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Analyser for measurement of Wobbe-Index, Air demand, Density and Calorific Value RHADOX 7300

The Application:

As economic alternative to fossil fuels in industrial furnaces the use of caloric Off-gases from industrial processes has become common in the past years. The composition of these Off-gases is subject to high fluctuations due to the origin of the gases. In order to mix the Off-gases with other gaseous fuels it is important to measure, besides the Wobbe-Index and the Air demand, the Density and the Calorific Value.

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The Measuring principle:

The principle of the RHADOX™ Analysers for measurement of Wobbe-Index and Air demand in industrial Off-gases is based on the determination of the Air demand to achieve complete combustion. A sample of the fuel gas and air are brought to identical temperature and pressure and are mixed homogenous. The resulting gas and air mixture is then oxidised in a catalytic reactor. During oxidation the Oxygen content of the gas mixture is measured continuously. By integrating the calibration parameters Wobbe-index and Air demand are measured. The RHADOX 3000 is equipped with an additional mixing chamber to measure the flow of the already conditioned Gas-Air mixture. The result is a precise measurement of the Gas density. From the measured values Wobbe-Index and Gas density the Calorific value of the Gas is determined.

The Measuring system:

The RHADOX™ Analysers are mounted on a metal mounting plate with the components catalytic reactor, gas mixing chamber, electronic evaluation unit, power supply and measuring signal distribution installed in separated sheet metal housings. The housings of the components are manufactured for General Purpose in protection class IP 65. If required the RHADOX™ Analysers can also be supplied as integrated system installed in a analyser shelter including gas monitoring. The analyser shelter does not have to be air conditioned. However the operating temperature has to be observed (see technical data below). The Wobbe-Analyser RHADOX 7300 is calibrated by using two calibration gases which represent the low and high measuring range which have to be determined for every Off-gas individually. The calibration is started manually from the analyser main menu. Integrated automation components allow access to the system by remote control. The RHADOX™ Analysers are available for use in hazardous areas classified as Zone 2. The RHADOX™ Analysers are designed for continuous operation in industrial applications.

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Technical Data

	RHADOX 7300
Measuring components / -ranges	
Air demand [CARI]	1,5 m3 < CARI < 30 Air / m3 Gas
Wobbe-Index [Wi]	5 MJ / m3 < WI < 120 MJ / m3
Specific Gravity [SG]	0,5 < SG < 3,0 (Gas Density relative to air)
Calorific value [LCV]	5 < LCV < 140 MJ / m3
Analogue signal port	4* 4 … 20 mA, galvanically separated
Reproducibility Air Demand & Wobbe-Index Spec. Gravity and Cal. Value	 0,15 % - 0,2 % of the measuring value 1,0 % … 2,0 % of the measuring value
Lang term drift	≤ 2 % of measuring value / Month
T90-Time	~ 5…6 Seconds
Display	2* 16 digit back-lit LCD display
Messages	1 System message (Measuring value yes / no) 3 Messages (Service, Calibration, Status)
Digital Communication	serial Interface RS232
Option	RS 485; Ethernet
Ambient operating temperature	 from - 20 °C to + 60 °C
Operating temperature	from + 5 °C to + 60 °C; spezial version for up to 105 °C
Gas connections Inlet / Outlet	 6 / 12 mm, Ferrule pack
Gas flow volume	Measuring gas 20 … 100 Nl/h Instrument Air 50 … 500 Nl/h (depending on Air demand)
Gas pressure (at Inlet) Power supply	Gas ≥ 0,1 bar (g) / instrument air ≥ 2 bar (g) 115 or 230 VAC / 50 - 60 Hz, 1000 VA
Protection class / Housing Weight	 IP65 / 1000 x 900 x 350 mm (HxWxD) ~100… 140 kg
Options	for use in Ex-Zone 2, ATEX 3G IIB+H2 T3 Integrated catalytic remover of by-pass gas Auto-calibration
Version: AMS RH7300 E V02-2012-04	

Technical data subject to change

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