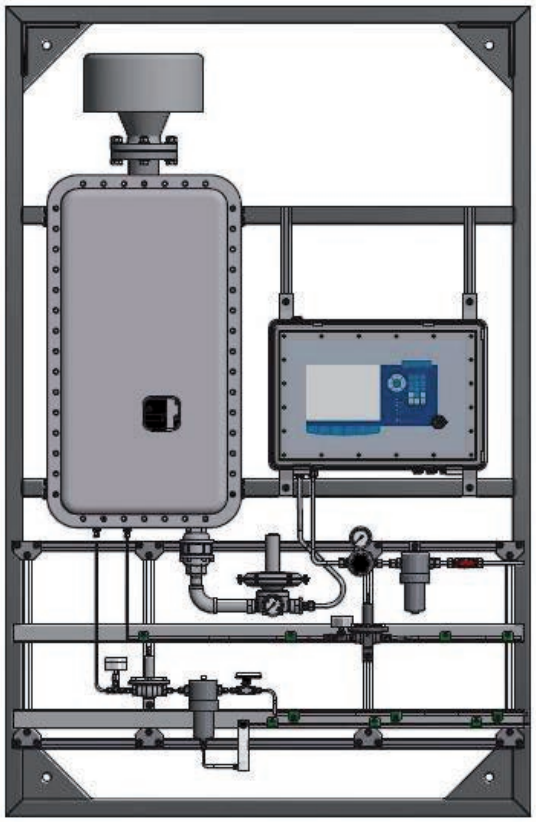
UNION Instruments



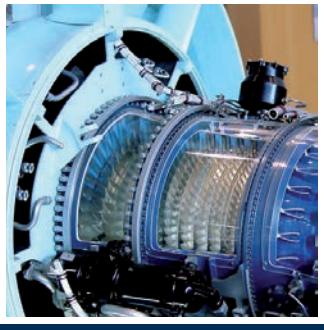
Measurement parameter

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

Applications

- LNG-Terminals
- Offshore Process gas regulation
- Fuel regulation for gas turbines



CWD2000 EX

Calorimeter with type examination certificate
for operation in hazardous areas

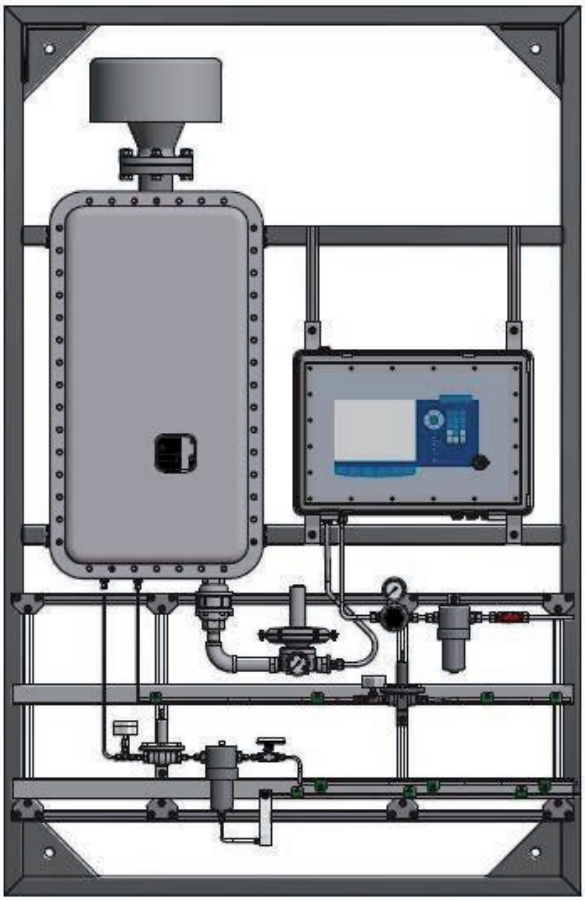


Figure 1: CWD2000 Ex

The combustion calorimeters of the **CWD2005** (**C**alorimetry, **W**obbe Index, Specific **D**ensity) device series are used to determine the gas quality and the associated measured quantities:

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

The **CWD2000 Ex** is a variant with an EC type examination 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 [MJ/m³]	Upstream pressure [mbar]	Wobbe index accuracy [± % MBE]	Typical gas consumption [l/h]
Natural gas	25 – 48	20	1.0	25
LPG	40 – 90	20	1.5	15

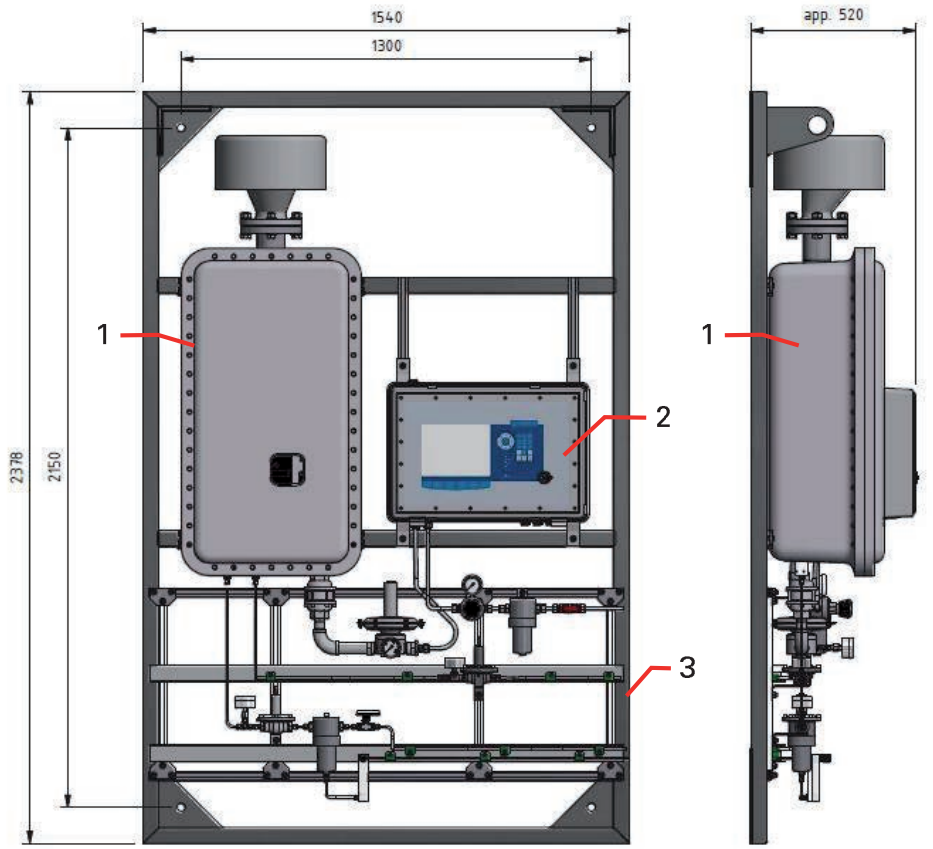
Table 1: Typical measuring ranges

The central component is the CWD2005 combustion calorimeter in a flameproof enclosure. The control unit and heater are integrated in a pressurized enclosure system from Gönnheimer (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 CWD2000 Ex 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	Up to approx. 450 kg
Dimensions W x H x D [mm]	1540 x 2380 x 600
Ambient temperature	-20 – 45 °C
Ambient humidity	0 – 95% relative
External pressure	800 – 1100 hPa (0.8 – 1.1 bar)
Supply pressure of gas	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	Approx. 30 m³/h (standard conditions)
Instrument air pressure	Min. 5 bar, max. 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 on 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 perpendicular.

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