



INDRADHANUSH GAS GRID LIMITED (IGGL)

(Joint Venture of IOCL, ONGC, GAIL, OIL and NRL)

GUWAHATI, ASSAM

NORTH -EAST GAS GRID PIPELINE PROJECT

CORRIGENDUM 1 FOR

**ANNUAL RATE CONTRACT 2(TWO) YEARS BASIS FOR
SUPPLY & INSTALLATION OF METERING SKIDS &
ASSOCIATED FACILITIES**

OPEN DOMESTIC COMPETITIVE BIDDING

Tender No.: 05/51/23VC/IGGL/030

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MECON LIMITED

(A Govt. of India Undertaking)

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CORRIGENDUM # 1
ANNUAL RATE CONTRACT 2(TWO) YEARS BASIS FOR
SUPPLY & INSTALLATION OF METERING SKIDS &
ASSOCIATED FACILITIES UNDER NORTH EAST GAS GRID PIPELINE
PROJECT OF M/s IGGL
Tender Doc. No.: 05/51/23VC/IGGL/030



MECON LIMITED

Dated : 10.03.2023

Sl. No.	Description	Volume	Page No.	Clause / Para / Section	Amendment / Addition / Modification / Deletion	
1	Datasheet of Online H2s Analyzer, Datasheet of Online Moisture Analyzer System, Specification of Online Sulphur Analyser	Vol-II	-	-	Addition	Datasheet of Online H2s Analyzer, Datasheet of Online Moisture Analyzer System, Specification of Online Sulphur Analyser are enclosed as Annexure-1 to this Corrigendum.

ANNEXURE-I TO CORRIGENDUM 1

1. Application :

H2S measurement in Natural Gas at pipeline conditions, Dry as well as associate /wet Natural gas custody transfer application.

2. Sampling System:

Extractive through retractable sample collection probes, (wherever applicable, otherwise sample from existing sample system of online GC to be used).

3. Sample Pressure: Refer P&ID.

4. Sample Temperature: Refer P&ID.

5. Ambient Conditions

Temp Range : 0 °C to 55 °C, Humidity 100% (Max)

Online Analyser system shall be suitable for the ambient conditions and shall guarantee that the performance of the online Analyser shall not deteriorate up to the specific ambient conditions.

6. Accuracy & Repeatability +/- 1 ppm or better

7. Range of Measurement: 0 – 10 ppm H2S in natural gas

8. Unit of Measurement / Output-:

'H2S content' in ppm

9. Minimum Detection Limit : 1 ppm or better

10. Calibration Traceability

Calibrations traceable to National Institute of Standards and Technology (NIST)/NPL/ Any Metrological Institute

11. Analyser Measurement Response Time : Less than 5 Minutes

12. Initial warm up time : Less than 20 min

13. Analyser Shed:

The analyzer shall be installed with suitable canopy, to avoid direct exposure to sunlight. Environment protection class is defined at point no 24.

14. Type of Analyser / Sensor:


The sensing mechanism of the online H2S analyzer to be 'Tunable Diode LASER/UV Absorption Spectroscopy' type having no moving parts inside the analyser.

15. Cycle Time:

In Seconds (to be specified by the bidder depending of the stability period in seconds in both way transitions from 'small to high' H2S content gas samples & from 'high to small' H2S content gas samples of their analyzer).

16. Number of Streams:

Two streams (one active and one standby). Samples from all streams are available for analysis sequentially in a cyclic way through auto-selection controller & field selection devices, with arrangement for manual override. Manually any particular stream can be selected overriding the auto-operation. Presently stream in operation

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will remain operational and the standby streams will remain temporarily by-passed. The provision in standby stream for analysing batch results of sample collected in sampling bombs.

17. **Pipeline Sizes:** Refer P&ID.

18. **Sample Collection Probe:**

Retractable sample collection probes for each stream (wherever applicable).

19. **Sample Handling System:**

- The sampling handling system shall be designed to move the sample from the process to the online Analyser in the shortest possible time.
- Sampling system shall include block valves on all process sampling lines.
- The sample handling system shall be designed in such a way so as to take care of both type of gas i.e. associate/wet as well as dry natural gas.
- Sample shall be returned to the atmosphere at a safe height.
- Sample system shall have selective filtrated passage of the concerned sample to avoid ingress of oil/dust in the sample.
- NG may contain traces of moisture, Glycol & other corrosive impurities; supplied system should be designed accordingly.

20. **Pressure Regulator & Sample conditioning:**

Suitable pressure regulating device & sample conditioning device should be supplied individually for all the streams of the H2S analyzer. Pressure Regulator, Filter-Separator etc., necessary tubing from pressure regulator up to the analyzer, heating arrangement, if any, all are required to be supplied by the bidder. Regulator shall have over pressure protection system.

21. **Auto & Manual Mode:**

In Auto mode the analyzer runs in predefined sequence & cycle time that is user programmable. In manual mode the user can select to run any stream, defeating the cyclic operation.

22. **Stream Switching & Selection:**

Stream switching assembly (automatically & manually both), along with necessary hardware & software shall be a part of the supply. The Analyser shall be capable of stream selection, the selection shall be automatic in a pre-programmed sequence or manually from programmer face or programming laptop as applicable. In automatic sequence the program shall allow any combination of stream selection such as any dedicated channel or cyclic selection of streams.

23. **Instrument Air Supply:**

No instrument air supply is available at site hence the vendor has to design the 'stream switching assembly' etc. accordingly without instrumentation air.

24. **Enclosure & Area Classification:**

The Analyser & all accessories to be field mountable type with IP66 protection and the electrical appliances to be certified for use safely in, Class-1, Division-1, and Group C&D area. Enclosure should be designed considering, no availability of instrument air supply at the site. The external cabinets to be made of SS 316.

25. **Input Power Supply:**


230 V 50 Hz

26. Deleted

27. Deleted

28. Deleted

29. **Local Indication:**

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Programmable “through-the-glass”, local indication of ‘H2S content’ in ppmv shall be available & viewable from the outside of the field cabinet without opening any cabinet etc.

30. Analog & Digital Outputs:

4 – 20 mA analog outputs for H2S concentration shall be available. One Ethernet and minimum two ‘RS 232 / 485 MODBUS RTU’ serial outputs shall also be made available simultaneously for both the outputs through each port. Minimum 2 Digital Output Relays for Hi/Lo Alarm and General Fault.

31. Analog & Digital Signal JB:

Analog & digital signals from the analyzer shall be terminated in separate JBs provided on the self- standing skid.

32. Sample Composition for each stream (normal range):

The average composition of natural gas stream for each terminal is provided elsewhere in the tender. Composition of Natural gas may vary from stream to stream & within the same stream, system should be designed to perform in varying natural gas compositions.

33. Venting:

If required should be at least 3 meter above from the nearest working platform with proper support. All necessary piping tubing to be done by the bidder.

34. Memory & Data storage :

The online Analyser system supplied shall store the data for minimum one month period with a provision of downloading the data on as and when required basis. Vendor shall furnish the maximum capacity of the online Analyser to store the data in the offer.

The system configuration & application program shall be stored on a non-volatile memory. Battery backup shall be provided in case memory is volatile. The design shall ensure that the application program and data tables remain unaffected in case of power fluctuation or failure. Clock time shall be protected with battery.

35. Communication Features


Analog & Digital Output: 4-20 mA analog output for H2S shall be available. Programmable alarm relays with Potential Free output and hermetically sealed.

Minimum 02 nos. of isolated serial port, One RS 232 /485 serial communication port for connecting CLIENT’s SCADA/ RTU / flow computer (MODBUS RTU protocol) output & One RS 232 /485 isolated serial communication port for connecting the configurator / Laptop. The protocol shall be MODBUS RTU or ASCII and the same shall be user selectable. The serial ports should be user configurable for 232 and 485. One TCP/IP Ethernet port configurable for programming, Mod bus Data communication, Printing. current process value, Day’s average, max value and alarm value (set point to be configure in system) shall be communicated from analyser. The analyser should be configurable to for data trending and registering the values up to 30 days. The data shall be downloaded to portable device like laptop having window software version 8 or higher.

Note: Complete details and documentation with respect to protocol details with message structure, frame structures, synchronizing / timing signals, memory register locations for data addressability and interface software driver details shall be furnished in order to successfully implement a serial link with the RTU. Any converter, repeater in the scope of vendor. Facility for remote monitoring of analyzer Through TCP/IP.

36. Diagnostic & validation features:

- The online Analyser shall have auto diagnosis feature and shall display error/ warn messages about the status of every parameter and eventful malfunctioning.
- Online automatic diagnostics for periodic self-checking of system integrity & alarming.
- Vendor must specify the frequency (if required) of factory validation / calibration of the supplied system

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- Provision in Analyser for Auto calibration / validation & Auto Zero checking at site by user.
- Event Logging / Audit log with Data tamper protection.
- All other utility requirement apart from Electrical Power to be given by vendor.

37. Reporting Features

- Generation of Analysis Report (scheduled or on- demand) and Automatic Generation of 24 hrs Average maximum, minimum Reports.
- Generation of alarms, diagnostic report
- The reports & alarm log etc. shall be stored in user configurable modbus address for connectivity

38. Program Features

The programming shall be user friendly. Field modifications of data tables and Analyser application shall be possible under password protection. Recent version of interface software compatible for windows-7 & 8 Environment with license.

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1. **Application :**

Moisture measurement in Natural Gas at pipeline conditions, Dry as well as associate /wet Natural gas custody transfer application.

2. **Sampling System:**

Extractive through retractable sample collection probes, (wherever applicable, otherwise sample from existing sample system of online GC to be used).

3. **Sample Pressure:** Refer P&ID.

4. **Sample Temperature:** Refer P&ID.

5. **Ambient Conditions**

Temp Range : 0 °C to 55 °C, Humidity 100% (Max)

Online Analyser system shall be suitable for the ambient conditions and shall guarantee that the performance of the online Analyser shall not deteriorate up to the specific ambient conditions.

6. **Accuracy & Repeatability** +/- 4 ppm or better

7. **Range of Measurement:** 0 – 200 ppmv moisture in natural gas

8. **Unit of Measurement / Output-:**

'Moisture content' in ppmv and 'Water Dew Point' in Deg. C both at line operating conditions.

9. **Minimum Detection Limit :** 5 ppm or better

10. **Calibration Traceability**

Calibrations traceable to National Institute of Standards and Technology (NIST)/NPL/ Any Metrological Institute

11. **Analyser Measurement Response Time :** Less than 5 Minutes

12. **Initial warm up time :** Less than 20 min

13. **Analyser Shed:**

The analyzer shall be installed with suitable canopy, to avoid direct exposure to sunlight. Environment protection class is defined at point no 24.

14. **Type of Sensor:**

The sensing mechanism of the Moisture analyzer to be 'Tunable Diode LASER Absorption Spectroscopy' type.

15. **Cycle Time:**

In Seconds (to be specified by the bidder depending of the stability period in seconds in both way transitions from 'small to high' moisture gas samples & from 'high to small' moisture gas samples of their analyzer).

16. **Number of Streams:**

Two streams (one active and one standby). Samples from all streams are available for analysis sequentially in a cyclic way through auto-selection controller & field selection devices, with arrangement for manual override. Manually any particular stream can be selected overriding the auto-operation. Presently stream in operation

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will remain operational and the standby streams will remain temporarily by-passed. The analyser shall have provision for analysing batch sample collected in sampling bombs in standby port.

17. **Pipeline Sizes:** Refer P&ID.

18. **Sample Collection Probe:**

Retractable sample collection probes for each stream (wherever applicable).

19. **Sample Handling System:**

- The sampling handling system shall be designed to move the sample from the process to the online Analyser in the shortest possible time.
- Sampling system shall include block valves on all process sampling lines.
- The sample handling system shall be designed in such a way so as to take care of both type of gas i.e. associate/wet as well as dry natural gas.
- Sample shall be returned to the atmosphere at a safe height.
- Sample system shall have selective filtrated passage of the concerned sample to avoid ingress of oil/dust in the sample.
- NG may contain traces of H₂S, Glycol & other corrosive impurities; supplied system should be designed accordingly.

20. **Pressure Regulator & Sample conditioning:**

Suitable pressure regulating device & sample conditioning device should be supplied individually for all the streams of the moisture analyzer. Pressure Regulator, Filter-Separator etc., necessary tubing from pressure regulator up to the analyzer, heating arrangement, if any, all are required to be supplied by the bidder. Regulator shall have over pressure protection system.

21. **Auto & Manual Mode:**

In Auto mode the analyzer runs in predefined sequence & cycle time that is user programmable. In manual mode the user can select to run any stream, defeating the cyclic operation.

22. **Stream Switching & Selection:**

Stream switching assembly (automatically & manually both), along with necessary hardware & software shall be a part of the supply. The Analyser shall be capable of stream selection, the selection shall be automatic in a pre-programmed sequence or manually from programmer face or programming laptop as applicable. In automatic sequence the program shall allow any combination of stream selection such as any dedicated channel or cyclic selection of streams.

23. **Instrument Air Supply:**

No instrument air supply is available at site hence the vendor has to design the 'stream switching assembly' etc. accordingly without instrumentation air.

24. **Enclosure & Area Classification:**

The Analyser & all accessories to be field mountable type with IP66 protection and the electrical appliances to be certified for use safely in, Class-1, Division-1, and Group C&D area. Enclosure should be designed considering, no availability of instrument air supply at the site. The external cabinets to be made of SS 316.

25. **Input Power Supply:**

230 V 50 Hz

26. Deleted

27. Deleted

28. Deleted

29. **Local Indication:**

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Programmable “through-the-glass”, local indication of ‘moisture content’ in ppmv and ‘Water Dew Point’ in degree C shall be available & viewable from the outside of the field cabinet without opening any cabinet etc. Dew point conversion methods : ISO 18453 / ASTM D1142 or equivalent for specific stream using live input for pipeline pressures / Temp.

30. Analog & Digital Outputs:

4 – 20 mA analog outputs for both Moisture & Dew point shall be available. One Ethernet and minimum two ‘RS 232 / 485 MODBUS RTU’ serial outputs shall also be made available simultaneously for both the outputs through each port. Minimum 2 Digital Output Relays for Hi/Lo Alarm and General Fault.

31. Analog & Digital Signal JB:

Analog & digital signals from the analyzer shall be terminated in separate JBs provided on the self- standing skid.

32. Sample Composition for each stream (normal range):

The average composition of natural gas stream for each terminal is provided elsewhere in the tender. Composition of Natural gas may vary from stream to stream & within the same stream, system should be designed to perform in varying natural gas compositions.

33. Venting:

If required should be at least 3 meter above from the nearest working platform with proper support. All necessary piping tubing to be done by the bidder.

34. Memory & Data storage :

The online Analyser system supplied shall store the data for minimum one month period with a provision of downloading the data on as and when required basis. Vendor shall furnish the maximum capacity of the online Analyser to store the data in the offer.

The system configuration & application program shall be stored on a non-volatile memory. Battery backup shall be provided in case memory is volatile. The design shall ensure that the application program and data tables remain unaffected in case of power fluctuation or failure. Clock time shall be protected with battery.

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Analog & Digital Output: 4-20 mA analog output for both Moisture & Dew point shall be available. Programmable alarm relays with Potential Free output and hermetically sealed.

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Note: Complete details and documentation with respect to protocol details with message structure, frame structures, synchronizing / timing signals, memory register locations for data addressability and interface software driver details shall be furnished in order to successfully implement a serial link with the RTU. Any converter, repeater in the scope of vendor. Facility for remote monitoring of analyzer Through TCP/IP.

36. Diagnostic & validation features:

- The online Analyser shall have auto diagnosis feature and shall display error/ warn messages about the status of every parameter and eventful malfunctioning.

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- Online automatic diagnostics for periodic self-checking of system integrity & alarming.
- Vendor must specify the frequency (if required) of factory validation / calibration of the supplied system
- Provision in Analyser for Auto calibration / validation & Auto Zero checking at site by user.
- Event Logging / Audit log with Data tamper protection.

37. Reporting Features

- Generation of Analysis Report (scheduled or on- demand) and Automatic Generation of 24 hrs Average maximum, minimum Reports.
- Generation of alarms, diagnostic report
- The reports & alarm log etc. shall be stored in user configurable modbus address for connectivity

38. Program Features


The programming shall be user friendly. Field modifications of data tables and Analyser application shall be possible under password protection. Recent version of interface software compatible for windows-7 & 8 Environment with license.

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SPECIFICATION FOR SULPHUR ANALYSER

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7. FACTORY ACCEPTANCE TEST/INSPECTION
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1. INTRODUCTION

This specification is to provide the details for on line sulphur analysers procurement to implement product quality measurement. The offered analysers shall be of proven technology and shall cater to the online measurement of required parameters.

2. OBJECTIVE

2.1. The objective of this document is to establish the requirements for procurement, installation and commissioning of online sulphur analysers for product services.

3. SCOPE OF WORK


- 3.1. Design ,engineering, manufacture, procurement of materials and bought out components, assembly at shop, supply of commissioning and consumable spares, inspection, testing at manufacturer's works, packing, delivery, documentation as per the enclosed standard specifications.
- 3.2. Bidder to study the application & service.
- 3.3. Selection and Supply of online sulphur analyser with density meter as per enclosed data sheet and scope of work.

4. HAZARDOUS AREA CLASSIFICATION

4.1. Zone 1, Group IIC, T3

5. SULPHUR ANALYSER

- 5.1. Microprocessor based with RAM memory with battery back-up
- 5.2. The analysers shall have VFD/LCD/LED to display measured values, Error messages, warning messages etc.
- 5.3. The working Principle of analysers shall be UV fluorescence.
- 5.4. Density meter to be considered to convert reading in ppmw.
- 5.5. Sample Tubing & Probe material shall be SS316 as a minimum. However bidder shall ensure that for the selected Tubing/ Probe material, any traces of sulphur are not absorbed/ adsorbed into the Sample Tubing/ Probe material, before entering in the analysers.
- 5.6. In case external configurator/laptop is required (one number for feed and one number for product analysers), bidder shall supply the same along with all associated software (along with License), hardware, other associated accessories, converters, cables etc. as required. The external configurator/laptop shall be suitable for use in the Hazardous Area mentioned. All License shall be perpetual type & shall be in the name of "CLIENT".
- 5.7. Fast loop sample system/Sample Recovery system with redundant pump to be considered to reduce lag time.
- 5.8. Validation system for checking analyser performance.
- 5.6 **Calibration Range shall be such that it shall measure the gas composition attached with tender document. Calibration range indicated elsewhere stands null & void.**

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5.7 Sulphur Analyser shall measure all the components of sulphur including Total Sulphur content.

6. ACCEPTANCE CRITERIA


- 6.1. The analysers shall not be withdrawn by analyser manufacturer from Indian market in next five years (from the date of placement of order) as a matter of corporate policy. Vendor and analyser manufacturer shall continue to support the Purchaser in providing back-up engineering, maintenance support and spare part support for a period of 10 years from the date of expiry of warranty.
- 6.2. Bidder to note that deviation on any part of scope of work shall not be acceptable and shall lead to the rejection of complete offer without any intimation.
- 6.3. CLIENT / MECON reserve the right to access the capability and capacity of the bidder for execution of the project. CLIENT / MECON also reserve their right to reject any offer received at its discretion without assigning any reason whatsoever.
- 6.4. Any accessories, parts of whole system which is obsolete or likely to become obsolete, shall not be supplied.

7. FACTORY ACCEPTANCE TEST/INSPECTION


- 7.1. CLIENT / MECON representatives may witness the factory calibration of the analyzer during FAT/Inspection of the system at manufacturer's /supplier's works place.
- 7.2. The bidder must make available all service facilities to carry out inspection and test.
- 7.3. CLIENT / MECON shall reject any goods, parts thereof or whole analyzer if it is not as per specification given in the Bid Document or Purchase Order.
- 7.4. All Test certificates, guarantees, etc. as required by CLIENT / MECON shall be presented at the time of FAT. Any other details to conduct FAT which is explicitly not mentioned here but necessary shall be furnished by Bidder/Supplier.
- 7.5. The bidder shall inform the CLIENT / MECON 15 days in advance for FAT and shall furnish the FAT procedure along with the intimation of FAT schedule for approval.
- 7.6. Even though the CLIENT / MECON may carryout inspection, the supplier/bidder shall not be relieved of his responsibilities for any defects, failure of instrument etc.
- 7.7. CLIENT / MECON reserves the right to wave off FAT and give dispatch clearance. As a pre-requisite to FAT and dispatch clearance, vendor shall submit PO compliance report for supply part only with clear indication of pending site activities if any.

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Product quality Analyser (Sulphur)			
General	1	Tag number & unit	1 No.
	2	Quantity	
	3	Service	Sulphur Analyser
	4	Line size, Rating & schedule	Vendor to specify
	5	Area Classification	Zone 1 Gas Gr IIC, T3
	6	Scope of Supply	Complete system including Analyser with Density meter, sample probe, sample pre-conditioning/ sample handling system, signal conditioning unit, conversion unit, power supply unit, control unit and other necessary systems and accessories including Calibration Cylinders & Mandatory Spares.
Analyser	7	Principle	UV Fluorescence
	8	Location	To be mounted in a self-standing panel
	9	Power Supply	a) 230V AC UPS for analysers & its accessories b) 230 V AC non-UPS for Cabinet Lighting c) 415 VAC, 3-phase Non-UPS for Pumps, Air Conditioning (if applicable)
	10	Calibration Range	L
	11	Detector	Photo detector
	12	Accuracy/ Repeatability	+/- 1% full scale or better Bidder to specify
	13	Maximum Sample Lag Time (min)	15 min. (Total lag time including sampling, conditioning and analysis)
	14	Flow rate	Kg/h As per P&ID
	15	Flow meter	SS rotameter shall be provided in the sample line suitable for the design pressure.
	16	Probe for sampling	Required.
	17	Sample Inlet/ Outlet Valves	Required
	18	Probe Material / Probe material housing	SS316/SS
	19	Probe insertion	Retractable type for online retraction
	20	Probe Area classification	Zone 1 , Gas Gr. IIC ,T3
	21	Probe length	Vendor to specify
	22	Analyser Type	Microprocessor based with RAM memory with battery back-up
	23	Configuration changes	Through inbuilt keypad or external configurator / laptop.
	24	Local Display Unit	LED/LCD/VFD
	25	Manual Zeroing Facility	Required
	26	Manual calibration Facility	Required
27	Inputs/ Outputs	i) 4-20mA DC, isolated analog output (all the sulphur components inc. total sulphur) ii) Output Potential free contact rated for 24 VDC, 2A for analyser common fault alarm. (inc. electronics fault, low temperature fault, low sample flow) iii) Modbus RTU over RS485 to DCS (for all troubleshooting, maintenance & diagnostic data)	

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Product quality Analyser (Sulphur)			
Sample Handling System (SHS)	28	Items Required	SHS shall include the necessary equipment's for sample probe, sample pre-conditioning, pressure/ temperature regulation, pressure regulators, pressure relief valves, pressure gauges, flowmeters, Non-Return valve etc.
	29	Location of Sample Handling System	Sample conditioning system and Analyser electronics shall be mounted in the self-standing panel in the field.
	30	Enclosure	The analyser system and all other panel mounted instruments, junction boxes, cable glands etc. shall be flameproof certified suitable for mounting in Zone 1, Gas Gr.IIC and temperature class T3 as per IEC and weatherproof to IP65.
	31	Sample Module	Length of sample line from tap-off point to analyser shall be upto 30 meters(approx). Bidder's scope shall include supply of all the components, interconnecting tubing, tube-fittings including connectors.
	32	Tap off point line size & rating	Vendor to provide
	33	Interconnection tubing/ fittings between take off points and sample handling system	By bidder
	34	Interconnection tubing/ fittings between sample handling system & analyser and Analyser to sample return line	Required, to be supplied by bidder
	35	Size of tubing	Minimum 6 mm (Bidder to furnish calculation for sample transport time. Tubing size shall be selected to minimise transportation time and also to prevent clogging)
	36	Material of tubing	SS 316 as a minimum (Bidder must categorically confirm in the offer that tubing material is compatible with the sample composition and condition)
	37	Material of fittings	SS 316, suitable for tubing, double compression
38	Utility Requirements	Vendor to Specify	

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Product quality Analyser (Sulphur)				
Process/Service condition	39	Fluid	As per P&ID	
	40	State	As per P&ID	
	41	Total Sulphur Contents		
	42	Pressure: Operating @ sample point	Kg/cm ² g	As per P&ID
	43	Temperature : Operating @ sample point	°C	As per P&ID
	44	Pressure:Max	Kg/cm ² g	As per P&ID
	45	Design Temperature: Min/	°C	As per P&ID
	46	Design Ambient Temp Min / Max	°C	As per P&ID
	47	Mol. Wt	Kg/ kmol	
	48	Secific gravity		As per P&ID
Certification	49	Viscosity at normal operating temp.	cP	As per P&ID
	50	Statutory		Required
	51	Others		-
Testing	52	Hydrogen testing		
Others	53	Manufacturer		
	54	Make and Model No.		

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