Representing contents of analysis for TRIBODIAGNOSIS

Analysis Contents		Measure	Standard	Purpose	Features
Viscosity		mm^2/s	JIS K 2283	① Lubricant degradation ② Presence of mixture ③ Lubricant property	There is correlated between the viscosity changes and the lubrication detegradation. Signs of deterioration can be detected to monitor the rate of change of kinematic viscosity. Also useful to confirm the health condition of lubrication.
Water		ppm	JIS K 2275	Water content	Water content in oil causes a degradation of lubricant or generates the rust in the system, it is causing of abnormal wear of the bearing.
Acid Number		mgKOH/g	JIS K 2501	Acid component	If the lubricant is depleted, an acid component is increasing in the oil and generates the rust. It bring accerelating of wear of the bearing.
Particle Contamination		N/100ml	JIS B 9930 (NAS1638)	Number of particles by size	The causes of increasing number of particles in oil are "dust" mixed from the outside and "wear particles" due to internally wear generation. If Particle Conatmination degree increased, wear progresses and accelerating the deterioration of the equipment.
Contaminations by Gravimetric Method		mg/100ml	JIS B 9931	Mass of insoluble contaminants	The main cause of the increasing of pollution degree of mass is deterioration of lubricant. When it proceeds the insoluble degradation products of oil (sludge) are generated. Because of this products are sticky, it causes malfunction by adhering the gaps of valves, et al.
Optical Micrograph		−	−	Observing of contaminants	Observing directly the filtered components "contaminants in oil" using an optical microscope and estimating its elements.
Infrared absorption spectroscopy (IR)		%T,cm^{-1}	JIS K 0117 (general)	① Identification of organics ② Residual volume of antioxidants ③ Oxidation degradations	Identifying the additive depletion, degradation of oil, contamination, et al. from the spectrum chart. Checking the characteristic peak's expression, decreasing, disappearing, to identify the chemical change by confirming of the qualitative and quantitative of subjects. Preferable to compare with the new oil chart.
Rotary Bomb Oxidation Stability Testing		min	JIS K 2514	Remaining life of oil	Evaluating the remaining life of the actual turbine oil.
Ferrography	Direct Reading	%/ml	−	Severity of wear	Size and amount of wear particles in oil is changed by the lubrication condition. Evaluate the degree of lubrication from the quantitative results of wear particles.
	Analytical	−	−	Causes and points of wear	As the form of wear particles reflects the lubrication condition, it is diagnosed by observing of the particles.
Spectrometric Oil Analysis Program (SOAP-T)		ppm	JIS K 0116 (general)	Detailed analysis of metal elements and its concentration	Analysing the metal consentration in oil by elements, to identify the generation point of wear from the measured elemental compositions and the degree of wear from the measured concentrations.
Scanning Electron Micrograph (SEM)		−	−	Detailed Observation of shape of wear particles and inorganics (mainly metals)	It is possible to do detailed observation of the particles in oil like wear particles as utilising of the better features compared with the optical microscope in "depth of field" and "magnifying power". This is important to reveal the cause of wear particles generation.
X-ray Micro Analysis (XMA)		−	−	Identifying materials of wear particles and inorganics (mainly metals)	A detailed analysis of the element concentration of the particles such as the wear particles observed by SEM. It is possible to identify the point of wear particle generation.

※For Grease's [Ferrography] [SOAP], preprocessing required such as the dilution, et al.

TRIBOTEX