Introduction

O₂ measurement is used to safely recover flue gas containing a high concentration of CO from a converter furnace. With conventional paramagnetic oxygen analyzers, O₂ concentrations are obtained through a sampling system to recovery flue gas. Therefore, there are problems with the maintenance and running costs of the sampling system, and time delays in measurement. The TDLS200 Laser Analyzer is the solution to all these problems.

Expected Benefits

- Eliminates the need for sampling and reduces the maintenance and running costs of the sampling system
- High-speed response, ability to apply measurement results to control the O₂ concentrations, improves gas recovery rate, and reduces fuel costs through the reuse of the recovered gas
- Continuous monitoring and highly accurate O₂ concentration monitoring

Process Overview

An oxygen converter gas recovery (OG) system is a treatment system to safely recover flue gas containing a high concentration of CO from a converter furnace. Since the recovered flue gas is reused as fuel, a slow response time results in a waste of fuel resources. That is why high-speed response and high reliability are required for O₂ measurements.

View of an installed TDLS200

(Installation Example A)

- View of installed light emitter
- Light path length: 2.4 meters
- Temperature correction: 55°C
Solution Details

The point is to use the TDLS200 capable of directly measuring the O₂ concentrations after IDF, instead of conventional paramagnetic oxygen analyzers that perform measurements through a sampling system. The high-speed response and high accuracy of the TDLS for the converter furnace process enable high purity gas to be recovered with higher efficiency.

Field Data

Converter Furnace Process and Changes in Measured Values of O₂ Concentration (Installation Example A)

If the reference value of the recovered gas is 1.0%, the indicated value is shown about 3 minutes faster than with a conventional paramagnetic O₂ analyzer.

Measurement System

TDLS (O₂ analyzer)

TDLS200-G-X1-2-N/PS/W

Note: Enter a number from 0 to 9 in □ for the light emitter/light receiver cable length (in meters).

Alignment flange

P/N K9745CA (ANSI Class 150 2-inch, 316SS)

Insertion tube (custom order)

Notes

- Power supply: 100 - 240 VAC, 50/60 Hz
- Purge gas: N₂
- Flowrate: 5 L/min to 50 L/min
- Dust concentration (standard): 15 g/Nm³ or less
- An insertion tube (custom order) is used