

CASE STUDY

TOPIC: Particulate, Water, and Varnish Contamination in Gas Compressor

LOCATION: Rio de Janeiro, Brazil

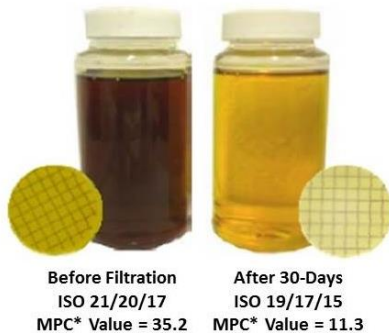
DATE: January 25, 2016

Problem: Elevated levels of varnish contamination, overall water content, and particle counts in the 190-gallon lube oil system of a CO2 Compressor was discovered by oil analysis. With an MPC reading of 35.2, water content of 292 PPM, and an ISO Cleanliness Code of 21/20/17, operators were concerned that the ISO VG 68 Compressor Oil was outside of recommended OEM cleanliness specifications. If left untreated, varnish would eventually plate out on metal surfaces within the lube oil system, causing inefficient operation of the compressor. In addition, high levels of water and particulate contamination in the oil could eventually cause premature failure of the rotating equipment.

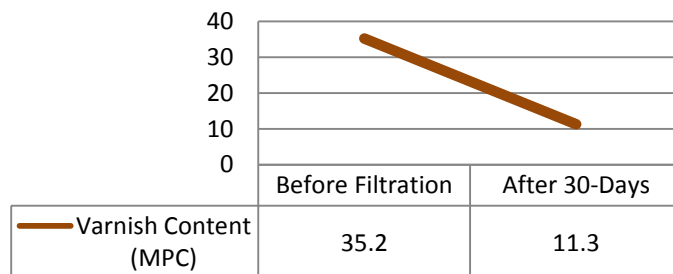
Solution: To effectively mitigate the varnish contamination in the lube oil, and to bring the ISO VG 68 lube oil back into OEM recommended cleanliness specifications, the plant decided to implement a 3 GPM Vacuum Dehydration Oil Purification System (VDOPS) equipped with a Varnish Removal housing and “Granular Adsorbent Media” to re-circulate the lube oil reservoir in a kidney-loop configuration, continuously removing impurities as the compressor was running.



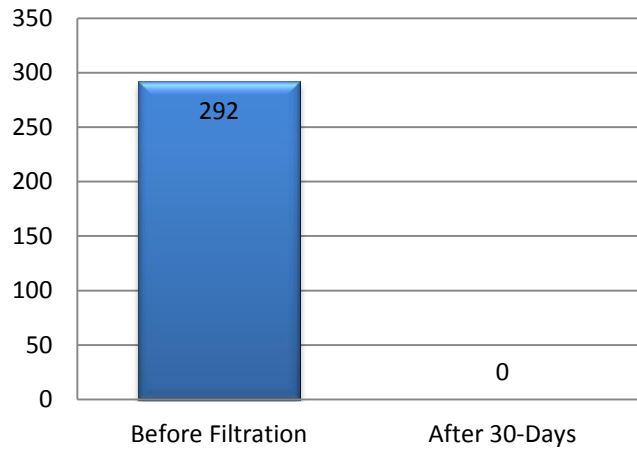
Results: The starting varnish content in the oil was MPC 35.2 on December 16, 2015, and an earlier oil analysis had revealed a water content of 292 PPM and an ISO Cleanliness Level of 21/20/17. After 30-days of run time, the varnish content dropped to MPC 11.3, the water content was measured at 0 PPM, and the ISO Cleanliness Level was 19/17/15.



Varnish Content (MPC)



Water Content (PPM)



ISO Cleanliness Level



LEFT: BEFORE
21/20/17

RIGHT: AFTER
19/17/15

Conclusion: By maintaining the Compressor Lube Oil at or below OEM recommended cleanliness levels, operators at this large industrial gas manufacturing plant can rest assured that they are doing what it takes to ensure optimal reliability and operation/performance of the compressor itself, while minimizing down-time and costly repairs.