

Improved Combustion Efficiency and Safety with TDLS Measurements

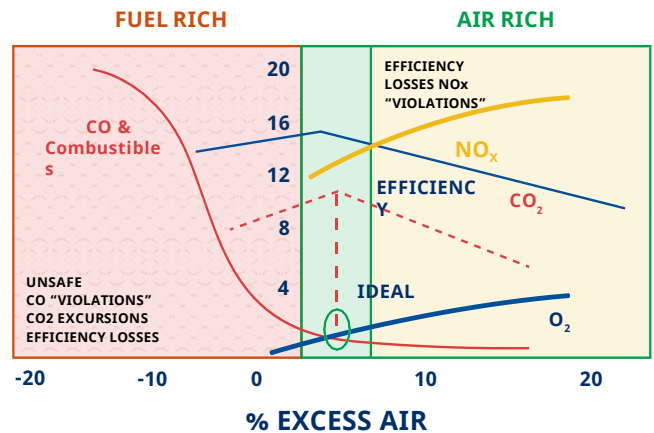
Tunable Diode Laser Spectrometers



“The modern unit operator needs access to accurate and reliable data to quickly mitigate the occurrence of unsafe conditions while continuing to maximize operational efficiency and throughput.”

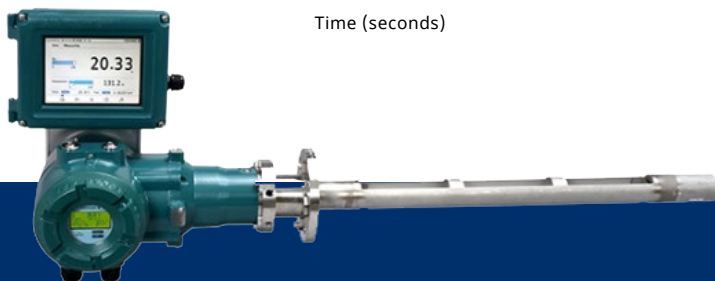
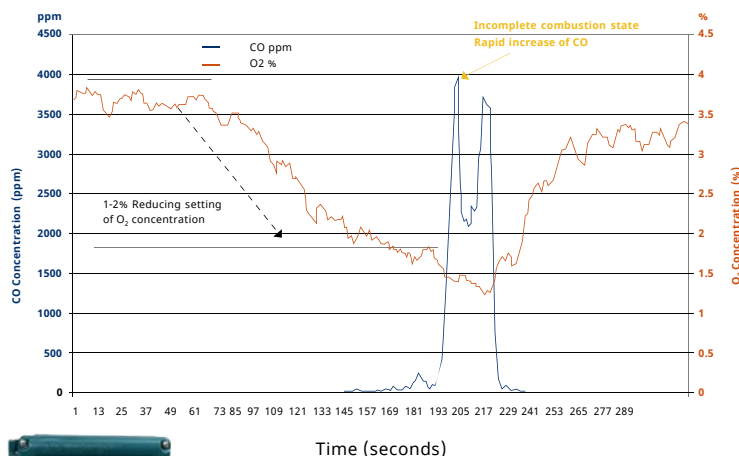
“Combustion Measurements Are Our Specialty”

Yokogawa’s Tunable Diode Laser Spectrometer (TDLS) technology requires little maintenance and can measure the concentrations of O₂ and CO/CH₄ in the furnace radiant section in real-time. Quick and reliable combustion measurements are a necessity for safe and efficient industrial combustion operations.



Relationship Between Air-Fuel Ratio and Heat Efficiency (Combustion)

Conventional analyzer technologies, such as zirconia and catalytic bead measurements, are point-style measurements that can fail to capture the whole picture of what's happening in your furnace. TDLS technology allows measuring in the radiant section of the heater where the combustion is taking place to minimize tramp air effects. The cross-stack installation provides an averaging measurement across the furnace to reduce stratification effects caused by factors such as burner differences and heater geometry.



Key Advantages

- **SIL 2 Certified (SIL3 capable)**
- **Interference Free Measurement**
- *Dynamic processes and upsets are easily compensated for*
- **High-speed response in less than 5 seconds**
- **Internal reference cell** ensures measurement reliability
- **50 days** of data and spectral storage
- **Up to 30m optical path lengths**
- Process temperatures up to 1500°C
- Process pressures up to 1 MPa
- **Modular design** allows for complete field serviceability and reparability
- **Non-contacting measurement**
- Sensor is isolated from harsh and aggressive process components
- HART and **Modbus TCP** communications standard
- Intuitive touchscreen HMI

TDLS provides advantages over traditional analyzers to maintain safe and efficient asset operation

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