SINCE 1839
Schaeffer's
SPECIALIZED LUBRICANTS

TECHNICAL DATA

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ISO 9001 CERTIFIED

210 Gas Fired Turbine Oil with VMT ISO 32, and 46

Gas Fired Turbine Oil with VMT is a top tier next generation, high performance, non-zinc containing, anti-wear, varnish mitigating turbine oil that is designed for use in the lubrication of gas, steam and combined cycle and geothermal turbines. Gas Fired Turbine Oil with VMT provides excellent resistance to oxidation and thermal degradation and has been formulated to prevent the deposition of varnish on critical surfaces in turbine systems including IGV valves, pencil filters, bearings, etc.

Gas Fired Turbine Oil is formulated from the highest quality, high viscosity index severely hydrotreated and hydrocracked Group II Plus base stocks available. Blended into these Group II Plus base stocks is a carefully balanced next generation top tier additive system that provides the Gas Fired Turbine Oil with VMT with the following performance features and benefits:

- Excellent oxidation and thermal stability
- Excellent and enhanced rust and corrosion protection for components
- Exceptional anti-wear protection especially for geared type turbines
- Excellent water separability and demulsibility
- Rapid air release and resistance to foaming
- Reduced sludge, varnish and deposit formation
- Prevention of the formation of varnish deposits
- Enhanced filterability
- Enhanced seal life
- Improved system efficiency and reliability
- Reduced system maintenance and downtime
- Enhanced system life and optimized oil drain intervals

With the drive for increased efficiency, turbine OEMs are designing turbines that have efficiency increased power densities and operate at higher operating temperatures. These factors along with minimized oil reservoir size, higher flow rates and shorter dwell times in the reservoir have resulted in conditions which increase the rate of oxidation and thermal degradation of the lubricant, resulting in the potential for the formation of varnish and sludge deposits in the system.

Once varnish deposits are formed and deposited on the metal surfaces of the system they can cause a host of problems such as:

- Adherence of wear particles and contaminants to the metal surfaces
- Increased overall friction
- Delayed response of inlet guide vane valves (IGV)
- Premature filter performance degradation
- Loss of hydrogen cooling system seal in Gen-set
- Hindered control capability of fuel control valves
- Restriction of heat transfer in bearings, lines and reservoirs
- Higher operating temperatures on components
- Restriction of oil flow in small orifices and control surfaces
- Reduced efficiency and responsiveness
- Increased maintenance costs, system downtime and lost production

VMT is a carefully balanced additive system that mitigates and prevents the formation and the build-up of varnish deposits, while providing exceptional anti-wear performance, outstanding thermal and oxidation stability, rust and corrosion protection and rapid water separation. The VMT additive system helps Gas

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Fired Turbine Oil with VMT minimize the formation of sludge and varnish. If any varnish particles do form, the dispersancy action of the VMT additive will keep these particles suspended and prevent them from depositing on critical internal components. This helps eliminate the replacement of components such as filters and inlet guide valves and the costs associated with these activities.

Gas Fired Turbine Oil anti-wear capabilities are further enhanced by the addition of Micron Moly®. Micron Moly® is a liquid soluble type of moly that plates itself to the sliding, rolling and rubbing metal surfaces of the turbine. This plating action forms a long lasting solid lubricant film on these rubbing, rolling and sliding surfaces. This moly film will withstand pressures up to 500,000 pounds per square inch. Once plated to the sliding, rolling and rubbing metal surfaces the Micron Moly® not only produces a smooth finish surface, but also reduces friction between the moving parts. This results in less heat being generated, which reduces operating temperatures and downtime.

Gas Fired Turbine Oil with VMT is suitable for use and meets and exceeds the performance requirements of: ASTM D-4304 Type I and III; ISO 808 L-TSA and L-TGA; DIN 51515 Part 1 and Part 2; DIN 51524 Part 1; ISO 11158 HH; ISO11158 HL; GB L-TSA and L-TSE Part B; GB TGA and GB L-TGSB; British Standard 489; GEK 32568J; Siemens AG TLV 9013 04 Standard Thermal Stability; Siemens AG TLV 9013 05 High Thermal Stability, Alstom HTGD 90117; Solar ES9-224W and Rolls Royce.

TYPICAL PROPERTIES

ISO Grade	**32**	**46**
Specific Gravity @ 15°C (60°F)	0.849	0.85
Viscosity, cSt @ 40°C ASTM D-445	30.6-35.5	42.5-50.0
Viscosity, cSt @ 100°C ASTM D-445	5.4-6.0	6.5-7.5
Viscosity Index ASTM D-2270	109	105
Flash Point, °F (°C) ASTM D-92	430°/221°	430°/221°
Pour Point, °F (°C) ASTM D-97	0°/-18°	0°/-18°
Oxidation TOST ASTM D-943, Time, hrs. to TAN of 2	10,000	10,000
RPVOT ASTM D-2272, minutes	1230	1230
Demulsibility Test ASTM D-1401 Oil/Water/Emulsion Time	 40/40/0 15	 40/40/0 15
Water Separation IP19, seconds	90	90
Filterability (Dry) ISO 13357-1 Separation Time Seconds Stage I Stage II	 96 90.4	 96 90.4
Filterability (Dry) ISO 13357-1 Separation Time Seconds Stage I Stage II	 88.2 79.7	 88.2 79.7
Air Release @ 50°C ASTM D-3427, minutes	1.1	1.1
Foaming ASTM D-892 Sequence I : Sequence II : Sequence III	 0/0;0/0;0/0	 0/0;0/0;0/0
Copper Strip Corrosion, ASTM D-130	1a	1a
Corrosion Properties Steel ASTM D-665 Procedure A – Distilled Water Procedure B – Salt Water	 Pass Pass	 Pass Pass
Foam Tendency Stability Test ASTM D-892 Sequence I Sequence II Sequence III	0/0 0/0 0/0	 0/0 0/0 0/0
Total Acid Number ASTM D-664, mg/KOH	0.1	0.1