

## Introduction

In a hot blast stove, the by-product gas produced in a coke oven is burned to preheat the air blast for the blast furnace. To improve the combustion efficiency and conserve energy in a hot blast stove, it is essential to be able to control combustion by measuring and adjusting the oxygen concentration in the exhaust gases.

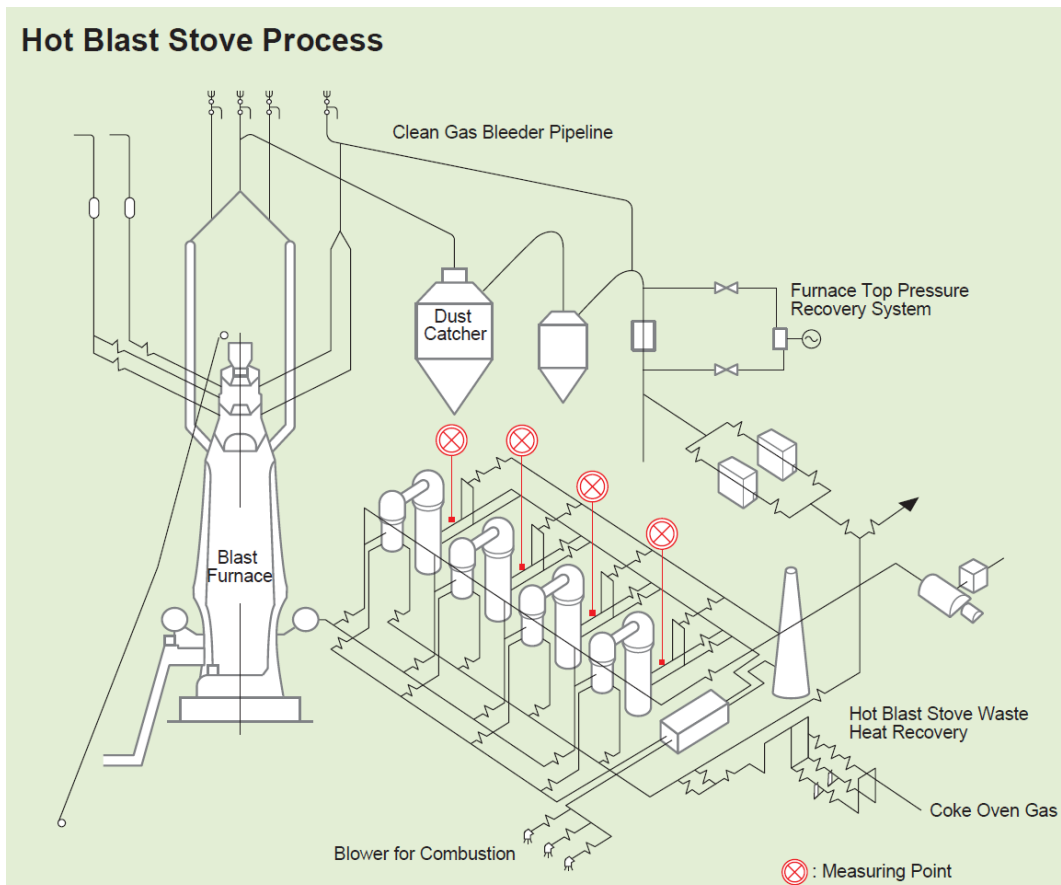
The ZR22G/ZR802G Direct In-Situ Zirconia Oxygen Analyzer is ideally suited for combustion control in hot blast stoves. It utilizes a long-life sensor.

## Expected Benefits

- Improves combustion efficiency in hot blast stoves
- Ensures stable, continuous oxygen measurement
- Reduces operating costs
- Minimizes the need for equipment replacement

## Process Overview

The temperature of the hot blast used in blast furnaces has been increasing every year and currently stands at around 1300°C. Under such circumstances efficient operation is achieved by such measures as increasing the calorie value of fuel gas, replacing the hot blast furnace more frequently, and recovering waste heat from gas. To further improve combustion efficiency and save energy, measurement of the oxygen concentration in exhaust gases is required.



## Solution Details

### Process conditions

Measurement: 20 to 350 °C  
 Pressure point: Duct  
 Temperature: : 3.5 to 10 kPa  
 Dust: 50 mg/Nm<sup>3</sup>  
 Fuel: Gas

### Measurement system

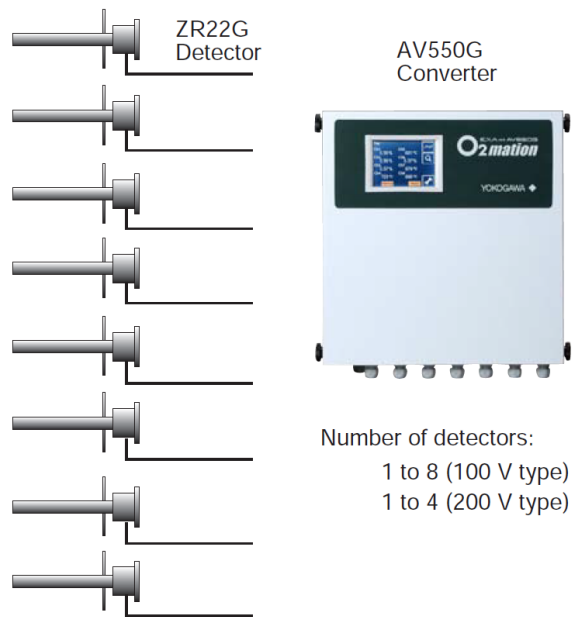
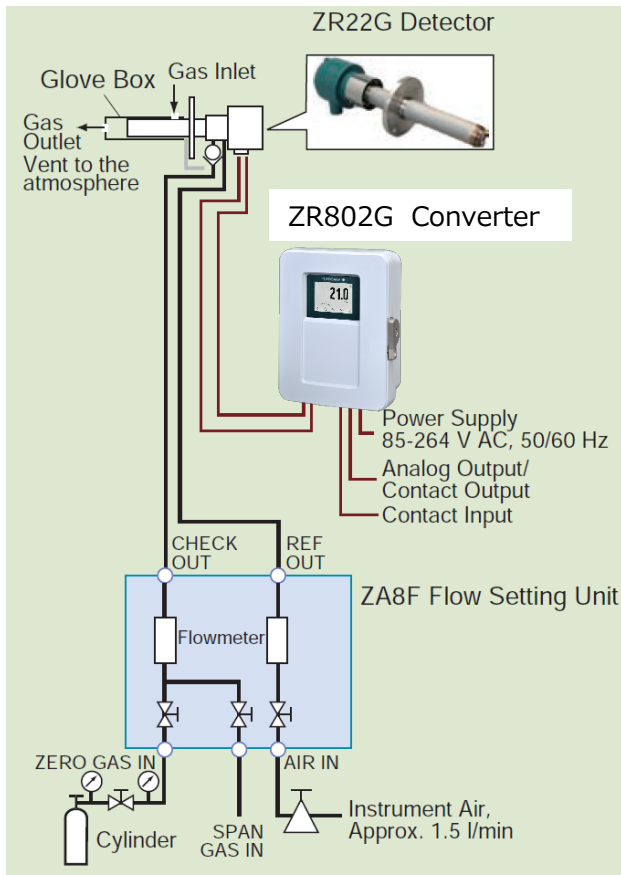
Detector: ZR22G-015-S-Q-E-□-□-E-A /CV/Z  
 Z: Glove box option  
 Converter: ZR802G-□-□-N-N /□  
 Flow setting unit: ZA8F-□\*C  
 Pressure regulator: G7013XF or G7014XF  
 Case for calibration gas cylinder: E7044KF  
 Note: the calibration gas cylinder must be purchased locally

### Utilities

Rated voltage: 100 to 240 V AC  
 Rated frequency: 50/60 Hz  
 Power consumption: 330 VA (Max. 800 VA)  
 Instrument air (reference gas) pressure: 300 to 700 kPa

### Notes

- The detector is installed in a glove box to reduce the sample gas pressure.
- When more than three detectors are installed, it is recommended that the AV550G Averaging Converter be used instead of the ZR802G converter. The AV550G accepts signals from up to eight detectors.



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