Compressed Air Quality for High Ambient Conditions

By David Robertson Certified Compressed Air System Specialist

The quality of compressed air is consistently overlooked and rarely, proactively managed within industrial manufacturing operations, until it's too late.

A key performance indicator of compressed air quality is found within ISO 8573-1-2010, the food and beverage industry accepted British Compressed Air Society (BCAS) or Safe, Quality Foods (SQF) standards.

When discussing compressed air quality, we are primarily concerned with particulates, water, oil and more increasingly, microbiological contents.

This article will lament the importance of understanding dew point specifications and working with a Compressed Air and Gas Institute Certified Compressed Air System Specialist in designing a properly sized refrigerated air dryer for high ambient conditions.

Most industrial manufacturing compressed air systems are designed around the ISO-8573-1 Class 4 ($\leq$38°F) or Class 5 ($\leq$45°F) dew point produced from a refrigerated air dryer when sized correctly.

Often overlooked are the upper limits of each dew point class. Understanding "less than" or "equal to" is very important when defining and achieving consistent dew point levels between the two classes. Failure to size a refrigerated air dryer properly will invariably result in compressed air quality falling to Class 6 or worse, Class 7 or what is commonly referred to as liquid.

Moisture is typically found downstream within an industrial compressed air system when a drain has failed or the existing refrigerated air dryer is turned off, bypassed, inoperable, or most likely, undersized for the Arizona and Nevada high ambient conditions.

Non-certified, salespeople have been historically negligent with improper refrigerated air dryer sizing for the high ambient conditions in Arizona and Nevada. Such was the case for an industrial, glass tempering facility in Arizona. As the summer temperature exceeded a refrigerated air dryer standard ratings of 100°F ambient and 100°F inlet temperature the compressed air system "dry" air receiver would fill with moisture. A clear indicator something was wrong.

Since contacting Arizona Pneumatic and aligning with a Compressed Air and Gas Institute Certified Compressed Air System Specialist, the client has since invested in a CAGI certified sized refrigerated air dryer including proper redundancy and filtration. Moisture downstream within the compressed air supply is no longer an issue during high ambient months and the risk of dryer downtime has been mitigated due to redundancy.

The final component of a properly sized compressed air quality system is proactive management. As the saying goes, "how can we manage, that which we cannot measure"? Over the last few years a paradigm shift has been made by a more diverse, technology driven facility manager who understand the importance of measurement and management synergies. Digital dew point monitoring has become the proactive standard for the conscious facility manager concerned with the KPI of a consistent dew point.

Sizing a refrigerated air dryer properly for high ambient conditions has been compared to possessing a life jacket on the same day the ship is sinking. A properly sized dryer is for the hottest day of the year.

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