

Measurement of NH₃ Concentrations in Flue Gas Using TDLS200

Industry: Power

Product: TDLS

Introduction

The ammonia (NH₃) gas is injected to remove the NO_x and thus reduce the NO_x concentration in the stack flue gas. With conventional NH₃ analyzers that perform measurements indirectly, NH₃ concentrations are obtained through a sampling system. 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.

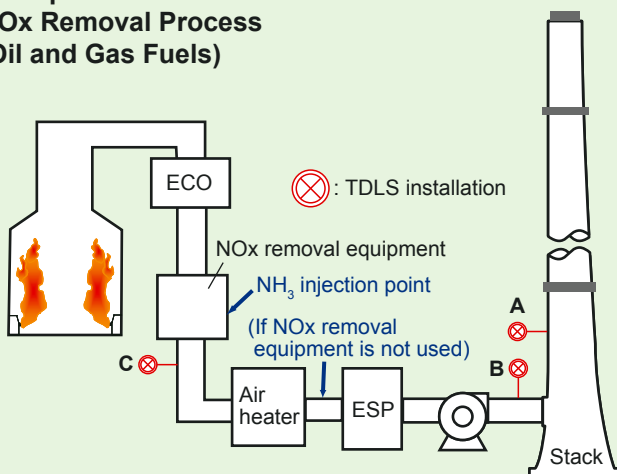
Process Overview

The NH₃ gas is injected to remove the NO_x and thus reduce the NO_x concentration in the stack flue gas, as well as to increase the dust collection efficiency of the dust collector (ESP) and prevent erosion. Excess NH₃ injection increases the running cost and the residual NH₃ amount, resulting in the generation of a foul odor. Therefore, the NH₃ concentration in the stack flue gas is measured, controlled, and monitored.

Expected Benefits

- Eliminates the need for sampling and reduces the maintenance and running costs of the sampling system
- High-speed response, possible to apply measurement results to control the NH₃ injection volume, and reduction and optimization of the NH₃ injection volume
- Continuous monitoring, NH₃ emission volume monitoring, and environmentally friendly
- Extends the service life of NO_x removal equipment and reduces the ammonium sulfate precipitation of the air heater

Example of Boiler Flue Gas NO_x Removal Process (Oil and Gas Fuels)



View of an installed TDLS200 (Point A)



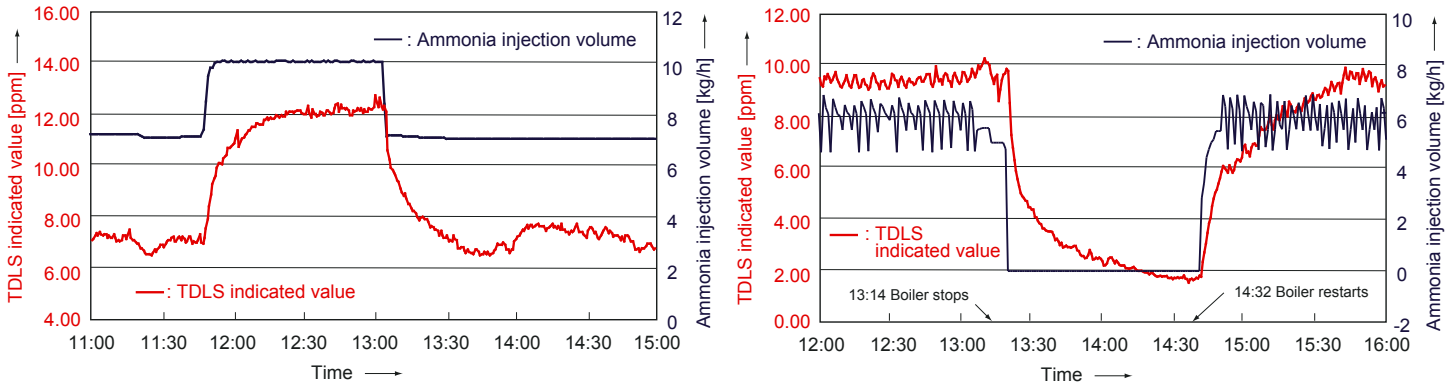
- Installed on the outer wall of the stack at a height of 45 meters (Light emitter)
- Light path length: 4.3 meters
- Temperature correction: 0 to 200°C

Solution Details

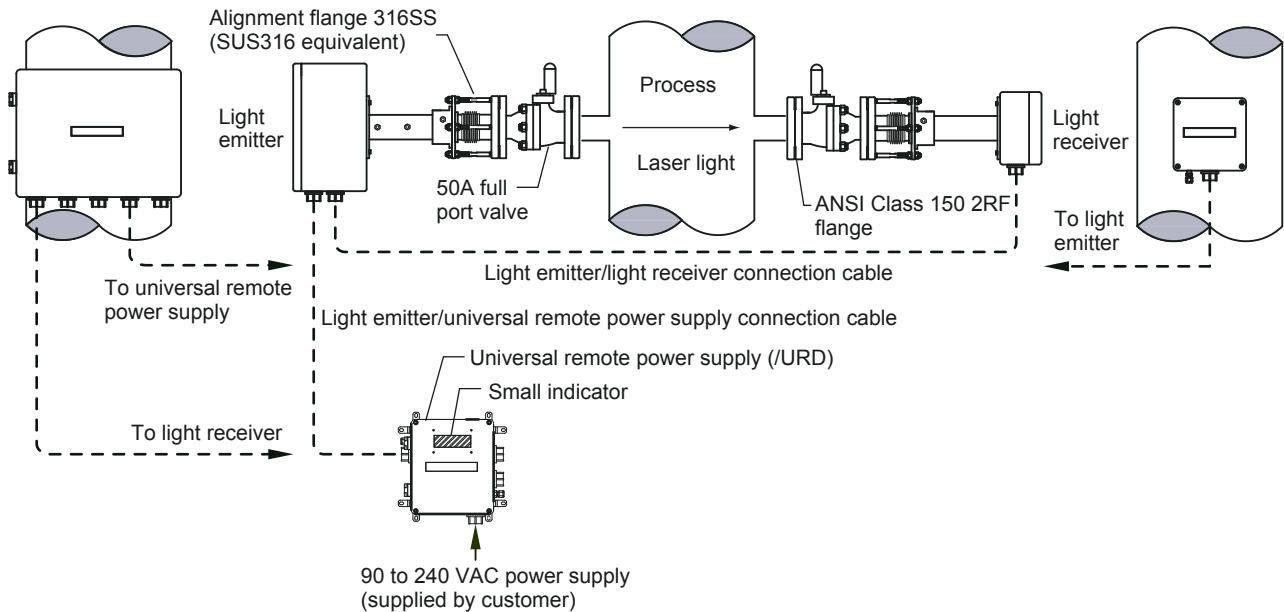
As compared with conventional NH₃ analyzers that perform measurements through a sampling system, the TDLS200 is able to measure the NH₃ concentrations in furnaces directly and thus reduce the maintenance and running costs.

Field Data

Changes in NH₃ Injection Volume and Measured Values (Installation Point A / Without NO_x Removal Equipment)



The TDLS200 responds to NH₃ injection volume changes at high speed and thus is able to control and monitor the optimum NH₃ injection volume.



Measurement System

TDLS (NH₃ analyzer)

TDLS200-G-A1-2-N/

Alignment flange

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

Notes

- Power supply: 100 - 240 VAC, 50/60 Hz
- Purge gas: Instrumentation air or N₂ (depending on the application type and required measurement accuracy)
Flowrate: 5 L/min to 50 L/min
- Dust concentration (standard): 15 g/Nm³ or less