

# Non-Sparking Elements

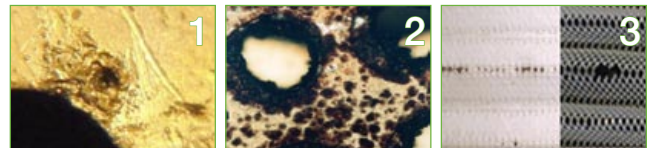


## Filter Element Spark Discharge

As fluid passes through the typical tortuous filter media fiber matrix, turbulence increases resulting in thermal events as the fluid layers shear creating static accumulation on elements that can lead to high voltage spark discharge from media to support tube. Photos 1 and 2 show evidence of sparking on the filter element support tube (pitting and burning), and photo 3 shows filter media and support mesh from a lube filter element with spark discharge burn damage.

The change from Group I to Group II has enhanced the effect of spark discharge. Group I base stock oils could conduct low levels of static charge out of the system to ground. The changes in resistivity with Group II base stocks mean that static charges stay in the system and can yield higher levels of static charge on filter elements. If the element cannot minimize and dissipate the charge, static on the element will build until it eventually arcs to a nearby surface.

- G8 element and media technology optimized to prevent spark discharge and minimize potential energy in bearing lubrication and hydraulic control systems.
- Prevent oil degradation caused by thermal events associated with element spark discharge.
- Prevent anti-oxidant additive depletion and extend useful fluid life.



## NSD Elements, Cleaner Fluid Without Sparking

For some the answer to preventing element sparking and high potential energy is to use coarse strainer type filters (Stat-Free) in the main bearing lube filter duplex. Although this may prevent sparking, the compromise between reduced filtration and risk of catastrophic bearing failure is not a reasonable trade off nor necessary. Independent lab analysis proves that Hy-Pro high efficiency 3 micron absolute ( $\beta_{5[\mu]} > 1000$ ) NSD elements are resistant to spark discharge.

The degree to which element spark discharge contributes to overall varnish problems is misunderstood. Varnish is caused from oxidation. Spark discharge causes a severe form of oxidation called thermal degradation. Thermal degradation prematurely consumes additives and reduces fluid life. With NSD elements spark induced thermal degradation is significantly reduced or eliminated thereby maximizing fluid additive life.



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