

	<b>BHARAT HEAVY ELECTRICALS LTD.,</b> <b>CORPORATE R&amp;D DIVISION</b> <b>VIKAS NAGAR, HYDERABAD-500093 (INDIA)</b>		Enquiry No. :	
			Date :	
	<b><u>PURCHASE SECTION</u></b>		<b><u>TECHNICAL SECTION</u></b>	<b><u>SPEC.NO.</u></b>
	91 40 2388 2404	<b><u>PHONE</u></b>	91 40 2377 4494 Ext.7326	ST:CN <sub>T</sub> _ICH:10: 001
	91 40 23770698	<b><u>FAX</u></b>	91 40 2377 6320	
	Mr. P.Bhaskar Reddy	<b><u>CONTACT</u></b>	Mr. G.Muralidharan	
	<b><u>pbreddy@bhelrnd.co.in</u></b>	<b><u>E-MAIL</u></b>	<b><u>gmurali@bhernd.co.in</u></b>	

### **TENDER DOCUMENT FOR SUPPLY OF CONTCT ANGLE MEASUREMENT SYSTEM**

#### **IMPORTANT**

1. The offer and all documents enclosed with offer should be in **English language only**.
2. Vendor must submit complete information against **Clause No. 15 Pre-Qualification Criteria**. **The offer meeting this clause would only be processed for Technical evaluation.**
3. The Pre qualification criteria are **mandatory** requirements and **the technical bids will be evaluated only when the Pre Qualification criteria are met.**
4. BHEL reserves the right to verify the information submitted by the vendor. **The offer with false/ incorrect/incomplete information may be rejected.**
5. Pre qualification will be carried out based on the details furnished by the vendor / feedback from their customers / inspection of the company / product if required **by BHEL and at its sole discretion.**
6. Vendor shall sign and stamp all sheets.
7. Offers submitted shall be valid for a period of minimum 6(Six) months from date of commercial bid.
8. Revised technical bid may be necessary should the specification need up gradation/ modification on first technical scrutiny.

<b><u>VENDOR DETAILS</u></b>			<b><u>INDIAN AGENTS DETAILS</u></b>		
<b>ADDRESS OF THE VENDOR :</b>		<b>ADDRESS OF THE INDIAN AGENT :</b>			
<b>TELEPHONE NOS.:</b>		<b>TELEPHONE NOS.:</b>			
<b>FAX NOS.:</b>		<b>FAX NOS.:</b>			
<b>CONTACT PERSON:</b>		<b>CONTACT PERSON:</b>			
<b>E-MAIL ADDRESS :</b>		<b>E-MAIL ADDRESS :</b>			
<b>SCOPE:</b>		Supply, training, installation, commissioning and demonstration at BHEL of Contact Angle Measuring System and related accessories, complying with the specifications listed in the Spec.No.ST:CNT_ICH:10:001.			
<b>Quantity:</b>		<b>ONE (1) Set</b>			
<b>Serial No.</b>	<b>DESCRIPTION OF REQUIREMENT</b>	<b>DESIRED TECH. SPECIFICATION</b> ( TO BE CONFIRMED BY VENDOR)	<b>OFFERED</b>	<b>DEVIATIONS</b> (IF ANY, ELSE PRINT NONE)	<b>REMARKS</b>
1.0	<b>EQUIPMENT:</b> Software controlled analytical system, for measuring Contact Angle, surface free energy, wettability of solid & other surfaces and interface surface tension along with suitable video system and CCD Camera, environment chamber and other accessories, hereinafter referred to as Contact Angle Measuring System, complying with the specifications listed in Clause 2.0 to 17.0.	BHEL requirement			
1.1	<b>Intended Use:</b> Measurement of static and dynamic Contact Angle, surface free energy, wettability of solid & other surfaces, interface surface tension and other surface properties at Room Temperature as well as at elevated Temperatures.	Vendor to confirm suitability of offered equipment	Confirmation in brief to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
1.2	The vendor should suggest a complete arrangement of the <b>Contact Angle Measuring System</b> and components and proposed system layout with all appropriate dimensions to house the system in a suitable location. Pre-installation requirements, other than the layout of location, such as the minimum required utilities like power, water, exhaust, operating environment requirements and other requirements., also should be clearly provided by the vendor. Tilting stage, Multi Syringe System and such accessories, if the same do not form the package quoted, should be quoted separately, along with complete specification, as <b>Optional Item</b> . Requirements of the computer system and accessories, and other requirements, if the same do not form the package quoted, should be quoted separately, along with complete specification, as <b>Optional Item</b> . The vendor should indicate the AMC charges, if any, separately, if the same do not form the package quoted as <b>Optional Item</b> . Tilting base assembly, if the same do not form the package quoted, should be quoted separately, along with complete specification, as <b>Optional Item</b> .	Vender to specify	Brief specification to be provided here		
1.3	Space requirement (Length, Breadth, Height), including the requirements for the computer system and accessories, UPS with battery backup , taking into the account of maintenance requirements as well, and necessary for the smooth operation of the <b>Contact Angle Measuring System</b>	Vender to specify,	Brief specification to be provided here		
1.4	Power requirement	Vender to specify	Brief specification to be provided here		
1.5	Air conditioner, Exhaust and other Operating Environment requirement	Vender to specify	Brief specification to be provided here		
1.6	Water and other requirements	Vender to specify	Brief spec. to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
2.0	<b>SPECIFICATION FOR CONTACT ANGLE MEASURING SYSTEM (Spec.No.ST:CNT ICH:10:001)</b>				
2.1	<b>Machine Model No.</b>	Vendor to specify	Brief specification to be provided here		
2.2	<b>Measuring Range:</b> Contact Angle: $0$ to $180^{\circ} \pm 0.1^{\circ}$ or better Surface and Interfacial Tension: $0.01$ to $1000\text{mN/m} \pm 0.01\text{mN/m}$ or better	Vender to specify	Brief specification to be provided here		
2.3	<b>Video System:</b> Optical high speed camera with $1024 \times 1024$ Pixel resolution / CCD Camera with $750 \times 550$ Pixel resolution or better with integrated fine focus, image distortion of $<0.1\%$ or better, capable of automatic triggering of measurements and Video Sequences with appropriate standard Interface.	Vender to specify	Brief specification to be provided here		
2.4	<b>Input Power:</b> $220 \pm 20$ VAC, 50 Hz	Vender to specify	Brief specification to be provided here		
2.5	<b>Optics:</b> 6.5 X Zoom/Fold with 4.5 X Zoom/Fold Magnification or better	Vender to specify	Brief specification to be provided here		
2.6	<b>Sample stage:</b> Software driven sample stage, precisely adjustable in X, Y, or Z axis. Tilting base assembly, preferably of electronic positioning accuracy of $\pm 0.005$ mm.	Vender to specify	Brief specification to be provided here		
2.7	<b>Measuring Speed:</b> 60 images per second or better	Vender to specify	Brief specification to be provided here		
2.8	<b>Drop control:</b> Automatic high precision single dosing system, adjustable in vertical and horizontal positions, with both manual and software controlled	Vender to specify	Brief specification to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
2.9	<b>Illumination:</b> Software controlled modular, hysteresis free illuminating with LED, Halogen or other better system	Vender to specify	Brief specification to be provided here		
2.10	<b>Environment Chamber:</b> Compatible, software controlled, environment chamber / high temperature attachment capable of heating up to 250° C along with relevant accessories, if any, with provision for inert gas facility, for the measurement of contact angle and other parameters.	Vender to specify	Brief specification to be provided here		
2.11	<b>Interface:</b> RS232 or other standard interface systems.	Vender to specify	Brief specification to be provided here		
2.12	<b>Software :</b> Suitable software capable of Video based measurement of static and dynamic contact angles for tilting table / base methods, measurement of drop and lamella contours, calculation of surface free energies on solids and their contributions, calculation of surface and interfacial tensions, calculation of wetting behavior, and other parameters.	Vender to confirm and specify	Brief Confirmation and specification to be provided here		
2.13	<b>Computer System:</b> Computer system and accessories, preferably sourced from India, with complete specification, including the connection type and other requirements. The system should preferably be integrated with the <b>Contact Angle Measuring System</b> with the Software quoted as per clause 2.12	Vender to specify	Brief specification to be provided here		
2.14	<b>Operating System:</b> Windows XP or other compatible systems	Vender to specify	Brief specification to be provided here		
2.15	<b>Upgradability:</b> The offered system, including the software, should have adequate provision for incorporating additional features as and when required for getting upgraded effortlessly.	Vendor to confirm and comply	Confirmation to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
3.0	<b>STANDARDS</b>				
3.1	<b>Compliance :</b> To Comply with relevant National and/or International Standards for the <b>Contact Angle Measuring System</b> . Relevant standards should be specifically mentioned, preferably along with copy/copies of the same.	Vender to specify	Brief specification to be provided here		
4.0	<b>PRE-DESPATCH INSPECTION (PDI)</b>				
4.1	A list of proposed tests along with the schedule for the same shall be furnished by the vendor along with the technical offer. In the event of training on the equipment is provided by OEM at Vendors site, all tests shall be performed, at vendor's cost, at vendor's works on the system in presence of BHEL representative, deputed at BHEL cost, before dispatch. However, In the event of training on the equipment is provided by OEM at BHEL, the pre-despatch inspection may be waived off and the vendor shall provide appropriate test certificates pertaining to the proposed tests carried out on the equipment.	Vendor to confirm	Brief description to be provided here		
5.0	<b>OPTIONAL ACCESSORIES/ITEMS:</b>				
5.1	The vendor shall submit list of optional accessories along with complete specification with the technical offer.	Vender to specify	Brief list of optional accessories to be provided here		
6.0	<b>DOCUMENTATION :</b>				
6.1	Four sets of documents (Hard Copies) in English, as enumerated in Clause 24.2 to 24.6, should be supplied along with the machine.	Vendor to confirm	Confirmation to be provided here		
6.2	Operating manuals in English for the APG Plant, systems, sub-systems and related Accessories.	Vendor to confirm	Confirmation to be provided here		
6.3	Detailed Maintenance manual with all drawings, circuit diagrams in English. All Assembly / Sub Assembly Drawings shall also be supplied including part list.	Vendor to confirm	Confirmation to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
6.4	Test and Guarantee certificates in English	Vendor to confirm	Confirmation to be provided here		
6.5	Catalogues of all bought out items including drawings where ever applicable, in English.	Vendor to confirm	Confirmation to be provided here		
6.6	Complete Master List of parts in English used in the machine shall be supplied by the vendor.	Vendor to confirm	Confirmation to be provided here		
6.7	SOFT COPY of all the documents as enumerated in Clause 24.2 to 24.6 in ENGLISH language on CD ROM, wherever applicable	Vendor to confirm	Confirmation to be provided here		
<b>7.0</b>	<b>TRAINING:</b>				
7.1	BHEL staff to be trained for acquaintance on operation and maintenance of supplied equipment <b>at premises of the VENDOR / BHEL</b> . Not less than TWO numbers of Persons deputed by BHEL shall be trained for mutually agreed period in area of use of all features, operating instructions, warnings and precautions. While the incidental expenditure towards travel, boarding & lodging of BHEL representatives shall be born by BHEL, the vendor should indicate the cost of training, if any, separately if the same do not form the package quoted.	Vendor to confirm	Confirmation to be provided here		
7.2	Competent English speaking experts shall be <b>deputed</b> by the vendor during the commissioning and training.	Vendor to confirm	Confirmation to be provided here		
<b>8.0</b>	<b>COMMISSIONING/ DEMONSTRATION :</b>				
8.1	The <b>Contact Angle Measuring System</b> shall be commissioned at the location to be specified by BHEL. The vendor should agree to re-locate and re-commission the system to its final location, in the case of such eventuality, within 9 months from the date of commissioning, preferably without additional cost.	Vendor to confirm & comply	Confirmation to be provided here		
8.2	All necessary tools, fixtures and other items required for the commissioning of equipment within stipulated time shall be brought by vendor on returnable basis.	Vendor to confirm	Confirmation to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION (TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
8.3	Charges, if any, in INDIAN currency, towards the service charges / commission to the authorized Indian dealer(s) / representative(s) for sales & service, should be furnished in detail separately by the vendor along with the offer.	Vendor to confirm	Confirmation to be provided here		
8.4	Charges and terms, if any, towards the commissioning and demonstration should be furnished in detail separately by the vendor along with the offer.	Vendor to confirm	Confirmation to be provided here		
8.5	The offers shall be evaluated by appropriately loading the service charges / commission ( <b>Clause 8.3</b> ) & commissioning charges and other incidentals ( <b>Clause 8.4</b> ) on "Cost to the Company" basis, while evaluating the bid.	Vendor to confirm	Confirmation to be provided here		
8.6	The vendor shall Demonstrate all features of the machine, control system and the accessories, including trial runs to the satisfaction of BHEL during the Commissioning / Demonstration.	Vendor to confirm	Confirmation to be provided here		
<b>9.0</b>	<b>SPARES AND SERVICE :</b>				
9.1	Spares for trouble free operation for 2 years to be supplied along with main equipment. List of back up spares if any for additional two year shall be provided by the vendor.	Vendor to confirm	Confirmation to be provided here		
9.2	Vendor shall support the availability of spares and maintenance workforce for 10 years from date of commissioning.	Vendor to confirm	Confirmation to be provided here		
9.3	Vendor shall provide proof and details of servicing base facility, spare parts availability, etc.preferably in India.	Vendor to confirm	Confirmation to be provided here		
<b>10.0</b>	<b>SAFETY ASPECTS:</b> The vendor must take care of all safety aspects regarding the equipment and operating personnel.	Vendor to confirm	Confirmation to be provided here		
<b>11.0</b>	<b>PACKING:</b> Air / Sea worthy rigid packing for all items of complete equipment, all accessories and other supplied items to avoid any loss / damage in transit. When equipment is dispatched in containers, all small loose items shall be suitably packed in appropriately packed boxes.	Vendor to confirm	Confirmation to be provided here		



Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
12.0	<b>PERFORMANCE GUARANTEE:</b> 12 months from the date of commissioning and acceptance of equipment.	Vendor to confirm	Confirmation to be provided here		
13.0	<b>QUALITY:</b> The <b>Contact Angle Measuring System</b> must comply with all relevant National / International standards.	Vendor to confirm	Confirmation to be provided here		
14.0	<b>GENERAL :</b> The vendor must supply the following information about the proposed equipment along with the offer :		Confirmation to be provided here		
14.1	All essential accessories for the satisfactory operation are to be included and listed. Any additional accessories are to be mentioned separately.	Vendor to specify	Confirmation to be provided here		
14.2	Vendor to supply, along with the offer, reference list of customers where similar systems have been supplied, and mentioning broad specifications of supplied machines.	Vendor to confirm	Confirmation to be provided here		
14.3	Detailed catalogue, sketch / photographs of the system and accessories / attachments should be submitted with the offer	Vendor to confirm	Confirmation to be provided here		
15.0	<b>PRE-QUALIFICATION CRITERIA</b>				
15.1	The vendor should be of International repute. The vendor shall be an Original Equipment Manufacturer (OEM) and should have supplied <b>Contact Angle Measuring System</b> in India.	Vendor to confirm	Confirmation to be provided here		
15.2	In the case of the vendor being the authorized Indian dealer(s) / representative(s) for sales & service, appropriate authorization letter from the OEM shall be provided.	Vendor to confirm	Confirmation to be provided here		
15.3	Offer can be submitted by the OEM or their authorized dealers in India along with an authorization letter. However Purchase Order will be placed on the lowest, technically acceptable OEM only.	Vendor to confirm	Confirmation to be provided here		
15.4	If the offer is from an authorized representative in India , the Indian representative cannot quote for the same equipment from more than one OEM	Vendor to confirm	Confirmation to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
15.5	The vendor or their authorized service representatives shall have trained engineers, preferably stationed in India for commissioning & service for the offered equipment and shall be in a position to provide prompt after sales service and spares support for our installations.	Vendor to confirm	Confirmation to be provided here		
15.6	The vendor should have already supplied and installed machines of similar capacity in India and operating satisfactorily for at least one year. The details of the customers with contact details, model number, date of installation, broad specifications of supplied machines. etc. to be provided.	Vendor to confirm	Confirmation to be provided here		
15.7	If required by BHEL, the vendor shall arrange for a demonstration of the machine or a similar system operating in India.	Vendor to confirm	Confirmation to be provided here		
15.8	Offer shall be for new equipment and not for any refurbished / used equipment. All the parts used in the machine shall also be new and not used / refurbished ones. A declaration to the above effect to be furnished.	Vendor to confirm	Confirmation to be provided here		
15.9	The vendor shall be in a position to undertake AMC or provide service support for the equipment supplied, after the expiry of the warranty/ guarantee period either directly or through an authorized, trained service representative preferably stationed in India. The vendor should indicate the AMC charges, if any, separately, if the same do not form the package quoted.	Vendor to confirm	Confirmation to be provided here		
15.10	The vendor shall furnish a comprehensive warranty for at least 12 months from the date of commissioning or 18 months from the date of delivery, whichever is early.	Vendor to confirm	Confirmation to be provided here		
15.11	The vendor shall guarantee the performance of the equipment for at least 12 months from the date of commissioning.	Vendor to confirm	Confirmation to be provided here		
15.12	Payment shall be made to the vendor against submission of dispatch documents as per the relevant rules of BHEL. Payment terms for advance payments are <b>likely to be rejected at the sole discretion of BHEL</b>	Vendor to confirm	Confirmation to be provided here		

Serial No.	DESCRIPTION OF REQUIREMENT	DESIRED TECH. SPECIFICATION ( TO BE CONFIRMED BY VENDOR)	OFFERED	DEVIATIONS (IF ANY, ELSE PRINT NONE)	REMARKS
15.13	In addition to the normal offer containing all the relevant details the vendor may submit, the vendor is required to make appropriate entries in the respective columns of this NIT, sign and stamp all sheets. The signed, stamped NIT forms are to be necessarily placed inside the sealed bid. <b>Offers with Incomplete NIT form is likely to be rejected at the sole discretion of BHEL</b>	Vendor to comply	Confirmation to be provided here		
<b>16.0</b>	<b>OTHER REQUIREMENTS:</b>				
16.1	Payment shall be made to the vendor against submission of dispatch documents through an irrevocable Letter of credit in case of Foreign vendors and by Electronic Transfer in case of Indian vendors	Vendor to confirm	Confirmation to be provided here		
16.2	Cost involved in other payment modes, as preferred by vendor, shall be loaded while establishing "Landed cost of the equipment" as per prevailing BHEL practice/ market rates.	Vendor to confirm	Confirmation to be provided here		
<b>17.0</b>	<b>DISPUTE REDRESSAL:</b>				
17.1	Any dispute arising out of this shall be referred to the sole arbitration of Head of Materials Management, BHEL Corporate R&D, Hyderabad or any other officer nominated by him/her and his/her decision shall be final and binding on the parties. The venue of the arbitration in all cases shall be Hyderabad, INDIA.	Vendor to agree & confirm	Confirmation to be provided here		