

TECH TALK

Air Quality Improvements

What factors should manufacturers consider when choosing systems to improve air quality in their facilities?

The entire system should be optimized for a cost effective solution – from the inlet to the point of use.

COMPRESSOR ROOM

The compressor inlet filter keeps out large particles (i.e. greater than 5 micron) in order to protect the compressor. However, smaller particles (light oils, hydrocarbons, dirt) will make their way downstream.

BEFORE DRYING

Compressors typically see 180°F pressure dew point, or higher. Cooling this air down to 100°F will condense out over 80% of the water. To remove all liquid aerosols, a mechanical separator (centrifugal) will easily remove the bulk of this liquid, followed by a coalescing filter for the remaining droplets.

DRYING

A refrigerated dryer provides air with a pressure dew point of about 38°F, which is well below average room temperatures. If feed pipes go outside

buildings or most of the air is required to be very dry (laboratories), then a desiccant dryer, which can achieve -40°F pressure dew point, is required. For large flow systems where refrigerated dryers are sufficient for the majority of the air, small point-of-use desiccant dryers can be installed on branch lines, minimizing pressure drop and desiccant change-out costs.

WHAT FILTERS TO USE AND WHERE?

Installing a single filter at the final process' micron requirement may reduce overall pressure drop, however, it also minimizes the life of filter elements and requires frequent change-outs or cleaning. Higher micron, lower differential pressure depth pre-filters will remove large particulate, leaving the final filter for polishing. For this reason, it is best to use a succession of particulate and coalescing filters beginning with least restrictive micron ratings. When the majority of air is sent to different areas – shop tools, laboratories, or process lines – it is recommended to use the least restrictive micron rating required to ensure minimal pressure drop.

