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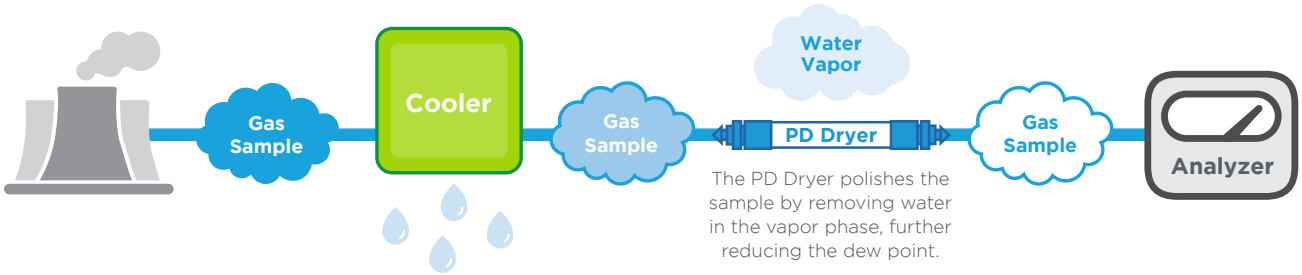
Breathe Easier. Be Healthier.

PD-Series Dryer as a Polisher

Polishing a sample gas refers to further drying the sample gas after a thermoelectric conditioning system and prior to the analyzer.

4°C is the accepted industry standard for the outlet dew point of a thermoelectric cooler. This temperature is well below the ambient temperature of an environmentally controlled analyzer shed and therefore expected to prevent condensation. However, achieving an even lower dew point is beneficial to help increase analytical accuracy and to provide greater protection of the sensor and analyzer.



Benefits of a lower dew point

Avoiding condensation

Unexpected cold spots, flow restriction or a change in pressure as the sample travels through the conditioning system and into the analyzer may cause condensation to form leading to damage to the analyzer, sensors, and other susceptible componentry.

Avoiding the formation of sulfuric acids or ammonia salts:

Water vapor often reacts with other common components of the gas stream creating the formation of sulfuric acid or ammonia salts that cause corrosion and damage when deposited on the optical bench. A dew point of 4°C does not prevent the recombination of these acid mists and salts.

Avoiding spectral interference

The presence of water can affect the analyzer's sensitivity leading to a decrease in analytical accuracy.

Costs Associated with Excess Water in a Sample Conditioning System

- Replacement sensor:
  $2K - $6K per sensor per incident
- Replacement analyzer:
  Up to $60K
- Lost production time:
  Up to 8 hours not including equipment/instrument lead time
- Analyzer technician hourly wage
- Fines for regulatory non-compliance

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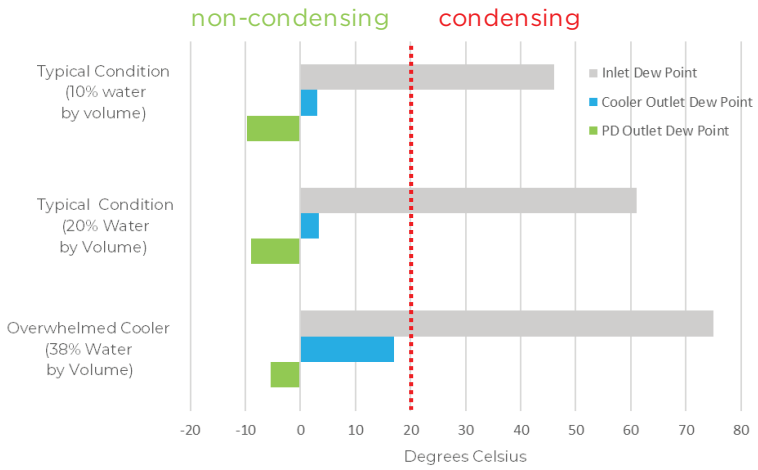
Benefits of the PD-Series Gas Dryer as a Polisher

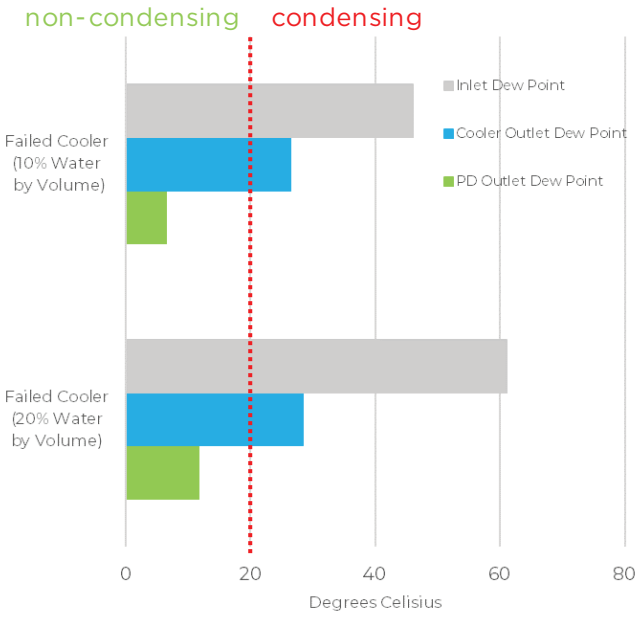
Installing a PD-Series Gas Dryer after the thermoelectric cooler is a simple and efficient way to lower the dew point of the sample gas.

- During normal operating conditions the PD-Series gas dryer lowers the dew point of the sample gas to almost -10°C, greatly **reducing the risk of condensation** and essentially **eliminating the occurrence of spectral interference or formation of sulfuric acid and ammonia salts**
- When experiencing upset conditions, where a thermoelectric cooler becomes overwhelmed, the PD-Series Gas Dryer is able to reduce dew points to well below 0°C, **preserving analytical accuracy** and **protecting complex equipment, components and instrumentation from the effects of condensation**



Flow rate = **5 LPM**

In the worst case scenario where a thermoelectric cooler completely fails, the PD-Series Gas Dryer, maintains an outlet dew point well below ambient levels helping to prevent condensation and avoid complete shutdown of the line until repairs can be made.



Flow rate = **3 LPM**

Two of the most prominent integrators worldwide, one in the United States and one in South Korea, include a PD-Series Gas Dryer with **every sample conditioning system**. What was once considered best practice has become **standard practice**. Customers now spec in the gas dryer when ordering a sample conditioning system.

Testing was performed under laboratory conditions. Incoming sample gas was compressed air humidified using a controlled humidity generator. Heated line was set to a consistent 150°C. Ambient temperature was 20°C.

Equipment used: Baldwin M425D Thermoelectric cooler rated for 3 - 5 LPM and incoming sample dew points up to 65°C PD-Series Gas Dryer Model #: PD-050-24-MSS

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