

UNISERVICE / TÜRKIYE

VISWA LAB. FUEL ANALYSIS

BÜLTEN #18

TECHNICAL UPDATE

WATCH YOUR TURBO CHARGER

The Norwegian Insurance Company GARD, announced recently that they have paid out \$25 million in 292 turbo charger related claims over the last 5 years.

Viswa Lab has also been involved in fuel related problems in turbo charger and exhaust gas economizers (EGE). It is time to take note of what is happening!!

What is happening is mostly related to bad fuels!! In the innocent pre 1970s when thermal or catalytic cracking of fuel was unknown, not only was there minimal problems with the engine but also the turbo charger. Today the state of affairs is different. Bunker fuel is not heavy fuel oil. It is actually the heavy fuel oil from which most of the lighter fractions have been removed and it is truly a residual fuel-the residue before it is turned into asphalt or petroleum coke. The impact of these fuels is being increasingly experienced by the marine industry in terms of delayed combustion, after burning, high wear rates to cylinders and piston rings and, not infrequently serious damages resulting in slowing down of the ship or complete breakdown.

The same residual fuel that creates problems with engines does not go away without showing its hand in turbo chargers and exhaust gas economizers. When combustion is poor and delayed, large quantities of unburnt / burnt hydrocarbon particulates travel through the exhaust passage and deposit in the passage as well as on the turbo charger blades and nozzles. When this deposition is uneven you experience surging of the turbo chargers caused by imbalance. The turbo charger speed also drops. The cleaning of the turbo charger blades through the wet or the dry method does not solve the problem. The nozzles too, have deposits obstructing the passage. Not only this, when the exhaust gases travel up and transfer heat to the EGE they also deposit on the outer surface constricting the passage of the exhaust gases through the funnel. The effect of this is an increased back-pressure on the turbo charger outlet. This again has an effect of reducing the turbo charger rpm. If the exhaust gases are not able to transfer sufficient energy to the turbo charger, the work done on the turbo charger reduces and, often turbo charger speed drops. Why say "often" ? This is because the turbo charger speed also depends on the air side of the turbo charger, how clean it is and how clean is the air filter etc. This will be the topic for another Technical Update.

For now remember the following :

1. Closely watch the turbo charger performance.
2. Clean the blades and if possible clean the turbo charger nozzles as much as you can.
3. Make sure that the exhaust gas passage to the funnel is clear and the back-pressure on the turbo charger is within limits.
4. Watch out in particular for any surging or excessive axial movement or any other unusual happenings with regard to the functioning of the turbo charger.

Best Regards,

Dr. Vis

Viswa Lab Corporation