Internal Combustion Engine Laboratory
Department of Mechanical Engineering
Indian Institute of Technology Madras
Chennai-600036, India

Calibration and Operational Gas Piping System for Automotive Exhaust Gas Analysers (COGPAGA) Ref No.: MEE/ARAM/2020/DST/01

Terms and conditions:

1. Quotations are invited in **a two-bid system for the items indicated in Annexure 1** for the supply and installation of COGPAGA**.** The offers / bids should be submitted in the two bid format as **Technical bid and Financial bid**.

   The Technical bid should consist of all technical details / specifications, method of execution and layout drawings only and should not include any financial details or terms failing which the bidder will be disqualified.

   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 the financial bid should be in separate sealed covers. Both the sealed covers, namely the technical and financial bids should be put in an outer bigger cover and sealed. **"Tender for COGPAGA"** should be written on the left side of the sealed outer bigger cover.
2. The quotations should be *valid for sixty days* from the due date and the period of delivery should also be clearly indicated.
3. Due to the prevailing COVID-19 situation site visits may be difficult. Hence, the price must be based on the items quoted in Table-1 in Annexure -1. **The total length of the SS tubes for all the gases is estimated as 395 m**. The commercial bid must indicate (i) The cost of tubing and tubing related work **alone** separately on **per meter basis** for this total length of tubing that is indicated **(395 m)**, (ii) cost of the remaining items excluding tubing and tubing related work and (iii) the total cost that will include all the items (in i and ii). All costs should be in terms of CIP Chennai. Amongst the technically qualified vendors the **decision will be based on the total cost quoted (as indicated in iii above).** However, finally, payment will be made for the **tubing and tubing related work part alone based on the actual length of the tubing that was used and the per meter cost that was quoted (as in i), while the payment for the remaining items excluding the tubing will be based on what is indicated in (ii)**
4. Terms of **warranty and guarantee** should be explicitly mentioned.
5. **Packing and delivery** charges, customs and clearance duty should be clearly stated.
6. Goods shall not be supplied without an official supply order.
7. **Local firms:** Quotations should be for free delivery to this institute. If quotations are for ex-godown, delivery charges should be indicated separately.
8. **Firms outside Chennai:** Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If the quotations are for ex-godown, packing, forwarding and freight charges must be indicated.
9. The rate of sales / general taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for sales / general taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that IIT Madras is entitled to have **Concessional Tax applicable to non-government educational institutions** run with no profit motive for which a concession tax certificate will be issued at the time of final settlement of the bill.

10. **Payment:** The mode of payment and if advance payment has to be made is to be specified in the financial bid for the consideration of the tender committee. Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.
11. IIT Madras is exempt from payment of **excise duty** and is eligible for **concessional rate of customs duty**. Necessary certificate will be issued on demand.
12. IIT 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.
13. Only bidders who meet the **supplier qualification requirements** given in Annexure -2 will be eligible for consideration.
14. **Training and commissioning:** After completion of work the staff and students of IC Engine Lab shall be given training on operating the pipeline system by vendor for **two days in two sessions as mutually convenient.**
15. **Queries:** In view of the prevailing COVID-19 situation no site visit will be possible. Bidders can preferably contact as given below on any one or both the days for any clarifications. Date and time for clarifying the queries are: 8th June 2020: 3-5 PM and 9th June 2020: 3-5 PM. On both the days in the denoted times the bidders can contact Prof. A. Ramesh by sending an email to (aramesh@iitm.ac.in) or through phone (Mob No.: 9444462154). However, bidders can contact on other dates and times also by email and phone.
16. **Safety:** The successful bidder shall take all safety precautions and ensure the safety of all concerned employees of the bidder and the people in the neighborhood of the work site. Safety of the bidder shall be the responsibility of the bidder who has been finally given the firm order by IIT Madras after all the administrative tasks.
17. The bidders should complete the given **Table 1 (last three columns) of Annexure 1** indicating the technical compliance of the materials, installation and commissioning along with the standards met by each component in the columns. **The completed Table 1 should form a part of the Technical bid failing which the bid will not be considered.**
18. **An undertaking as indicated in Item 6 of Annexure 2 has to be provided along with the technical bid regarding the quality of the items failing which the bid will not be considered.**
19. **A letter / certificate regarding after sales service as given in Item 2 of Annexure 2 has to be provided along with the Technical Bid failing which the bid will not be considered.**
20. A break up of labor charges involved should also be given but **only in the commercial bid**.
21. The bidder should give reference of having executed similar jobs of this magnitude in a reputed company or institutions **as given in the supplier qualification requirements and other important conditions (Item 1 in Annexure 2)**. **These details as outlined in Annexure 2 have to be attached for the bid to be considered.**
22. **Warranty period: 36 months from the date of successful commissioning of the system. This has to be clearly specified in both the Technical and in the commercial bids.**
23. **On-site Installation**: - The equipment or machinery has to be installed and commissioned by the successful bidder within 21 days from the date of receipt of the items at site at IIT Madras.
24. **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.
25. **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.
26. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**
27. **Performance Security: -** The successful bidder should submit Performance Security for an amount of 5% of the value of the tender/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 in India. **The performance security should be furnished within 21 days from the delivery of the purchase order.**
28. **Payment:**

    60% after supply of material without any tax

    30% after installation and commission without tax

    Remaining amount after being certified by end user

29. **Validity:** The validity of Quotation should not be less than 60 days from the due date of tender. 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.
30. **The closing date for the Tender is: 23rd June 2020. The bids have to be sent by Speed Post/Courier only.**
31. **Considering the prevailing COVID-19 situation the tentative Technical bid opening date will be 25th June 2020, 4PM. Opening will be at the address given below in Item 31. However, the bidders advised to contact Prof. A. Ramesh (details given below in Item 31) on or before 24th June 2020 and confirm the date of opening.**
32. The sealed quotations as indicated above should be sent by speed post/courier to the address mentioned below. All queries may be addressed to the same address.

    Prof. Ramesh A
    IC Engines Laboratory
    Department of Mechanical Engineering
    Indian Institute of Technology Madras, Chennai – 600036
    Ph: 9444462154, 0091-44-22574676, 0091-44-22576676, aramesh@iitm.ac.in

Acknowledgement: - It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them. **(All of the above have to be printed and signed as given below and submitted along with the Technical Bid for the bids to be considered)**

SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE

Annexure -1

Calibration and Operational Gas Piping System for Automotive Exhaust Gas Analysers (COGPAGA) Technical details, Specifications and Quantity

Quotations are invited for the supply and installation of gas pipelines along with accessories and sub-systems for a Calibration and Operational Gas Piping System for Automotive Exhaust Gas Analysers (COGPAGA) inside the IC Engine Lab, Department of Mechanical Engineering, IIT Madras.

1. Brief description of the required gas pipeline (Refer Fig.1 and Table 1 also):

Gas pipes, regulators, flame arrester/s, valves, panels etc. as outlined in the Technical specifications are required for the combined supply of gases to two Exhaust gas Emission analyzers namely (a) Euro 6 capable Automotive Exhaust Gas Analyser – Called **Analyser-A** and (b) Automotive FTIR analyser – Called **Analyser-**B. The system asked in the tender which will hereafter be called COGPAGA is for supplying calibration and operational gases as per the requirements. Each gas supply line requires two stages of pressure reduction and regulation. One regulator should be fixed near the high pressure gas cylinder that will be kept outside the laboratory while the other is to be fixed on a gas control panel which is to be fixed near each of the emission analysers. The following paragraphs outline the gases that will be used, the gas pressures and the methods that should be adopted. *(Gas Cylinders and gases are not in the scope of this tender).* The details given below and the components given below will come under the scope of the tender unless otherwise stated.

a) All the regulators supplied by the vendor (that are fixed on the gas cylinders) should reduce the pressure from the cylinder gas pressure that can vary from 20-200 bar to outlet pressure of 10-20 bar. The outlet pressure should be adjustable in this range.

b) There should be *two gas distribution panels with regulators or one panel with two groups of regulators* clearly demarcated that should be supplied that will be Called DP(A) for Analyser-A and DP(B) for Analyser-B. (As mentioned DP(A) and DP(B) may also be combined on one panel. DP(A) and DP(B) should be located near the Analysers inside the laboratory in location 2 as shown in Fig.1. DP(A) and DP(B) should receive gases at 10-20 bar (adjustable) from the cylinder mounted regulators through common pipe lines where ever possible as indicated (otherwise individual pipelines should be provided as indicated). DP(A) should regulate the outlet pressure to 1 bar and DP(B) should regulate the outlet pressure to 3 bar. The outlet pressures must also be adjustable near the range of the regulators provided on the panels DP(A) and DP(B).

2. Operating and Calibration Gas Pipelines:

There will be two groups of operating and calibration gases associated with respective individual cylinders *(Gas Cylinders and gases are not in the scope of this tender).* The first set called Group X is related to gas pipelines for gases that will be linked to both the panels DP(A) and DP(B). The second set called Group Y is related to gas pipelines that will be linked to only with the panel DP(A).

Group X: In the case of the operating and Calibration gases given below for Group X, the following has to be adopted. On the corresponding high pressure gas cylinder kept outside the laboratory in Location 1 (Fig.1), a pressure regulator must be provided as outlined earlier and a single pipe line must come into the lab and get divided into two supply lines near the panels in the laboratory (Location 2), one to DP(A) and the other to DP(B). In DP(A) there must be a pressure regulator for each associated operating / Calibration gas to reduce the pressure as given earlier for supply to Analyser-A (1bar, adjustable). In DP(B) there must be a pressure regulator for each operating /calibration gas to reduce the pressure as given earlier for supply to Analyser-B (3

bar, adjustable). **(Please note that in this group for each gas two regulators will be needed at the panels, one on DP(A) and the other on DP(B))**

Pipe Lines for the Operating Gases that should be provided on Group X:

a) H_2 and He=>H_2-40% He-60% **(Brass Flame Arrester Needed)**
b) Synthetic Air=>20%O_2 80%N_2
c) N_2 (0-4 bar)
d) One extra line with regulator to be provided – **Spare1**

Pipe Lines for the Calibration Gases that should be provided on Group X:

e) C_3H_8 (900 ppmC)
f) C_3H_8 (54000 ppmC)
g) CH_4 (900 ppmC)
h) CH_4 (18000 ppmC)
i) One extra line with regulator to be provided – **Spare2**

Group Y: In the case of the operating and Calibration gases given below for Group Y, the following has to be adopted. On the corresponding high pressure gas cylinder kept outside the laboratory in Location 1, a pressure regulator must be provided as outlined earlier and a single pipe line must come into the lab and get connected to only DP(A) kept in Location 2. In DP(A) there must be a pressure regulator for each operating /calibration gas to reduce the pressure to 1 bar as given earlier for supply to Analyser-A.

Pipe Lines for the Operating Gases that should be provided on Group Y:

j) O_2 (100%)- single gas pipe line required **(Brass Flame arrester needed)**

Pipe Lines for the Calibration Gases that should be provided on Group Y:

k) CO_2 (18%)
l) CO (10.8%)
m) NOx (900 ppm)
n) NOx (9000 ppm)
o) O_2 (22%) –required single pipe line
p) One extra line with regulator to be provided – **Spare3**

For all cylinders the maximum gas pressure shall be **200 bar and in all cases two stage pressure regulation is needed i.e. one near the cylinder at Location 1 and the other on the panel i.e. on either DP(A) or DP(B) at Location 2.**

Stage1 (Regulator near the Cylinder): Inlet (20 to 200 bar) regulated outlet pressure (10-20 bar adjustable) at Location 1.

Stage2: (Distribution regulators inside the laboratory on panel DP(A) or DP(B)) : 10 bar to 1 bar for DB(A) and10 bar to 3 bar for DP(B) at Location 2.

All regulators must be adjustable near their ranges. Every regulator should have corresponding inlet and outlet gauges and also should be labelled.

Flame arrester as specified is to be provided only for (a) 100% oxygen and (b) (H_2 and He=>H_2-40% He-60%) gas lines. The regulators shall be of Brass material.

21. Joining of gas pipelines& specifications:

- The welding of the pipe lines shall strictly be of ORBITAL TIG WELDING.
- Tube size-1/4" SS Tube Electro polished- 316L

- Pneumatic Jerk fittings where ever appropriate.
- Gas panel equipped **with one Inlet diaphragm shutoff valve & one Internal Purge Diaphragm Shut-Off Valve & with ¼" OD Tube Double Compression Ferrule fitting**
- **Flexible stainless braided hose along with safety wire** from the gas cylinder to high pressure regulators kept near the cylinders.
- All high pressure regulators must be fixed on the corresponding wall. All low pressure regulators must be fixed on the panel/s

22. Leak testing and labeling:

The entire system shall be leak tested **(Helium Leak test should be done).**

23. Training and commissioning:

After completion of work the staff and students of IC Engine Lab shall be given training on operating the pipeline system by vendor for t**wo days in two sessions as mutually convenient.**

24. Queries:

In view of the prevailing COVID-19 situation no site visit will be possible. Bidders can preferably contact as given below on any one or both the days for any clarifications. Date and time for clarifying the queries are: 8th June 2020: 3-5 PM and 9th June 2020: 3-5 PM. On both the days in the denoted times the bidders can contact Prof. A. Ramesh by sending an email to (aramesh@iitm.ac.in) or through phone (Mob No.: 9444462154). However, bidders can contact on other dates and times also by email and phone.

25. Safety:

The successful bidder shall take all safety precautions and ensure the safety of all concerned employees of the bidder and the people in the neighborhood of the work site. Safety of the bidder shall be the responsibility of the bidder who has been finally given the firm order by IIT Madras after all the administrative tasks.

26. Layout to be provided along with the Technical Bid:

Bidders may provide labelled plan view of the piping layout along with the components along with the technical big clearly indicating the component specifications.

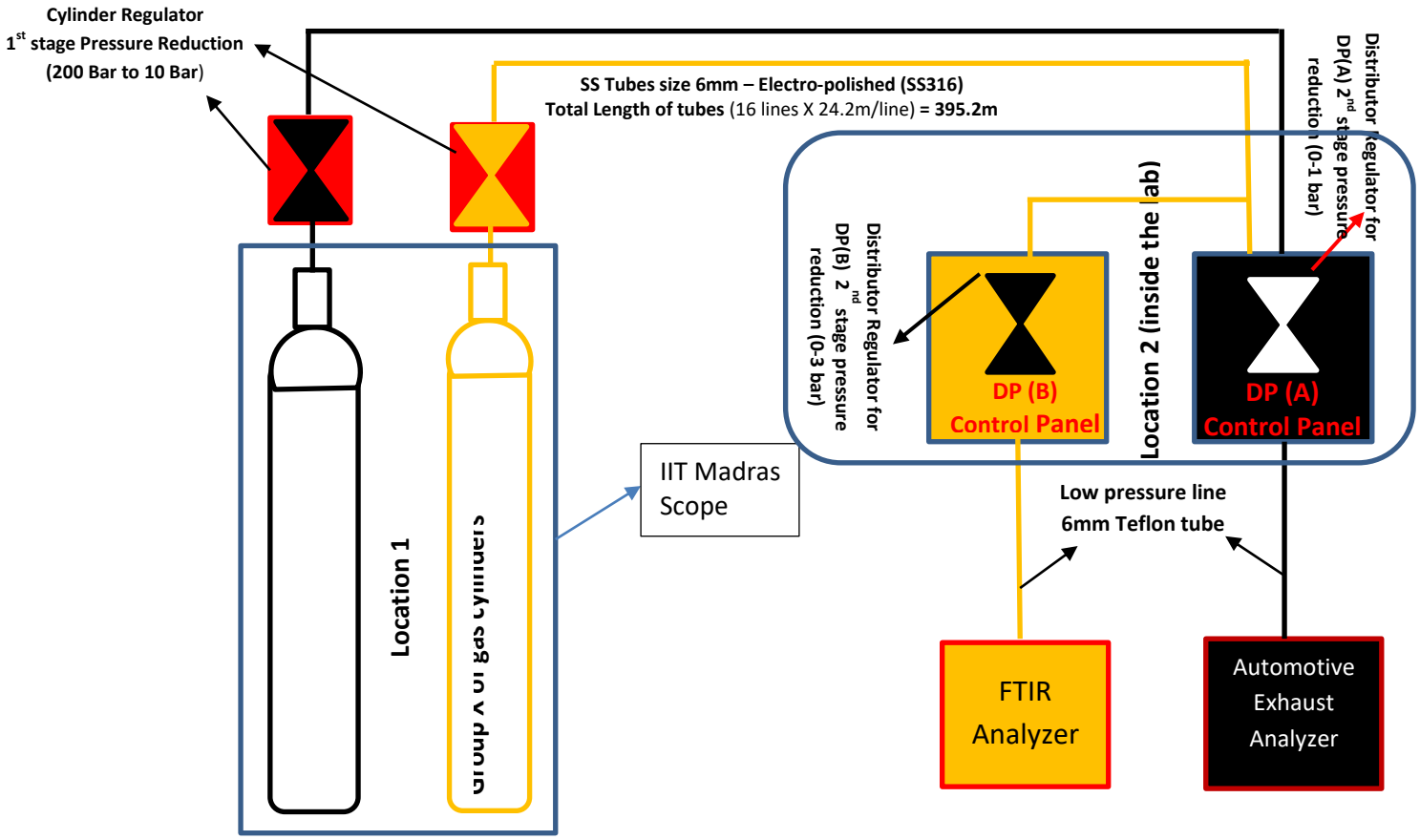
27. The bidders should complete the given Table 1 (last three columns) indicating the technical compliance of the materials along with the standards met by each component in the columns. **The completed Table 1 should form a part of the Technical bid failing which the bid will not be considered.**

28. The bidder should give reference of having executed similar jobs of this magnitude in a reputed company or institutions **as given in the supplier qualification requirements and other important conditions (in Annexure 2)**. **These details as outlined in Annexure 2 have to be attached for the bid to be considered.**

33. **Warranty period: 36 months from the date of successful commissioning of the system. This has to be clearly specified in both the Technical and in the commercial bids.**

34. **The closing date for the Tender is: 23rd June 2020**

35. For any clarification, please contact Prof. Ramesh A (aramesh@iitm.ac.in), Mob: 9444462154.



1. **Location 1 is near the cylinder**
2. **Location 2 is inside the laboratory (near the Analyzers in the laboratory) i.e. where DP(A) and DP(B) are to be located.**

Fig.1 Layout of two stage pressure Reduction with pipe line

Annexure 1 (Continued)

Table 1 Technical Specifications & Requirements for Gas pipe line

Technical Bid

Sl. No	Item Description	Qty	Standards	Make	Model No	Technical Compliance including meeting quality standard mentioned (Yes/No)
1	**The pressure regulator which will be mounted above the calibration and Operating gas cylinder (location 1) with the following specifications:** **Separate Panel for each Operational & Calibration Gas cylinder with the following specifications:** **Gas Purity 6.0 Grade,** MOC=SS316L, Specially Cleaned, Inlet Pressure =200bar, Outlet Pressure = 0 to 15 Bar**,** **Diaphragm=Hastelloy,** With 1 Number of Inlet Diaphragm Shut-Off Valves, With 1 Number of Internal Purge Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Normal Gauges, With Inlet & Outlet Ports = 1/4" FNPT**,** **Leak Rate : 10-8 mbar l/s of Helium** Outlet Fittings for above Panel, MOC:SS316L, 1/4"MNPTX1/4" OD.	**15**	EN ISO 2503/ CGA–E4 Pressure Gauges in Regulators: EN 837/ ASTM A 276 AISI 316L/EN 562 Class 1.6			
2	**The pressure regulator which will be mounted above the Calibration and Operating gas cylinder (location 1) with the following specifications:** **Separate Panel for Oxygen Gas with the following specifications:** **Gas Purity 6.0 Grade,** MOC=Brass Chromeplated, Specially Cleaned, Inlet Pressure =200bar, Outlet Pressure = 0 to 15 Bar**,** **Diaphragm=Hastelloy,** With 1 Number of Inlet Diaphragm Shut-Off Valves, With 1 Number of Internal Purge Diaphragm Valves, With Safety Relief Valve, With Inlet & Outlet Normal Gauges, With Inlet & Outlet Ports = 1/4" FNPT**,** **Leak Rate : 10-8 mbar l/s of Helium** Outlet Fittings for above Panel, MOC:SS316L, 1/4"MNPTX1/4" OD.	**1**	EN ISO 2503/ CGA–E4 Pressure Gauges in Regulators: EN 837/ ASTM A 276 AISI 316L/EN 562 Class 1.6			
3	**Flexible hose which will connect each cylinder and pressure regulator (S. No:1) at location 1 should have the following specifications:** SS Flexible Hose **(Internal SS)** along with **Safety Wire** & Cylinder Connectors for Operational Gases, 1.5 Meter Length. Operating Pressure : 200 Bar	**16**				
4	**Cylinder Holder to Hold Cylinders with Belt.**	**16**				
5	**Suitable length of SS pipe line between location 1 & location 2 (inside the laboratory) with the following specifications:** **SS316L Tube 1/4"OD x 0.035" WT, TP316L, Electropolished,** (10 Ra internal surface finish) ***Length to be decided by the bidder based on site visit***	**395m For estimation**	ASTM A269 / A632/TRGL/ DIN EN 10217-7 / DIN EN 10216-5			
6	**Flash Back Arrestor for Hydrogen helium mixture and pure oxygen to be located between emission analyser and point of use regulator should have the following specifications:** **MOC: Brass, Operating Pressure : 3 Bar,** **Inlet & Outlet = 1/4" OD, Compression Fitting.**	**2**	EN 730 / ISO 5175, BAM & UL Approved/ EN 730-1			
7	**The pressure regulator at location DP-A should have the following specifications:** Point of Use Regulators for Operational & Calibration Gases, Gas Purity 6.0 Grade, Wall Mounting, Single Stage, Inlet Pressure : maximum 20 Bar, Outlet Pressure : 1 bar , (All adjustable near their ranges) **MOC : SS316L, Specially Cleaned, Gas Purity 6.0 Grade,** With inbuilt Inlet Diaphragm Shut--Off Valve, **With Hasteloy Diaphragm,** Assembled with Outlet Pressure Gauges **With Inlet & Outlet Ports = 1/4"FNPT.** Leak Rate : 10-8 mbar l/s of Helium	**15**	EN ISO 2503/ DIN 12918 Pressure Gauges in Regulators: EN 837/ ASTM A 276 AISI 316L/EN 562 Class 1.6 NG 50			

8	**The pressure regulator at location DP-A should have the following specifications:** Point of Use Regulators for Oxygen, Gas Purity 6.0 Grade, Wall Mounting, Single Stage, Inlet Pressure : maximum 20 Bar, Outlet Pressure : 1 bar , (All adjustable near their ranges) **MOC : Brass Chromeplated, Specially Cleaned, Gas Purity 6.0 Grade,** With inbuilt Inlet Diaphragm Shut--Off Valve, **With Hasteloy Diaphragm,** Assembled with Outlet Pressure Gauges **With Inlet & Outlet Ports = 1/4"FNPT.** Leak Rate : 10-8 mbar l/s of Helium	**1**	EN ISO 2503/ DIN 12918 Pressure Gauges in Regulators: EN 837/ ASTM A 276 AISI 316L/EN 562 Class 1.6 NG 50			
9	**The pressure regulator at location DP - B should have the following specifications:** Point of Use Regulators for Operational & Calibration Gases, Gas Purity 6.0 Grade, Wall Mounting, Single Stage, Inlet Pressure : maximum 20 Bar, Outlet Pressure : 3 bar , (All adjustable near their ranges) **MOC : SS316L, Specially Cleaned, Gas Purity 6.0 Grade,** With inbuilt Inlet Diaphragm Shut--Off Valve, **With Hasteloy Diaphragm,** Assembled with Outlet Pressure Gauges **With Inlet & Outlet Ports = 1/4"FNPT.** Leak Rate : 10-8 mbar l/s of Helium	**9**	EN ISO 2503/ DIN 12918 Pressure Gauges in Regulators: EN 837/ ASTM A 276 AISI 316L/EN 562 Class 1.6 NG 50			
10	**Electropolished Equal Weld Tee to branch the Gas Lines for DP "A" & DP "B" for 9 Numbers of Operational & Calibration Gases with the following specifications:** **Orbital Weld Tee – 1/4"OD,** **MOC:SS316L, Electropolished,** (10 Ra internal surface finish)	**9**	ASTM A-276/ASME SA-479, Forgings – ASTM A 182			
11	Inlet Fittings for Point of Use Regulators, MOC:SS316L, 1/4"MNPTX1/4"OD.	**25**	ASTM A276/ ASME SA479/UNSPSC (10.0): 40142613/UNSPSC (11.0501): 40142613/UNSPSC (13.0601): 40183110/UNSPSC (15.1): 40183110/UNSPSC (17.1001) : 40141700/UNSPSC (4.03) : 40141720			
12	Outlet Fittings for Point of Use Regulators, MOC:SS316L, 1/4"MNPTX6MM OD.	**25**	ASTM A276/ ASME SA479/UNSPSC (10.0) : 40142613/UNSPSC (11.0501) : 40142613/UNSPSC (13.0601) : 40183110/UNSPSC (15.1) : 40183110/UNSPSC (17.1001) : 40141700/UNSPSC (4.03) : 40141720			
Installation of Gas Piping with Orbital Welding with Required Accessories.						
13	Installation of Gas Panels, point of Use Regulators, Tubing with required Accessories, Orbital TIG welding, Labeling, LEAK TESTING & COMMISSIONING, Training etc.(Pressure Test with Helium Gas)	**1**	ORBITAL TIG WELDING IS MUST Orbital Welding: Section IX of ASME Weld Fittings: ASTM A 276 Testing of fittings as per ASME B 31.1			

Annexure – 2

Essential Supplier Qualification Requirements and Other Important Conditions (These have to be complied with for the bids to be considered)

1. The bidder should have executed **at least three** such gas piping orders for supplying calibration/operational gases with similar or higher specifications in terms of kinds and quality of gas fittings, regulators, welding and material requirements and ASTM standards for the important components given in this tender in Table 1 to NATRIP testing centers (National Automotive Testing and R&D Infrastructure Project) and reputed automotive OEMs (Original Equipment Manufacturers) in the **last three years**. Out of the three **at least one** should have been supplied to **NATRIP testing centers / ARAI** [(Automotive Research Association of India) or ICAT (International Centre for Automotive Technology) or GARC (Global Automotive Research Centre) or NATRAX (National Automotive Test Tracks)] for automotive applications with BS IV capability or higher. **Proof of such execution of orders mentioned above has to be provided along with the technical bid without any financial items being indicated for the bidder to qualify.**
2. The supplier should be able to offer (a) complete after sales service support in Chennai during the warranty period of 3 years. Further (b) the supplier should be able to respond to any service issue within 48 hours. **A letter confirming this is to be attached along with the Technical bid failing which the bid will not be considered.**
3. Warranty should be for three years starting from one month after the date of installation and commissioning. The date of completion should be within 2 months of the PO, the rate indicated should be CIP and that the mode of payment should be specified.
4. **No financial details should be specified in the technical bid**. Violation will lead to disqualification.
5. Any other support systems that are needed for the functioning of the system but do not form a part of the supply should be specified in the technical bid.
6. The supplier should also give an undertaking that all the quality (ISO/DIN/ASTM) standards mentioned in Table-1 will be met for the items mentioned in the same table failing which the bidder will not qualify. **The undertaking should be in the following format and should be a part of the Technical bid:**
   "It is hereby confirmed that all the quality (ISO/DIN/ASTM) standards mentioned in Table-1 for the different components in this tender will be strictly met during supply, installation and commissioning. It is also understood that if the above is not followed during execution the supplier will be liable for disqualification and appropriate legal action may be initiated".

Quality Standards and Preferred Makes of Components

For important components like pressure regulators, flexible and other SS tubes, panels, valves, gas fittings, flash back arrester etc., in order to meet high safety and operational requirements the mentioned quality standards in Table 1 have to be met. Following are the preferred manufacturers

for such components considering safety and high operational performance requirements i.e. Dockwieler / GCE / Messer / Parker / Rotarex / Sandvik / Swagelok / Tescom / Valex / WITT.