

	<p style="text-align: center;"><b>INDIAN INSTITUTE OF TECHNOLOGY MADRAS</b> Chennai 600 036</p> <p>Telephone : [044] 2257 8356/9760      FAX : [044] 22570545/8366 E-mail: <a href="mailto:arpp@iitm.ac.in">arpp@iitm.ac.in</a></p>	 
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P.SERVAHARANA  
Assistant Registrar (Project Purchase)

Ref: ICS/11-12/013/DSTX/TSUN  
Date: 01.07.2016

Tender No: ASE/SRCH/027/2016

**Due Date: 25.07.2016, 3:30pm**

**Technical Bid Opening meeting on 26.07.2016 (Tuesday) at Admin Building Conference room, 2<sup>nd</sup> Floor, IIT Madras at 11 a.m. to 12 a.m**

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the Scope of work "Gas Pipe Line Laying Work" conforming to the specifications given in Annexure.

**Instructions to the Bidder**

- (i) **Preparation of Bids:** - The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- (ii) **Delivery of the tender:** - The tender shall be sent to the below-mentioned addresses either by post or by courier so as to reach our office before the due date and time specified in our Schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. The tender box is kept in the office of the "Assistant Registrar, Project Purchase" IC & SR Building 2<sup>nd</sup> floor, I.I.T. Madras, Chennai – 600 036, which is also the address for communication.
- (iii) **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and it will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The bidders are requested to attend the opening of **Technical bids schedule on 26.07.2016 (Tuesday) at Admin Building, Conference room, 2<sup>nd</sup> Floor, IIT Madras at 11 a.m. to 12 a.m.** In respect of opening of financial bid, those bidders who are technically qualified only will be called for.

P. SERVAHARANA  
 ASSISTANT REGISTRAR (PROJECT PURCHASE)  
 IC & SR Building, Centre for IC & SR  
 I.I.T. MADRAS - 600 036

- (iv) **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges to various Departments/Institutions. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of tax & duties should be clearly indicated.

The price should be quoted without custom duty and excise duty, since I.I.T. Madras is exempt from payment of excise duty, and the custom duty will be paid at concessional rate against duty exemption certificate.

In case of import supply, the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

- (v) **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate about the percentage of payment and it should be included in the originally quoted basic price, if any.
- (vi) **Terms of Delivery:** - The item should be supplied to our various Departments/Institutions as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
- (vii) **Other Terms & Condition:** - please refer the specifications for other terms & conditions.
- (viii) IIT Madras reserves the full right to accept / reject any tender at stage without assigning any reason.

Yours sincerely,



P. SARVAHARANA  
Assistant Registrar (Project Purchase)  
IC&SR, I.I.T. Madras

**पी. सार्वहरणा / P SARVAHARANA**  
सहायक कुलसचिव (परियोजना क्रय)  
**ASSISTANT REGISTRAR (PROJECT PURCHASE)**  
आईसी एवं एसआर केन्द्र / Centre for IC & SR  
आईआईटी मद्रास / I.I.T. MADRAS - 600 036

## SCHEDULE

### Important Conditions of the tender

1. The due date for the submission of the tender is **25.07.2016, 3:30pm.**
2. The offers / bids should be submitted in two bids systems (i.e.) Technical bid and Financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and Financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The Open Tender for supply of " \_\_\_\_\_ " should be written on the left side of the Outer bigger cover and sealed.
3. **EMD:** - EMD of Rs.1,80,000/- (Rupees One Lakh Eighty Thousand) for Gas Pipe Line Laying Work to be submitted by the bidder. The EMD should be included in the Financial bid which will not be opened for Technical evaluation. Enclosing the EMD in the Technical bid will automatically disqualify the tenderer. EMD should be in the form of DD in favour of "The Registrar, Indian Institute of Technology Madras" and payable at Chennai. The tender without EMD would be considered as UNRESPONSIVE and REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD (Bid Security) will be refunded to the successful bidder on receipt of Performance Security.
4. **Performance Security:-** The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from any nationalized bank of India will be an acceptable.

**Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.**

**Performance Security in the form of Bank Guarantee:-** In case the successful bidder wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.

The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

5. If an Indian agent is involved, the following documents must be enclosed:
  - Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
  - ✓ Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
  - ✓ The enlistment of the Indian agent with Director General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.
6. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
7. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
8. Documentary proof for the claimed position and repetition accuracies must be obtained from the principals and submitted along with the relevant pages of the standards.
9. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
10. **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
11. **Delivery Schedule:-** The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
12. **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
13. **Payment:-** No Advance payment will be made for Indigenous purchase. However 60% after supply of material without any tax, 30% after Installation and Commission without tax and balance 10% after Inspection & Certification by end user.
14. **Advance Payment:-** No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.

15. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at site of IIT Madras.
16. **Warranty/Guarantee:** - The vendors should provide a warranty for at least 12 months from the date of Commissioning of the setup. Any extended warranty offered for the same has to be mentioned separately.
17. **Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
18. **Acceptance and Rejection:** - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
19. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**
20. **Disputes and Jurisdiction:** - Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.
21. All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.
22. **Pre-bid Meeting:** - The bidder should attend the pre-bid meeting and also make a site visit to qualify for submitting the tender.

Date and time of Pre-bid Meeting: 11<sup>th</sup> July 2016 (Monday) at Admin Building Conference room.  
2<sup>nd</sup> floor, IIT- Madras at 11 a.m to 12 a.m.

**Acknowledgement:-** It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER  
ALONG WITH SEAL OF THE  
COMPANY WITH DATE**

# **TENDER SPECIFICATIONS FOR GAS PIPELINE**

## **Project no: ICS/11-12/013/DSTX/TSUN**

Quotation for supply and installation of gas pipelines along with accessories and sub-systems for gases like Nitrogen, Methane and LPG inside the building of National Center for Combustion Research and Development (NCCRD).

### **1. Brief description of the building:**

The NCCRD building consists of 5 floors. i.e., Ground floor, First floor, second floor, Third floor and Fourth floor. Except the first floor all other floors require gas pipeline.

### **2. Brief description of the required gas pipeline:**

Every floor (Except first floor) will have a cylinder bank area which consists of a facility for storing and chaining of empty cylinders in one row and full cylinders in another row. In addition there will be a panel with relevant equipments for the purposes of distribution of gases to the pipelines (details enclosed).

### **3. Termination of pipelines:**

The gas pipelines will terminate at user points as shown in the lay-out drawings for each floor. The termination shall be with a shut-off valve.

### **4. Joining of gas pipelines:**

The welding of the pipelines shall strictly be of ORBITAL WELDING.

### **5. Leak testing and labeling:**

The entire system shall be leak tested and labeled.

### **6. Training and commissioning:**

The staff of NCCRD shall be given training on operating the pipeline system.

### **7. Pre-bid meeting and site visit:**

The bidder should attend the pre-bid meeting and also make a site visit to qualify for submitting the tender.

✓ Date and time of pre-bid meeting: 11<sup>th</sup> July 2016 at Admin. Conference room at 11a.m.

### **8. Safety:**

The successful bidder shall take all safety precautions and ensure the safety of all their employees and the people in the neighborhood of the work site.

### **9. Items required and its description:**

Floor-wise description of the items required and their quantity is attached. At the time of execution, any additional quantity of any material utilized/installed to fit the site condition shall be charged separately.

**10. Layout:**

Plan-view layouts of pipelines for all the floors are attached.

11. The technical bid and price bid should be in the format given for technical specification and requirement.
12. The bidder should also indicate the technical compliance of materials in the column given.
13. Choices of brand names for components are given. In case insufficient bids are received in spite of the choice of brand names, the choice of brand names may be reconsidered at the time of considering the bids (before opening financial bid).
14. A break up of labor charges involved may also be given.
15. The bidder should give reference of having executed similar jobs of this magnitude.

**16. Payment:**

- 60% after supply of material without any tax.
- 30% after installation and commission without tax.
- 10% after inspection & certification by end user.

17. For any technical clarification & Drawing clarification, please contact Mr.P.John George (9042301070 / 044-22575026 ) or Krishnakumar.D (8124430509)

**TECHNICAL SPECIFICATION & REQUIREMENTS FOR PROPOSED GAS PIPING AT NCCRD LABS**

**TECHNICAL BID**

\*For technical bid indicate the make and model of compliance to technical specification of requirement.

Ground Floor for N2 & LPG - Thermal Power Lab					
Sl.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:500LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges according to EN837, With Inlet & Outlet Ports=CL3/8" OD.	1	GCE/Parker/Matheson/Swagelok		
2	Factory Assembled Manual Change Over Panel for LPG,(1+1 Cylinders), Single Stage,Flow:100LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=50bar/720psi,Outlet Pressure = 0 to 6 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD.	1	GCE/Parker/Matheson/Swagelok		
3	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2 & LPG, 1.0 Meter length .	4	GCE/Parker/Matheson/Swagelok		
4	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	2	GCE/Parker/Matheson/Swagelok		
5	Inlet Diaphragm Shut-Off Valve for User Points(2 X 3 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	6	GCE/Parker/Matheson/Swagelok		
6	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	27 mtrs*2no's.	GCE/Centravis/Valex/Parker		
7	Weld Tees for User Point, MOC:SS, 3/8" OD	4	GCE/Centravis/Valex/Parker		
8	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	1	Indegenous		

**TECHNICAL SPECIFICATION & REQUIREMENTS FOR PROPOSED GAS PIPING AT NCCRD LABS**

**FINANCIAL BID**

\*For technical bid indicate the make and model of compliance to technical specification of requirement.

Ground Floor for N2 & LPG - Thermal Power Lab							
SI.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Price/Unit	Value	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:500LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges according to EN837, With Inlet & Outlet Ports=CL3/8" OD.	1	GCE/Parker/Matheson/Swagelok				
2	Factory Assembled Manual Change Over Panel for LPG,(1+1 Cylinders), Single Stage,Flow:100LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=50bar/720psi,Outlet Pressure = 0 to 6 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD.	1	GCE/Parker/Matheson/Swagelok				
3	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2 & LPG, 1.0 Meter length .	4	GCE/Parker/Matheson/Swagelok				
4	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	2	GCE/Parker/Matheson/Swagelok				
5	Inlet Diaphragm Shut-Off Valve for User Points(2 X 3 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	6	GCE/Parker/Matheson/Swagelok				
6	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	27 mtrs*2no's.	GCE/Centravis/Valex/Parker				
7	Weld Tees for User Point, MOC:SS, 3/8" OD	4	GCE/Centravis/Valex/Parker				
8	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	1	Indegeneous				

**Second Floor for N2, CH4& LPG - Combustion Dynamics Lab**

SI.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Price/Unit	Value	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:100LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Normal Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD..	1	GCE/Parker/Matheson/Swagelok				
2	Factory Assembled Manual Change Over Panel for Methane,(1+1 Cylinders), Single Stage,Flow:500LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8"OD.	1	GCE/Parker/Matheson/Swagelok				
3	Factory Assembled Manual Change Over Panel for LPG,(1+1 Cylinders), Single Stage,Flow:50LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=50bar/720psi,Outlet Pressure = 0 to 6 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8"OD.	1	GCE/Parker/Matheson/Swagelok				
4	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2, CH4 & LPG,1.0 Meter length .	6	GCE/Parker/Matheson/Swagelok				
5	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	6	GCE/Parker/Matheson/Swagelok				
6	Inlet Diaphragm Shut-Off Valve for User Points(3 X 4 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	12	GCE/Parker/Matheson/Swagelok				
7	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	49 mtrs*3no's.	GCE/Centravis/Valex/Parker				
8	Weld Tees for User Point, MOC:SS, 3/8" OD	9	GCE/Centravis/Valex/Parker				
9	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	1	Indegeneous				

**Second Floor for N2, CH4& LPG - GAS Dynamics Lab**

Sl.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Price/Unit	Value	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:100LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Normal Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD..	1	GCE/Parker/Matheson/Swagelok				
2	Factory Assembled Manual Change Over Panel for Methane,(1+1 Cylinders), Single Stage,Flow:150LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8"OD.	1	GCE/Parker/Matheson/Swagelok				
3	Factory Assembled Manual Change Over Panel for LPG,(1+1 Cylinders), Single Stage,Flow:50LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=50bar/720psi,Outlet Pressure = 0 to 6 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8"OD.	1	GCE/Parker/Matheson/Swagelok				
4	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2, CH4 & LPG, 1.0 Meter length .	6	GCE/Parker/Matheson/Swagelok				
5	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	6	GCE/Parker/Matheson/Swagelok				
6	Inlet Diaphragm Shut-Off Valve for User Points(3 X 3 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	9	GCE/Parker/Matheson/Swagelok				
7	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	25 mtrs*3no's.	GCE/Centravis/Valex/Parker				
8	Weld Tees for User Point, MOC:SS, 3/8" OD	6	GCE/Centravis/Valex/Parker				
9	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	2	Indegeneous				

**Third Floor for N2, CH4& LPG - Burner Development Lab**

SI.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Price/Unit	Value	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:100LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 14 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Normal Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD..	1	GCE/Parker/Matheson/Swagelok				
2	Factory Assembled Manual Change Over Panel for Methane,(1+1 Cylinders), MOC= Brass,Specially Cleaned , Flow:1500LPM, Inlet Pressure=300bar;Outlet Pressure = 0 to 20 Bar. With Two numbers of Inlet Shut-Off Valves, With Two numbers of Internal Purge Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Outlet Shut-Off Valves With Inlet Port = W21,8X1/14"LH, Outlet Ports = G1/2"OD.	1	GCE/Parker/Matheson/Swagelok				
3	Factory Assembled Manual Change Over Panel for LPG, ( 1 + 1 Cylinder) Single Stage, MOC:Brass, Flow:400LPM, Inlet Pressure=25bar;Outlet Pressure = 0 to 4Bar. With Inbuilt Filters & Non Return Valves, With One numbers of Inlet Shut-Off Valves, With One numbers of Internal Purge Valves, With Safety Relief Valve, <b>With Inlet</b> & Outlet Pressure Gauges According to EN837, With Inlet Port= W21,8X1/14"LH, Outlet Port = 1/2"OD..	1	GCE/Parker/Matheson/Swagelok				
4	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2, CH4 & LPG, 1.0 Meter length .	6	GCE/Parker/Matheson/Swagelok				
5	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	6	GCE/Parker/Matheson/Swagelok				
6	Inlet Diaphragm Shut-Off Valve for User Points(1 X 3 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	3	GCE/Parker/Matheson/Swagelok				
7	Inlet Diaphragm Shut-Off Valve for User Points(2 X 3 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 1/2" OD SS.	6	GCE/Parker/Matheson/Swagelok				
8	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	28 mtrs.	GCE/Centravis/Valex/Parker				
9	Seamless SS Tubing, Grade : SS316 ,TP316 1/2" OD, 0.049" Wall thickness	28 mtrs*2no's.	GCE/Centravis/Valex/Parker				

10	Weld Tees for User Point, MOC:SS, 3/8" OD	2	GCE/Centravis/Valex/Parker				
11	Weld Tees for User Point, MOC:SS, 1/2" OD	4	GCE/Centravis/Valex/Parker				
12	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	2	Indegeneous				

Fourth Floor for N2, CH4& LPG - Aero Lab							
SI.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Price/Unit	Value	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:500LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 20 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD..	1	GCE/Parker/Matheson/Swagelok				
2	Factory Assembled Manual Change Over Panel for Methane,(1+1 Cylinders), MOC= Brass,Specially Cleaned, Flow:1200LPM Inlet Pressure=300bar;Outlet Pressure = 0 to 20 Bar. With Two numbers of Inlet Shut-Off Valves, With Two numbers of Internal Purge Valves, With Inbuilt Filters at Inlets, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Outlet Shut-Off Valves With Inlet Port = W21.8X1/14" I.H. Outlet Ports = G1/2"OD.	1	GCE/Parker/Matheson/Swagelok				
3	Factory Assembled Manual Change Over Panel for LPG,(1+1 Cylinders), Single Stage,Flow:50LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=50bar/720psi,Outlet Pressure = 0 to 6 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges Accoring to EN837, With Inlet & Outlet Ports=CL3/8"OD.	1	GCE/Parker/Matheson/Swagelok				
4	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2, CH4 & LPG, 1.0 Meter length .	6	GCE/Parker/Matheson/Swagelok				
5	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	6	GCE/Parker/Matheson/Swagelok				
6	Inlet Diaphragm Shut-Off Valve for User Points(2X4 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	8	GCE/Parker/Matheson/Swagelok				
7	Inlet Diaphragm Shut-Off Valve for User Points(1 X 4 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 1/2" OD SS.	4	GCE/Parker/Matheson/Swagelok				

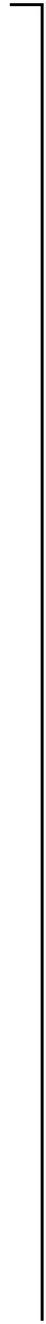
8	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	43 mtrs *2no's.	GCE/Centravis/Valex/Parker				
9	Seamless SS Tubing, Grade : SS316 ,TP316 1/2" OD, 0.049" Wall thickness	43 mtrs.	GCE/Centravis/Valex/Parker				
10	Weld Tees for User Point, MOC:SS, 3/8" OD	6	GCE/Centravis/Valex/Parker				
11	Weld Tees for User Point, MOC:SS, 1/2" OD	3	GCE/Centravis/Valex/Parker				
12	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	2	Indegeneous				

**Fourth Floor for N2, CH4 - Laser Diagnostics Lab**

SI.No.	Item Description	Qty. (Nos./Mtrs.)	Approved Make	Model	Price/Unit	Value	Technical compliance (YES / NO)
1	Factory Assembled Manual Change Over Panel for Nitrogen,(1+1 Cylinders), Single Stage,Flow:100LPM, MOC=Brass Chromeplated & Specially Cleaned, Inlet=230bar/3300psi,Outlet Pressure = 0 to 30 Bar, Diaphragm=Hastelloy, With Inbuilt 10 micron filter at Inlets, With 2 numbers of Inlet Shut-Off Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Inlet & Outlet Ports=CL3/8" OD.	1	GCE/Parker/Matheson/Swagelok				
2	Factory Assembled Manual Change Over Panel for Methane,(1+1 Cylinders), MOC= Brass,Specially Cleaned, Flow:150LPM, Inlet Pressure=300bar;Outlet Pressure = 0 to 20 Bar. With Two numbers of Inlet Shut-Off Valves, With Two numbers of Internal Purge Valves, With Inbuilt Filters at Inlets, With Safety Relief Valve, With Inlet & Outlet Pressure Gauges According to EN837, With Outlet Shut-Off Valves With Inlet Port = W21,8X1/14"LH, Outlet Ports = G1/2"OD.	1	GCE/Parker/Matheson/Swagelok				
3	SS Flexible Hose(Internal SS) along with Safety Wire & Cylinder Connectors for N2, CH4 & LPG, 1.0 Meter length .	4	GCE/Parker/Matheson/Swagelok				
4	Cylinder Holder to Hold Cylinders, Profiled Stainless Steel Sheet with Belt	4	GCE/Parker/Matheson/Swagelok				
5	Inlet Diaphragm Shut-Off Valve for User Points(N2=6, CH4=3 Places), MOC: Brass Chromeplated,Working Pressure:50 Bar, Diaphragm:Hastelloy, Inlet & Outlet Ports = 3/8" OD SS.	9	GCE/Parker/Matheson/Swagelok				
6	Seamless SS Tubing, Grade : SS316 ,TP316 3/8" OD, 0.035" Wall thickness	64 mtrs for N2 33 mtrs for CH4	GCE/Centravis/Valex/Parker				
7	Weld Tees for User Point, MOC:SS, 3/8" OD	7	GCE/Centravis/Valex/Parker				
8	Fabrication of MS powder coated structure to store 4no's of full cylinders and 4 no's of empty cylinders. (Fixed to the wall)	2	Indegeneous				

**Installation of Gas Piping with Orbital Welding with Required Accessories (Total labour charges).**

1	Installation of Gas Panels, Tubing with required Accessories, Orbital welding, Labeling, LEAK TESTING & COMMISSIONING, Training etc.	1	ORBITAL WELDING IS MUST				
<b>Total Price (Including transport and tax)</b>							













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