

Measurement and Monitoring of O₂ Concentrations in Steel Mill Reheating Furnaces

Introduction

A furnace for heating slabs needs to be operated under low oxygen conditions at high temperatures of 1000°C and above to prevent oxidation of the steel. The measurement of oxygen concentrations in the furnace is essential in this process. The ZR22G/ZR802G Zirconia Oxygen Analyzer requires no sampling system and utilizes a long-life sensor, and is therefore ideally suited for measurement of oxygen concentrations in a high-temperature

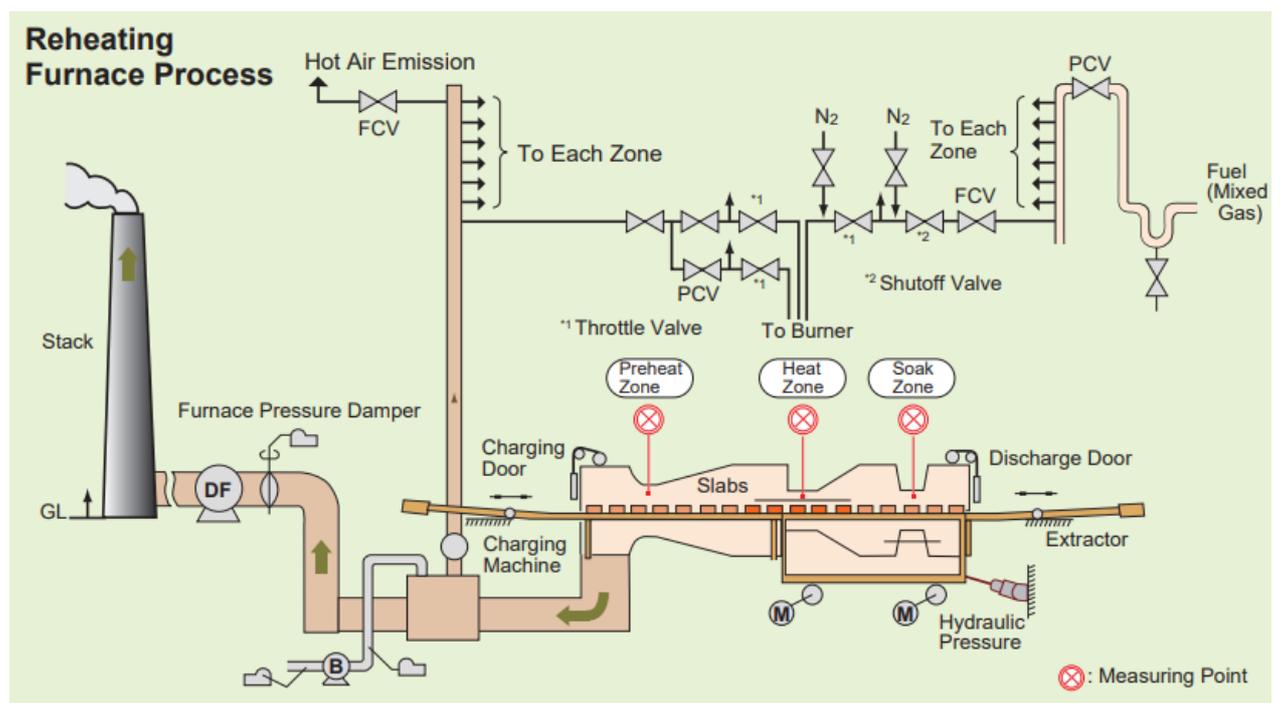
environment. The ZR22G detector with the ZO21P high temperature probe adapter can be used in gas furnaces at temperatures up to 1400°C.

Expected Benefits

- Maintains high product quality by monitoring oxygen concentrations in steel mill reheating furnaces
- Ensures stable, continuous measurement of oxygen concentrations
- Reduces operating costs

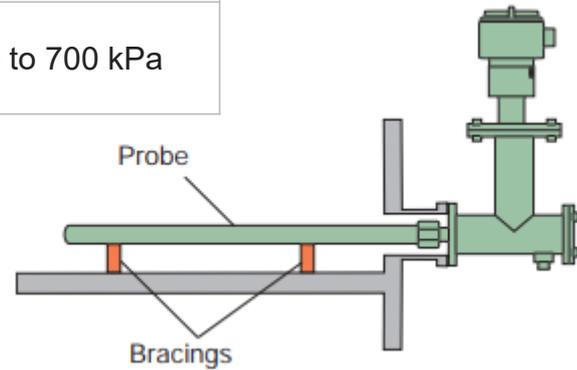
Process Overview

Slabs are loaded on a conveyor and fed to a reheating furnace, which is heated to between 900 and 1400°C by burners that use fuels such as by-product gas. In order to keep the oxygen concentration between 1 and 2%, it is monitored in the preheat, heat, and soak zones. The slabs are heated uniformly without being oxidized, and then sent to the next processing stage.



Probe Adapter

Utilities	
Power supply:	85 to 264 V AC, 50/60 Hz
Instrument air (reference gas):	pressure, 300 to 700 kPa



Notes

The material selected for the high temperature probe adapter depends on the temperature of the sample gas. Follow instructions carefully when installing the probe.

SUS:	Sample gas temperature ≤ 750°C
Probe orientation:	vertical or horizontal
Inconel:	750°C < sample gas temperature ≤ 900°C Probe orientation: vertical or horizontal
SiC:	900°C < sample gas temperature ≤ 1400°C Probe orientation: vertical

Note:

When the probe is installed horizontally, bracings must be provided for mechanical support

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