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Page: 10
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Microfine filtration boosts fuel quality, reduces equipment failure

The path to contamination-free fuels relies on minimising contamination prior to use. Craig FitzGerald from ISO-Reliability Partners introduces his microfine filtration solution.

Microfine filtration systems from ISO-Reliability Partners include a stainless steel desiccant air breather that absorbs moisture, as well as radial and depth filtration, with around 6 000 times the filtration media when compared to market competitors.

The breather is filled with thousands of desiccant silica gel beads designed to absorb moisture from the air and tank headspace. These change colour when filters need to be serviced. The breathers are fitted on diesel and oil bulk holding tanks, gearboxes, and lube and hydraulic systems to capture large volumes of moisture and particulate contamination at low cost. "This makes the technology not only feasible, but also highly recommended in comparison to common options on the market," says Craig FitzGerald from ISO-Reliability Partners. Its microfine filtration solutions and wear particulate analysis offerings were the result of FitzGerald identifying fluid contamination as the initial driver behind the vast majority of equipment failures.

According to the South African Bureau of Standards SANS 342:2016, the maximum water content allowed in automotive diesel fuel is 350 mg/kg, with total contamination of particulate matter being 24 mg/kg. The US government has a stricter specification of 10 mg/l (about 12 ppm) for particulate matter. However, neither specification addresses the critical issue of particle size.

While most fuel filters recommended by engine manufacturers have a nominal pore size of 10 µm, studies reveal that the critical particle size for initiating significant abrasive wear in rotary injection fuel pumps and in high-pressure fuel injection systems ranges between one to seven microns.

However, as designs to reduce emissions result in higher rail and injector pressures, the tighter clearances have less tolerance for solids, moisture and impurities in the fuel.

As a result, some engine manufacturers now specify filters with pore size as low as 2.0 µm. "The problem is that moisture and dust particles that can pass through a two-micron filter can easily damage the injection parts of a diesel engine. The present standard is therefore not strict enough," highlights FitzGerald.

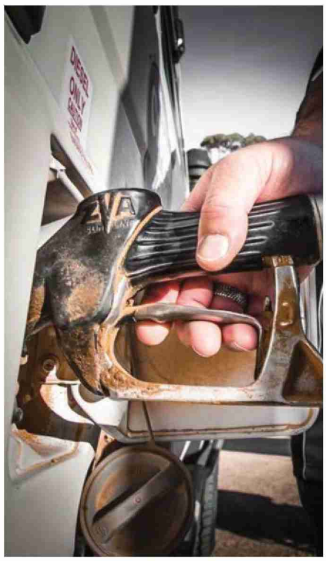
SANS 342:2016 has made strides towards reduced engine failures with the inclusion of ISO 12156-1 for fuel lubricity, an essential assessment. "It must be noted that testing is done at the refining stage, yet contaminants continue to enter well after the fuel is given the greenlight for quality," notes FitzGerald.

ISO-Reliability Partners is an OEM of class-leading microfine oil filtration solutions, vacuum dehydration systems, automated water removal for compressed air, and high efficiency industrial air scrubbing. Its expertise combines the sciences of lubrication, filtration, and tribology.

www.iso-reliability.com

***ISO Reliability's microfine filtration results** (right) **versus competitors** (left).*

Moisture and dust particles will quickly cause damage to the injection parts of a diesel engine.



Contamination-free fuel is critical for optimal performance and efficiency.