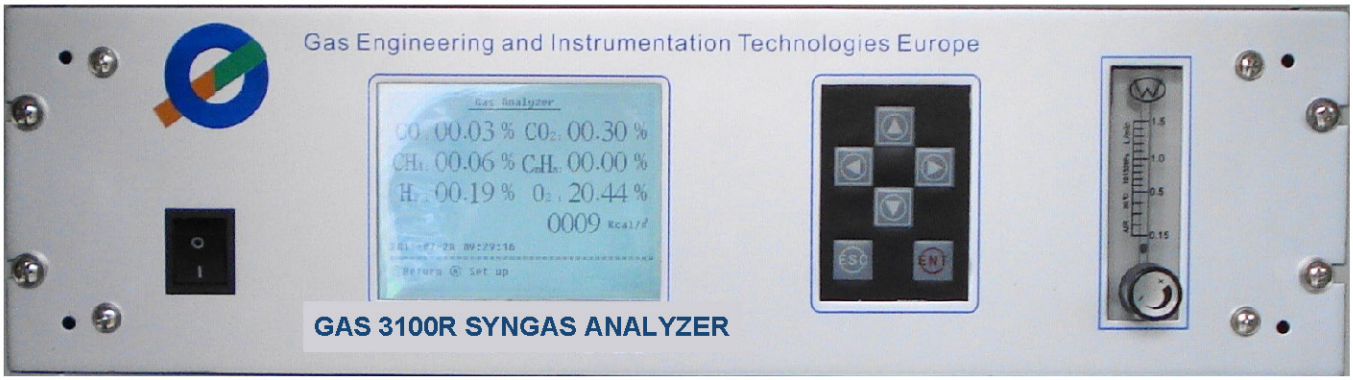
GAS 3100R SYNGAS Analyser

$CO\% + CO_2\% + CH_4\% + C_NH_M\% + H_2\% + O_2\% + GHV + N_2$ (option)

GEIT
Gas Engineering and Instrumentation Technologies Europe



Standard configurations

GAS 3160R	$CO+CO_2+CH_4+H_2+O_2+CnHm$
GAS 3150R	$CO+CO_2+CH_4+H_2+O_2$
GAS 3140R	$CO+CO_2+CH_4+H_2$
Standard	Gas heating value calculation
Optional	N_2 calculation

Some applications

Syngas production from biomass, wastes and coal gasification/pyrolysis processes
Coal chemical process,
Blast furnace, Converter, Coking,
Direct Iron Smelting reduction process

Main features

Up to 6 gas measures + GHV/N_2 calculation
Real time measures
No need of carrier gas/ combustion air
Different NDIR detectors for CH_4 and C_3H_8
Fast, accurate and reliable syngas measures

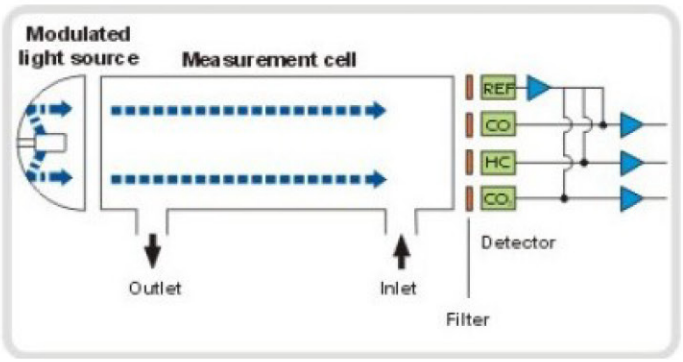
Syngas measurement

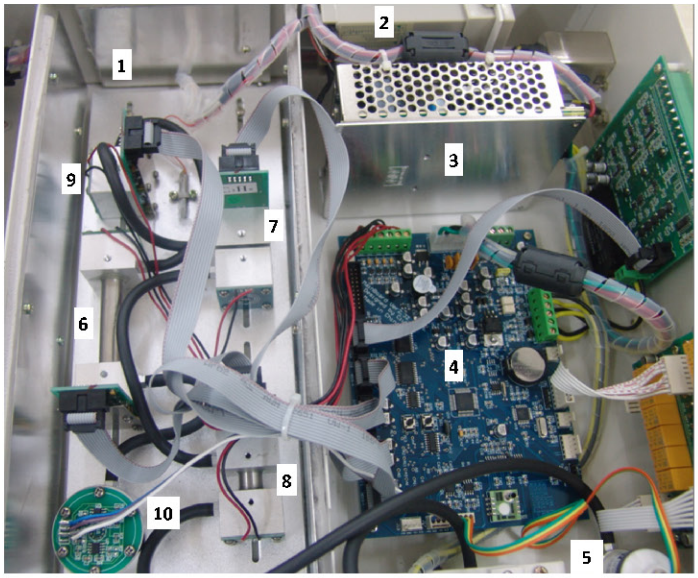
Syngas is measured after pre-treatment on dry gas and at ambient temperature (≤ 20°C). Only gaseous alkanes at 20°C as methane, ethane, propane and butane can be measured by the gas analyser.

Calculated of Gas Heating (calorific) Value

The measure of CnHm (even if in low concentrations) is important for the calculation of the GHV value as CnHm respectively weight 5.5x more than CO and H_2 and 1.77x more than CH_4.

NDIR dual beam NDIR technology





Internal view GAS 3160R SYNGAS

1 : Heated enclosure (50°C) for NDIR and TCD detectors
2 : Temperature controller
3 : Power supply
4 : Mother board
5 : Oxygen sensor
6 to 9 : Dual beam NDIR detectors
10 : TCD detector

G.E.I.T. EUROPE is also specialized in the delivery of customized syngas analysis systems in 1600 mm height industrial cabinet including dedicated system parts for gas pre-treatment (tar/dust removal), gas sampling and conditioning, PLC for system operation control and communication with an external server or PC with our SCADA software.

Technical specifications

Measures and technologies	CO, CO_2, CH_4, C_NH_M	: proprietary non dispersive dual beam infrared detectors (NDIR)
	O_2	: industrial galvanic fuel cell (ECD)
	H_2	: proprietary thermal conductivity detector (TCD)
Calculations	Gas Heating (or calorific) Value (in MJ/m^3 or $kcal/m^3$)	
	N_2: 0-100%vol (optional)	
Minimum ranges	CO, CO_2, CH_4, C_NH_M, H_2, O_2: 0-5%vol	
Maximum ranges	CO, CO_2, CH_4, H_2, O_2: 0-100%vol (intermediary ranges also available)	
	C_NH_M : 0-20%vol	
No cross-interference between CH_4 and C_NH_M	We apply measuring technologies and specific band filtration techniques to obtain selective measures of CH_4 and CnHm with 2 different NDIR detectors	
No effect of CO_2 and CH_4 on H_2 detector	CO_2 reduces H_2 measurement reading while CH_4 increases H_2 measurement reading. We apply specific algorithms for compensating these effects on the H_2 measurement.	
No effect of gas flow variation on H_2 detector	We adopt a patented thermal conductive sensor technology on which gas flow variation has negligible effects on H_2 measurement.	
No effect of ambient temperature variations	NDIR and TCD detectors are integrated inside an enclosure with temperature regulation (+50°C) providing increased stability and accuracy of the measures	
Real time process measures	NDIR/ECD: T90 < 10s - TCD : T90 < 20s	
	Real time measures are impossible to achieve with GC-FID gas analysers	
No need of external carrier gas and combustion air	Our NDIR/TCD/ECD technology does not require any carrier gas and combustion air to operate as required by GC-FID analysers.	
Accurate measure of oxygen	We implement a highly performant and long life (> 3 years) galvanic fuel cell that is not affected by the presence of up to 100% vol CH_4, H_2, CO_2, CO or C_3H_8 and 2000 ppm H_2S	
Display / Display resolution	LCD (320 x 240), 4 digits, in % vol / 0.01%	
Precision / Repeatability	≤ ± 2% FS / ≤ 1% FS	
Warm up time	800 seconds (30 minutes to full specifications or before gas calibration)	
Zero & Span Drift	± 1% FS/week	
Auto zero function	Auto-zero function on ambient air during the last 100 seconds of the warm-up time	
	Programmable auto-zero function on ambient air via setting menu	
	Note : 4-20mA outputs are frozen during the zeroing cycle + 120 sec.	
Response time (T_{90})	≤ 15 s (NDIR/ $ECDO_2$) / ≤ 30 s (TCD)	
Gas sampling	With external pump. Internal pump available in option with operation via keyboard or by external server (+12VDC voltage signal)	
Calibration	5 points factory calibration stored in the microprocessor of the gas analyzer	
	2 points (zero and span) user calibration	
Sample Gas Conditions at analyser inlet	Flow rate	Nominal 1L/min (0.7 to 1.2 L/min)
	Inlet pressure	20 mbar mini - 500 mbar maxi
	Outlet pressure	Atmospheric pressure
	Temperature	Max. 50°C
	Quality	Free of dust, tars, water, oil traces
Operation conditions	T_{AMB}	0 to 50°C
	P_{AMB}	86 to 108kPa (860 to 1080 mbar)
	R_H	≤ 95%
Communication interface	RS232/485 with proprietary communication protocol	
Analogue output signals	4-20 mA signal per measuring channel	
Digital output signals	2 gas alarm contacts per measuring channel (freely adjustable level)	
Mechanical	19''- 3U rack or desk type	
	Dimensions/weight	L485 x W457 x H 132 mm - Weight : < 15kg
Power supply	220 ±44 VAC - 50Hz ± 1 Hz (power cable included)	
Options	Internal gas sampling pump	
	Real time data transfer software	
	RS232 cable	
	DB9-USB cable adapter	

Non contractual pictures and specifications - subject to change without prior notification - Issue -EN15v0

Gas Detection and Analysis
Industrial Processes Gas Monitoring
Landfill & Environmental Gas Monitoring

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