MOD-1022-S Natural Gas Quality Analysis

Natural gas is a complex mixture of various organic and inorganic components and component groups. A differentiation must be made between flammable hydrocarbons as the actual source of energy and non-flammable components.

The wide range of components makes it difficult to reliable determine natural gas qualitatively and quantitatively. For this application Modcon offers complete natural gas quality control systems, equipped with modern analytical instruments and everything needed for fast and accurate analysis sample probes from the gas pipeline.

On-line Analytical System is a complete equipment set, which allows performing the following tasks in real time mode and in field conditions:

- Continuous sampling of gas from pipeline or process vessel, its filtration and separation from accompanying impurities (solid particles, salts, oils, aerosols of liquid hydrocarbons, glycols, amines etc')
- Sample preparation for analysis of physical and chemical parameters according to specifications of analytical devices (incoming gas temperature, pressure, flow rate etc')
- Analysis of critical gas parameters, which are necessary for assessment of its quality and suitability for processing, transportation and use
- Transfer of analysis results to customer's gas processing facility control room by means of electronic communication
- Automatic gas leak detection and indication of dangerous gas concentration levels in Analyzer house.

MODCON SYSTEMS LTD.
Leaders in Analysis, Measurement and Automation
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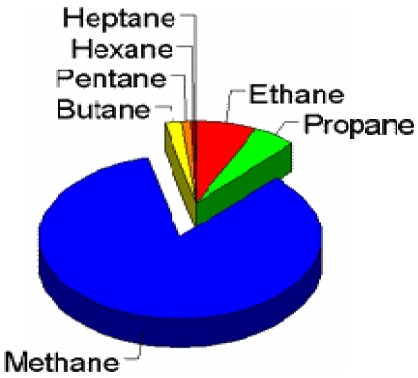
Natural gas quality on-line analytical system model MOD-1022 has been designed for continuous measurement the following quality characteristics of natural gas:

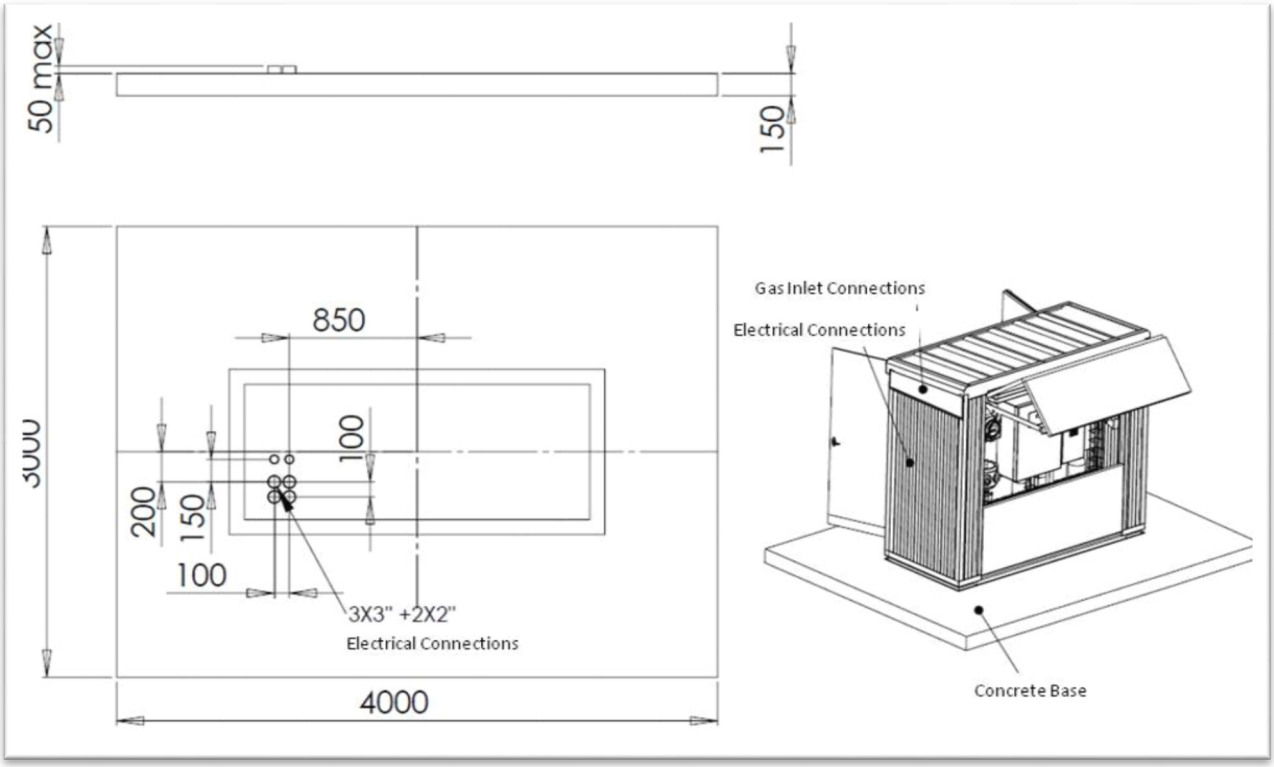


- Gas chemical composition, molecular weight, Wobbe index and Upper Calorific Value – CV, which is the latent energy content of a gas which is released during combustion.
- Concentration of Hydrogen Sulfide (H2S) content in natural gas
- Water Dew Point (WDP) is the temperature at which water condenses out. Water together with hydrocarbons favors the generation of solids, in particular during the decompression of gas from high-pressure pipelines. The solids block gas fittings, and the water is corrosive
- Hydrocarbon Dew Point (HDP) is a temperature at which higher hydrocarbons condense. Liquid phase is produced in the gas pipeline if the hydrocarbon dew point is fallen below. The accumulation of liquid in the pipelines can lead to a plug flow and may destroy the compressors in the pumping station

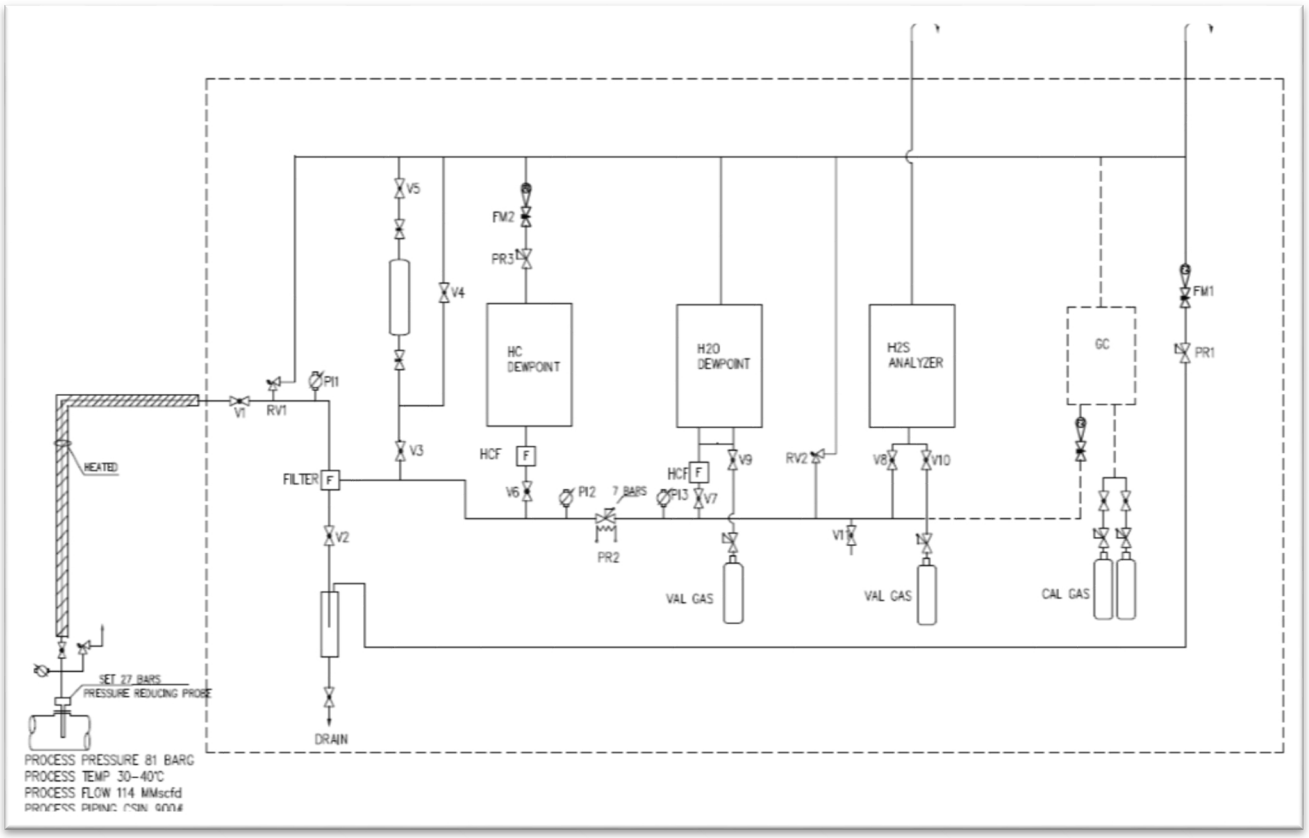
The system includes following main components:

- On-line gas infrared spectrometer, water dew point hydrocarbon dew point and H2S analyzers
- Sampling system, including high-pressure gas probes for taking samples from pipelines and process vessels, membrane filters-separators for gas separation from liquids and aerosols, absorption filter-scrubbers for glycols and amines, pressure regulators, release valves, flow meters and flow regulators, 2- and 3-way valves and tubing – all made of SS-316.
- Weather-proof analyzer housing for accommodation of all major System components and providing suitable working conditions according to their specifications.
- Electrical infrastructure, including main power switches, power distribution boards to analyzers and to peripheral equipment (lighting, heating, AC), signal terminal box, light switch, armored cabling – all Ex-proof.

INSTALLATION DETAILS



SAMPLE HANDLING SYSTEM



SPECIFICATION

Component	Unit	Minimum	Normal	Maximum	Measured Range
CH4	%	70,00	80,00	100,00	0-100
C2H6	%	10,00	12,00	20,00	0-20
C3H8	%	1,00	3,00	10,00	0-10
iC4H10	%	0,10	1.0	5,00	0-5
nC4H10	%	0,30	1.0	5,00	0-5
Total C5	%	0,00	1.0	2.00	0-2
n-Hexane	%	0,00	1.0	2.00	0-2
CO2	%	0,00	60	70,00	0-70
Nitrogen (balance)	%	0,00	1,00	100.00	0-100
Water Dew Point	ppm	0,00	100.0	500.00	0-500
H2S	ppm	0,00	100.0	1000	0-1000

Update time rate	1-120 sec (software selectable)
Sample flow rate	0.1-3 L/min
Calibration	Manual or automatic, single or multilevel
Precision/Repeatability	Hydrocarbons: ±0.05% (absolute) CV and WI Computation: ±0.05% (relative of reading) or ±0.01 MJ/m Water dew point: ±2°Cdp H2S: 10% of reading
Power	220 VAC +10% / -15% (25A)
DCS link	1 x RS485 or RS232 / MODBUS RTU
Area classification	ATEX Zone 2
Ambient temperature	-25 to +45 deg.C
Dimensions	Approx. 2,500 x 1,100 x 2,000 mm (LxWxH)
Weight	Approx. 500 kg

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