

Siemens Process Analytics: Customer Focus

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SITRANS SL Combustion Control for Process Boilers and Furnaces

The SITRANS SL is an in-situ, tunable diode laser based Oxygen or Carbon Dioxide gas analyzer suitable for highly accurate and repeatable measurements in combustion control of process furnaces and boilers. The sensors (transmitter and receiver) are meant to be mounted directly on the process furnace or boiler with no need of sampling systems. The laser light is sent from the transmitter, passing through the combustion gas, arriving at the detector on the receiver side. The O₂ and CO measurements are carried out in-situ with a very short response time permitting fast and effective cost savings in combustion control.



Combustion efficiency can be greatly improved by measuring and controlling the O₂ and CO in combustion gas. Typically, O₂ is measured and controlled to a value higher than the combustion stoichiometric ideal for a given fuel. The reason that excess O₂ is supplied to the combustion process is that fuel and O₂ are rarely perfectly, uniformly mixed during combustion. To make sure there is enough O₂ to burn all the fuel, the operators add excess O₂ in the form of air. This additional air volume is called excess air. If too much excess air and O₂ is added both the NO_x concentration and energy losses will go up (or combustion efficiency will go down) due to the combustion gas dilution with the cool added air. Therefore, the excess air and O₂ value is an important parameter to monitor for an optimal combustion process and economic plant operation.

By measuring CO in the combustion gas, the excess O₂ can be minimized. If the O₂ concentration goes below the optimum for combustion then CO will rapidly rise from near zero to several hundred ppm or more. When the CO rises above a given set point then O₂ is added to the combustion process. Once the added O₂ is enough to bring the process into complete combustion then the CO decreases back to zero. The combustion process can be very tightly controlled closer to optimum efficiency by measuring both O₂ and CO with the SITRANS SL.

User Benefits

- Higher combustion efficiency saves on fuel costs, since less excess air has to be heated up
- Less NO_x emissions for regulatory compliance

Product Benefits

- In-situ measurements - no costly gas sampling required
- In line reference cell - provides stable operation with outstanding performance
- Fast response time - 3 seconds for fast, tight combustion control
- Low maintenance - no moving parts
- Suitable for all plant area operation - FM certified for Class I Div. 1, Group A

The SITRANS SL tunable diode laser for measuring O₂ and CO is the perfect solution for your process Combustion Control applications.

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> [Click here](#) to download additional technical information about the SITRANS SL.

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