

GasPTi for the Glass Industry – Take Control of Your Industrial Processes

Introduction

Given the quantities of Natural Gas consumed during large industrial operations such as glass manufacture, even very slight changes in gas quality can have financial, operational and environmental implications in the medium and long term. It would therefore seem self-explanatory that a cost-effective means of rapidly accurately monitoring gas quality would be ubiquitous in every large scale plant. At present, this is not the case for a number of reasons

- Technological limitations: there have been very few advances in gas quality measurement until very recently.
- Lack of awareness: Plant designers are not experts in gas monitoring and may be unaware of the most effective technologies on the market, which do not require specialist knowledge or incur continuous maintenance and operational costs.

How does it work?

GasPTi is a combination of 2 world-leading technologies: VE Technology® and GasPT®. VE Technology has developed a suite of modular components through a series of innovations. The entire suite works together to deliver a truly representative sample to almost any analyser. GasPT (Gas Properties Transmitter) is a natural gas analyser which measures 3 parameters to calculate the key physical properties within seconds, to OIML R140 Class A Accuracy (+/- 0.5%).

The “fit and forget” unit can be installed within hours and requires very little maintenance and no calibration or carrier gas. This leads to CAPEX reductions of up to 75% and reductions in OPEX of up to 95%.

Example installation: Calculated from real data from a GasPTi user

Assumptions:

- Net CV variations in gas supply between 10.50 and 11.00 kWh/m³ (37.8-39.6 MJ/m³)
- Variation = 0.50 kWh/m³ or ~ 5%
- Air flow to furnace ~ 18000 nm³/hr
- Gas flow to furnace ~ 1300 nm³/hr
- Air/Gas Ratio ~ 14:1 or 40% Excess Air

The high excess air was required to enable lean firing if the gas CV increases by up to 5%. Typically the CV data from the gas grid operator was received with several hours delay. If run with rich gas, firing at less than stoichiometric air/gas ratio then combustion efficiency was impaired and emissions of high NO_x, CO and unburnt gas would occur. The furnace was therefore run conservatively with 40% excess air.

The proposed GasPTi-Low Pressure will give data on CV changes from less than 10 seconds, which means combustion control can be operated closer to the stoichiometric/ideal settings.

Calculations:

	Excess Air	O ₂ dry	Combustion Efficiency	Fuel Saving
Ideal	10%	2.1	68%	9 – 11%
Current	40%	6.5	62%	-
Proposed	20%	3.8	67%	6.8%

Conclusion

Following installation and commissioning, which was completed in a single day, the reduction in excess air to fuel ratio in their combustion mixture will lead to fuel savings of up to 8% and a payback time of just 8 weeks. Following a request from the client, the GasPTi's microcontroller has also been configured to calculate additional physical properties outside of the standard properties table. GasPTi is revolutionising the market for gas analysis and our growing list of successful installations now includes some of the largest manufacturers and LIU's in Europe and the world.

How can I learn more?

Orbital will be bringing GasPTi and their other industry-leading products to the Glasstec Exhibition in Düsseldorf from 20th - 23rd September – stand 15G23, where their expert sales engineers will be happy to discuss your operation and ascertain whether you can also benefit from this trend-setting technology.

If you are unable to attend Glasstec, you can also contact enquiries@orbitalgassystems.com for more information.