

IAS Varnish Mitigation Extends Fluid Life and Ensures Fluid and System Cleanliness, Minimizing

The Situation

Recent MPC results on the turbine received a color result of 39 (above the critical limit of 33 and considered abnormal), indicating the presence of insolubles that can lead to varnishing issues. The process of making a patch isolates and agglomerates insoluble by-products associated with varnish. The color of the membrane patch provides a guideline to the extent of varnish potential.

The RULER test results accurately measures the remaining active antioxidants in the lubricant. Antioxidants are the most important additive including turbine, hydraulic, compressor and aerospace fluids. The RULER number represents the concentration of the antioxidants monitored relative to new oil. The RULER results are 74% amines and 60% phenols; this is in the acceptable range for preventing oxidation. However, it shows 26% of the amines and 40% of the phenols are depleted and this is a reason the MPC results for varnish potential is critical.



The Solution

Allow IAS to perform an on line Varnish Mitigation Service on CT SW 501F Gas Turbine to remove varnish and oxidation by products from Shell Turbo CC 32 turbine oil. By reducing the MP value from 39 into the normal range (<15) the oil will have a better chance of protecting the oil wetted surface from forming additional varnish deposits and extend the life of the oil.

Project Objectives

- Provide 100% turnkey project
- Complete 100% safe project
- To reduce MPC number to 15 or less
- To keep the machine in production without downtime
- To verify MPC results via on site testing

Project Scope

- Flow circuitry engineering
- Perform all necessary connections and disconnections to reservoir supply and return lines
- Complete system integrity verification
- Multi-stage mechanical filtration to purify the system and the fluid
- IAS proprietary Varnish Mitigation Service includes Deoxidizing Agent (D.O.A.) and Molecular Polarization Technology (MPT)



IAS provided purpose-built process equipment and on-site test equipment to verify results in real time

Initial MPC 25.8



Final MPC 8.6



Benefits

- ✓ Zero safety incidents
- ✓ Zero environmental incidents
- ✓ Extend the life of the fluid
- ✓ Ensure fluid and system cleanliness
- ✓ Minimize future maintenance and repair costs due to a cleaner oil system
- ✓ Achieve 100% customer satisfaction

IAS WORKS SAFELY

IAS worked 325 man-hours without any safety incidents, near misses or accidents. IAS continues to be the leader in safety training and



Conclusion

Varnish conditions in heat exchangers, close tolerance hydraulic valves and lube oil control systems should be routinely monitored for signs of reduced equipment reliability. Having IAS perform this service, equipment owners can assure reliable start up and long service life of their critical production equipment.