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Myths and Facts About Compressed Air

Important notes on air treatment for textile plants.

Myth: It is safe to clean dirt and debris from a work area using compressed air.

Fact: No. This is an unsafe practice. Cleaning a work area using compressed air could result in serious injury as a result of particulate striking or entering the eyes, ears or skin. A safer alternative is to use a vacuum, mop or broom to remove dirt and debris.

Myth: Variable speed drive is always the best solution for the most efficient part-load performance.

Fact: Not necessarily. Inherent to their design, variable speed drive compressors have an optimum tip speed range where they operate most efficiently. If the compressor load requirements fall outside of this range, other control options may provide the most efficient solution. The compressor provider will need to consider the numerous application requirements in order to recommend the most efficient compressed air solution for the job.

Myth: Variable speed drive increases oil carryover.

Fact: Operating at reduced speeds should have no detrimental impact on oil carryover. The reduced airflow will lower the velocity through the separator media, which will improve its efficiency. There are two primary contributors to an increase in carryover, lower pressure and higher temperature. Neither of these issues is caused by the addition of a VSD.

Myth: using a variable speed drive compressor eliminates the need for a flow controller.

Fact: every application is different, but there are clearly systems that would benefit from the stable, constant pressure that a flow controller can provide in a very dynamic system and the part load efficiency of a VSD compressor. Even with a flow controller and proper storage, an optimized system will fill the storage in the most efficient manner. In many systems, this can include a VSD compressor.

Myth: All "Synthetic" compressor fluids are the same.

Fact: No, they are not the same. When looking at air compressor fluids, the term "Synthetic" is often used to describe the base stock. Since "Synthetic" simply means that the fluid is not a hydrocarbon base stock, it encompasses many different base stocks which offer dramatically different performance. The real question is what is the synthetic base stock, PAG, Diester, PAO? Once you determine the base stock you can evaluate its advantages and disadvantages.

Myth: All Polyglycol(PAG) blended compressor fluids are the same.

Fact: Polyglycol compressor fluids are generally blended with one of two types of 'Esters,' "Polyolesters" or "Diester." These two differ drastically in their performance in a rotary screw air compressor.

Polyolesters (POE): POE's handle heat very well and run varnish and sludge free. They are best known as jet engine lubricants. They are expensive and are used in applications where performance is critical, like in a rotary screw air compressor.

Diester: Diester are low cost and have the potential to cause sludge. Sludge can become very costly to a company's bottom line, reducing compressor efficiency and becoming very expensive to remove from a compressor system once it forms. Diester also cause swelling in gaskets, seals, and hose liners. This results in problems with leaks, swelling of O-rings and deterioration of shaft seals.

BEWARE, many generic Polyglycol/Ester blends turn out to be a Diester base with a minimum amount of Polyglycol. These generic fluids will have all the issues associated with a Diester fluid.

Myth: Generic replacement parts and compressor lubricants are the same as manufacturer proprietary parts and lubricants.

Fact: Maintenance kits and manufacturer proprietary replacement parts and lubricants offer the best overall performance. They are designed to maintain unit efficiency and reliability. Generic parts increase liability, decrease performance, and may void manufacturer warranties.

Myth: Filter elements should only be changed when the differential pressure is high.

Fact: you install compressed air filtration to improve air quality. DP gauges/indicators are blockage indicators not air quality indicators. To ensure your compressed air quality, filter elements should be changed annually in line with manufacturer's instructions.

Myth: Coalescing filters are ONLY for oil removal.

Fact: Coalescing filters have an even higher capture rate with solid contaminants than with liquids.

Myth: Oil contamination is not present in atmospheric air.

Fact: Atmospheric air typically contains between 0.05mg/m³ and 0.5mg/m³ of oil vapor from sources such as car exhausts and industrial processes. As oil-free compressors use large quantities of atmospheric air and atmospheric air contains oil vapor which can cool and condense in the compressed air systems, the use of oil-free compressors does not guarantee oil-free air.

Myth: Liquid oil and oil aerosol are the only contaminants present in a compressed air system.

Fact: Generally, there are ten contaminants found in a typical compressed air system that need to be removed or reduced for the system to run efficiently.

The ten contaminants are:

1. Water vapor.
2. Liquid Oil.
3. Oil vapor.
4. Rust Atmospheric Dirt.
5. Water Aerosols.
6. Microorganisms.
7. Oil Aerosols.
8. Liquid Water.
9. Pipe scale.

Only two of these contaminants, liquid oil and oil aerosol are introduced by a lubricating compressor. The purification equipment required to reduce, or remove the remaining contaminants by virtue of their operation also remove liquid oil and oil aerosols. Therefore regardless of the type of compressor installed, purification equipment is required.

Myth: Compressed air contamination is a compressor issue.

Fact: In a typical compressed air system, compressed contamination comes from four different sources, these being:

1. Source 1 - Atmospheric Air
Air compressors draw in huge amounts of atmospheric air, which continuously fills the system with contaminants such as water vapor, micro-organisms, atmospheric dirt and oil vapor.
2. Source 2 - The Air Compressor
In addition to the contaminants drawn in through the compressor intake, the compressor also adds additional wear particulates from its operation. Additionally, oil lubricated compressors carry over liquid oil, oil aerosols and oil vapor from the compression process. Once through the compression stage, the after-cooler will also condense water vapor, introducing it into the compressed air in both a liquid and aerosol form.
3. Source 3 - Compressed air storage devices
4. Source 4 - Compressed air distribution piping

The air receiver (storage device) and the system piping that distributes the compressed air around the facility both store large amounts of contamination. Additionally, they cool the warm, saturated compressed air which causes condensa-



tion on a large scale, adding liquid water into the system. This saturated air and liquid water leads to corrosion, pipe scale and microbiological growth.

Myth: Static Oil Water Separators are not suitable for synthetic lubricants / PAG's. This is evident with cloudy outlet water.

Fact: Oil Water Separators are designed to reduce oil in water levels to acceptable limits. Some lubricants such as synthetics / PAG's also contain detergents and additives to extend the life of the compressor. Oil water separators are not designed to remove detergents and additives. Oil in water content cannot be accurately determined from visual inspection and lab analysis should be used. Lab analysis on cloudy outlet water is the only way of accurately testing oil in water content and will show it is within acceptable limits.



Myth: Any dryer (refrigerated or desiccant) can be installed outdoors.

Fact: All standard dryers are designed for internal installation. However, many are often installed outside, (with a lean-to roof in some cases and without a lean-to roof in some cases). Outside installation is acceptable provided there is lean-to roof with freeze / snow protection, blowing rain protection, and a roof / ceiling high enough to avoid hot air re-circulation. Outside installation of standard dryers with no roof is not recommended.

In the case where outside installation without roof is a necessity, request an outdoor modification package including freeze protection, UV protection in paint, fasteners and electronics, and Nema 4 components throughout. A Nema 4 electrical enclosure alone is not sufficient for an outdoor without roof installation.

Myth: Most dryers do not provide dryness levels to the same levels quoted in sales literature.

Fact: Dryer installations are often plagued with a variety of mistakes which impact the level of compressed air dryness which they provide. Classic installation mistakes are: insufficient space above or in front of condenser air discharge which causes recirculation and high pressure faults...dramatic under sizing of the dryers when forgetting that cooling water and ambient air in summer is at far higher temperatures than in winter...wrong power supplies are amazingly frequent. Often dryers are on the same power line as other capital equipment and so the actual voltage is subject to tremendous dips which play havoc with dryer operation and dryness performance.

Myth: Compressed air filters also dry compressed air.

Fact: Compressed air filters are capable of removing bulk liquid water and some water aerosol from compressed air. Compressed air filters are not capable of reducing the level of moisture vapor in compressed air or reducing the pressure dew point of compressed air.

Note: For further clarification contact Sakoon service info@sakoon.com.pk◆