

GD ENERGY PRODUCTS SOLVES POWER END FAILURES IN THE MARCELLUS SHALE

Recommendations lead to substantial reduction in overheating, pump failures, and non-productive downtime across customer's entire fleet nationwide.

CHALLENGE

- C2500 quint frac pumps used across hydraulic fracturing fleet experienced lube system problems which caused pumps to overheat and fail prematurely.

SOLUTION

- Replace ISO 220 oil with 80W/140 to provide enough viscosity to maintain the required pressure at the power end.
- Adjust system parameters to ensure pump receives at least 55 GPM of oil at all times.

RESULTS

- Substantial reduction in overheating, pump failures, and non-productive downtime across customer's entire fleet located in multiple shale plays.

CHALLENGE

C2500 quint frac pumps used across a customer's hydraulic fracturing fleet in the Marcellus shale experienced lube system failures which caused them to overheat and fail prematurely. After GD Energy Products' (GDEP) initial testing and gathering of lube system data at the customer's Ohio field location, the unit was operated and analyzed at the test stand at GDEP's Fort Worth, Texas repair facility. A GDEP C2500 power end was installed on a test unit, along with gauges and sensors to aid in understanding system dynamics. The power end oil was replaced with clean ISO 220 oil, per the customer's specification, and the oil filter element was changed before operation.

SOLUTION

GDEP technicians determined that the thermostatic bypass valve was no longer functioning as designed because it was allowing pressure communication to the oil cooler loop below its designed thermal set point. A new valve was delivered and installed. Additionally, due to the component issues found system-wide, it was determined that a lower viscosity oil would be a better fit for the system. The ISO 220 oil was removed, and the system was filled with synthetic 75W/90 for an additional round of experimental testing, as well as for the factory acceptance test. GDEP Engineering calculated specific factory acceptance test parameters for the unit in question based on the transmission gear ratios. It was observed that the system was only able to maintain 90 psi at the power end pressure relief valve. An attempt was made to adjust the pressure relief valve, but due to the low oil viscosity, the pressure was unable to be increased further. The customer was advised that a slightly more viscous oil could be a better fit for the system. An oil such as 80W/140 could provide enough viscosity to maintain the required pressure at the power end.

RESULTS

The unit, as received, was not supplying the required lubrication pressure and flow to the power end. As a result of the testing detailed above, GDEP recommended several changes to all affected units, most notably, choosing an alternate oil with less viscosity to improve system performance. The customer implemented GDEP's recommendation across their fleets in the Marcellus and reported an immediate and substantial reduction in overheating, pump failures, and non-productive downtime attributed to the lube oil issue. In addition, the customer later implemented the new recommendation across their entire fleet nationwide and have experienced fewer breakdowns as a result.

LOCATION

