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Gas quality: a growing concern for the end user

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European gas quality harmonization

European Natural Gas market

In the next few years the European Natural Gas market will see significant changes arising from harmonization of gas quality standards. These changes, linked to globally changing supply situations caused by depletion of mature gas fields and increasing integration of gases from renewable sources (e.g. biogas or power-to-gas), will result in a gas grid in which end users are forced to deal with greater variations in gas quality. The same changes have also instigated the rapidly developing global market for LNG.

The European Commission aims to harmonize gas quality and has issued a mandate to CEN to propose common European standards, which will be published this year. The first step has been the creation of EASEE-gas.

EASEE-gas

EASEE-gas, an organization set up to develop and promote physical gas transfer and trading across Europe, has created a working group with a mission to harmonize gas quality. This group has produced a gas quality specification designed to facilitate cross-border Natural Gas transfer without compromising the operability of gas appliances. This specification is set for H-gas, since L-gas – still distributed in Germany, The Netherlands, Belgium and France – will soon cease production.

Effects of changing gas qualities

Fast-changing gas quality can have serious implications for combustion installations such as furnaces and boilers.

Common problems include:

- Reduced capacity
- Variations in product quality
- Higher CO, NOx & CxHy emissions
- Contamination due to soot formation
- Equipment Failure

These problems result in higher financial costs, safety issues and loss of production. Typical applications are furnace control for gas & oil, steel, glass and ceramic industries, as well as burner control in steam boilers, gas turbines, the greenhouse industry and emergency power units.

Case study: The Netherlands

New Government regulations

As of 1st October 2014, the Dutch government has imposed new gas composition standards to account for increased variation in H-gas imports. Previously, strongly varying H-gas had been denied entry across Dutch borders. However, due to depleting L-gas fields, H-gas imports are now increasing. With this new standard, gas from many different markets will cause faster and more frequent gas fluctuations.

Effects on burners

Current burners are set up for Wobbe Index fluctuations of +/- 5%, leaving no flexibility for fluctuations outside that range. This can result in the following issues:

- Higher CO emissions
- Lower output
- Contamination of the burner through soot formation
- Installation shutdown

Natural gas end users have been instructed to deal with these changes by adjusting industrial appliances accordingly.

Hobré technology - Wobbe Index solutions pt. 1

- **WIM COMPAS™**
  The WIM COMPAS™ measures Wobbe Index, heating value (BTU) and the Combustion Air Requirement Index (CARI) with a quick response time of T90 <5 seconds. The analyzer comes in a continuous, injection and high-temperature version.

  Typical applications include (Natural) Gas blending, Fired heaters, gas turbine control and flare gas. The WIM COMPAS™ is used to control the thermal input and air/fuel ratio in such a way that disturbances caused by fuel gas quality fluctuations are minimized.

- **WIM Gas Stabilization System**
  The system with small foot print stabilizes the Wobbe Index of the incoming gas by blending air or nitrogen to a fixed Wobbe Index. Due to the speed of response and superb repeatability of the WIM COMPAS™, no large gas buffers are required.

Learn more about the WIM COMPAS™ – *http://hobre.com/products/wim-compas-fuel-flare-gas-combustion-measuring/*

Hobré technology - Wobbe Index solutions pt.2

HIGAS – Natural Gas Quality Meter

The residual oxygen Wobbe Index technology has proved its value in large industrial fuel gas control systems. The larger and faster variations in natural gas raised a demand to use the technology for smaller size burner installations. The HIGAS is a compact gas quality meter, providing the Wobbe Index, Heating Value, Specific Gravity and Combustion Air Requirement within 15 seconds. Hobré has over 20 years of experience with this technology and is now offering a solution for smaller installations.

The robust and easy to use technology is available as two versions

- Portable version (for burner adjustments)
- Continuous version (controlling the energy flow and air fuel ratio to burners)

Learn more about the HIGAS – *http://hobre.com/higas-natural-gas-quality-meter/*

Differences between WIM COMPAS™ and HIGAS

WIM COMPAS™

- Suitable for all sorts of industrial combustion applications
- Safe area and hazardous area (ATEX / IECEx / KCS / NEC)
- Indoor and outdoor installation
- Three versions: Continuous, Injection & High-temperature + many add-ons available
- Response time of 5 seconds
- Repeatability < ± 0,05% of full scale or 30 KJ/Nm^3

HIGAS

- Suitable for Natural Gas applications
- Safe area only
- Indoor installation
- Two versions: Portable & Stationary
- Response time of 15 – 30 seconds (depends on version)
- Repeatability 0,2 MJ/Nm^3

Hobré technologies

Other analyzers cover the following applications

Highly Differentiated Product Offering

H_2S and Sulfur Analysis	Manual sampling	Oil in water monitoring and analysis	Gas composition analysis
Moisture and water measurement	Fuel gas quality measurement	Flare gas measurement	Oil product quality

HLT Hilase

- **HLT Hilase**
  The HLT Hilase with TDL photo acoustic detection is a proven and virtually maintenance-free on-line process analyzer. It has a wide variety of applications, from analyzing low-ppm H_2S and H_2O in sales gas to percentage levels in process gas.

- *Applications for the HLT Hilase cover the following industries: natural gas, refinery, offshore, gas processing / LNG, power generation, petrochemical and alternative energy.*

Learn more about the HLT Hilase - *http://hobre.com/products/hlt-hilase-hydrogen-sulfide-tdl-photoacoustics/*

HIFISC – Sample Conditioning

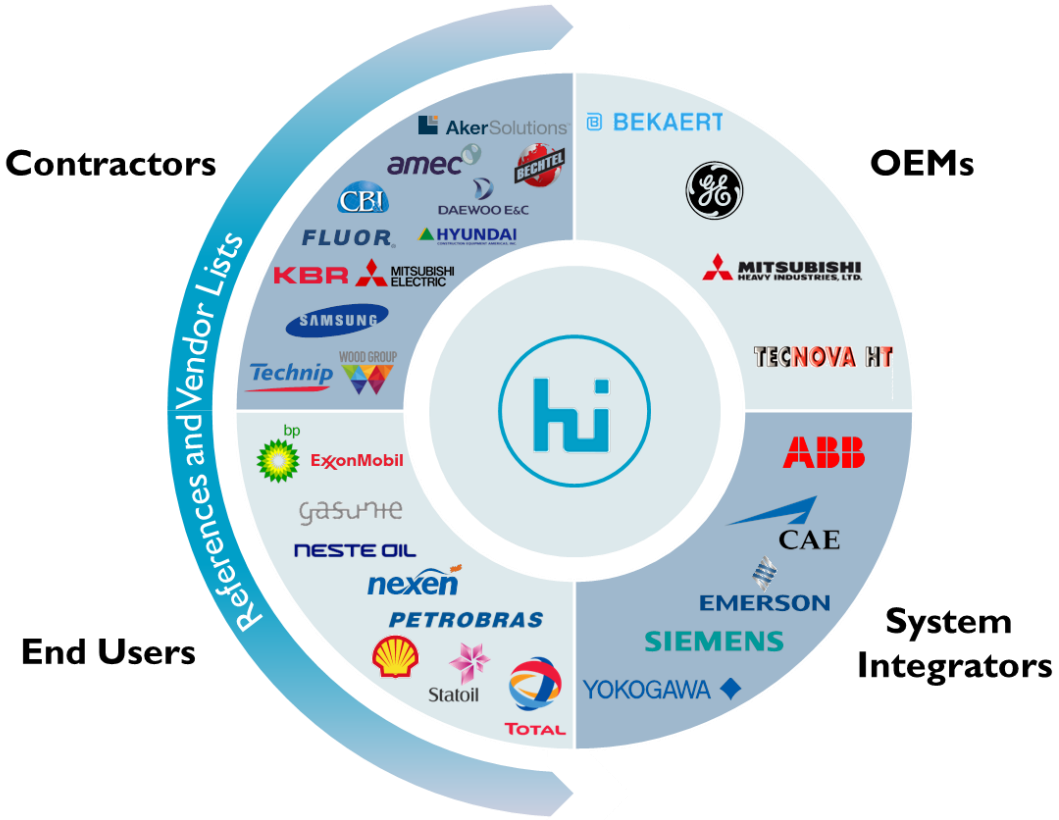
- **HIFISC**
  The Hobré HIFISC sample conditioning system is the result of years of development. It takes a radically different approach, resulting in quick response time, high analyzer uptime, reduced maintenance and improved performance. Diagnostics on the essential functions of the sampling system are a valuable tool to maximize uptime and minimize maintenance in remote locations. Furthermore, the HIFISC is designed according to piping specifications and drastically reduces the flow to flare with up to 90%.

- To perform a high-quality analysis it is crucial that an analyzer receives an uncontaminated gas sample. This is achieved through sample conditioning. The Hobré HIFISC can be combined with most process gas analyzers; we design and produce sample conditioning systems to meet the exact needs of each analyzer.

Learn more about the HIFISC – *http://hobre.com/products/hifisc-gas-sample-conditioning/*

Customer experience of our technologies

Hobré serves a large and diverse blue-chip customer base and has well-established customer relationships that have been built over many years.



Feedback from a Western European refinery

"Last week there were strong calorific value fluctuations in the Natural Gas grid, causing a stage down. Thanks to Hobré technologies we were able to prevent stage downs at two further locations."

About Hobré

Hobré Instruments is a leader in the design, manufacture, marketing and maintenance of on-line analyzers, sample systems and complete turnkey analyzer systems. Established in 1978, our company focuses upon providing solutions for the oil and gas, (petro-)chemical, power generation, steel and food industries worldwide.

Our engineering, production and service team consists of knowledgeable, experienced engineers that design and construct analyzers, preconditioning systems, sample conditioning systems, sample recovery systems and complete analyzer system packages for a broad range of gas and liquid applications.

Please visit our website to learn more about our technologies
www.hobre.com

Contact us

For more information about this topic, feel free to contact us.

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