

HZI Fabric Filter Cleaning System Intelligent Monitoring and Early Warning System for Precise Filter Cleaning



Comprehensive Monitoring Options and Thorough Cleaning Combined with Ease of Use

HZI's filter cleaning system monitors and manages the cleaning of filter bags, reporting filter malfunctions instantly to the operator. This optimises the service life of filter bags and simplifies maintenance. The system is also easy to use and highly flexible.

Hitachi Zosen Inova's new fabric filter cleaning system is built on the basis of the tried-and-tested technology from Hesch. The automation expert has refined the traditional filter cleaning system and improved its functionality in terms of monitoring and utilising fabric filters. The result is an easy-to-use, individually adaptable control unit.

The system gathers measurement data as the basis for coordinating the selective cleaning of filter bags on a fully automated basis, and regulates cleaning sequences for individual filter bag lines. It uses high-performance sensors to instantly detect valve failures and damage to bags, and to display the position and type of defect. It also monitors valve function, differential pressure, and flue gas volumetric flow.

| Condition-Based Maintenance

If there is a defect in the cleaning system leading to an increase in differential pressure, the control unit pinpoints the relevant valve or filter bag instantly, allowing timely replacement of the faulty element. The new control system thus ensures cleaning is timed perfectly, helping extend the service life of filter bags and reliably detect damage early on to avoid unscheduled downtime and excess emissions.



Inner surface of a filter bag after cleaning



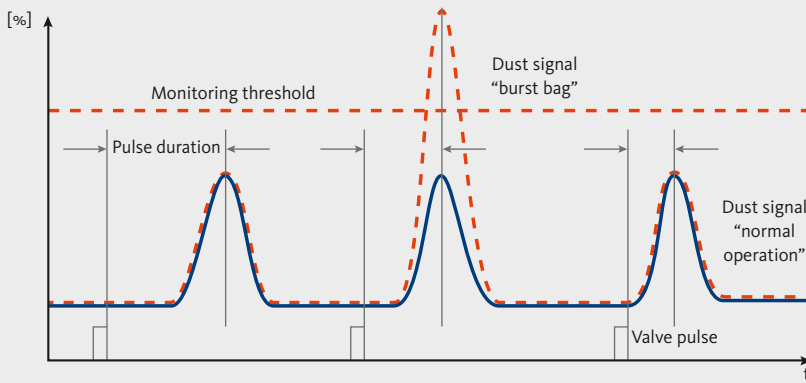
Filter bag lines with cleaning lances

Set-Up and Process

By permanently collecting a range of measurement data, the system is able to regulate the differential pressure in the filter independently of volume flow. During the cleaning process, the pressure drop in the cleaning tanks is also monitored and compared against the opening time of the valve to give a clear indication of the condition of the diaphragm and solenoid valve. The solenoid valve is also monitored by measuring electric valve flows.

The new control unit rapidly processes data locally to indicate faults that were not detectable using the old system. The new model can also be integrated with the plant's distributed control system (DCS) as required. This enables filter cleaning to be managed via the DCS, with the local monitoring system capturing all the necessary parameters. Alternatively, filter cleaning can be both monitored and managed locally.

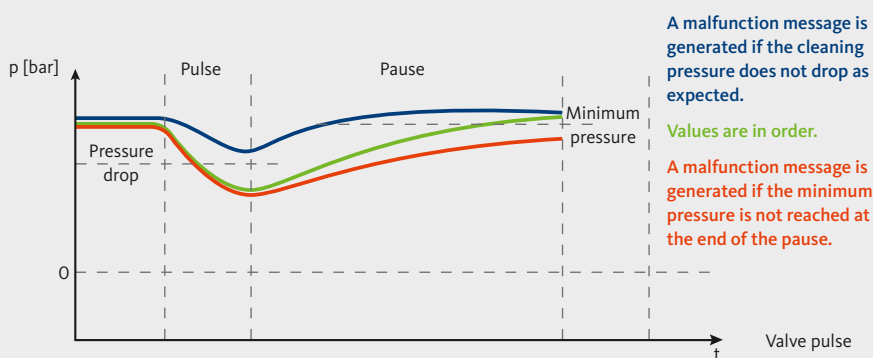
Signals from Dust Monitor



Filter Bag Monitoring

The filter cleaning system uses the volumetric flow to calculate the current gas flow speed and work out the time required for a cloud of particulate emissions from chamber X to reach the sensor. If a bag is damaged, the particulate signal exceeds the monitoring threshold set in the system. In this case a malfunction message is generated, precisely localising the filter bag line in question. Changes in the particulate signal over longer observation periods also enable the lifetime of filter bags to be predicted.

Pressure Monitoring of Manifold



Tank Pressure Measurements and Valve Control

To check the valve function, the pressure measurement system monitors the pressure drop in the tanks during the cleaning process with millisecond precision. A malfunction message is generated if the cleaning pressure does not drop as anticipated. A message is likewise generated if the pressure fails to return to the starting value within a prescribed period of time after cleaning. Measurement of electric valve flows also enables the solenoid valves to be monitored.

Benefits of the New Fabric Filter Cleaning System

- Precise cleaning of filter bags evens out the load on filter surfaces
- Faulty valves are detected and pinpointed immediately
- Early detection and localisation of defective filter bags enables rapid intervention
- Comprehensive monitoring facilitates condition-based maintenance
- Short, plannable inspection windows
- Easy to use locally, via distributed control system, or remotely

