1- Purchase Order

1 Special On-line GC Instruments for HDPP Pilot as Below:

Configured so that be able to separate and analyze below components in percent range:

Hydrogen, Ethylene, Propylene and 1-Butene every 180 seconds and report mole percentage of each compound and their ratio to the Hydrogen.

Common Requirements for all instruments:

*Voltage: 220 volt (universal)

*PC system with latest version of original MS operating system with color laser printer

*latest version of Original Software in Order to control GC and analyze results

* Five years spare parts

* 1 year guaranty & 10 years warranty

* Training course for 2 people

Technical Data Sheet

Item No	TECHNICAL FEATURES	DESCRIPTION
1	Component to be Analyzed:	H2, C2H4, C3H6, 1-Butene
2	Concentration Level**:**	Percentage
3	Water	No ■ Yes ☐
4	No. of Sample Points:	4 (Reactor Inlet:2, Reactor Outlet:2)
5	Temperature:	Inlet: Ambient, Outlet: 65 ^{0}C
6	Pressure:	Inlet: 9bar, Outlet: 8.5bar
7	Line Diameter:	tube 1/8”
8	The distance of Sample Point to the Analyzer:	30 m
9	The Elevation of Sample Point:	Second floor, 6 m
10	Sample Point Zone:	Ex. Zone 1
11	Analyzer Room Zone:	Zone 2
12	Ability to Transfer Data to the PLC:	No ☐ Yes ■
13	Electrical data	220 V, 50 Hz

Additional Accessories: Cabling and run the cable tray

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2- Sample Requirement Specification

A) Sample information

Sample type:

Sample Type	Real		(Calibration, Validation, Real sample)
Sample Description	Ethylene Polymerization reactor Analysis		(for example Naphtha)
Sample state	Gas		(Gas orLiquid)
Sample Temperature at site	80-85	°C	
Sample Pressure at site	6-9	Bar	
Max Runtime	On-line		
Max cycle Time	3	Min	

Fill in details in case of specific component analysis

#	Component or group	Critical comp.	Concentration		LOD	Unit of measurement (wt%, vol%, ppm, ppb, etc.)	Quantitation (yes or no)
			Min.	Max.			
01	Hydrogen					mol %	Y
02	Ethylene					mol %	Y
03	Ethan					mol %	Y
04	Propylene					mol %	Y
05	1-Butene					mol %	Y
06	1-Hexene					mol %	Y
07	1-Octene					mol %	Y

Additional Information:

Does this sample contain:		No	Yes	Describe
	Corrosives	*		
	Moisture/Water	*		
	Particulates	*		
	Oils/Heavies	*		
	Precipitates	*		
	Oligomers, Polymers	*		

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3- Additional Technical Information

Item No	TECHNICAL FEATURES	DESCRIPTION
1	Minimum Range	0-500 ppm
2	Repeatability	±1 % of full scale from 0.05-2 % ±5 % of full scale from 2-100 %
3	Linearity	±2 % of full scale
4	Oven Temp. Range	5-330 °C
5	Temp. Control	±0.05 °F (±0.02 °C)
6	Cycle time	180 sec
7	Serial output	RS232, RS435
8	Ethernet	Standard Four 10/100 Base T Ethernet connection with Rj45 connectors autosense and auto-negotiato
9	Standard I/O	2 analog outputs, 4 digital outputs, 4 digital inputs
10	Board slots for optional I/O	Up to 2
11	Sample flow	50-200 cc/min
12	Sample filtration	0.1 µm
13	Minimum sample pressure	5 psig
14	Maximum sample pressure	75 psig
15	Maximum sample temp.	121 °C
16	Material in contact with sample	Stainless steel, teflon and polyimide
17	Configuration	Single unit with multiple enclosures

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