

Health check for oil and machinery in ships

When a person's health needs to be assessed, a doctor can take a blood sample and analyse it for quality (red/white blood cells: oxygen carriers and defence against sickness). In a similar way, an oil sample can be analysed in order to evaluate the oil quality, which degrades slowly over time.

As oil passes through machinery (gears, bearings, pistons), any surface (particles) that break off will be transported around in the oil and the oil system – in the same way that when a person drinks a beer, alcohol is transported around in the blood system. If the doctor detects the alcohol, he can deal with the effects of drinking; but if the liver (body filtration) has removed the alcohol, he will be unable to detect it. Similar filtration systems are installed in oil lubrication systems.

However, if the doctor could continuously monitor both the blood cells (oil quality) and the alcohol percentage in the blood (number and size of particles) - for instance by a "smart watch" and internet connection – he could more accurately assess how healthy the person is. If he could then model the person's health (when not drinking and having a lot of good red/white blood cells), such a model would enable an alarm to be sent to the doctor, who could call up the person when he/she is unhealthy (read: several days of being drunk and/or 80 years old and watching tv!).

Corrective actions can then be administered (get sober = remove the particles from the oil system, prevent further excessive abuse = repair possible damaged machinery component) and/or replace the old oil with new, restoring the vitality of a 20-year-old!

Such continuous models, based on sensors measuring particles in the oil and the oil quality, have been shown to work in oil-lubricated machinery on board ships, enabling continuous surveillance of equipment condition.

Nobody/no equipment lives forever, but such continuous monitoring models could prevent too-early death / breakdown of oil systems and machinery equipment by unintended extensive abuse, and prolong the overall lifespan (for machinery and oil – not sure about people!).