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Calorimeter

CWD PLUS

Datasheet

CWD PLUS

Calorimeter for direct and continuous determination of gas quality with increased accuracy

The combustion calorimeters of the CWD (Calorimetry, Wobbe index, Specific Gravity) series are used to determine gas quality and the associated measured variables:

- Calorific value and heating value
- Wobbe index
- Specific density
- CARI, air requirement

The CWD PLUS is a variant of the CWD for continuous determination of the Wobbe index with increased accuracy. In natural gas applications, the accuracy is ± 1.0 % relative to the measured value.

The various measuring ranges make the CWD PLUS extremely versatile. Typical areas of application are natural gas, biomethane, liquefied petroleum gas, refinery gases, flare gases and fuel gases. Possible areas of application include fuel control in refineries, the conversion of refinery gas into electricity and processes in the glass industry.

Typical measuring ranges CWD PLUS (others on request)

Application	Wobbe measuring range [MJ/m³] start	Wobbe measuring range [MJ/m³] end	Accuracy [%]
Natural gas	30	60	1 Measured value
Liquid gas air	60 30	85 60	1 FSR
Liquid gas air extended measuring range	30	80	1 FSR
Biogas	14,5	25	1 FSR
Mixed gas	Various mixed gases – details available on request		
Coke oven gas	19	29	1 FSR
Refinery gas	25	70	1 FSR
Combustible gas	0 0 5 20 0 10	75 30 60 40 30 40	2 FSR 1 FSR 1 FSR 1 FSR 1 FSR 1 FSR
Flare gas	0 0 7,5	118 90 60	2 FSR

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The detection of unexpected or unknown gas components also allows the CWD PLUS to be used in applications with rapidly changing gas compositions, such as residual gases from chemical processes or substitute gases in the steel industry. In addition, the system offers a high level of safety when processes are shut down or the gas supply is interrupted by extinguishing the flame after a maximum of 10 seconds.

The direct and continuous determination of gas quality using combustion calorimeters is a measurement principle that has been proven for more than 60 years and offers a high degree of accuracy (see Table 1). When a defined volume of gas is combusted, all gas components are thermally converted. The energy released in this process is proportional to the Wobbe index. At the same time, the specific density of the gas is measured so that the calorific value can be calculated from these two variables.

The measuring principle is free of cross-sensitivity to individual gas components such as O_2, H_2 or CO.

Technical specifications CWD PLUS

Weight	approx. 54 kg
Dimensions H x W x D (mm)	1020 x 720 x 337
Protection class	IP50
Ambient temperature	5 °C–40 °C
Permitted temperature change	≤ 5 °C per hour
Ambient humidity	0–95 % relative
External pressure	800–1100 hPa (0.8–1.1 bar)
Gas inlet pressure	20–40 mbar
Process gas inlet	1, additional optional
Test gas inlet	1 per measuring range
Relative gas humidity	≤ 95 %, condensate-free
Voltage	240 VAC, 50/60 Hz; 110 VAC, 60 Hz
Max. power consumption	200 VA
Interfaces	8 SPDT Relais 3x 4. 20 mA, additional optional buses optional
T90 display time	≤ 15 sec
Licence (optional)	NRTL approval by SGS, according to UL61010-1, CAN/CSA-C22.2 No. 61010-1 (customer reference 710162)

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