



Annexure - A to the HPCL Tender Enquiry

List of Scheduled Payments Banks

Sr.No.	Name of the Bank
1.	India Post Payments Bank Limited

List of Scheduled Regional Rural Banks

Sr.No.	Name of the RRBs
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1.	Andhra Pradesh Grameena Vikas Bank
2.	Andhra Pragathi Grameena Bank
3.	Chaitanya Godavari Grameena Bank
4.	Telangana Grameena Bank
5.	Saptagiri Grameena Bank
6.	Arunachal Pradesh Rural Bank
7.	Assam Gramin Vikash Bank
8.	Langpi Dehangi Rural Bank
9.	Dakshin Bihar Gramin Bank*
10.	Uttar Bihar Gramin Bank
11.	Chattisgarh Rajya Gramin Bank
12.	Baroda Gujarat Gramin Bank
13.	Dena Gujarat Gramin Bank
14.	Saurashtra Gramin Bank
15.	Sarva Haryana Gramin Bank
16.	Himachal Pradesh Gramin Bank

17.	Ellaquai Dehati Bank
18.	Jammu & Kashmir Grameen Bank
19.	Jharkhand Gramin Bank
20.	Vananchal Gramin Bank
21.	Kaveri Grameena Bank
22.	Karnataka Vikas Grameena Bank
23.	Krishna Pragathi Gramin Bank
24.	Madhyanchal Gramin Bank
25.	Narmada Jhabua Gramin Bank
26.	Central Madhya Pradesh Gramin Bank
27.	Vidharbha Konkan Gramin Bank
28.	Maharashtra Gramin Bank
29.	Manipur Rural Bank
30.	Meghalaya Rural Bank
31.	Mizoram Rural Bank
32.	Nagaland Rural Bank

[* Note: Dakshin Bihar Gramin Bank was established amalgamating two RRBs viz. Bihar Gramin Bank & Madhya Bihar Gramin Bank. Punjab Gramin Bank was established amalgamating three RRBs viz. Punjab Gramin Bank, Malwa Gramin Bank & Sutlej Gramin Bank. Also, another 12 RRBs have been notified to be amalgamated into 6 RRBs from 01.04.2019. Further changes and details in the list of Regional Rural Banks (details of address and contact no), as a result of on-going amalgamation shall be communicated in due course.]

List of Scheduled Foreign Banks in India

Sr.No.	Name of the Bank
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1.	Australia and New Zealand Banking Group Ltd.
2.	Westpac Banking Corporation
3.	Bank of Bahrain & Kuwait BSC
4.	AB Bank Ltd.
5.	Sonali Bank Ltd.
6.	Bank of Nova Scotia
7.	Industrial & Commercial Bank of China Ltd.
8.	BNP Paribas
9.	Credit Agricole Corporate & Investment Bank
10.	Societe Generale

11.	Deutsche Bank
12.	HSBC Ltd
13.	PT Bank Maybank Indonesia TBK
14.	Mizuho Bank Ltd.
15.	Sumitomo Mitsui Banking Corporation
16.	The Bank of Tokyo- Mitsubishi UFJ, Ltd.
17.	Cooperatieve Rabobank U.A.
18.	Doha Bank
19.	Qatar National Bank
20.	JSC VTB Bank
21.	Sberbank
22.	United Overseas Bank Ltd
23.	FirstRand Bank Ltd



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24.	Shinhan Bank	36.	Emirates Bank NBD
25.	Woori Bank	37.	Barclays Bank Plc.
26.	KEB Hana Bank	38.	Standard Chartered Bank
27.	Industrial Bank of Korea	39.	NatWest Markets Plc
28.	Kookmin Bank	40.	American Express Banking Corporation
29.	Bank of Ceylon	41.	Bank of America
30.	Credit Suisse A.G	42.	Citibank N.A.
31.	CTBC Bank Co., Ltd.	43.	J.P. Morgan Chase Bank N.A.
32.	Krung Thai Bank Public Co. Ltd.	44.	SBM Bank (India) Limited*
33.	Abu Dhabi Commercial Bank Ltd.	45.	DBS Bank India Limited*
34.	Mashreq Bank PSC	46.	Bank of China Ltd.
35.	First Abu Dhabi Bank PJSC		

[* Note: SBM Bank (India) Limited (Subsidiary of SBM Group) and DBS Bank India Limited (Subsidiary of DBS Bank Ltd.) have been issued licence on December 06, 2017 and October 04, 2018 respectively for carrying on banking business in India through Wholly Owned Subsidiary (WOS) mode. They have commenced operations as WOS with effect from December 01, 2018 and March 01, 2019.]



ABBREVIATIONS:

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Abbreviations used hereinafter:

- HPCL -> Hindustan Petroleum Corporation Limited
RFQ -> Request for Quotation (also referred as Tender Enquiry)
PO -> Purchase Order
LOA -> Letter of Acceptance
Vendor -> Bidder/Supplier/Seller/Shipper/Agency/Tenderer/

1.0 IMPORTANT NOTES:

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- 1.1. The Vendor shall necessarily quote for items with scope, specifications and all other terms & conditions exactly as stated in HPCL's Tender Enquiry, **WITHOUT ANY DEVIATIONS**, failing which the offer shall be liable for REJECTION.
- 1.1.1 Vendor to submit the following declarations mandatorily along with the bid as per the format attached with the tender document.
- a) Banned or Delisted or Blacklisted
 - b) Bid Security declaration
 - c) Land border sharing

Non submission of the above declarations, vendors offer shall be liable for REJECTION.

- 1.2. All documents including the scope, technical specifications, Schedule of quantities, General terms and Conditions, Drawings etc. (if any) that form part of the tender document available in the e-procurement portal shall be construed to be accepted by the bidder in totality unless specifically mentioned in the Deviation form in the Technical responses.
- 1.2.1. For Supply: HPCL's "General terms and conditions for supply" (GTC) shall be applicable.

I. BID SECURITY DECLARATION:

Bidder need to provide the Bid Security declaration as per the format attached with the tender.

II. PERFORMANCE SECURITY (PERFORMANCE GUARANTEE):

Performance Guarantee is applicable to this tender as per HPCL General Terms and Conditions attached herewith. However, it is to be noted that 3% (Three Percent) of the PO / contract value is applicable in place of 10%. All other terms of guarantee as per HPCL General Terms and Conditions shall remain unchanged

1.3 SCOPE OF JOB:

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- 1.3.1. Vendor scope shall include, but not limited to, carrying out the jobs / activities for successful design, supply, installation, testing and commissioning of Solar CST based thermic oil Test rig at HPCL Green R&D Centre, Bengaluru as per technical specification & terms and conditions attached in this tender.



1.4 DELIVERY SCHEDULE:
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- 1.4.1 The Material should be delivered at the earliest possible, within 20 weeks from the date of PO/LOA, whichever is earlier.
- 1.4.2 The date of the receipt of material at HPCL R&D warehouse/Lab, Bangalore shall be reckoned as the date that the material has been delivered by the Vendor. Transit Insurance is in vendor's scope.

Delivery Address: -

HP GREEN R&D CENTRE,
KIADB Industrial Area | Tarabanahalli | Near Devanagonthi Railway Station
Hoskote Taluk | Bengaluru – 560 067 | Karnataka | India

1.5 PRICE REDUCTION CLAUSE:
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- 1.5.1 Applicable as per HPCL's "General Terms and Conditions for Supply".

1.6 PERFORMANCE SECURITY (PERFORMANCE GUARANTEE):
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- 1.6.1 The supplies made against this order shall be fully guaranteed against any manufacturing defects/poor workmanship/inferior quality etc. for a period of 24 months from the date of Successful Installation and commissioning or 30 months from the date of supply, whichever is earlier.
- 1.6.2 During this period, you will arrange to repair/replace any defective parts free of cost or replace complete set if required. Guarantee Certificate should be submitted along with dispatch documents. You will furnish **Performance Bank Guarantee** in favour of HPCL from the list of banks whose bank guarantees are acceptable to the Corporation (list enclosed in tender appendix) or through e-payment for 10% value of PO Value and valid during the above guarantee period.
- 1.6.3 Performance Bank Guarantee must be as per HPCL's format (Format Enclosed to this tender).

Note: PBG shall be submitted in the same currency in which the order is released. Default currency indicated in PBG format is INR (Rs.), the same shall be changed to currency in which the order will be released. (for details refer Annexure - A attached to tender enquiry)

All foreign BGs, issued by a bank located outside India, are to be confirmed by a list of banks whose bank guarantees are acceptable to the Corporation (list enclosed Annexure - A) located in India.

1.7 PAYMENT TERMS:
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- 1.7.1 For item no 1: 80% against supply of all components of the system on submission of performance bank guarantee (PBG), remaining 20% on installation and commissioning of the system
- 1.7.2 For item no 2: 100% against installation and commissioning of the system



Above Specified all the Milestone payment shall be done through Wire Transfer method within 15 days after receipt of Goods/Materials, Original tax Invoice and all other relevant original documents at HPCL Green R&D Centre, Bangalore. However, the final bill payment will not exceed 30 days.

2.0. Annual Maintenance Contract (AMC):
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2.1 Vendor should quote firm & fixed AMC charges for Three years which will start after completion of Guarantee period. The same cost shall form the cost of equipment for evaluation purpose. A separate order shall be placed for AMC.

2.2. SCOPE OF JOB:
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1. The vendor has to quote firm and fixed AMC charges to provide preventive maintenance as well as break down maintenance to keep Solar CST based Thermic Oil Test Rig in good working condition for three years from the completion of guarantee period.
2. Vendor has to provide a minimum of one visits per year for preventive maintenance on dates mutually convenient to each other.
3. For Preventive maintenance: Vendor has to be done according to the checklist and the report has to be submitted along with the service report.
4. For breakdown maintenance: if required, vendor has to provide one number of visits per year and has to attend the breakdown maintenance work within 72 hours after receiving the break down information.
5. The AMC cost shall form the cost of equipment for evaluation purpose.
6. AMC is only for services.

Work Involved during Visits are as follows:

1. Leak Test
2. Mirror Alignment / Replacement
3. Receiver Alignment/Replacement
4. Insulation test
5. Thermic Fluid inspection and Refilling if required
6. Tracker Tuning
7. Data Logger and RS485 converter testing
8. Performance checking of system and improving
9. Software updates
10. Checking of control system and following instrumentation of the system
 - a. Temperature Sensors (Resistance test)
 - b. Tracker Motors (convergent point inspection)
 - c. Mass Flow meters (flow measurements)
 - d. Thermic Fluid pump and coolant Pump
 - e. Heating system
 - f. Corrosion Probes
11. Supervision for cleaning of (Parabolic Trough collectors) PTC and receivers
12. Replacement of spares (Spares will be within HPCL Scope)

2.3. Payment Terms for AMC:
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1. Payment for services will be made on completion of preventive maintenance and breakdown maintenance visits and submission of original invoice and copy of the service report.



2.3. Price reduction clause/ CPBG/ Retention is not applicable for AMC

BANK GUARANTEE to be submitted to USER DEPARTMENT as per the details mentioned below:

3.0. CONTACT PERSONS (USER DEPARTMENT) FOR TECHNICAL QUERIES:

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Mr. Krishnamurthy Narayanan | Mr. Kumar Manoj
Chief Manager - Rand D | Sr. Manager Nano Technology-R and D
Tel: 080-2807 8594 | 080-2807 8735
E-Mail: knarayanan@hpcl.in | manoj.kumar@hpcl.in

4.0. FOR COMMERCIAL QUERIES:

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Mr. Sekhar D B; DGM – Materials
Mr. K Pradeep Kumar; Sr. Manager – Materials
Mr. Sharma Kaushik, Manager Purchase
Tel: (080) 2807 8570 | 8572 | 8573 | 8683
E-Mail: dbsekhar@hpcl.in | Pradeepkkondaka@hpcl.in | kaushiksharma@hpcl.in

IN CASE OF ANY TECHNICAL /COMMERCIAL QUERIES, THE SAME SHOULD BE SOUGHT THROUGH THE "QUERIES / MESSAGES" APPLICATION IN THE E-PROCUREMENT SITE ONLY. (Manual for raising queries available in "Help" application (point e) after logging into the website)

For Indian Bidders// Items quoted in INR:

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i. The Rate(s) quoted shall be firm and inclusive of all extras like Packing, Forwarding, Freight, etc. but EXCLUDING GST.
- ii. Vendor need to quote GST (in the form of SGST, CGST or IGST as applicable) in percentage separately under "Tax n Extras" in e-Proc website which shall be paid extra at actuals as applicable.
- iii. It may be noted HPCL is registered with the Government of India in the Department of Scientific and Industrial Research and entitled for 5% concessional GST for research items / purchases of equipment, consumables and other supplies used for R&D purposes.
- iv. HPCL shall seek clarification with regards to applicable GST in case vendors quote GST differently.
- v. Vendor should not quote the rates INCLUSIVE of GST and shall quote GST separately as EXTRA as stated above. Incase offers received INCLUSIVE of GST, offer shall be liable for REJECTION and HPCL decision shall be final in this case.
- i. For other details, refer respective clauses of HPCL's "General Terms and Conditions for Supply"
The tendered item is non-divisible
- vi. Transit insurance shall be in the vendor's scope



5.0. PRICED BID/HOW TO QUOTE -- ONLINE ONLY:

Tenderer shall quote as follows:

- i. Please quote your Unit Rates (EACH) alongside the individual items, in the corresponding fields of this e-tender considering all the terms and conditions mentioned in the Tender enquiry.
- ii. For AMC Charges, vendor to quote lump sum rate for each visit considering the scope and Terms & Condition of this tender
- iii. Please note that the Priced Bid should contain only rates and should not contain any conditions or deviations.
- iv. Order shall be placed on overall Lowest basis.

Planning and Designing in purview of Vulnerability Atlas of India

Vulnerability Atlas of India (VAI) is a comprehensive document which provides existing hazard scenario for the entire country and presents the digitized State/UT - wise hazard, maps with respect to earthquakes, winds and floods for district-wise identification of vulnerable areas. It also includes additional digitized maps for thunderstorms, cyclones and landslides. The main purpose of this Atlas is its use for disaster preparedness and mitigation at policy planning and project formulation stage.

This Atlas is one of its kind single point source for the various stakeholders including policy makers, administrators, municipal commissioners, urban managers, engineers, architects, planners, public etc. to ascertain proneness of any city/location/site to multi-hazard which includes earthquakes, winds, floods thunderstorms, cyclones and landslides. While project formulation, approvals and implementation of various urban housing, buildings and infrastructures schemes, this Atlas provides necessary information for risk analysis and hazard assessment.

The Vulnerability Atlas of India has been prepared by Building Materials and Technology Promotion Council under Ministry of Housing and Urban Affairs, Government of India and available at their website www.bmtpc.org.

It is mandatory for the bidders to refer Vulnerability Atlas of India for multi-hazard risk assessment and include the relevant hazard proneness specific to project location while planning and designing the project in terms of:

- i. Seismic zone (II to V) for earthquakes,
- ii. Wind velocity (Basic Wind Velocity: 55, 50, 47, 44, 39 & 33 m/s)
- iii. Area liable to floods and Probable max. surge height
- iv. Thunderstorms history
- v. Number of cyclonic storms / severe cyclonic storms and max sustained wind specific to coastal region
- vi. Landslides incidences with Annual rainfall normal
- vii. District wise Probable Max. Precipitation

All other terms and conditions as per HPCL's "General Terms and Conditions for Supply".

Refer Annexure - A attached to tender enquiry for OTHER TERMS AND CONDITIONS

Tender No. : 21000130-HB-10155



Tender Published On : 25-Aug-2021 22:09

Scope of Job

Sl.No.	Description	Attached File	Set Value	Supporting Doc. Req'd
1	Scope of Job	Scope of the job.pdf	-	No

ANNEXURE-I

Specifications

Scope of the Job:

Design, Supply, Installation, testing and commissioning of SOLAR CST based Thermic Oil Test rig at HPGRDC. The test rig should be capable of evaluating the in-house thermic oil formulations for Optical Gain, Thermal stability and Heat transfer characteristics. Test rig should be durable, easy to use and maintain.

A shadow free plot area of about 500 square meter allocated for test rig is attached as ANNEXURE-II. **The construction of control room (5m X 5m) is in the scope of HPCL.** The vendor has to provide the necessary drawing.

S. No	Specification	Details
1.	Type of Thermic oils for evaluation:	Synthetic oils (based on biphenyl and terphenyl) and mineral oils with stability up to 400 °C.
2.	Support structures	Supporting structure of collector field should withstand wind loads up to 150 km/h or measured gust speed at location whichever higher. Support structures should be rust free and should withstand local conditions.
3.	Solar collector field	Solar Collector Field (i.e., Parabolic Trough collectors) has to be equipped with the Full automatic closed loop single axis tracking towards the sun. The tracking accuracy should be +/-5 mrad at any instant. The trackers should stow to safe position automatically above 80km/h wind speeds. Trackers should be able to focus and defocus to maintain a controlled temperature during the experiments. The Solar Receivers should have the following specs (a) absorptivity minimum 95 %(b) emissivity maximum 9% @400 °C (c) Evacuated to 10 ⁻³ mbar vacuum (d) should withstand and sustain at 400 °C. The reflector of PTC should be made of RIO glass. The bidder should demonstrate the solar optical gain in collector field delivery of 20kW @380 °C[@650 W/m ² DNI]
4	The thermic oil pump	Thermic oil Pump should be capable of adjusting and setting the flow rate from 1LPM to 30 LPM and should withstand 400°C. The pump should be variable frequency drive (VFD) controlled.
5.	Steam generation	The system should deliver minimum 15kg/hour steam at 120°C with 650 W/m² DNI. Heated oil from solar PTC field to be circulated through Oil-Steam Heat exchanger to generate steam (temperature range

		between 100 to 250 °C) and recirculated to the collector for heat gain.
6.	Heat gain	PTC plant with minimum heat gain in the Collector field shall be 20 KW@650 W/m ² DNI.
7.	Viscosity and density of thermic oils	Oil groups to be tested with viscosity of 1 to 90 cSt at room temperature and density of 600 to 1200 kg/m ³ .
8.	Material of construction	Shall be robust and durable to withstand the operating temperature, cycling, and weathering.
9.	Oil Storage tank, expansion tank, water storage tanks	<p>Insulated Thermic oil storage tank should be of minimum 200 litre capacity. Storage tank should be made of SS304 to store the oil of 400°C. A Drain tank of SS304 with capacity of 300 litre and a water storage tank of SS304 of 500 litre capacity are to be provided.</p> <p>Hot oil Storage tank shall be equipped (or assisted) with electric heating system to heat the thermic oil for stability study. All insulation for the storage tank and interconnecting pipes shall have minimum 50 mm ceramic/glass/mineral wool.</p> <p>Additional storage system of 25 liters storing high vapor thermic oils such as therminol Vp-1(12 bar) shall be included in the system.</p>
10.	Thermic oil	Bidder should provide 1 barrel each of Therminol Vp-1 (220 Kg) and Therminol 72 (208 Kg) for commissioning and as spare stock.
11.	Heat exchanger	Plate or shell & tube heat exchanger of suitable capacity to meet minimum steam generation requirement (sr no 5) to be provided.
12.	Electrical heating of the thermic oils	A electrical heating system to heat the Thermic oil is to be provided to generate steam in absence of solar DNI. Electrical heating system should be capable to raise and maintain the thermic oil/fluid temperature up to 380°C (maximum) with solar PTC support.
13.	Pipes, valves	With suitable standard ratings.
14.	Corrosion	Suitable electrical resistance based corrosion probes, should measure the corrosion with sensitivity of 0.01% metal surface loss under thermic oil flow.
15.	Degassing	Degassing of thermic oil in the loop shall be done using deaerator/expansion tank. The tank shall be mounted at sufficient height or provisions for external pressurization with inert atmosphere (up to 12 bar for Therminol VP-1) to be provided. Thermal expansion up to 50% to be considered for thermic fluids.

16.	Parameters measurement	<p>The systems should have provisions for precise measurement of temperature, flow rate and pressure, at various control points of oil and water flow as given below.</p> <p>(a) Mass flow measurement of oil at the outlet (b) Viscosity measurement at outlet of collector field (c) Corrosion probe at inlet and outlet of collector field (d) Water mass flow rate at inlet to Heat Exchanger (e) Pressure and temperature of Oil at various points (f) Direct Normal irradiance in W/m²</p>
17.	Instrumentation, Control Systems and Data logging:	<p>The system should have necessary instrumentation for the measuring of thermic oil properties during plant operation to analyze and compare with benchmark commercialized heat transfer fluids (HTFs).</p> <p>(a) Viscometer-1 No (Accuracy +/-1%). (b) Oil mass flowmeter - 1 No, (Accuracy +/-1%). (c) Water mass flowmeter -1 No. (d) Corrosion Probe (CP)- 2 No's. (e) Temperature sensors (Preferably Platinum based) to measure temperature at control points of proposed system (Accuracy +/-0.1°C). The system should have two temperature sensors at each control point. (f) Water flowmeter at inlet of heat exchanger to measure steam generated-1 No. (g) Feedback based flow control valves (Min 5 Nos). (h) Pressure sensors to measure fluid gauge pressure (Min 5 Nos). (i) Wind velocity measuring anemometer to correlate heat loss coefficient to ambient 1 No. (j) Pyrheliometer for DNI measurement (w/m²)-2 No.</p> <p>Latest software for tracking system and data logger has to be provided along with the system.</p>
18.	Safety systems	<p>Process control safety for high temperature and pressure cut-off</p>
19.	Control room	<p>LCD Display Minimum 32" size Plant Visualization and information in one view has to be provided with latest software. The details of computer specifications are given in section 1.</p>

COMPUTER SPECIFICATIONS (SECTION 1)

Sl.no	Specifications
1	Processor minimum 8 Core processor
2	Processor base frequency minimum 3.00 GHz
3	Processor Minimum smart Cache Memory 12 MB
4	Capable of hyper-threading technology
5	Memory type DDR4
6	Memory minimum 32 GB RAM
7	Memory Minimum 2666 MHz
8	UHD Graphics Card (Port HDMI/DP/SL-DVI-I)
9	Graphics Card Memory 4GB
10	PCI Network Card – Dual Gigabit Ethernet Adapters (1GbE)
11	Storage type SATA II / SATA III
12	Drive capacity minimum 2 TB
13	Drive minimum RPM 7200
14	Drive Cache minimum 64 MB
15	DVD/CD Drive (Read and Write)
16	6 USB Port (Minimum 2nos USB 3.1)
17	USB keyboard / optical mouse
18	Minimum 1 Universal Audio Jack
19	Monitor 32" Inch LED(HDMI/VGA/DP)
20	Windows 10 Pro (64 bit) Operating System
21	Optional MS Office
22	System Power Cord (India)
23	Serial and Parallel Ports