



राष्ट्रीय प्रौद्योगिकी संस्थान - आंध्रप्रदेश
NATIONAL INSTITUTE OF TECHNOLOGY ANDHRA PRADESH
Near National Highway No. 16, Kadakatla, Tadepalligudem – 534101
West Godavari District, Andhra Pradesh

Ref. No.: NIT-AP/ME/HMT Lab/2021-22/25/71

Date: 31.12.2021

Limited Tender Enquiry

Sub: Establishment of Heat and Mass Transfer Laboratory at NIT Andhra Pradesh–Quotation invited –Regarding.

Please send your lowest quotation to supply the item(s) as attached in Annexure-1. The quotation is to be sent in a sealed envelope by to the following address:

C/o Tender Box
Central Stores and Purchase Section,
NATIONAL INSTITUTE OF TECHNOLOGY, ANDHRA PRADESH,
Near National Highway No. 16, Kadakatla,
TADEPALLIGUDEM – 534101
West Godavari District, Andhra Pradesh.

The quotation has to be sent by Post (Ordinary / Register / Speed Post) or drop in a drop box physically. (Any other mode will not be accepted)

The envelope must be superscribed as "**QUOTATION**" at the center of the envelope and the above **reference number at left top** along with the name of the tender on the envelope. Quotations without the above subscription **will not be accepted**.

The last date to receive the sealed quotation is **25.01.2022**

Annexure-1

S. no	Description of Items	Specification	Quantity	
01	Thermal conductivity of a given circular slab specimen by guarded hot plate method.	12 Channel Digital Temperature Indicator	01	
		Ring Guard Heater Assembly.		
		Test specimen assembly.		
		Cooling Chamber with liquid Circulation		
		Central Heater assembly		
		Set of thermocouples.		
		Dimmer stat		0 - 2 A.
		Voltmeter		0 - 250 V.
		Ammeter		0 - 3 A.
		Space Required		1.5 m.(L)x 1.0 m(W) table top.
Service Required	230 v Ac Supply 50 Hz			
02	Thermal conductivity of liquid sample.	Control Panel	Stand Alone Metallic powder coated panel	01
		Specimen	Liquid paraffin, chamber dia 160 mm	
		Ring Heater	100mm dia250W	
		Main Heater	75 mm dia 250W	
		Water Tank	SS tank with Powder coat (3 liters)	
		Voltmeter	Digital voltmeter of range 0-300V AC	
		Ammeter	Digital ammeter of range 0-2A AC	
		Temperature Indicator	Digital Temperature Indicator ,0-400°C with TSS	
		Thermocouples	Teflon coated Cr -Al (K-type)-9 no.	
		Regulator	Variac 2 nos 0-230 v 2A	
		Measuring Jar	Plastic-250ml	
		Experimental Capability	Thermal Conductivity K	
03	(a) Heat transfer coefficient in forced convection of air in horizontal tube	Specimen size	25 mm inner dia. × 400 mm length	01
		Blower	Standard make, 230 volts.	
		Type of Heater	Band Heater of 100 watts capacity	
		Temperature Measurement	K type, Chromel-alumel Thermocouples	
		Power Measurement	By Digital Wattmeter	
		Digital Temperature Indicator	0 to 300 °C (with selector switch)	
		Flow Measurement	By Orifice meter with acrylic U tube manometer	
		Heat Regulation	By Electronic Voltage Regulator	
		Supply	1ph, 230V, 6 Amps to be provided by user	
		Control panel\	Wooden sheet and square tubes.	
		Specimen size	25 mm outer dia. x 450 mm length	

	(b) Heat transfer coefficient in Free Convection of air in horizontal tube	Type of Heater	Heater (Cartridge type) of 100 watts capacity.	01
		Temperature Measurement	K type, Chromel-alumel Thermocouples.	
		Power Measurement	By watt meter	
		Digital Temperature Indicator	0 to 300 °C (with selector switch)	
		Flow Measurement	Vertical measurement	
		Enclosure	M.S with Transparent acrylic window	
		Heat Regulation	By Electronic Voltage Regulator	
		Supply	1ph, 230V, 6 Amps to be provided by user	
		Control panel	Wooden sheet and square tubes.	
04	Efficiency of pin fin in natural and forced convection.	Fin size	12 mm dia. × 150 mm Length	01
		Fin Material	Aluminium	
		Duct	150mm with window.	
		Blower	axial type.	
		Type of Heater	Nichrome Band Heater of 100 watts capacity	
		Temperature Measurement	K type, Chromel-alumel Thermocouples	
		Power Measurement	By Digital Wattmeter.	
		Digital Temperature Indicator	0 to 200 °C (with selector switch)	
		Flow Measurement	By manometer	
		Heat Regulation	By Electronic Voltage Regulator	
		Supply	1ph, 230V, 6 Amps to be provided by user.	
		Control panel	Wooden sheet and square tubes.	
05	Heat transfer coefficient of fluidized bed heat convection.	Control Panel	Stand Alone Metallic powder coated panel	01
		Air Heater	1Kw Capacity	
		Voltmeter	Digital voltmeter of range 0-300V AC	
		Ammeter	Digital ammeter of range 0-2A AC	
		Temperature Indicator	Digital Temperature Indicator ,0-400°C with TSS	
		Thermocouples	Teflon coated Cr –Al (K-type)-3 no.	
		Regulator	Variac 1 no. 0-230 v 2A	
		Air Measurement	U Tube Manometer 0-300 mm	
		Glass Column	50Dia, 300mm Height	
		Compressor	1HP Capacity, 8-10Liters	
Experimental Capability	Thermal Conductivity K			
06	Study the pool boiling phenomenon & different regimes of pool boiling.	Specimen	Copper cylinder of Diameter 50mm and 30mm length.	01
		Glass container	90mm OD, 6mm thickness, 250mm length.	
		Heater	200 watts capacity	
		Power measurement	By digital wattmeter.	
		Temperature measurement	K type Chromel aluminium thermocouples.	

		Digital temperature indicator	0-200°C (with 8-way channel selector).		
		Time measurement	By stop clock.		
		Power controller	By electric voltage regulator.		
		Control panel	Wooden sheet and square tubes.		
		Supply	1ph, 230V, 6 Amps to be provided by user.		
		Condenser	Copper coils of 6mm diameter.		
		Temperature controller	Digital type.		
		End flanges	SS and MS.		
		Flow measurement	By Measuring jar and stop clock.		
07	Heat transfer through lagged pipe	Specimen size	G.I pipe with 2 stages of insulation.	01	
		Heater	100 watts, band heater		
		Temperature Measurement	K type, Chromel-alumel Thermocouples		
		Power Measurement	By Digital wattmeter		
		Digital Temperature Indicator	0 to 200 °C (with selector switch)		
		Thickness of insulation	3 zones of diameter 65mm & 75mm		
		Supply	1ph, 230V, 6 Amps to be provided by user		
		Control panel	Wooden sheet and square tubes.		
08	Vapour compression refrigeration test rig.	Type	Vapour compression.	01	
		Compressor	1/3 HP, Hermetically sealed		
		Refrigerant	R-134a.		
		Evaporator / Freezer	2 Liters.		
		Type of Cooling	By Capillary tube method.		
		Condenser	Air Cooled.		
		The complete unit mounted on a Self-contained Control panel.			
		STANDARD ACCESSORIES:			
		Thermostat	Indfoss / Danfoss Make.		
		Pressure Indicators	2 Nos. Analogue Indicators before & after Expansion in HP & LP Lines, Pressure Gauges for HP & LP Lines.		
		Temperature Indicators	Digital Indicators in HP & LP line, for cooled medium in Freezer compartment.		
		Power meter	Energymeter.		
09	Air conditioning cycle test ring.	Type	Vapour Compression.	01	
		Compressor	<i>Standard.</i>		
		Refrigerant	R - 22.		
		Condenser	Air Cooled.		
		STANDARD ACCESSORIES:			
		Thermostat	Indfoss / Danfoss Make.		
		Air flow measurement	By orifice and manometer.		

		Expansion Valve	Indfoss / Danfoss Make.	
		Pressure Indicators	2 Nos. analogue Indicators with before & after Expansion in HP & LP Line.	
		Flow measurement	By rotameter	
		Temperature measurement	<ul style="list-style-type: none"> Digital Indicator in HP & LP line. Wet and Dry bulb in Air Flow Line using stick thermometer. 	
		Power measurement	By energy meter.	
		Fan	For Air Flow circulation in open & closed Cycle.	
		Boiler (Mini)	Electrically Heated for Humidification	
		Preheater & Reheater	For Heating & humidification.	
10	Critical heat flux apparatus.	Cylindrical Shell	1000 ml and of glass material window	01
		Water Heater	Coil Heater (Industrial Purpose)	
		Test Heater Length	100 mm (approx).	
		Temperature Measurement	K type, Chromel-alumel Thermocouples.	
		Digital Voltmeter & Ammeter	0-20 Amps, A micro controller and Ammeter to hold the data at the instant wire breaks. 0-230 Volts	
		Temperature control	Thermostat	
		Dimmerstat	230 volts, 15 amps, 50 Hz.	
		Supply	1ph, 230V, 20 Amps to be provided by user.	
		Control panel	Wooden sheet and square tubes.	
11	Transient heat transfer unit.	CONSISTS OF:		01
		Aluminium rod 20mm dia. and 400mm length (approx).		
		Copper rod 20mm dia. and 400mm length		
		Steam generator of suitable capacity.		
		Temperature measurement with selector switch by thermo couple and digital temperature indicator		
		Temperature controller with heater for 220V, AC supply		
		Circulating water chest at one end with necessary water connection		
		Measuring jar for measurement for water flow rate.		
		The whole arrangement is mounted on a self-contained unit.		
		Supply: 1ph, 230V, 6 Amps to be provided by user.		
		Control panel	Wooden sheet and square tubes.	



Handwritten signature in blue ink.

While sending your lowest quotation – please specify the following:

1. Sales Tax : Inclusive
VAT/CST/GST : Indicate prevailing tax on percentage basis.
2. Excise Duty :
3. Rates
a) F.O.R. Destination/
b) Estimated Packing, Forwarding and Freight Charges in case of Ex-works only, may be mentioned on percentage basis.
4. Insurance : Inclusive/ indicate on percentage basis, in case payable by the Institute.
5. Preferred terms of payment (institute rules permit to pay on Receipt of materials in good condition):
6. Recommended mode of transport :
7. Discount offered, if any :
8. Validity of the offer :
9. Warranty Period :
10. **The final vendor will be selected based on the total consolidated price of all items requested in enquiry which includes, GST, Packing, transportation, etc. as applicable.**
11. **In view of the above clause (10), the vendor should quote all the items in their quotation or else, the quotation shall be treated as unresponsive/invalid unconditionally. Partial order shall not be placed at any case.**
12. Indicate whether any AMC support is given after completion of warranty Period. If so, the AMC charges may be mentioned on percentage basis
13. Firm schedule of delivery :
14. Detailed drawings / catalogues / Leaflets / literature / samples may be furnished wherever feasible / required
15. Please indicate clearly whether the rates quoted herein are the same as applicable to DGS & D / Government Department / Other Public Sector Undertakings.
16. The supplier shall invariably furnish the **Certificate of Clearance of VAT / CST/ GST Registration number along with the quotations.**
17. Please mention the Quotation number and name of the item/s (in brief) on your envelope when submitting your quotation to the Institute
18. Please note that the Director reserves the right to modify or alter the specifications and also to reject any or all the Quotations without assigning any reasons thereto.
19. The suppliers / firms are informed not to call on us without prior appointment.
20. The Institute is not responsible for delays / loss in postal transit or due to any other reasons.
21. Performance Security should be for an amount of **5 %**. Of the contract as specified in the bid documents. Performance Security may be furnished in the form of an Account payee Demand Draft, Fixed Deposit Receipt form a Commercial bank or online payment in an acceptable form safeguarding the purchaser's interest in all respects.
22. Performance Security should remain valid for a period of sixty days beyond the date of completion of all contractual obligation including warranty obligations.
23. Any Violation in the terms and conditions, the bidder will be made ineligible for the contract.
24. **Presently our Institute doesn't have DSIR certificate so no concession in GST. Normal rate of GST will be applicable.**

Yours faithfully,



Head of the Department

सह अधिष्ठाता / Associate Dean
CENTRAL STORES & PURCHASE SECTION
NIT Andhra Pradesh