




**ANALYZER SOLUTIONS FOR
SUSTAINABLE DEVELOPMENT**



DESIGNED TO POWER A LIFETIME OF VALUE

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Established in 1978, Hobr  Instruments is a well-known manufacturer of a range of on-line analyzers and related equipment. We serve customers in oil&gas, power, chemical, metal&mining and food industries worldwide.

All Hobr  Instruments products can be offered together with suitable sampling and sample conditioning systems as well as complete analyzer shelters and including third party analyzers. Our Integrated Product Solutions team is familiar with international, national and company standards, and designs, builds and delivers state of the art and fit for purpose solutions.

After delivery and installation on site Hobr  field service engineers typically provide start-up, commissioning and training. After sales services like spare part supply, preventive and curative maintenance are available at any location required.

Over the last decade and in close consultation with key customers, Hobr  Instruments has adapted and expanded its' product portfolio to meet with changing requirements. The transition towards sustainability and low carbon footprint is driving projects worldwide in many areas:

- Hydrogen generation and co-firing with natural gas
- Renewable natural gas and biofuels production
- Upstream and downstream flare gas monitoring
- Metals and battery recycling

For above mentioned activities Hobr  Instruments offers a range of analytical technologies that support better process control, monitoring and compliance with regulations.

Hydrogen applications

Green hydrogen produced from solar and wind energy is increasingly mixed into natural gas grids, typical levels being up to a few percent at this moment. Projects are running that demonstrate the feasibility of bringing the hydrogen content in local gas grids up to 15% by volume. For feedforward control of gas turbines and furnaces the hydrogen content can be up to 100% and may fluctuate rapidly. The presence of hydrogen in natural gas introduces several challenges for which Hobr  offers the right solution.

Hydrogen in natural gas grids

Measuring natural gas/hydrogen mixtures is problematic with currently popular technologies based on inferred sensing. The thermal conductivity of hydrogen is so much higher than other components in natural gas that already below 1% hydrogen by volume correlative methods fail. Hobr 's WIM Compas Wobbe Index and Calorific Value analyzers which will deliver an unaffected performance. If also the actual hydrogen content is of interest, the Hobr  PRISM Raman analyzer will deliver component concentrations in addition to above mentioned sum parameters.



Hydrogen in power generation and furnace control

The WIM Compas on-line calorimeter can handle any mix of hydrogen (up to 100% hydrogen) and natural gas. As a result, the fast WIM Compas is a tremendous tool for feed forward control of gas turbines and furnaces that are fired on natural gas/hydrogen mixtures. With a response time of less than 5 seconds, rapid composition variations can be dealt with nearly instantaneously. This is vital to protect equipment and reduce emissions of air pollutants and carbon dioxide. In addition, an integrated hydrogen measurement can deliver the hydrogen content as a separate output.

As an alternative solution, the Hobr  PRISM Raman analyzer delivers individual component concentrations and sum parameters like Wobbe Index, Density, Calorific Value and Heat ratio. The unique sampling system ensures an all-in response time of 10 seconds without in-line optical components. The Hobr  PRISM analyzer does not require a low-pressure sample return point.

Renewable Natural Gas and Biofuels

Biogas produced at amongst others farm sites, water treatment plants and landfills has traditionally been used on site for heating and for power generation by gas motors. However, projects for upgrading biogas to RNG for injection in the natural gas grid or as a motive fuel (LNG or CNG) are now abundant. The toxic and corrosive properties of raw biogas require careful handling and processing. Hobr  Instruments offers a range of analyzer solutions that help control the biogas upgrading processes and monitor product quality.

Raw biogas and product quality monitoring

The Hobr  Tisomic tunable diode analyzer with photo-acoustic detection is available in different versions covering all important measurements in low and high ranges: H_2S , H_2O , CO_2 , CH_4 and O_2 . Measurement is performed at elevated temperature thereby eliminating the need for water removal. The use of PA-TDL laser technology ensures a rugged solution with low maintenance costs and high accuracy.

Calorific Value and Wobbe Index monitoring and control

For grid spec compliance monitoring, the WIM Compas and the WIM Compact Gatekeeper offer fast and accurate analysis of Wobbe Index, CARI, Calorific Value, Specific Gravity, Density and optionally CO_2 and CH_4 content. For gas blending a PLC controlled skid mounted system is available that will blend streams, e.g. landfill gas and natural gas, to a constant Wobbe Index or Calorific Value.

Biofuel production: catalyst protection

Production of low-carbon fuels such as renewable diesel from waste in the form of used cooking oil, waste animal fat and other industrial and agricultural residual products is a rapidly growing industry. The processing of this waste involves typically hydrotreating. For catalyst protection the monitoring of metals and phosphor, sulfur and chlorides in the feed is very important. With the Hobr  C-Quand on-line energy dispersive XRF analyzer it is possible to monitor continuously a range of elements in the hydrotreater feed stream.

Flare Gas Applications

Monitoring the calorific value of flare gas is an important topic in the upstream and downstream oil and gas and chemical industry. As flare gas should have sufficient calorific value to ensure complete combustion natural gas is often added for compliance. Optimizing steam dosing in steam assisted flares based on on-line analysis results can prevent smoke formation. Finally, programs for methane emission reduction require reliable and accurate monitoring of flaring activities.

Flare gas monitoring

Continuous analysis of flare gas is challenging as composition variations are large and sudden. In addition, flare gas may be very corrosive and toxic. Also, the presence of heavy hydrocarbons or steam can result in a high dew-point requiring all sample wetted parts being heated to up to 150  C. The WIM Compas Pulse is designed for these conditions and delivers an update every 30 seconds. Special versions are available should a faster response time be mandatory. An integrated high temperature density measurement is available in case this information is required for flare gas flow calculations.



Integrated H2 measurement

As hydrogen in flare gas supports the complete combustion of hydrocarbons in a flare stack, in the USA natural gas addition can be reduced. It is required that the hydrogen content is measured continuously and natural gas addition is controlled based on this information, as per EPA Refinery Sector Rule (RSR) 40 CFR 63.670 (USA). For other industry segments similar Rules are expected. The WIM Compas can be equipped with an accurate and fully integrated (non-TC type) hydrogen measurement which can also provide oxygen and methane readings.



CO₂ emission factor measurement for flare gas and fuel gas

Emissions trading systems are gaining importance as prices of CO₂ emission rights are rising. This drives

the need for reliable on-line emission factor monitoring. Alternatives like laboratory analysis after manual sampling are costly and potentially unsafe whereas on-line gas chromatography has a high cost of ownership. The WIM Compas offers an optional integrated emission factor measurement that will deliver kgCO₂/ton fuel or kg CO₂/GJ(HHV).

Metal Recycling

With the introduction of hybrid and 100% electrically powered cars, the demand for lithium-ion batteries has risen steeply. Both metal refining companies and car manufacturers are investing in battery recycling capacity.

Cobalt, manganese, and nickel recovery

The Hobre C-Quand on-line XRF analyzer is the perfect tool for following the recovery process of various metals in different process stages. Electrode material for car batteries typically includes cobalt, manganese and nickel which can be monitored from sub ppm level up to percent levels. In addition, C-Quand can monitor trace elements in process streams as well as in wastewater to and from wastewater treatment facilities.



Headquarters

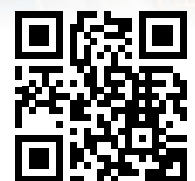
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