Beck Differential Pressure Transmitter 985

The importance of overpressure smoke filters for fire prevention

Image.1

- Considering the new legislation for fire prevention, smoke-proof filters are becoming increasingly important for the protection of exodus routes.
- The filters are generally small rooms delimited by walls and fire doors with adequate fire resistance class.
- The types of filter allowed by current legislation are as follows:
- Maintenance of an overpressure with respect to the external environment of at least 30 Pa in emergency conditions, through a specific system designed, built and managed according to the rule of art.
- These systems, also called “PDS Pressure Differential System (Differential Pressure Systems)”, allow to keep the room overpressure with respect to the neighbouring compartment invaded by fire and therefore by smoke and heat.
- In the event of an alarm, the PDS is activated immediately by operating the fan which, creating a positive pressure difference, allows the restaurant to remain smoke-free and keeping the way out safe.
- Continuous fan adjustment with dedicated speed or, alternatively, in alarm mode with speed suitable for the correct pressurization of the smoke-proof filter room.

Beck Differential Pressure Transmitter 985

Draft pressure measurement in Dryer

Image.1

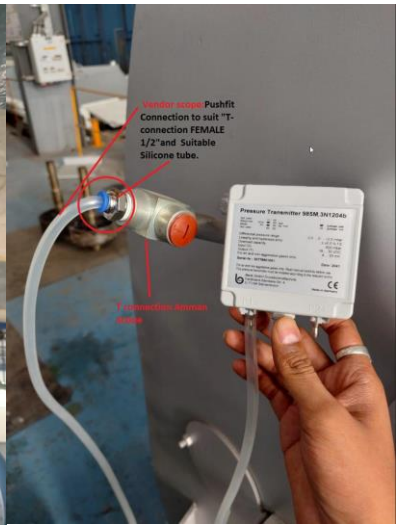

Image. 2

Image. 3

To measure draft pressure in a dryer using a Beck differential pressure transmitter like the 985 model, you would typically follow these steps:

1. **Mounting the Transmitter**: Install the Beck 985 differential pressure transmitter in a suitable location where it can accurately measure the pressure differential related to draft inside the dryer.
2. **Connecting Tubing**: Connect tubing from the high-pressure side (H) and the low-pressure side (L) of the dryer to the respective ports on the transmitter. Ensure the tubing is appropriate for the pressure range and compatible with the transmitter's ports.
3. **Power and Signal Wiring**: Connect the necessary power supply and wiring for the transmitter. The Beck 985 typically requires a 4-20 mA signal output, so ensure you have the appropriate wiring for signal transmission.
4. **Calibration**: Perform calibration according to the manufacturer's instructions. This usually involves adjusting the zero and span to match the actual pressure readings in the dryer. Calibration ensures accurate measurement.
5. **Monitoring and Adjustment**: Once installed and calibrated, monitor the transmitter readings to ensure they correspond accurately to the draft pressure inside the dryer. You may need to adjust settings or verify calibration periodically to maintain accuracy.
6. **Safety Considerations**: Always follow safety guidelines when working with pressure transmitters and equipment under pressure. Ensure proper installation and maintenance practices are observed to prevent accidents or damage.

By following these steps, you can effectively use the Beck 985 differential pressure transmitter to measure draft pressure in your dryer, ensuring efficient and safe operation.

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Draft pressure measurement in Furnace/Boiler

Applications of Draft Measurement and control:

In two main applications draft measurement and control is essential.

- Boiler Applications
- Furnace Applications

Here we are talking about Boiler applications. Measuring and controlling the furnace draft is important for two reasons.

- To increase combustion efficiency
- To maintain safe operating conditions.

Uncontrolled draft causes poor, non-efficient operation of a furnace (poor combustion efficiency), unstable pilot flame, build-ups of highly toxic gases like carbon monoxide, and soot accumulation due to varying air-to-fuel ratio.

It is thus extremely important to measure and control the boiler drafts. There are different points of measurement of boiler drafts, and these are approx. readings. Such as

A. FD fan outlet (Cold Air)/Air heater inlet (The usual range is about 150 to 200 mmWC).

B. Air Heater outlet (Hot Air, usually between +130 to +140 mmWC).

C. Furnace Draft (It should be ideally zero but kept slightly negative, the measuring range required is +/- 50 mmWC)

D. Boiler Outlet (Flue Gas) about -30 to +30 mmWC.

E. Economizer Outlet ranging between -70 to -80 mmWC.

F. Air heater outlet (Flue Gas) about -100 mmWC.

G. ID Fan Inlet (Range between -140 to -150 mmWC).

H. Secondary Air Draft for a High-Pressure Boiler

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Filter condition monitoring in Dust collector and Bag-house system

Differential pressure measurements provide a reliable metric of baghouse performance. Just as a doctor uses a thermometer to check for fever, so too can maintenance personnel use DP Transmitter to measure pressure drop across a baghouse. When the differential pressure readings fall too high or too low, it's a clear indication that it's time to make adjustments.

Differential pressure is a measure of resistance to air flow across the filter bags. As air passes through the dust layer and the filter medium, it loses the dynamic or velocity component of pressure. Eventually, as dust builds up on the bags, there is greater resistance to air flow and the volumetric flow rate decreases.

A change in differential pressure can also reveal the condition of the bags, whether they are in good working order, approaching the end of useful life, or blinded and therefore, ready to be replaced.

Filter Bag Life Cycle	**Typical Differential Pressure**
New bags	0 to 500 Pa (50 mmWC)
Seasoned bags	500 to 1250 Pa (50 to 125 mmWC)
May be nearing end of life	> 1500 Pa (150 mmWC)

Regular logging of baghouse differential pressures is the best way to monitor the performance of your dust filtration system allowing you to take corrective actions sooner and at less expense.

Beck Differential Pressure Transmitter 985

Low Differential Pressure Measurement in Aseptic Packing Machines

The pressure differential is the difference between atmospheric pressure between the production area and its surroundings.

It is measured in Pascal using the differential pressure transmitter. According to WHO guidelines on HVAC system, 10-15 pascals of differential pressure is maintained between manufacturing and surrounding areas.

The aseptic area should always be highly pressurized than the non-aseptic area and air flow should be always from the aseptic to non-aseptic area. This pressure differential is maintained by HVAC system. In tablet production area, pressure differential helps to prevent the cross-contamination. Dust particles are generated in granulation and compression area; those can contaminate the other products being manufactured in adjacent areas.

In sterile manufacturing pressure differential prevents entering the particles and microbes in sterile manufacturing rooms. It is necessary to maintain the positive pressure in the corridor than the tablet manufacturing areas to minimize the cross contamination. But positive airlocks should be there before entering the corridor while maintaining the positive corridor than the manufacturing rooms. These airlocks prevent the direct airflow from uncontrolled area to controlled areas and help to minimize the entrance of contaminated air into the controlled area. In sterile manufacturing area, manufacturing room is maintained under positive pressure than the surrounding corridor because there are more chances of microbial contamination instead of cross contamination. It is important to carry out the pressure differential and recovery tests at the time of HVAC system validation. DP Transmitters should also be calibrated at the time of HVAC validation.