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Technical Bulletin - ITT Conoflow HPNGV Series Regulator and Compressor Oils

The ITT Conoflow HPNGV series regulator reduces natural gas pressure from on board storage cylinders to a factory preset level. Typical system installations utilize a coalescing filter upstream of the regulator to remove particulates, and excessive moisture and liquid compressor oils which may be present in the stored fuel.

Although these filters do a fine job of removing harmful particulates and the majority of moisture and oil, natural gas tends to act like a solvent and keeps some oil dissolved in the gas stream.

When the pressurized gas expands from high pressure to low pressure, within the regulator, the gas rapidly cools and some of the oil vapors condense into a fine aerosol. This oil can and will deposit itself within the regulator and downstream lines, flow to downstream components and potentially drain back into the low and high pressure sides of the regulator.

We have learned that in some cases, the combination of organic and synthetic oils, in a vehicular natural gas fuel system, allows the oil condensate to thicken in the presence of heat. The thicker residue may pose a problem for engine fuel management components, such as engine mounted fuel injectors or other fuel metering devices. This must be addressed by system maintenance practices and considerations.

The function, safety and performance of an ITT Conoflow HPNGV series regulator is not affected by the majority of organic, synthetic or a combination of compressor oils. ITT Conoflow has performed significant material testing to determine if the materials of regulator construction are affected by these oils. ITT Conoflow has tested ester based, polyalphaolefin (PAO) based, and polyglycol (PAG) based compressor oils for seal compatibility.

To date, results of these tests show that some PAG based compressor oils can cause excessive shrinkage of critical seals in the pressure regulator. Examples of commonly used PAG compressor oils, which can cause excessive volume loss of seals include Mobil Glygoyle 22 and Summit NGL-888. An example of this concern is as follows:

Tests were conducted with both new and used Glygoyle 22 compressor oils and the results show 10% volume shrinkage after 30 days exposure at room temperature.

This rate of seal shrinkage leads to a much higher likelihood of premature seal leakage failure.

Other PAG based oils tested, including Royco 886, and Ucon RSC 155, did not cause this magnitude of shrinkage or weight loss of the HPNGV regulator elastomers.

As new compressor oils are brought onto market, ITT Conoflow would like to be notified by the user community. If samples can be provided, we will gladly test those oils for compatibility with the materials used in our HPNGV series pressure regulators.