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Fine control of the Combustion process becomes increasingly possible as gas analysis technology continues to become more sophisticated while at the same time cost effective and reliable. Optimizing combustion control not only saves fuels but can help minimize harmful emissions of both acid and greenhouse gases and may often minimise cleaning of heat exchange surfaces.

THE COMBUSTION PROCESS

The key to good combustion is simultaneous multicomponent stack gas measurement to enable optimum air: fuel ratio control. Maximum efficiency is achieved with minimum excess oxygen consistent with minimum unburned or partially burned hydrocarbons, usually best indicated by carbon monoxide, CO.

This ensures that the energy produced by the combustion process is not wasted in heating unnecessary air while all the fuel is completely combusted. Oxygen and carbon monoxide are used as the primary indicators of the situation; the O₂ level where CO starts to increase significantly from a background level usually of a few ppm (Figure 1) is the most efficient control point

The NEO Monitors LaserGas™ iQ2 enables multicomponent (and temperature measurement) with only one unit, giving extra capability with simplified lower cost of installation and support. Not only CO and O₂ but also CH₄ and H₂O are available.

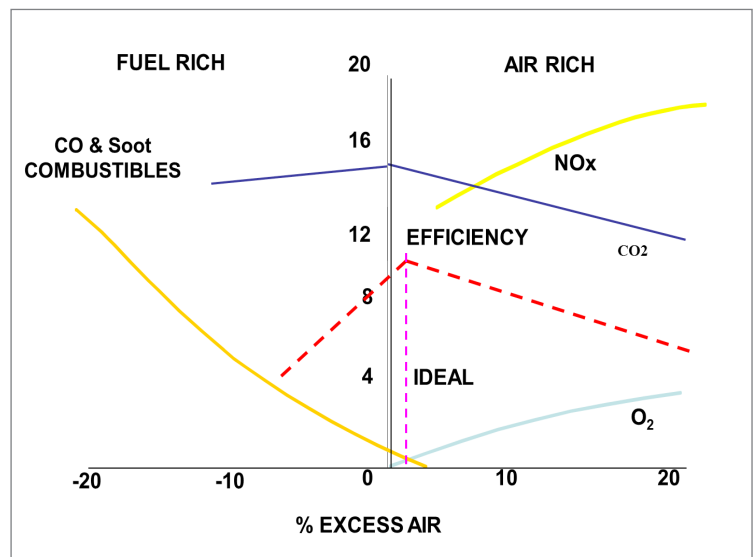


Figure 1: Combustion Optimisation by Stack Gas Analysis

MOTIVATION

- Optimum Fuel efficiency -CO levels may be read down to 1 ppm LDL
- Minimisation of NOx levels due to O2 minimisation
- Cleaner Heat exchange surfaces
- Minimisation of Greenhouse Gases
- Operational safety where methane measurement may be used to identify start up issues in gas fired boilers
- Water measurement may be used to establish wet/dry measurement for emissions monitoring

SOLUTION

NEO Monitors LaserGas™ iQ² analyzer is the first to measure up to four gases (O2, CO, CH4, H2O) and temperature depending on configuration, which eliminates the need for multiple units for combustion analysis. The cutting edge design and ground breaking functionality ensures that the instrument delivers unmatched reliability and durability.

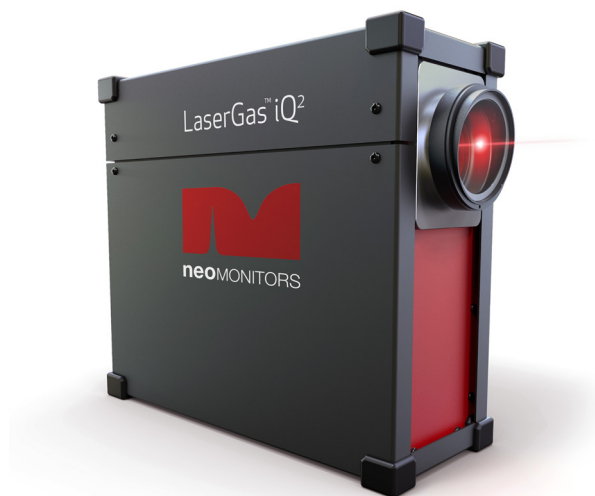
More than 30 years' experience as the originators of cross stack laser measurement have enabled NEO monitors to add features to the measurement which minimise the need to calibrate and concerns with line lock and collisional broadening.

BENEFITS

- High Sensitivity (double path length increases absorption for low concentrations)
- Low Maintenance costs
- Easy to install and operate transceiver
- Proven measurement technique
- Up to 5 measured components in one unit, O2, CO, CH4, H2O and temperature
- Measuring temperatures up to 1300 °C

LaserGas™ iQ²

- Measure directly in the process (in-situ)
- High sensitivity
- High reliability and long lifetime
- No need for sampling systems
- No Zero drift
- Fast response time (typical 5 sec)
- Integrated Span check (optional)
- ATEX/CSA
- Standard configuration O2 and CO
- Optional components CH4, H2O and temperature



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