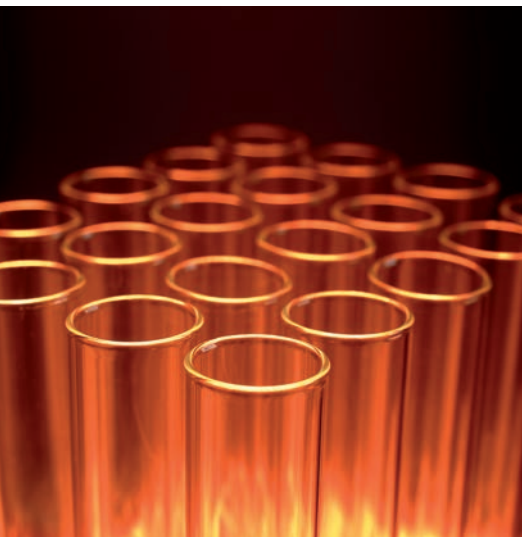
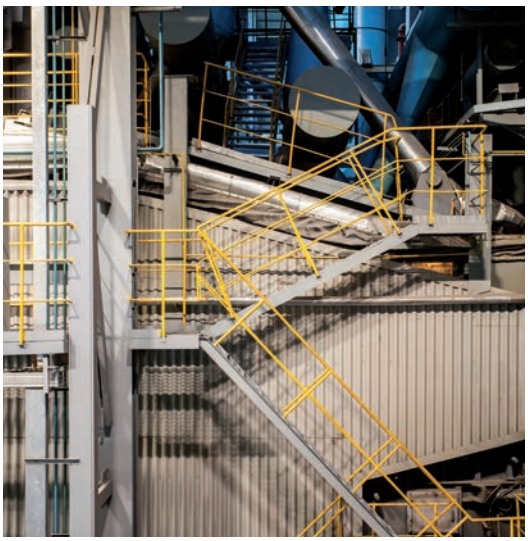
Process calorimeter CWD monitors the Calorific Value (CV) of syngas from waste pyrolysis plants in real time



COMPETENCE IN GAS MONITORING

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Synthetic Gas (Syngas)

Syngas is the product of gasification/pyrolysis (not incineration!!) of carbon-containing materials such as coal, wood, biomass or, only recently, Municipal Solid Waste (MSW). Gasification and pyrolysis, in contrast to incineration, do not combust but transform the materials into another form of energy containing substance in the absence of oxygen (pyrolysis) or with only a small amount of oxygen (gasification) respectively. Both processes break the original compounds down into simpler ones such as carbon monoxide, methane or hydrogen. The resulting gaseous mixture is called Synthetic Gas or Syngas and can be further used either to generate electricity or to serve as feedstock to produce defined chemical products.

Syngas technology goes back to the 1800s when „towngas" was produced by gasification of coal for lighting, cooking and industrial heating .This application has been replaced later by electricity and Natural Gas. However, the growing need for energy and specific chemical products (via e.g. Fischer-Tropsch Synthesis) has reactivated the interest in syngas; and most recently, the challenge of how to manage the increasing amount of waste materials without landfilling made syngas even more an attractive technology and, consequently, waste materials a valuable feedstock.

CWD calorimeter series

CWD stands for **C**alorimetry, **W**obbe-Index, and Specific **D**ensity and designates a modularly designed analyzer series for determination of calorimetric quantities in gases in various application areas including custody transfer measurements and measurements in hazardous areas. The CWD2005 directly determines the Wobbe index as the typical variable for the calorific value.
The measurement method is based on the continuous determination of the temperature changes of a carrier medium (air) caused by the energy which is released continuously during combustion of a defined gas flow. The relative gas density is measured simultaneously and used to calculate the heating and combustion value. Unknown or unexpected combustible components in a process gas (flare gas, syngas, Natural Gas…) are as well captured and combusted and thus considered in the measurement. This is essential for achieving reliable data from processes with rapidly changing gas composition such as chemical or steel industries or from waste disposal plants which use gasification or pyrolysis technologies.

Real- time monitoring of Wobbe number

Enables access to the UK Renewable Obligation Certificates

Reliable, industry-proved process analyzer

Direct measurement of all combustibles in the syngas

Design details ensure very low maintenance effort

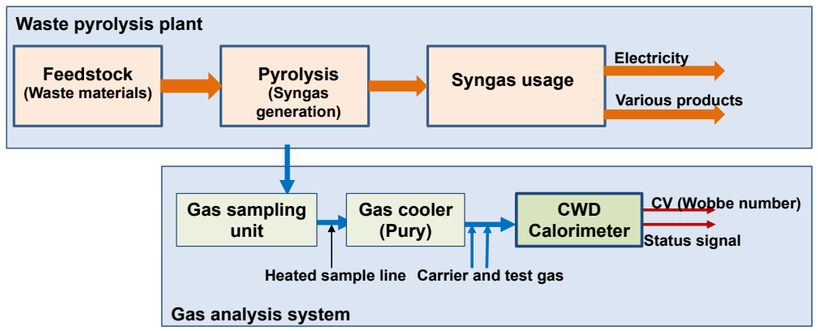
High performance sample gas preparation

The UK solution for waste disposal plants is Pyrolysis

Waste disposal plants in Europe – including incineration, gasification and pyrolysis processes – must comply with the European Waste Incineration Directive (WID) 2000 and the Industrial Emission Directive (IED) of 2002 respectively. In the UK, the construction of waste pyrolysis plants is a preferred choice to comply with these directives and also part of the ROC (Renewable Obligation Certificate) program, which supports generation and use of renewable energy. The ROC program requires UK electricity suppliers to generate a proportion of their total deliveries from renewable sources such as waste and supports this financially under certain conditions (see next clause).

CWD2005 is test winner in monitoring the Wobbe number of Syngas

In order to participate successfully in the ROC program, a waste pyrolysis plant has to verify reliably and continuously the energy content of the produced/delivered syngas. For that, various gas analyzer systems of leading suppliers have been tested in the Isle of Wight household waste pyrolysis plant including continuous gas analyzers, process gas chromatographs and other analyzer types. But finally only the CWD2005 process calorimeter system (see figure) was able to meet the demanding requirements: to monitor reliably and continuously the energy content of the syngas, which may alternate in composition and energy content depending on the sort of waste that is actually fed to the process. The direct reading CWD including a high performance sample gas preparation system, was able to respond quantitatively to all variations in the syngas composition and the resulting energy content of the gas. All combustibles in the gas are continuously burnt in the CWD; the resulting temperature increase is measured together with the specific density of the gas. The corresponding Calorific Value and Wobbe Index are calculated and displayed or digitally provided in almost real time!
Since that successful test period, many CWD systems have been and will be further delivered for use in waste pyrolysis plants.
For more information see http://www.union-instruments.com/en/products/calorimeter-cwd



UNION Instruments.
Competence in gas monitoring

UNION Instruments GmbH is an Germany based manufacturer of devices and systems in gas measurement technology with a global approach. The company specialises in determining the energy content (calorimetry) and composition (analysis) of gases for industrial purposes covering a broad range of applications. The modular design of the devices makes them especially suited for custom solutions.

UNION Instruments offers our customers flexibly configurable standalone devices as well as complete solutions (systems) designed for individual needs including planning and engineering.

The characteristic feature of such a complete solution is the combination of different measuring methods to form a complete system. This tailor-made offer includes all measures from counselling, planning, engineering and installation to commissioning on site. This includes as well the correct documentation according to ISO and/or CSA/UL.

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.

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.

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.

COMPETENCE IN GAS MONITORING

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