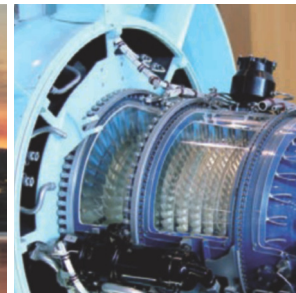


### Measurement parameter

- Calorific Value / Heating Value
- Wobbe Index
- Specific Gravity
- CARI, Air Requirement

### Applications

- LNG-Terminals
- Offshore Gas Production
- Fuel Gas Control for Gas Turbines



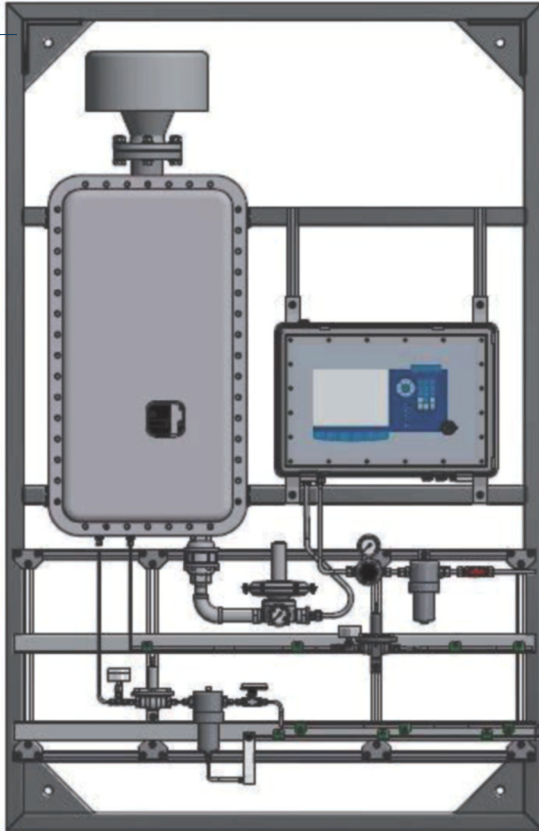
# CWD2000 EX



Calorimeter with type approval for  
operation in hazardous area

**CWD2000 Ex** combustion calorimeters (Calorimetry, Wobbe Index, and Specific Gravity) are used to determine the gas quality.

- Calorific Value / Heating Value
- Wobbe Index
- Specific Gravity
- CARI, Air Requirement



Picture 1: CWD2000 EX

The **CWD2000 Ex** is a variant with an EC type approval certificate (BVS 04 ATEX E 018 X) for use in explosive areas (II 2G Ex d IIA T3 Gb). This confirms its approval according to the ATEX Directive using the following standards:

- EN 60079:2009 General requirements
- EN 60079:2007 Flameproof enclosures

The field of application includes natural gas and liquefied petroleum gas (see Table 1).

It is typically used for process control, such as control of gas turbines on offshore drilling platforms.

**Typical measuring ranges of CWD2000 Ex**

Gas type	Measuring range [BTU/ft <sup>3</sup> ]	Upstream pressure [H <sub>2</sub> O]	Wobbe index accuracy [± % F.S.]	Typical gas consumption [SCFH]
Natural gas	675–1300	8	1.0	0.875
LPG	1075–2400	8	1.5	0.525

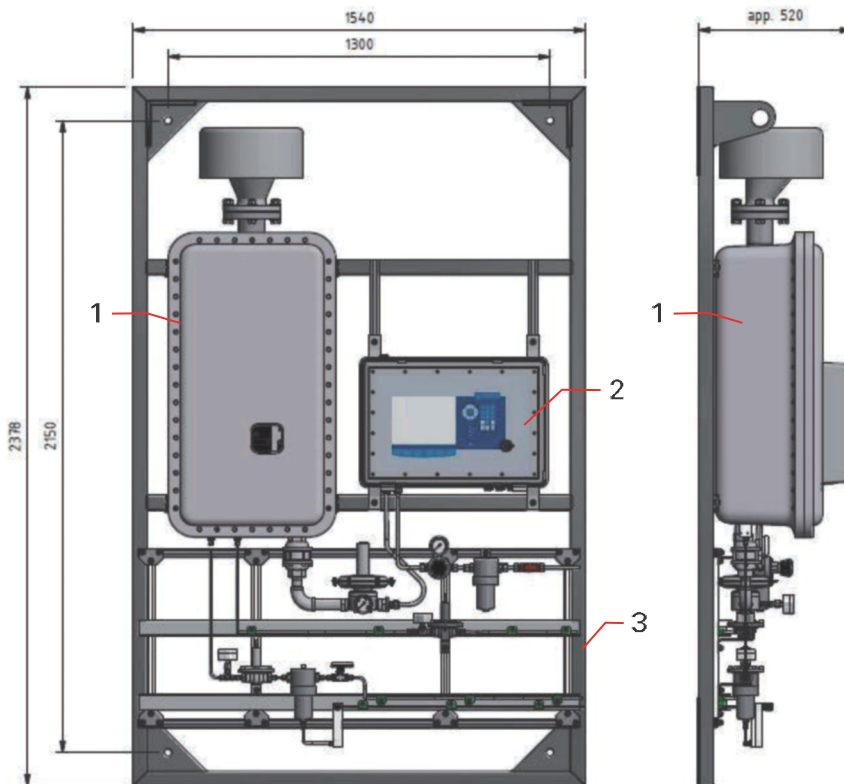
Table 1: Typical measuring ranges

The central component is the CWD2005 combustion calorimeter in a flameproof enclosure. The control unit and heater are integrated in a pressurized enclosure system (see Figure 2). The complete system with pressure controllers, gas and air supplies and filter is installed on a mounting frame.

**Direct and continuous determination** of gas quality by combustion calorimeter has been a proven, high-accuracy measurement principle for more than 60 years (see Table 1). During combustion of a defined gas volume, all gas components are thermally converted. The energy released in the process is proportional to the Wobbe Index. The specific density of the gas is measured simultaneously so that the heating value can be calculated from these two values.

Because it also measures unexpected and unknown gas components, the CWD2005 SPC can be used with a rapidly changing gas composition, such as in the case of residual gases of chemical processes or synthetic gases in the steel industry. In addition, the system provides a high level of safety in the event of a process shutdown or interruption of the gas supply by extinguishing its flame after a maximum of 10 seconds.

## Technical data



- 1 Calorimeter in a housing with flameproof enclosure
- 2 Pressurized enclosure system: PLC and heater
- 3 Mounting frame

### Technical data for CWD2000 EX

Weight	990 lbs. (450 kg)
Dimensions	
W x H x D [mm]	61"x94"x24" (1540 x 2380 x 600 mm)
Ambient temperature	-4 – 113° F (-20 – 45 °C)
Ambient humidity	0 – 95% RH
Ambient pressure	800 – 1100 hPa (0.8 – 1.1 bar)
Supply pressure of gas	16 – 20" H <sub>2</sub> O (40 – 50 mbar)
Process gas supply	1
Calibration gas supply	2
Carrier gas supply	1
Relative gas humidity	<95%, condensate-free
Supply temperature of gas	max. 45 °C
Instrument air consumption	8 cfm @ 100 psi (14 m <sup>3</sup> /h)
Instrument air pressure	75 – 150 psi (5 – 10 bar)
Voltage	240 VAC, 50/60 Hz; 110 VAC, 60 Hz
Interfaces	3 x relay; RS232; 4 – 20 mA; Fieldbus; Profibus DP; Profinet IO; Modbus RTU/TCP; Industrial Ethernet
T90 display time	15 s
Ex classification	II 2G Ex d IIA T3 Gb
Certification/Conformity	ATEX Directive (EN 60079-01:2009, EN 60079-1:2007)

Table 2: Technical data for CWD2000 Ex



## About UNION Instruments

UNION Instruments GmbH, founded in 1919, is a specialized supplier of measuring instruments in the areas of calorimetry and gas composition. Its user and customer base includes biogas producers, the chemical industry, and energy and water suppliers. The company has its headquarters in Karlsruhe and a subsidiary in Lübeck. With 30 international distributors, UNION Instruments operates worldwide. The company's core businesses include development and production as well as maintenance, service, and support.

## Our service performance



### Support

The **UNION-hotline** helps to solve all inquiries and urgent issues fast and easy. Device specific concerns can be solved worldwide within minutes by direct communication via TEAMVIEWER.



### Original spare parts

Original spare parts for the majority of UNION's products are in stock directly at site and ready for dispatch within a few hours.



### Software

For read-out of measurement and calibration data a device-specific software is available for our clients. In addition to the graphic display of measurement data its export in several database formats is possible.



### Training

UNION offers individual in-house training or on-site seminars for installation, use and maintenance of our devices even at the customer's premises. Training is individually adapted to the client's requirements.



### Repair service

A global service for inspection, maintenance and repair of our devices and systems is provided directly by UNION and via its distributors.



### Certification

Since 20 years we have implemented the ISO9001 system. UNION's products are certified to ATEX and UL/CSA directives accordingly. Industrial safety "**Safety with System**" is part of UNION's company policy.



### Engineering

In the last decades UNION compiled a very high level to the state of the art that covers many market segments. So a wide range of possible solution approaches is on hand.



### Calibration

As part of maintenance and service UNION provides the validation and re-calibration of measuring devices in conformity with certified custody transfer instruments and / or traceable protocols.



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