of contact person with phone no., fax no. & e-mail ID (if any) to whom the same / similar items are supplied in the past two years. The date of supply may also be indicated, against each client.
- i) **Bidders who are not already registered with BHEL Ranipet** are requested to submit the filled in Supplier Registration Forms (SRF) available in the BHEL website-ww.bhel.com and the other required documents called for in the SRF (including D&B reports for import vendors, the facilities available at the works – starting material to finished product, manufacturing quality plan, inspection & test plan to meet the specification requirements) along with the technical bid. In addition, vendors may submit an experience certificate detailing the quantity supplied spec wise year wise along with the unpriced PO copies and proof of supply along with the offer for all the tendered specifications. Technical acceptance of offer by BHEL, shall be based on the evaluation of offer and the submitted documents. Documents supporting the following prequalification requirements shall be submitted with offer
 - 1) Offerers should have supplied atleast 10 No's opacity monitors to similar conditions specified in tender per year for the last five years from the date of issue of tender.
 - 2) Offerers should have successfully commissioned atleast 15 No's of opacity monitors for projects similar to the conditions specified in the tender in the last three years (From the date of issue of tender) and satisfactory performance report from the customers shall be enclosed along with the customer details.



k) **Authorization Letter:** Such of those tenderers who wish to participate in the Tender Opening, should attach an authorization letter which shall be duly signed and stamped in original, identifying the representative to be deputed for tender opening.

Note

- (i) The materials offered, shall conform to the specification and scope attached in the tender.
- (ii) In case the offered materials are not conforming to the Enquiry material Specification or such that the offered sections do not match the enquiry, such offers would not be considered for evaluation and would be rejected. Where equivalent specifications and sections are offered considering such offers will be at the sole discretion of BHEL. Wherever alternative standards / specifications are offered by Bidder, the Bidder shall provide sufficient documentary evidence to ensure equivalence to the designated standards / specifications, failing which the offer would be considered as not technically acceptable and hence shall stand rejected.
- (iii) All taxes and duties payable as extra to the quoted price should be specifically stated in offers. Offer from within India shall be submitted along with CST & TIN No. / Tariff No. etc, failing which the purchaser will not be liable for payment of such taxes and duties. Our TIN NO. 33024364741, CST. NO. 1141686, BHEL ECC No. AAACB4146PXM008.
- (iv) The un-priced bid is to be used to indicate relevant commercial implications without indicating price.
- (v) Commercial terms are to be indicated clearly in the offer.
- (vi) No changes shall be entertained once the bid is opened unless otherwise specifically agreed to in writing by BHEL.
- (vii) Money values shall not be indicated anywhere in the un-priced bid.
- (viii) Time required for inspection (at Supplier's works), should be clearly given in terms of numbers of working days
- (ix) It is advised that all the pages and annexure to the Techno-Commercial bid should be serially numbered, including indicating the total number of pages.

Sealed envelope super-scribed Cover – II (Price bid), with Tender Number, Item Name, Tender Due Date & Name of the Supplier and Validity, containing:

Sealed Cover super scribed "Cover II –Price Bid" containing:

Price Bid (i.e. Un-priced bid but with Price duly filled-in) in conformance with the commercial terms as per Cover- I.

The Prices shall be indicated in both figures and words, clearly specifying the currency used. Differential foreign currencies may not be used in a given offer.

Wherever there is a discrepancy between the figures and the words, the value as indicated by words shall be taken as the "Price" by the Purchaser. Similarly if there is a discrepancy between the Unit Price and the Value on account of arithmetical error in the computation of the Value (Price x Quantity), only the Unit Price would be taken by the Purchaser for consideration. No corrections would be permitted after the submission of the bids. Error statements should be completely erased / struck out and fresh values given in the offer, which should be initialled and attested by the tender submitting authority. Offers without the above may become liable for rejection.

Note

- (i) The price break-up should be in line with technical specification / scope of the tender. (Cost of material, packing charges, forwarding charges, freight, insurance charges shall be shown appropriately, as applicable).
- (ii) No Price Variation Clause will be entertained and No advance payment will be made by BHEL.



- (iii) In case, there is a discrepancy in the term quoted in techno-commercial bid and price bid, the term as per the techno-commercial bid (Cover I) shall hold good and the commercial term quoted in the Price Bid (Cover II) shall not be considered.
- (iv) In their own interest, all Tenderers are advised to double check their prices, applicable duties and taxes.
- (v) The quotation should be valid at least for a period of 90 days from the Price bid opening date.
- (vi) Offers should be submitted in two sets, one original and one copy.
- (vii) The offers should invariably contain Signature (ink-signed) & Office Stamp of the Supplier. Any corrections / erasures in the offers should be initialled and stamped.
- (viii) Indian bidders should submit the prices in Indian Rupees only.
- (ix) Foreign bidders may submit their bid in their home currency. The currency should be clearly indicated in the un-priced commercial bid as well as in the price bid.
- (x) Indian Suppliers shall quote on FOR Destination basis only. Destination is BHEL, Ranipet Stores. Foreign Suppliers shall quote on FOB Delivery/FCA Airport . Delivery shall be on FCA AirPort basis indicating the nearest airport. No other delivery terms shall be acceptable. The Airport shall be a popular and commonly used international Airport. Transit would be arranged by the freight forwarder nominated by BHEL, details of whom would be included in the Purchase Contract. As per Government of India guidelines, BHEL Ranipet being a Government of India Undertaking the Bill of Lading shall be made with the Shipper as "Government of India". This shall be specifically confirmed by the Bidder.
- (xi) List of shipping agents would be a part of the Purchase Contract.

B] Opening of Offers

- a) **Tenders shall be received up to 14 00 Hours on 26.08.2014 and be opened on the same day at 1430 Hours. Tenders received after 14 00 Hours would not be opened. The times indicated are Indian Standard Time (IST). Tenders received after 14:00 Hrs would be designated as "Late Offer" and would be returned back to the Bidder unopened.**
- b) Supplier shall submit two covers (Cover-I techno-commercial bid & Cover-II price bid) in one envelope only. If one cover containing all the bids techno-commercial bid & price bid together, the **bid is liable for rejection**. The decision to accept such bids shall be the sole discretion of BHEL, which may be done by BHEL after segregating the bids so received.
- c) Such of those Tenderers who wish so, may participate in the Tender Opening by deputing their representatives. The representatives would be allowed to participate in the Tender opening only on submission of a signed and stamped authorization letter issued by the Supplier. Representatives without the Authorization Letter would not be allowed to participate in the Tender Opening. Representatives who turn up after the Tender opening time / start of the Tender opening would not be allowed to participate. After tender opening the details would not be given to such suppliers who choose to be absent at the time of Tender opening.
- d) Details such as the Technical Specification, Delivery Terms, and Delivery Period and the Price details in the event of the sealed price bid opening, alone would be read out by the Tender Opening Officer. No other data will be read out.
- e) In exceptional cases, at the discretion of BHEL, in the event of the named representative (named in the Tender Document) is unable to come due to unavoidable circumstances, then an alternative representative would be allowed, where the alternative representative should carry a revised original authorization certificate. Suppliers are advised to avoid such situations to avoid embarrassments on both sides and
- f) If so required, BHEL reserves the right to open the Price-Bids, 'in-camera'. Intimation to this effect would be given to the Supplier by BHEL, before the opening of the Price-Bids.



Note

- (i) Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be provided in ENGLISH language only.
- (ii) At its option, BHEL may consider extending the due date/s for the tender openings. Sufficient notice would be given by BHEL for such extensions. Any amendments to this tender will be published in www.bhel.com only.
- (iii) Specifications are the basic essence of the "Item". and all deviations shall be summarized and provided in a "Deviation Statement", listing the points and the deviation against each point, and
- (iv) BHEL reserves the right to increase or decrease the tendered quantity.
- (v) Offers for part quantities on item level basis are not acceptable to BHEL. no supplier shall quote for partial quantity of any given enquiry item. Such partial offer would not be considered in the enquiry for that item.

C] Evaluation of Offers

- a) The price bids including the negative impact price of the technically acceptable offers alone, contained in Cover II shall be opened.
- b) All bidders shall submit their offers by filling-in the format of the BHEL tender documents. Offers received in any other format are liable to be rejected. Offers are asked in BHEL's format for purpose of standardisation - to help in the offer evaluation.
- c) Offer with any pre-conditions (like conditional discounts) for price are liable to be not considered / rejected. For evaluation the such conditions would be removed and only the base offer would be considered for evaluation and comparison.
- d) In the event of any change in scope / quantity arising out of the discussions, offerers would be given a chance to submit their revised offer (impact). The revised offer (impact) shall contain only the price addition / deletion for such change in the scope / quantities, over and above the original scope and price quoted. The original price quoted shall not be changed on account of the technical discussions.
- e) BHEL reserves the right to reject without assigning any reasons / load any offer with factors other than already specified for such offers having deviations to BHEL Specifications, Standard Terms & Conditions at its discretion. The decision of BHEL in this regard shall be final.
- f) BHEL reserves the right to reject an offer due to unsatisfactory past performance during tender finalisation / execution of a contract at any of BHEL projects / units or if unsatisfactory performance report is received from the party/s referenced by the supplier at any time during tender finalisation.
- g) BHEL reserves the right to operate Purchase / Price preference to Government of India Undertakings, which shall be given as per the guide lines of Government of India given from time to time and / or relax the Terms and Conditions of the tender.
- h) For the purpose of comparing prices, tender prices shall be converted to Indian rupees and the conversion shall be made by using the TT Selling rate of State Bank of India (SBI) prevailing on the date of opening of Techno-Commercial/Unpriced bids. This exchange rate will be followed till placement of order.
- i) BHEL reserves the right to conduct negotiations on the "Price" and "Other Commercial Terms and Conditions" with the lowest ranked offerer at any time after the bid opening but before the release of the Purchase Order and
- j) If so required by BHEL, Supplier may have to share their cost data / costing sheet with BHEL.



D] Execution of the Order

- a) BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s **but this does not absolve the Supplier from giving the specifications as agreed upon.**
- b) In the case of overseas suppliers Inspection call for carrying out the inspection shall be given 60 days before the scheduled contract delivery date. BHEL requires clear 30 days notice to arrange for inspection. The Inspection date/s given by the Supplier shall be on firm basis. For local Suppliers the Notice period of Inspection shall be 10 working days.
- c) Deviations, if any pointed out by the visiting Inspection team of BHEL shall be corrected and the items as per specification shall be dispatched on or before the contract delivery date.
- d) The final inspection for acceptance will, however, be carried out at BHEL's works at Ranipet.
- e) The contract delivery date is the date of ex-works dispatch of the item for suppliers in India and the date of dispatch clearance given by BHEL for overseas suppliers.
- f) Travel & other local stay cost for the Inspectors sent by BHEL will be to BHEL account, but other Inspection Charges, if any shall be to the account of the Seller only.
- g) The supplier shall arrange for packing suitably in all respects for normal transport by air / rail / road and Materials shall be suitably protected against damage in transit and storage.
- h) Foreign suppliers shall dispatch on FCA agreed Airport basis, according to the contract conditions. Indian suppliers shall dispatch on free delivery (door-delivery) at BHEL stores basis only. Unloading the materials at BHEL Stores would be to the account of BHEL only.
- i) In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances in the case of foreign suppliers.
- j) Materials shall be dispatched only after getting the dispatch clearance of BHEL (Dispatch clearance would either be faxed / e-mailed as a scanned document / couriered.) and
- k) Payment terms: The acceptable mode is "100% direct with in 90 days of receipt and acceptance of materials at BHEL for Indigenous Suppliers " and through "100% payment through unconfirmed irrevocable L/C with 120 days interest free credit period ", for foreign suppliers. Payment to Indian suppliers would be through Electronic Fund Transfer (EFT). The EFT form which is a part of the tender document has to be filled in and submitted by the Indian bidder along with the techno-commercial offer in Cover-I. No other payment terms are acceptable.
- l) In case of deviation to credit period for foreign suppliers , BHEL reserves the right to load the price of foreign suppliers in order to bring them on common platform as per Indigenous Suppliers on the account of differential payment terms to Indigenous Suppliers.
- m) Any incidence of tax like Income tax, Service Tax and any other similar tax / duties /levies imposed by the Government of India, or the State Government, where the BHEL Unit is located, deductible at Source, during the tenure of the Order shall be deducted by BHEL and necessary certification of the deduction (Tax deduction at Source) would be given.
- n) The Guarantee period shall start from the "Date of Dispatch" and shall be submitted in BHEL-Format only.



E] Liquidated Damages Clause:

BHEL will levy penalty as Liquidated Damages (LD), for delay in delivery. The damages shall be at the rate of ½% per week or part thereof subject to a maximum of **10%**. Delivery for purpose of L.D, will be reckoned as the date of the Airway bill for the Foreign Supplier and date of receipt of materials at stores for Local Supplier. Supplier shall deduct the applicable LD from the first payment when raising the claim for the same. The applicable LD if any would be communicated by BHEL along with the dispatch clearance. The LD would apply on the undelivered portion only. In case of reasons attributable to BHEL for the delay in delivery (for e.g. delay in arranging the pre-inspection) then the delivery time would be reset to the extent of the time delay attributable to BHEL, with waiver of the LD. Delivery being the essence of BHEL's contract requirements, In the event that a Supplier does not accept the LD condition above, the offer would be loaded to the extent of the shortfall with respect to upper limit specified above. Offers which do not accept for any LD would stand rejected.

The offer/s of such of those bidders who do not accept for levy of liquidated damages (LD) for delay in delivery is likely to be summarily rejected. No correspondence would be entertained by BHEL in this regard, on this subject. BHEL specifically draws the need of this mandatory requirement to the notice of all Bidders. The Price Bid of such of those offerers failing to meet this requirement, would not be considered for the Price-Bid Opening.

F) Miscellaneous

i) Role of Agents:

BHEL prefers to deal directly with the Main producers only.

BHEL strongly discourages the engagement of Agents in India by foreign principals, to deal with BHEL, in BHEL's tenders.

BHEL will not enter into any correspondence with an Indian Agent.

The Indian Agent will not be extended the privilege given to the principals, such as that of attending the tender openings, attending technical discussions, commercial discussions or price negotiations and such like.

In case, in spite of the above, a foreign principal insists on engaging an Indian Agent, It is made clear by BHEL that:

It is the sole responsibility of the foreign principal to ensure the Agent does not represent any other foreign principal in a given tender.

An undertaking to this effect shall be given by the foreign principal that his / her Agent does not represent any other foreign principal in the tender. This document shall form a part of the techno-commercial offer.

If at any stage of the tender, BHEL finds that an Indian Agent has represented more than one foreign principal, all such offers of and all the foreign principals would be disqualified summarily in the tender inquiry. BHEL will only give an intimation of notice of the disqualification. No correspondence would be entertained by BHEL, on their decision. Such decision of BHEL shall be irrevocable, firm and final and shall be binding on the tenderer.

BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL.

Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM.

Hence in their own interests, prospective tenderers may check with BHEL, the status of their proposed agent vis-à-vis BHEL.

In view of the requirement of BHEL, it is strongly suggested that in their own interest, foreign principals may desist from engaging any Indian agent and deal with BHEL directly and it is stressed that any Main producer proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk.

BHEL shall in no way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions of their Indian Agent.

In the event of the foreign principal engaging an Indian Agent:

a) The Supplier shall furnish an authenticated copy of the Agency Agreement with his agent detailing the precise relationship between them and their mutual interest in the business along with techno-commercial bid.

b) The Supplier shall furnish original authorization letter for the Indian Agent. The letter shall contain name, contact person, complete postal address including phone, fax and e-mail ID. It shall also spell out the type of services to be rendered by Indian Agent.



- c) Indian Agent & Agency commission: An Indian Agent can represent only one Foreign Manufacturer against a particular Tender. The FCA price quoted by the foreign bidder shall include the agency commission. However, the agency commission component payable to their Indian Agents shall be shown separately in the Offer, either as a lump-sum or as a percentage of the quoted price. This will be paid by BHEL in Indian Rupees, on satisfactory receipt & acceptance of the materials. For calculation of Rupee equivalent of Agency Commission, exchange rate as prevailing on the date of Purchase Order will be taken and
- d) For all discussions, technical clarification and negotiations etc. only the principal would be authorized for interaction with BHEL. The Agent shall not be a party to the discussions / negotiations and would not be normally allowed to participate.

ii) Terms & Conditions of Letter of Credit (L/C) for overseas suppliers (indicated for acceptance).

- a) Unconfirmed irrevocable Letter of Credit only will be opened by BHEL. Confirmation of L/C is not preferred by BHEL.
- b) Bank charges out side India are to the Supplier's account.
- c) In case of L/C extension caused by delays attributable to the Supplier, the L/C extension / commitment charges are to be borne by the Supplier.

iii) Other terms & conditions for letter of credit: - Documents for negotiation

- a) Signed Commercial invoice in quadruplicate, for a value not exceeding the draft amount, quoting the import Licence No and certifying goods evidencing shipment of the merchandise are as per Applicant's Purchase Order. The amount of invoice after deducting Indian Agent's commission, if any, should not exceed the Credit amount. (The Indian agent's commission, if any, is payable in India in Indian rupees only.)
- b) Certificate of Country of Origin, from the country of manufacture, issued by the Chamber of Commerce.
- c) One set of Original and two sets of Non-negotiable copies of 'signed', 'unmarked', 'clean on board' Ocean Bill of Lading, showing Shipper as "Government of India" Account M/s. Bharat Heavy Electrical Ltd, Unit: BHEL, Ranipet as consignee (The opening bank should not be notified as consignee), marked freight payable / prepaid at destination.
- d) Packing list in 4 copies in English, indicating Size wise Number of bundles / pieces shipped and weight.
- e) Certified copy of the fax / e-mail sent by the beneficiary to the applicant giving the following particulars of shipment, as the insurance is to be arranged by the Applicant in India: (a) Purchase Order Number & date; (b) Bill of Lading Number & date /Air Way Bill (c) Name of vessel; (d) Port of Loading; (e) Number of bundles / pieces and weight; (f) Invoice Number, date and value (g) Purchase Order item number's despatched. The cable / fax is to be sent within 2 working days of shipment.
- f) Beneficiary's certificate showing the relevant airmail / courier reference no. and date that the following clauses have been complied with:
- 1] Beneficiary to forward by Registered Airmail / Courier one complete set of original documents and one set of non-negotiable documents within 3 working days of obtaining shipping documents to Regional Manager (ROD), Bharat Heavy Electricals Ltd, No. 165, Thambu Chetty Street, Chennai – 600 001. India. (Phone: +91-44-25341249, 25341240 / Fax - +91-44-25340787; e-mail: raja@rodchn.bhel.co.in)
 - 2] Beneficiary to courier at his cost 3 copies of complete set of non-negotiable documents to the Officer who released the Purchase Order.
 - 3] Declaration by the Supplier certifying that the contents in each case are not less than those entered in the invoices / packing list and that the invoicing for the supplies effected is strictly in accordance with agreed rates as stipulated in the Purchase Order.
 - 4] Declaration to the effect that all other documents as per purchase order has been couriered to the Purchase order releasing authority



5) Copy of Dispatch Clearance / Instruction issued by BHEL.

iv) Documents to be sent directly to the Purchaser prior to shipment

- a) Manufacturer's Original Internal Inspection / Test certificate in triplicate.
- b) Manufacturer's Original Guarantee certificate as per Purchase Order. The material shall be guaranteed for a period of 12 months from the date dispatch or 18 months from the date of commissioning whichever is earlier.
- c) Inspection / Test Certificate issued by BHEL / Inspection agency specified in the Purchase Order. In the event that Inspection prior to dispatch is not carried out by the Engineers of BHEL, the Inspection certificate of the third party so authorized by BHEL and
- d) Any other documentation as specified in the Purchase Order.

v) Conditions for transportation:

- a) All shipping documents shall show the Purchase Order Number & Date, Import Licence Number & Date, and Letter of Credit Number & Date.
- b) Transshipment is to be avoided.
- c) A transport document which is produced or appearing to have been produced by reprographic, automated or computerized systems or as carbon copy will be accepted as an original document provided that it is marked as original and is ink-signed.
- d) The transport document must contain all the conditions of carriage on the original document.
- e) The transport document must not indicate the place of destination as being different from the port of discharge.
- f) The transport document must not contain the indication 'intended' or similar qualification in relation to the vessel or other means of transport or port of loading or port of discharge.
- g) The transport document must be issued by the carrier or his agent and not by any freight forwarder.
- h) Transport documents bearing reference by stamp or otherwise, to costs additional to the freight charges are not acceptable.
- i) The Bills of Exchange must be dated and presentation of documents for negotiation must not be later than 15 days after the date of shipment and in any case not later than the expiry date of the Credit.
- j) Material shall be dispatched through the agency nominated by BHEL.
- k) Indian suppliers shall dispatch the materials, freight prepaid, on door-delivery basis (FOR Destination – Destination: BHEL Stores) preferably through any one of the approved carriers of BHEL only and
- l) In the event there is a delay by the Supplier in negotiating / submitting the document, any demurrage / wharfage arising out of the same shall be to the account of the Supplier and shall be deducted from the final payment. Also, in such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading". Over-seas Suppliers have to give a No-Objection Certificate to BHEL, authorizing BHEL to get the Delivery Order from the Steamer Agent without producing the Original Bill of Lading. This is required to ensure avoidance of incidence of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller.

G] Force Majeure

If at any time during the currency of this contract, the performance in whole or in part, by either party of any obligations under this contract shall be prevented or delayed by reason, of any war, hostilities, acts of the



public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine, restrictions or acts of GOD (hereinafter referred to as events), then provided notice of happening of any such events is given by either party to other within ten days from the date of occurrence thereof, neither party shall reason of such events be entitled to terminate this contract nor shall either party have any such non performance and delay is resumed as soon as practicable after such events has come to an end or ceased to exist. If the performance in whole or part of any obligation under this contract is prevented or delayed by reason or any such event claims for extension of time shall be granted for period considered reasonable by the purchaser subject to prompt notification by the seller to the purchaser of the particulars of the events and supply to the purchaser if required of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed to be a waiver of time in respect of remaining deliveries.

H] Cancellation of Order:

In the event of non-performance of the contract by the Supplier, BHEL reserves the right to cancel the order with issue of a written notice. BHEL would provide a curing period of 30 days, for the Supplier to rectify the situation. If the Supplier fails to rectify the reason/s that led to the issue of cancellation notice by BHEL, then the cancellation order would be issued automatically by BHEL, without further recourse to the Seller. BHEL will not pay any cancellation charges or any other charges / damages to the Supplier, arising out such cancellation. In the event of the non-performance of the supply contract, by the Supplier, the rights of BHEL include, in addition to canceling the order, to take alternate purchase action at the cost and risk of the supplier. The additional expenditure to be incurred by BHEL in such alternate purchase would be to the account of the supplier. (Risk Purchase). This remedy would be in addition to the invoking of the CEBG on grounds of failure of the Supplier in executing the Contract and any other legal remedies."

I] Performance Bank Guarantee:

10% of Purchase Order value is required with validity period of 12 months from the date of commissioning (or) 18 months from the date of despatch which ever is earlier plus three months claim period is also required [PBG shall be from BHEL consortium of banks and in BHEL prescribed format](List and format Enclosed)
All vendors shall confirm the same.

J] Installation Supervision and Commissioning is in Vendor's scope: Vendors shall consider the same while submitting the offer and it shall be inclusive in the offered price.

K] Others

a) In case of any contradiction in the terms and conditions given here and elsewhere in the other documents of the tender, it shall be the responsibility of the tenderer to get it clarified from BHEL. The officer authorized to provide such clarifications is Sr.Manager / ESP Purchase e-mail: tvgopal@bhelrpt.co.in (or) srikanthch@bhelrpt.co.in.

b) Alterations to the conditions of the Tender can be done only by the authorized officer, at any time before the date and time of tender opening. Such changes, if any, would be communicated in writing and / or hosted in the web-page.

c) The laws governing this transaction shall be the laws in India.

d) Wherever not specified, INCO Terms 2011 shall be used to interpret the Commercial terms and conditions and

e) In the event of an order, Supplier shall agree to settlement of disputes or differences, if any, by way of arbitration, in accordance with the "Rule of Arbitration" of the Indian Council of Arbitration.

The language in the tender documents downloaded by the Bidders shall at no point of time be changed, altered or modified in any manner by the Tenderer. If such changes are made by any tenderer, it shall be considered as tampering with BHEL's terms and the offer shall be summarily rejected, whenever it is noticed



by BHEL. Such Bidders would be disqualified from the Bidding Process and their offers would be forfeited / Bank Guarantees invoked. They would also not be allowed to participate in future tenders of BHEL.

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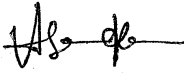
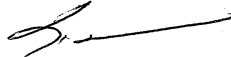
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TECI:DDM:GEN:REV 02  
PAGE 01 OF 16  
EFFECTIVE DATE : 07.05.2014

TITLE : TECHNICAL SPECIFICATION FOR BOUGHT OUT ITEMS FOR ESP and  
BAG FILTER

ITEM : DUST DENSITY MONITOR

PROJECT : REFER PROJECT SPECIFIC DATA SHEET

|          | NAME           | DESIGNATION | SIGNATURE                                                                             | DATE       |
|----------|----------------|-------------|---------------------------------------------------------------------------------------|------------|
| PREPARED | A.SRAVAN KUMAR | AE II       |    | 07.05.2014 |
| CHECKED  | S.RANGARAJAN   | SDGM        |  | 07.05.2014 |
| APPROVED | S.JAYAPRAKASAM | AGM         | -SD-                                                                                  | 07.05.2014 |

ISSUED BY

**EDC – E, C&I**

REVISION: 02      Clause No 5.3.0 Make of components added.      07-05-2014  
REVISION: 01      Clause No 5.0.0,5.1.0 revised      18-12-2012

REVISION: 00

INITIAL RELEASE DT : 05.01.2010

### **1.0.0 INTRODUCTION:**

- 1.1.0 This technical specification is meant for Dust Density Monitor and its Accessories to be supplied and commissioned at the site, mentioned in Project Specific Data Sheet.
- 1.2.0 The Dust Density Monitor & its accessories offered by the bidder shall be field proven type and approved by BHEL /BAP/RANIPET.
- 1.3.0 The Dust Density Monitor shall be IN-SITU, visible light type. The Dust Density Monitor shall meet the requirements stipulated by US EPA / VDE standard.
- 1.3.0 The bidders shall submit all the documents required as per this specification, along with their offers for review by BHEL.
- 1.4.0 The offers without enclosing any of the required documents will be considered as non-responsive & incomplete offers. Such offers are liable for rejection.
- 1.5.0 The bidders may note that deviation if any to this technical specification is not acceptable. The offers with technical deviations, is liable for rejection.

### **2.0.0 SCOPE OF SUPPLY & WORKS:**

- 2.1.0 The scope of supply shall include Design, manufacture, testing, inspection, packing and delivery of Dust Density Monitor, Remote control unit ( if applicable) and accessories as per this technical specification.
- 2.2.0 The scope of the bidder shall also include the following.
  - a)Erection supervision of the items supplied.
  - b)Commissioning of all the items supplied by the vendor to the satisfaction of BHEL / Customer.
  - c)Supply of software if any, required for commissioning, and operation & maintenance of Dust Density Monitor and its accessories.

### **3.0.0 PROJECT INFORMATION:**

As per Project Specific data sheet

#### **4.0.0 SITE CONDITION & SITE DATA:**

|        |                                                      |                                                                                                   |
|--------|------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 3.0.1  | Ambient temp                                         | 5 to 50°C                                                                                         |
| 3.0.2  | Design ambient                                       | 50°C                                                                                              |
| 3.0.3  | Relative humidity (maximum) at 45°C                  | 95 %                                                                                              |
| 3.0.4  | Location                                             | Out door, ESP outlet duct before ID fan. Surrounding atmosphere is dusty, polluted and corrosive. |
| 3.0.5  | Duct width through which light passes                | As per project specific data sheet                                                                |
| 3.0.6  | Duct material                                        | Mild steel                                                                                        |
| 3.0.7  | Flue gas flow                                        | Horizontal                                                                                        |
| 3.0.8  | Flue gas pressure                                    | As per project specific data sheet                                                                |
| 3.0.9  | Flue gas temperature<br>(i)Normal<br>(ii)Exceptional | As per project specific data sheet<br>As per project specific data sheet                          |
| 3.0.10 | Flue gas sulphur content                             | As per project specific data sheet                                                                |
| 3.0.11 | Flue gas moisture content                            | As per project specific data sheet                                                                |
| 3.0.12 | Dust emission (ESP design condition)                 | As per project specific data sheet                                                                |
| 3.0.13 | Source of dust emission                              | Coal fired boiler                                                                                 |
| 3.0.14 | Type of dust collector                               | ESP /Bag filter.                                                                                  |

4.0.14 All the items supplied by the vendor shall be suitable and perform satisfactorily under the above site condition specified in the site data.

#### **5.0.0 MAJOR COMPONENTS OF Dust Density Monitor & ITS ACCESSORIES**

5.1.0 One set of Dust Density Monitor & its accessories shall consist of the following:

**(Sl.Nos- i to xi only Imported items to be supplied.**

**Sl.Nos- xii to xvii Imported or Indigenous items can be supplied).**

- (i)Transceiver / Measuring Head /Sender Receiver with Purge Air Adopter.
- (ii)Reflector / Retro Reflector with Purge Air Adopter
- (iii)Local Connection Unit / Local Control Unit.
- (iv)Interconnecting **special** cables/prefabricated cable.
- (v)Air Purge Blower with filters, Hose, Adapters and mounting base plates.
- (vi)Air purge hose between Blower and Transceiver / Reflector along with hose clips. (Length 2x15m).
- (vii)Alignment fasteners to align the Transceiver and Reflector.
- (viii)Fully Automatic, electrically operated Failsafe Shutters for protecting Transceiver / Reflector
- (ix)Differential Pressure Switch / Flow sensors for monitoring purge air failure at the Transceiver / Reflector.
- (x)Set of span filters for all measuring ranges (if applicable for the design).
- (xi)Remote Control Unit suitable for panel mounting if applicable as per Project Specific Data Sheet.

- (xii) Low pressure switch to monitor Air Filter Choking condition.
- (xiii) Mounting flange/Mounting tube with flange along with fasteners.
- (xiv) Weather hood for Measuring head/Sender/Receiver, Reflector,Purge air blower.
- (xv) Weather hood cover for Evaluation unit/local Control Unit as applicable/Field mounted items.
- (xvi) Field Termination box/Auxiliary Box for Fail safe shutter with Interconnection Cables/Junction Box with Interconnection cables as applicable.
- (xvii) Adaptor Flange for Solenoid operated Fail safe Shutter as applicable.

5.2.0 In addition if any other items required to make the system complete, shall be identified & supplied.

**5.3.0 Make of components as follows**

| SL.NO | DESCRIPTION                                                                                                                                      | MAKE TO BE FOLLOWED                                                                                             |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1     | Transceiver/ Measuring Head / Sensor Receiver with Purge Air Adopter.                                                                            | DURAG GERMANY/LAND UK/SICK GERMANY.                                                                             |
| 2     | Reflector / Retro Reflector with Purge Air Adopter.                                                                                              | DURAG GERMANY/LAND UK/SICK GERMANY.                                                                             |
| 3     | Local Connection Unit / Local Control Unit.                                                                                                      | DURAG GERMANY/SICK GERMANY.                                                                                     |
| 4     | Interconnecting <b>Special</b> cables/ prefabricated cable.                                                                                      | DURAG GERMANY/SICK GERMANY.                                                                                     |
| 5     | Air Purge Blower with filters, Hose, Adapters and mounting base plates.                                                                          | DURAG GERMANY. (Blower make is Gardner-Denver, Germany)/ESAM ITALY. No indigenous make will be permitted.       |
| 6     | Air purge hose between Blower and Transceiver / Reflector along with hose clips.(Length 2x15m)                                                   | DURAG GERMANY ( for 120 Deg C hose)/ESAM ITALY (suitable for 120 Deg C) . No indigenous make will be permitted. |
| 7     | Alignment fasteners to align the Transceiver and Reflector.                                                                                      | DURAG GERMANY/SICK GERMANY/LAND UK. No indigenous make will be permitted.                                       |
| 8     | Fully Automatic, electrically operated Failsafe Shuttters for protecting Transceiver / Reflector.                                                | DURAG GERMANY/BELIMO SWITZERLAND.NO indigenous make will be Permitted.                                          |
| 9     | Differential Pressure Switch /Flow sensors for monitoring purge air failure at the transceiver / Reflector.                                      | DURAG GERMANY/ORION GERMANY/NO indigenous make will be Permitted.                                               |
| 10    | Set of span filters for all measuring ranges (if applicable for the design).                                                                     | DURAG GERMANY                                                                                                   |
| 11    | Remote Control Unit suitable for panel mounting if applicable as per Project Specific Data Sheet.                                                | DURAG GERMANY/SICK GERMANY/NO indigenous make will be Permitted.                                                |
| 12    | Low pressure switch to monitor Air Filter Choking condition.                                                                                     | SWITZER / DONFOS /INDFOS/DWYER (INDIGENOUS).                                                                    |
| 13    | Mounting flange/ Mounting tube with flange along with fasteners.                                                                                 | DURAG INDIA/CIL INDIA/ANY OTHER MAKE SUBJECT TO APPROVAL.                                                       |
| 14    | Weather hood for Measuring head/ Sender/ Receiver, Reflector, Purge Air Blower.                                                                  | DURAG INDIA/LAND INDIA/CIL INDIA                                                                                |
| 15    | Weather hood cover for Evaluation unit / Local Control Unit as applicable/Field mounted items.                                                   | DURAG INDIA/CIL INDIA/LAND INDIA.                                                                               |
| 16    | Field termination box / Auxiliary Box for Fail safe shutter with Interconnection Cables/ Junction Box with Interconnection cables as applicable. | DURAG INDIA/JB SUCHITRA INDUSTRIES/JB RITTAL INDIA                                                              |
| 17    | Adaptor Flange for Solenoid operated Fail safe Shutter as applicable.                                                                            | DURAG INDIA/CIL INDIA(if applicable)/LAND INDIA(if applicable).                                                 |

#### 5.4.0 Power supply details

(i) The Local Connection Unit / Local Control Unit / Power Supply Unit / Signal Processing Unit & Electrically operated shutter shall be suitable for the following power supply.

- a) Voltage : 110 V/240 V AC (As per Project Specific Data Sheet)
- b) Frequency : 50 HZ.
- c) Variation in Voltage :  $\pm 10\%$ .
- d) Variation in frequency :  $\pm 5\%$ .
- e) Combined Variation in Voltage & Frequency : 10% (Absolute sum).

(ii) The Blower shall be suitable for the following power supply.

- a) Voltage : 415V, AC, 3 Phase
- b) Frequency : 50 Hz.
- c) Variation in voltage :  $\pm 10\%$ .
- d) Variation in Frequency :  $\pm 5\%$ .
- e) Combined Voltage & frequency : 10% (Absolute sum).

#### 6.0.0 Principle of operation :

6.1.0 The Dust Density Monitor is a monitoring device for the optical measurement of dust concentration. It belongs to a group of Transmissiometers, which precisely determine the energy loss focused light beam caused by dust particles in the emission

6.2.0 The energy loss is expressed in the optical measurement 'Extinction'. The quantity of Dust contained in the emission through which the light passes is proportional to the 'Extinction' value. The correlation is found by means of gravimetric measurements. (Gravimetric measurement is not in the scope of bidder / supplier).

6.3.0 The principal of operation of Dust Density Monitor shall be transmission and absorption. The unit shall operate on Auto Collimation principle.

6.4.0 The Dust Density Monitor and its accessories, mounted at the duct, shall be designed for weather & dust proof as per IP 55 degree of protection, as per standard.

- 6.5.0 The Dust Density Monitor shall automatically and continuously correct the measurement for variations in the following and provide out put signal not affected by the following parameters.
- a) Flue gas temperature.
  - b) Ambient temperature.
  - c) Line voltage.
  - d) Ambient illumination.
  - e) Lamp aging.
  - f) Detector drift.
  - g) Shift in components characteristics.
  - h) Moisture in flue gas
- 6.6.0 The Dust Density Monitor shall measure the dust concentration of the dust at the location of installation and produce 4 – 20mA DC (floating) instantaneous signal corresponding to dust density measurement in mg / Nm<sup>3</sup>. The Dust Density Monitor system shall provide separate isolated 4-20 mA DC signals corresponding to dust measurement in mg / Nm<sup>3</sup> and opacity for Purchaser's use.
- 6.7.0 The Dust Density Monitor shall provide potential free 'NO' contact for high emission level alarm.
- 6.8.0 The Dust Density Monitor shall meet the following.
- a. Drift in calibration (zero & span ) : 1% in 24 hours.
  - b. Response time : Within 5 sec.
  - c. Sensor type : Luminescence
  - d. Calibration error : 2% or less of full scale range.
- 6.9.0 The Dust Density Monitor shall automatically carry out on-line ZERO & SPAN calibration. However it shall also be possible to select the on line ZERO & SPAN calibration manually at the field.
- 6.10.0 It shall be possible to select measurement mode, zero calibration mode and span calibration mode at the field.
- 6.11.0 It shall also be possible to read the out put current, Dust measurement at the field.
- 6.12.0 The Dust Density Monitor shall check the contamination on the optical surfaces and output error signal .Potential free 'NO' contact shall be provided if the window contamination exceeds the set level.

- 6.13.0 One Potential Free 'NO' contact shall be provided in the Dust Density Monitor to indicate that, the Calibration process is ON. The change in status of this potential free contact shall hold until the completion of the zero & span calibration.
- 6.14.0 The bidder shall furnish in their offer, the duration of ZERO & SPAN calibration / any other check cycle.
- 6.15.0 The bidder / supplier shall feed all parameters related to this contract in the Dust Density Monitor at the works itself and not at the site. It shall also be possible to feed the path Length details in the Dust Density Monitor, at site. Details of set point shall be furnished along with test certificate
- 6.16.0 Erection, commissioning, operation & maintenance manual shall be in ENGLISH only. Accordingly any displays, instruction etc. shall be furnished in English only.
- 6.17.0 All Potential Free contacts for external used shall be rated for 240 V, AC.5A If required suitable Local Junction Box shall be supplied to convert the Potential Free Contacts to 240 V, AC rating.**

6.18.0 Necessary Field Termination Box shall be supplied to terminate the Flow Sensor contacts, if Flow Sensors are envisaged.

**7.0.0 TRANSCIEVER / TRANSMISSOMETER / MEASURING HEAD AND REFLECTOR / REFLECTOR:**

- 7.1.0 Each set of Dust Density Monitor shall have one number each Transceiver (to be mounted on one side of the duct), and Reflector (to be mounted on the opposite side of the duct).
- 7.2.0 The Transceiver shall contain a light source, the light from which shall be modulated and shall be projected through the flue gas stream. The light reflected (Measurements beam) from the Reflector shall be compared at the Transceivers with the light transmitted (reference beam) from the Transceivers. The ratio of measurement beam to reference beam shall be used to determine the Optical density of the dust in the flue gas.
- 7.3.0 The power supply to the light source shall be regulated to ensure constant light emission.
- 7.4.0 The minimum life of the light source shall be 20, 000 hours.
- 7.5.0 The Transceivers and the Reflector shall be made up of Die Cast Aluminium / Stainless Steel.
- 7.6.0 The Transceivers shall be provided with automatic on line Span and Zero calibration function with manual over – ride facility.
- 7.7.0 For the visual observation of the system alignment (Alignment Indicators), suitable provision shall be made available in the Transceivers.
- 7.8.0 The Reflector shall be suitable for the duct dimension indicated in Project Specific Data sheet.

**7.9.0 EXTINCTION RANGES:**

- 7.9.1 The measurement range in  $\text{mg}/\text{Nm}^3$  for various extinction ranges shall be furnished.
- 7.9.2 The instrument can be designed for a particular duct width (zero reference paths) as per purchase enquiry / purchase order, for a particular extinction range, considering  $200\text{mg}/\text{NM}^3$  having dust particle size 3 micron .
- 7.9.3 The vendor shall supply span / check filter for all measurement ranges for all Dust Density Monitors.
- 7.9.4 In case during calibration check cycle, if the span filter needs to be changed for different extinction ranges, the same should be possible and replaceable at site easily.
- 7.9.5 Adjustment at site, for working in different extinction range, shall be possible and the same shall be confirmed in the offer.
- 7.9.6 Minimum 5 different MEASUREMENT RANGES shall be provided in the Dust Density Monitors.
- 7.9.7 If any other design is offered which does not require changing of SPAN / CHECK FILTER for various measurement ranges, the same shall be explicitly brought in the offer along with details.

**8.0.0 LOCAL CONNECTION UNIT / LOCAL CONTROL UNIT / POWER SUPPLY UNIT / SIGNAL PROCESSING UNIT,**

- 8.1.0 The vendor shall supply Local unit .
- 8.2.0 In addition any Control Unit for Fail Safe Shutter is required, the same shall also be supplied.

**9.0.0 FULLY AUTOMATIC ELECTRICALLY OPERATED FAIL SAFE SHUTTERS :**

- 9.1.0 Each set of Dust Density Monitors shall be supplied along with 2 nos. independent Fully Automatic Fail Safe Shutters, to prevent dust laden flue gas from entering and contaminating the Optical surfaces of the Transceivers and Reflector .
- 9.2.0 These failsafe shutters shall automatically open when, the following conditions are satisfied.
- a) Power supply is available
  - b) Purge air is available at the Transceiver & Reflector.

9.3.0 The failsafe shutters shall close automatically when minimum one of the following conditions is satisfied.

- a) Power supply is not available
- b) Purge air is not available at the Transceiver or Reflector.

9.4.0 The failsafe safe shutter requiring manual intervention for its Open / Close operation, is not acceptable.

9.5.0 The part of failsafe shutter, which is exposed to the measuring light beam shall not be of polished surface/ white colored surface.

**9.6.0 The Fail Safe Shutter shall be operated using Electrical supply only and not based on Air operation or Air cum spring operation or Counter Weight.**

9.7.0 The Operation of the failsafe shutter shall not be based on Battery. Battery charging mechanism is not acceptable.

9.8.0 Counter weight cum air operated fail-safe shutter is not acceptable.

9.9.0 The failsafe shutter shall be field proven type and BHEL / Ranipet approved model.

9.10.0 The shutter shall move away from the exposed portion of the flange such that moving mechanism will not be affected by dust deposit, if any.

9.11.0 The bidder shall submit along with the offer, the General Arrangement drawing along with Operational write – up of the Failsafe shutters for BHEL review & acceptance, if the shutters are not meeting the above requirement.

9.12.0 Each failsafe shutter shall be provided with one number potential free contact, which shall close, when the shutter is closed and shall open when the shutter is open. This contact is required for the use of Purchaser.

9.13.0 The Fail Safe Shutter shall perform satisfactorily with the dust having highly abrasive characteristics.

#### **10.0.0 MOUNTING FLANGE WITH TUBE**

10.1.0 Two sets of Mounting Flange with Tube assembly shall be supplied, one each for Transceiver and Reflector.

10.2.0 The mounting flange with tube shall be integral. Supply of separate flange and tube from supplier's works is not acceptable.

10.3.0 The flange tube shall be suitable to mount Transceiver and Reflector along with the Fail Safe Shutters.

10.4.0 The length of tube shall be minimum 225mm.

10.5.0 To mount failsafe shutter with the equipment, additional adopter / accessories if any are required, the same shall be supplied along with the mounting flange.

10.6.0 Suitable sealing gaskets shall be supplied along with the Flange with Tube, so as to prevent dust and water entry through the Flange-to-Flange connection.

#### 11.0.0 ALIGNMENT FASTNERS AND MOUNTING FASTENERS

11.1.0 To mount and align the Transceiver & Reflector on the flange tube along with the Fail Safe Shutters, suitable mounting cum aligning fasteners shall be supplied. The length of the fasteners shall be sufficient enough to mount the Transceiver / Reflector on the Flange Tube along with the Fail Safe Shutters

11.2.0 All mounting hardware (bolt, nut & washers or any other items not specified but required for the system) for fixing all applicable equipment / accessories shall be supplied by the vendor. The bolts shall have adequate length for fixing the equipment / accessories.

#### 12.0.0 BLOWER

12.1.0 For each set of Dust Density Monitor, Blowers along with accessories shall be supplied. The Blower shall be of field proven & BHEL approved type.  
**Number of Blowers shall be as per Project Specific Data Sheet.**

12.2.0 The Blower motor suitable for power supply other than that mentioned above will be not be accepted and the same will be rejected.

12.3.0 The Blower shall be supplied along with the mounting base, so that the blower can be mounted on the flue gas duct wall itself.

12.4.0 Each Blower shall be supplied along with air purge hose (**length as per Project Specific Data Sheet**) to convey the purge air from the Blower to the Transceiver and Reflector

12.5.0 The Blower shall be provided with removable cartridge dust filter at the suction side to filter 5 micron & above dust particle from the intake air.

12.6.0 The Blower and its associated components, filter etc, shall be suitable for an ambient temperature of +50°C

12.7.0 Necessary hose clips, screws etc, shall be supplied for the installation of the hose, between Blower, Transceiver and Reflector.

- 12.8.0 The KW rating & full load current of Blower to be furnished in the offer.
- 12.9.0 The Blower shall be provided with electrical motor of adequate capacity & justification for the capacity selected shall be submitted.
- 12.10.0 The motor shall be minimum Class-B insulated. The temperature rise for the motor shall be 70 deg. C by resistance method.
- 12.11.0 The noise level and vibration level of the motor shall be limited within the limits prescribed in relevant IEC / IS standard. The motor shall withstand the vibrations produced by the driven equipment.
- 12.12.0 The maximum continuous rating of the motor shall be at least 10% above design point or equal to the maximum load demand of the driven equipment, under entire operating range including voltage and frequency variations.
- 12.13.0 The starters (Switch gear) for Blower will be provided by BHEL and excluded from the scope of supply of Dust Density Monitor.
- 12.14.0 The Blower shall deliver the purge air at the required pressure and volume to prevent the dust laden flue gas from reaching the Optical Surfaces of the Transceiver thereby avoiding contamination of the Optical Surfaces and condensation of flue gas moisture in the Dust Density Monitor.
- 12.15.0 The air purge hose shall be suitable for 120 deg.C continuous operation
- 12.16.0 Providing Compressor for Air Purging is not acceptable.
- 13.0.0 **DIFFERENTIAL PRESSURE (DP) SWITCH / FLOW SENSOR:**
- 13.1.0 For each set of Dust Density Monitors, two numbers Differential Pressure Switch shall be supplied.
- 13.2.0 The differential pressure switch shall be provided with potential free 'NO' contact, to sense the purge air flow at the Transceivers / Reflectors. These 'NO ' contacts shall be suitable for 240 V , AC .
- 13.3.0 Alternatively, if the design of the bidder calls for Flow Sensors, then, 2 numbers Flow Sensors per Dust Density Monitors shall be supplied , to sense the air flow at the Transceiver / Reflector.
- 13.4.0 On sensing the purge air failure at the Transceivers / Reflectors, the DP Switch / Flow Sensor shall close the Fail Safe Shutters automatically to prevent the optical surfaces of Transceivers / Reflectors from the dust deposit. When the purge air is resumed at Transceivers/ Reflectors, the Fail Safe Shutter shall open automatically.

**14.0.0 WEATHER HOODS:**

- 14.1.0 Weather hoods shall be provided for all field mounted equipment & for all instruments including Transceiver, Reflector, Local Connection Unit/ Local Control Unit, Purge Air Blowers, Local Junction Box / Field Termination Box etc.
- 14.2.0 These weather hoods shall be provided for all field mounted equipment / instrument, even if they are meeting weather and dust protection to prevent direct fall of sunlight or rain or dust on the equipment / instruments.
- 14.3.0 The weather hoods shall fully cover the respective equipment / instrument except at the bottom (for heat dissipation.)
- 14.4.0 The weather hood shall be made of Mild Sheet Steel.
- 14.5.0 The weather hood drawing shall be submitted to BHEL for approval, on placement of order.

**15.0.0 INTERCONNECTING CABLES:**

- 15.1.0 Prefabricated Inter connecting **special** cables of sufficient length from Transceiver / Reflector/ Fail Safe Shutter / DP Switch / Flow Sensors to Local Termination box / Local Evaluation Unit / Power Supply Unit / Signal Processing Unit/ Control Unit for Fail Safe Shutter shall be supplied for each Dust Density Monitor.
- 15.2.0 Fabrication of cables at site is not acceptable.
- 15.3.0 If pre fabricated cables are not required, the same shall be clearly indicated in the offer.
- 15.4.0 The type of cable, type of termination, limitation in length if any etc. shall be clearly indicated in the offer.
- 15.5.0 The bidder shall furnish detailed interconnection drawings between various equipment / instrument on placement of order.
- 15.6.0 Inter connecting cable between Transceiver and Reflector if applicable shall be supplied at the rate of 15 meter per Dust Density Monitor.

**16.0.0 REMOTE CONTROL UNIT (RCU):(If applicable as per PROJECT SPECIFIC DATA SHEET)**

- 16.1.0 The automatic calibration interval shall be selectable from the Remote Control Unit (Herein after called as RCU).
- 16.2.0 The RCU shall be suitable for Panel mounting located at a distance of 500 m away from the location where the Transreceiver / Measuring Head is installed.
- 16.3.0 The RCU shall provide two separate isolated 4-20 mA DC (floating) outputs corresponding to dust density measurement in mg / Nm<sup>3</sup> & 0 to 100 % Opacity.
- 16.4.0 The RCU shall be provided with the following features:
- (i) Dust density indication (in mg / Nm<sup>3</sup>.)
  - (ii) Measurement range selection (min. 10 ranges)
  - (iii) Remote automatic transceiver/ Measuring head calibration interval control (1 to 24 hours)
  - (iv) Status indication of in-situ equipments such as lamp, Air filters, Fail safe shutters, Optical surfaces (Transceiver and Reflector) and Over range operation etc.
  - (v) Two independent high level alarm (potential free NO contact) with adjustable time delays.
  - (vi) Potential free contact (NO) output for indicating that the Dust Density Monitor is under calibration mode.
  - (vii) Potential free contact (NO) output for indicating that the Dust Density Monitor is malfunctioning.

**17.0.0 DOCUMENTS/DETAILS TO BE SUBMITTED ALONG WITH THE OFFERS:**

- a) Schedule A (Schedule of technical confirmations)
- b) Schedule B (Schedule of technical deviations)
- c) Schedule C (Bill of materials including special tools if any)
- d) Schedule D (Scope of work)
- e) General arrangement drawing & operational write-up on Fail Safe Shutters
- f) Block / Schematic diagrams identifying various items quoted / required and also indicating the scope of supply.
- g) The duration of Zero & Span calibration / any other check cycle.
- h) The measurement range in mg/Nm<sup>3</sup> for various extinction ranges.

- i) The KW rating, full load current & flow of Blower is to be furnished in the offer.
- j) The type of cable, type of termination, limitation in length if any etc. shall be clearly indicated in the offer

**18.0.0 THE FOLLOWING DOCUMENTS SHALL BE SUBMITTED TO BHEL IN THE EVENT OF AN ORDER ON THE BIDDER.**

Following documents / drawings shall be submitted to BHEL within 2 weeks days from the date of order.

- 18.1.0 Detailed Bill of material (as per purchase order including special tools if any) indicating item description, part no. rating, quantity make etc.
- 18.2.0 Details of dimension and weight for various loose items.
- 18.3.0 Mounting arrangement drawing including clearance required.
- 18.4.0 Electrical interconnection diagram indicating terminal /pin details of various items.
- 18.5.0 Internal wiring diagram of the Local Junction Box / Field Termination Box.
- 18.6.0 Termination details of various items.
- 18.7.0 Power & Control Scheme drawings of motor & instruments
- 18.8.0 Technical Data sheet for Blower and its motor
- 18.9.0 General arrangement and mounting arrangement drawings for Blower and its motor.
- 18.10.0 General arrangement drawing of weather hoods
- 18.11.0 General arrangement and operational write up of Fail Safe Shutters
- 18.12.0 Block / Schematic diagrams & wiring diagrams identifying various items quoted / required and also indicating the scope of supply.
- 18.13.0 The bidder shall furnish, the duration of Zero & Span calibration / any other check cycle.
- 18.14.0 The measurement range in mg/Nm<sup>3</sup> for various extinction ranges shall be furnished.
- 18.15.0 The KW rating, full load current of Blower is to be furnished along with justification for capacity selection.
- 18.16.0 The type of cable, type of termination, limitation in length if any etc.

18.17.0 The bidder shall furnish detailed interconnection between various equipment / instrument.

18.18.0 Erection instruction.

18.19.0 Pre commissioning checks.

18.20.0 Commissioning procedure.

**19.0.0 O & M INSTRUCTION MANUAL :**

19.1.0 Hard copies of operation & maintenance instruction manual shall be supplied along with the Dust Density Monitor, RCU (if applicable) and all its accessories. The number of copies shall be as per Enquiry / Purchase order.

19.2.0 In addition, the O & M manual shall also be submitted in CD.

19.3.0 The O & M instruction manual shall include all the items supplied by the bidder / vendor.

19.4.0 The O&M manual shall include the following:

19.5.0 Detailed technical write up on working principal, technical data & specification for various items.

19.6.0 Detailed erection procedures

19.7.0 Detailed commissioning procedure, trouble shooting, maintenance schedule etc.

19.8.0 Various parameters to be set during commissioning along with their tolerance.

19.9.0 Detailed operating instructions

19.10.0 Detailed maintenance instructions

19.11.0 List of spare parts along with ordering details

19.12.0 All inter connection drawings including terminal / pin details

19.13.0 DO's & DON'Ts

**20.0.0 PACKING:**

20.1.0 The Dust Density Monitors and its accessories shall be covered with polythene and packed with completely enclosed wooden boxes. Lining with plastic sheet shall be provided inside the packing to avoid water entry during transit / storage.

20.2.0 The packing shall be suitable for transport by Air.

**21.0.0 INSPECTION.**

21.1.0 The Dust Density Monitors and its accessories shall be inspected based on the following documents.

- a)BHEL Purchase Order.
- b)BHEL Technical Specification.

**22.0.0 COMMISSIONING :**

22.1.0 The vendor shall furnish necessary documents to BHEL for erecting all the Dust Density Monitor, Remote Control Unit (if applicable) and its associated items supplied by the vendor.

22.2.0 The vendor shall commission all the Dust Density Monitor, RCU (if applicable) and its associated items supplied by the vendor to the satisfaction of BHEL/ Customer.

22.3.0 The supplier shall carry out Zero Reference Path Calibration, for each Dust Density Monitor at site.

22.4.0 The instruments, tools, spares etc. required for the commissioning shall be arranged by the vendor.

\*\*\*\*\*


**PROJECT DATA SHEET FOR OPACITY MONITOR**

|                                                                                 |   |                                                 |
|---------------------------------------------------------------------------------|---|-------------------------------------------------|
| 1. Project Name                                                                 | : | IPCL-HALDIA TPS 3X150 MW                        |
| 2. Number of Boilers                                                            | : | THREE                                           |
| 3. Flue gas Pressure                                                            | : | ESP Inlet- minus 150 mm WC<br>(Guarantee point) |
| 4. Flue gas temperature                                                         | : |                                                 |
| (i) Normal                                                                      | : | 200 deg.C                                       |
| (ii) Exceptional                                                                | : | 300 deg C for 30 minutes                        |
| 5. Flue gas sulphur content                                                     | : | 0.60 %                                          |
| 6. Flue gas moisture content                                                    | : | 6.92 % in weight                                |
| 7. Dust emission (ESP Guarantee point)                                          | : | 50 mg/Nm3 (N-1)                                 |
| 8. Duct width                                                                   | : | 2400 with Including thickness of<br>wall.       |
| 9. Remote Control Unit                                                          | : | Not Applicable                                  |
| 10. Voltage level for local Control/ Power<br>Supply Unit/Local connection Unit | : | 240V AC                                         |
| 11. Voltage level for Solenoid Valve                                            | : | 240V AC                                         |
| 12. Number of Blowers per Opacity Monitor                                       | : | One                                             |
| 13. Length of Air Purge hose required<br>for each Blower                        | : | 30 meters                                       |
| 14. Length of Air Purge hose<br>required for each OPM                           | : | 30 meters                                       |

PREPARED BY

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M.Vijayalakshmi

CHECKED BY

  
S RANGARAJAN  
SDGM/EDC-ECI

| SCHEDULE 'A' (SCHEDULE OF TECHNICAL CONFIRMATIONS)                                   |                                                                                                       | PAGE 01 OF 02 |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------|
| OFFER FOR THE SUPPLY OF DUST DENSITY MONITORS, RCU (IF APPLICABLE) & ITS ACCESSORIES |                                                                                                       |               |
| BHEL ENQUIRY REFERENCE:                                                              |                                                                                                       | PROJECT:      |
| BHEL TECHNICAL SPECIFICATION REFERENCE: TECI:DDM:GEN:REV 02                          |                                                                                                       |               |
| Sl. No.                                                                              | DESCRIPTION                                                                                           | YES / NO      |
| 01                                                                                   | OFFERED MODEL NUMBER:                                                                                 |               |
| 02                                                                                   | THE OFFERED MODEL IS FIELD PROVEN TYPE?                                                               |               |
| 03                                                                                   | COMPLIANCE TO ENQUIRY TECHNICAL SPECIFICATION AND PROJECT SPECIFIC DATA SHEET?                        |               |
| 04                                                                                   | THE DUST DENSITY MONITOR IS SUITABLE FOR THE DUCT WIDTH INDICATED IN THE ENQUIRY?                     |               |
| 05                                                                                   | REFLECTOR IS SUITABLE FOR THE DUCT WIDTH INDICATED IN THE ENQUIRY?                                    |               |
| 06                                                                                   | THE DUST DENSITY MONITOR IS SUITABLE FOR THE FLUE GAS PRESSURE INDICATED IN THE ENQUIRY?              |               |
| 07                                                                                   | THE DUST DENSITY MONITOR IS SUITABLE FOR THE FLUE GAS TEMPERATURE INDICATED IN THE ENQUIRY?           |               |
| 08                                                                                   | MEASUREMENT RANGE OF THE OFFERED INSTRUMENT MEETS THE ENQUIRY SPECIFICATION?                          |               |
| 09                                                                                   | THE DUST DENSITY MONITOR IS SUITABLE FOR MEASURING DUST EMISSION AS PER PROJECT SPECIFIC DATA SHEET?  |               |
| 10                                                                                   | ALL ITEMS AS PER ENQUIRY INCLUDED IN SCOPE?                                                           |               |
| 11                                                                                   | WEATHER HOOD FOR ALL FIELD MOUNTED ITEMS INCLUDED IN SCOPE?                                           |               |
| 12                                                                                   | DEGREE OF PROTECTION FOR ALL FIELD MOUNTED ITEMS AS PER ENQUIRY REQUIREMENT?                          |               |
| 13                                                                                   | FAIL SAFE SHUTTER MEETS ENQUIRY SPECIFICATION ?                                                       |               |
| 14                                                                                   | FAIL SAFE SHUTTER IS FULLY AUTOMATIC SOLENOID OPERATED TYPE?                                          |               |
| 15                                                                                   | AUTOMATIC ON LINE ZERO CALIBRATION PROVIDED?                                                          |               |
| 16                                                                                   | AUTOMATIC ONLINE SPAN CALIBRATION PROVIDED?                                                           |               |
| 17                                                                                   | ALL EQUIPEMENTS / COMPONENTS ARE SUITABLE FOR THE POWER SUPPLY AS PER ENQUIRY SPECIFICATION?          |               |
| 18                                                                                   | ALIGNMENT FASTENERS FOR ALIGNING THE TRANSEIVER / MEASURING HEAD AND THE REFLECTOR INCLUDED IN SCOPE? |               |

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| SCHEDULE 'A' (SCHEDULE OF TECHNICAL CONFIRMATIONS)                                   |                                                                                                             | PAGE 02 OF 02 |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------|
| OFFER FOR THE SUPPLY OF DUST DENSITY MONITORS, RCU (IF APPLICABLE) & ITS ACCESSORIES |                                                                                                             |               |
| BHEL ENQUIRY REFERENCE:                                                              |                                                                                                             | PROJECT       |
| BHEL TECHNICAL SPECIFICATION REFERENCE: TECI:DDM:GEN:REV 02                          |                                                                                                             |               |
| Sl. No.                                                                              | DESCRIPTION                                                                                                 | YES / NO      |
| 19                                                                                   | MOUNTING FASTENERS, FOR MOUNTING, ALL ITEMS UNDER BIDDER'S SCOPE, ARE INCLUDED IN SCOPE?                    |               |
| 20                                                                                   | PURGE AIR BLOWER IS SUITABLE FOR THE POWER SUPPLY AS PER ENQUIRY SPECIFICATION?                             |               |
| 21                                                                                   | PURGE AIR BLOWER IS FIELD PROVEN TYPE?                                                                      |               |
| 22                                                                                   | THE PURGE AIR BLOWER IS SUPPLIED ALONG WITH MOUNTING BASE PLATE?                                            |               |
| 23                                                                                   | THE CAPACITY OF BLOWERS IS ADEQUATE ENOUGH TO MEET THE SYSTEM AND ENQUIRY REQUIREMENTS?                     |               |
| 24                                                                                   | 4 – 20 mA DC (FLOATING) SIGNAL CORRESPONDING TO DUCT DENSITY MEASUREMENT in mg / N.cubic meter IS PROVIDED? |               |
| 25                                                                                   | POTENTIAL FREE CONTACT FOR DUST DENSITY MONITOR IN CALIBRATION MODE IS PROVIDED FOR PURCHASER'S USE?        |               |
| 26                                                                                   | POTENTIAL FREE CONTACT SIGNAL FOR FAIL SAFE SHUTTER CLOSED IS PROVIDED FOR PURCHASER'S USE?                 |               |
| 27                                                                                   | POTENTIAL FREE CONTACT SIGNAL FOR HIGH EMISSION LEVEL IS PROVIDED FOR PURCHASER'S USE?                      |               |
| 28                                                                                   | ALL POTENTIAL FREE CONTACTS ARE RATED FOR 240 V AC?                                                         |               |
| 29                                                                                   | MINIMUM LIFE OF LIGHT SOURCE?                                                                               |               |
| 30                                                                                   | REMOTE CONTROL UNIT (IF APPLICABLE) MEETS THE ENQUIRY REQUIREMENTS?                                         |               |
| 31                                                                                   | COMMISSIONING OF ALL DUST DENSITY MONITOR INCLUDED IN SCOPE?                                                |               |
| 32                                                                                   | IN THE EVENT OF AN ORDER, ALL DOCUMENTS AS PER ENQUIRY WILL BE SUBMITTED TO BHEL?                           |               |
| 33                                                                                   | NUMBER OF O&M MANUAL SUPPLIED IN HARD COPIES?                                                               |               |
| 34                                                                                   | O&M MANUAL WILL ALSO BE SUPPLIED IN CD?                                                                     |               |
| 35                                                                                   | SEPARATE BLOWERS ARE PROVIDED FOR TRANSCIEVERS/MEASURING HEAD and for REFLECTOR?                            |               |

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**SCHEDULE 'B' (SCHEDULE OF TECHNICAL DEVIATIONS)  
OFFER FOR THE SUPPLY OF DUST DENSITY MONITOR, RCU (IF APPLICABLE) & ITS ACCESSORIES**

PROJECT:

BHEL ENQUIRY REFERENCE:

BHEL TECHNICAL SPECIFICATION REFERENCE: TECI:DDM:GEN:REV 02

| SPECIFICATION<br>CLAUSE No. | SPECIFICATION REQUIREMENTS | BIDDER'S CLARIFICATION / DEVIATION |
|-----------------------------|----------------------------|------------------------------------|
|                             |                            |                                    |

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OFFER FOR THE SUPPLY OF DUST DENSITY MONITORS, RCU (IF APPLICABLE) & ITS ACCESSORIES

BHEL ENQUIRY REFERENCE: PROJECT:

BHEL TECHNICAL SPECIFICATION REFERENCE: TECI:DDM:GEN:REV: 02.

| Sl. No. | DESCRIPTION                                                              | QTY / SET | QTY / .... SET | UNIT PRICE | TOTAL PRICE FOR 08 SETS |
|---------|--------------------------------------------------------------------------|-----------|----------------|------------|-------------------------|
| 01      | TRANSCIEVER (OR) MEASURING HEAD WITH AIR PURGE ADAPTER                   |           |                |            |                         |
| 02      | REFLECTOR WITH AIR PURGE ADAPTER                                         |           |                |            |                         |
| 03      | LOCAL CONNECTION UNIT (OR) LOCAL CONTROL UNIT                            |           |                |            |                         |
| 04      | INTERCONNECTION CABLE BETWEEN TRANSCIEVER & REFLECTOR (IF APPLICABLE)    |           |                |            |                         |
| 05      | PURGE AIR BLOWER WITH MOUNTING BASE PLATE, FILTERS, ADAPTERS FOR HOSE    |           |                |            |                         |
| 06      | AIR PURGE HOSE                                                           |           |                |            |                         |
| 07      | CLAMPS WITH SCREWS FOR HOSE                                              |           |                |            |                         |
| 08      | FLANGE WITH TUBE FOR MOUNTING TRANSCIEVERS/ MEASURING HEAD AND REFLECTOR |           |                |            |                         |
| 09      | ALIGNMENT FASTENERS                                                      |           |                |            |                         |
| 10      | MOUNTING FATENERS TO MOUNT ALL THE ITEMS UNDER BIDDER'S SCOPE            |           |                |            |                         |
| 11      | FULLY AUTOMATIC SOLENOID OPERATED FAIL SAFE SHUTTERS                     |           |                |            |                         |

PRICE SHALL NOT BE INDICATED IN THE TECHNICAL BID

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SCHEDULE 'C' (SCHEDULE OF BILL OF MATERIALS)

OFFER FOR THE SUPPLY OF DUST DENSITY MONITORS, RCU (IF APPLICABLE) & ITS ACCESSORIES

PROJECT :

BHEL ENQUIRY REFERENCE:

BHEL TECHNICAL SPECIFICATION REFERENCE: TECI:DDM:GEN:REV : 02

| Sl. No. | DESCRIPTION                                                 | QTY / SET | QTY / .... SET | UNIT PRICE | TOTAL PRICE FOR 08 SETS |
|---------|-------------------------------------------------------------|-----------|----------------|------------|-------------------------|
| 12      | SET OF SPAN FILTERS FOR ALL MEASURING RANGES                |           |                |            |                         |
| 13      | ADAPTER FLANGES FOR FAIL SAFE SHUTTERS (IF APPLICABLE)      |           |                |            |                         |
| 14      | LOCAL JUNCTION BOX / FIELD TERMINATION BOX                  |           |                |            |                         |
| 15      | DIFFERENTIAL PRESSURE SWITCH (OR) FLOW SENSORS              |           |                |            |                         |
| 16      | SOFTWARE FOR COMMISSIONING, OPERATION & MAINTENANCE         |           |                |            |                         |
| 17      | WEATHER HOOD FOR TRANCEIVER / MEASURING HEAD                |           |                |            |                         |
| 18      | WEATHER HOOD FOR REFLECTOR                                  |           |                |            |                         |
| 19      | WEATHER HOOD FOR LOCAL CONNECTION UNIT / LOCAL CONTROL UNIT |           |                |            |                         |
| 20      | WEATHER HOOD FOR PURGE AIR BLOWER                           |           |                |            |                         |
| 21      | WEATHER HOOD FOR LOCAL JUNCTION BOX / FIELD TERMINATION BOX |           |                |            |                         |
| 22      | O&M MANUAL IN HARD COPIES                                   |           |                |            |                         |
| 23      | O&M MANUAL IN CD                                            |           |                |            |                         |
| 24      | REMOTE CONTROL UNIT (IF APPLICABLE)                         |           |                |            |                         |
| 25      | LOW PRESSURE SWITCH                                         |           |                |            |                         |
| 24      | (ANY OTHER ITEMS ... PLEASE SPECIFY)                        |           |                |            |                         |

PRICE SHALL NOT BE INDICATED IN THE TECHNICAL BID

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| SCHEDULE 'D' (SCHEDULE OF SCOPE OF WORK)                                            |                                                                                                                  | PAGE 01 OF 01 |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------|
| OFFER FOR THE SUPPLY OF DUST DENSITY MONITOR, RCU (IF APPLICABLE) & ITS ACCESSORIES |                                                                                                                  |               |
| BHEL ENQUIRY REFERENCE:                                                             |                                                                                                                  |               |
| PROJECT:                                                                            |                                                                                                                  |               |
| BHEL TECHNICAL SPECIFICATION REFERENCE: TECI:DDM:GEN:REV. 02                        |                                                                                                                  |               |
| Sl. No.                                                                             | DESCRIPTION                                                                                                      | YES / NO      |
| 1.                                                                                  | SUPPLY OF ALL ITEMS AS PER ENQUIRY SPECIFICATION INCLUDED IN SCOPE?                                              |               |
| 2.                                                                                  | SUPPLY OF SOFTWARE REQUIRED FOR COMMISSIONING & O&M OF DUST DENSITY MONITOR & ITS ACCESSORIES INCLUDED IN SCOPE? |               |
| 3.                                                                                  | COMMISSIONING OF ALL ITEMS INCLUDED IN SCOPE?                                                                    |               |
| 4.                                                                                  | ALL INSTRUMENTS & TOOLS REQUIRED DURING COMMISSIONING INCLUDED IN SCOPE?                                         |               |
| 5.                                                                                  | ALL SPARES REQUIRED DURING COMMISSIONING WILL BE ARRANGED BY BIDDER?                                             |               |
| 6.                                                                                  | IN THE EVENT OF ORDER, ALL DOCUMENTS AS PER ENQUIRY & SPECIFICATION WILL BE SUBMITTED TO BHEL?                   |               |
| 7.                                                                                  | SUPPLY OF O&M MANUAL IN HARD COPIES AS PER ENQUIRY REQUIREMENT?                                                  |               |
| 8.                                                                                  | SUPPLY OF O&M MANUAL IN SOFT MEDIA?                                                                              |               |
| 9.                                                                                  | GUARANTEE AS PER ENQUIRY REQUIREMENTS?                                                                           |               |

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### Payment mechanism of BHEL-Ranipet

BHEL, Ranipet's payment mechanism will be as follows: (All Bidders are requested to read this carefully and take note of it before submitting their offer)

All bills of Suppliers processed for payment by BHEL, Ranipet shall pass through the following mile stones:

- (1) Receipt of materials at BHEL, Ranipet Stores (evidenced by the Day-Book Number and Date generated at BHEL Stores, Ranipet) or Receipt of materials at Project Site / Destination specified in the Purchase Order (as evidenced by the acknowledgement given by the Consignee).
- (2) Acceptance of the supplied materials at BHEL Stores, Ranipet. (Proof of evidence: Stores Receipt voucher – Short form "SRV", raised by BHEL Stores, Ranipet referenced by the SRV Number and Date)
- (3) Receipt and Registration of the Bills / Invoices of the Supplier at BHEL, Ranipet Accounts Department. (evidenced by the ABS Number and Date)
- (4) Receipt of clarifications, if any that may be required by BHEL, Ranipet Accounts or Purchase Department, from the Supplier. (As evidenced by the IOM Inward Date)
- (5) Bill processing and passing.
- (6) Payment release.

All these events are transparently available in the SCM web-site of BHEL, Ranipet, {<http://bapscm.bhelrpt.co.in/purc>} which can be viewed by all registered supplier with a pass-word.

Allowed Time frames:

- |                                       |                                             |
|---------------------------------------|---------------------------------------------|
| A] From DB to SRV:                    | 10 Days                                     |
| B] From SRV to ABS:                   | 15 Days                                     |
| C] From ABS to Bill Pass:             | 07 Days (if Stage 4 above is not there)     |
| Or                                    |                                             |
| From IOM to Bill Pass:                | 07 Days (if Stage 4 above is applicable)    |
| D] From Bill Pass to Payment Release: | As per payment terms of the Purchase order. |

All Suppliers payment/s would be released based on seniority of receipt of the processed bills at the payment section of BHEL, Ranipet Accounts Department.

The seniority would be based on the sequence of milestone events listed above.

In the sequence of the bill processing the preceding mile-stone seniority will be void, if the subsequent event occurs beyond the permitted time frame between two successive events.

For example:

Start seniority would be with the DB date

If the SRV date is greater than 10 days of the DB date, then the seniority of the DB date would be replaced by the SRV date.

If the ABS date is greater than 15 days of the SRV date, then the seniority would be reckoned by the ABS date.

If the Bill pass date is greater than 07 days of the ABS date then the seniority would be the date of inward receipt of the IOM.

The logics of these sequence is that SRV, ABS, IOM inward entry are dependent entirely on submission of correct documentation by Suppliers, as called for in the Purchase Order. If the documents are

correctly submitted each of the milestone listed above will occur within BHEL, Ranipet within the timelines specified above.

Hence, in their own interest all Suppliers are requested to take note of this process and comply with the same.

**Caution:** Suppliers' payments would get delayed / affected if they fail to adhere to the submission of the documents specified in the Purchase Order / Contract, since the listed milestone events occurrence are contingent upon the availability of the requisite documents.