

Differential pressure in industrial ventilation and exhaust systems

In industrial smelting plants, ventilation and exhaust systems play a critical role in managing the release of smoke and gases containing hazardous substances/particles. According to many workplace regulations, "procedures for regular inspection and condition monitoring of ventilation and filter systems" must be established. Additionally, written documentation of ongoing repairs, adjustments, and maintenance, such as airflow measurement protocols, maintenance logs, and air requirement specifications, is required to assess the condition of the system.

If gases are not adequately ventilated from a process or if substances are not filtered before being released into the environment, significant problems arise - impacting both the environment and the safety and health of employees.

Challenge

Loss of pressure in the exhaust system or pressure drop across filters can lead to various issues. Manual measurements are often challenging due to accessibility issues and limited data due to low measurement frequency. Implementing wired sensor systems presents installation challenges, especially when the facility is in operation, and it involves time-consuming tasks with high installation costs.

Examples:

- Furnace exhaust: If the exhaust system operates at negative pressure, unaddressed



issues can lead to equipment failure, downtime, and increased risks to employee health and safety. These gases can also result in undesirable environmental emissions.

- Clogged/blocked Filters: Bag filters and other filter types remove unwanted particles from exhaust gases. If a filter becomes clogged or blocked, it can lead to the release of these particles, causing pollution within the facility. Additionally, this can impact production quality and performance, and detecting a clogged filter can be challenging without disassembling the equipment or observing production-related issues.

Solution

- With Neuron Differential Pressure sensors, you can monitor pressure in ventilation and exhaust ducts and receive early alerts if values fall outside specified limits. For instance, you can gain insights into data and receive alerts regarding significant pressure drops across a filter, allowing you to replace the filter before it becomes blocked and significantly impacts production.
- By measuring the condition of various ventilation and exhaust systems in your facility, you can ensure the quality of emissions and prevent unplanned downtime due to component failures.
- Collected data on differential pressure in ventilation and exhaust systems can also serve

as documentation of the facility's condition and aid in root cause analysis following an incident if needed.

- Maintaining the correct pressure in such systems can also minimize energy consumption and extend the lifespan of components altogether.

What you get

- A Neuron Differential Pressure sensor that is easy to install, measures the pressure difference between two points, and transmits data wirelessly.
- Continuous monitoring with immediate alerts of significant pressure changes based on customizable alarm values.
- Historical data can be used as documentation of ventilation quality, providing an overview of the facility's condition.
- Adjustment of parameters such as measurement frequency upon request.
- Your own defined alarm levels via the Neuron app, with notifications via email and/or SMS.
- An overview of the operating status of ventilation and exhaust systems, which enables preventive maintenance and better resource utilization.
- Prevent unwanted emissions for a safer work environment and a more sustainable climate.

Products in use

- Neuron Differential Pressure

