Metavis

FPAS-A

Filter Particulate Analysis System

Microscopic Analysis of Filter Membranes by Measurement of Particulate Contaminants in Hydraulic Fluids.

Introduction

In Hydraulic fluid Power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. The liquid is both a lubricant and power transmitting medium.

The presence of particulate contamination in the liquid interferes with its ability to lubricate and causes wear to the components.

The FPAS series of equipments have been developed to fulfill the requirements of Maintenance workshops in Air force, Army, Navy, Earth Moving Equipments etc.

This, microscopic image analysis based equipment , measures and counts the number of unwanted particles present in the fluid and further classifies them into classes.

The results are reported as per international ISO standard 1S0 4407. The software can also be configured to report as per user defined standards.

The System

The system consist of a high resolution upright microscope.

A high resolution digital camera.

A motorised X-Y-Z stage for sequential movement in X, Y, Z axis.

Special auto focusing arrangement to automatically focus while moving from one field to another. This takes case of any unevenness in the filter paper.

A special filer holder placed on the stage: To hold the filter

Proprietary particulate analysis software.

System Specifications

Particles Size : $\leqslant 2\mu$

Filter Holder : for holding standard Dia 47 filters

Computer : Latest Configuration computer

Software : User friendly software for Particulate Analysis

Reporting : as per 1S0 4407

Methodology

Take a 100 ml sample of Hydraulic Oil.

The Oil sample filtered through a membrane filter using a vacuum flask and vacuum pump. The particles present in the liquid are collected on the filter which is then dried in an oven at a specified temperature and time.

The dried filter is placed on Microscope filter holder where a Series of images are captured sequentially using the Computer controlled x y stage and autofocus System attached to the microscope.

The captured images are analyzed using our Particulate Analysis Software.

Particulate analysis software

The advanced but user friendly software for Particulate Analysis User can get the individual particle details when clicked on the particle on the image, like feret diameter, area.

The particles in the image can be overlayed with different colours as per different user defined or standard classes and the report is generated accordingly.

Software generates an easily reproducible report in just a few minutes.

These accurate measurement results can be used for documentation & presentation purposes.

# Professional reporting, Compliance with international standards
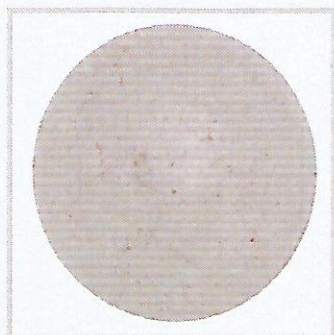
Sample No:	121010	Date:	07.02.15
Rinse Fluid:	Used Lubricant		
Manufacturer:	ABC	Magnification:	5x

| Scanned Area (mm2)	972
Flow through Area (mm2)	960
ISO 4407- 2002 Code	0/73510/19160/9410/830/130

ISO 4407-2002 (Particle Size Classes)

Sl. No.	Feret Max Low (um)	Feret Max High (um)	Class Area (μm^2)	Particle Count High Particles	Normalized Count Particles / 100 ml
1	2	5	557517.91	58462.00	584620.00
2	5	15	3722883.75	110547.00	1105470.00
3	15	25	2447920.37	14220.00	142200.00
4	25	50	3769201.21	6947.00	69470.00
5	50	100	3129449.69	1711.00	17110.00
6	100		1499484.54	238.00	2380.00
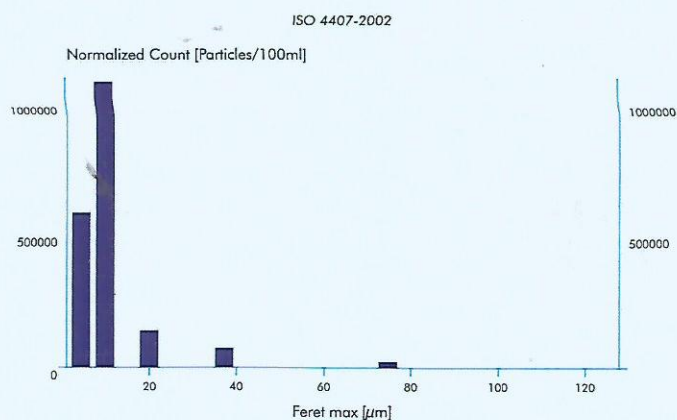
Parameters of the Biggest Particles Results

Sl. No.	Feret Max (μm)	Area (μm^2)	Class Area (μm^2)	Particle Class A-Metalic B-Fiber
1	838.27	53.14	11619.59	A
2	558.08	129.61	18928.14	B
3	283.9	44.54	3019.74	B
4	283.9	172.81	30346.62	A
5	273.89	59.02	8683.47	B
6	273.42	54.76	6952.91	B
7	271.41	168.1	33841.6	A
8	266.65	112.48	21997.62	A
9	224.49	117.62	16836.65	A
10	218.53	115.00	14808.68	A

Biggest Particles
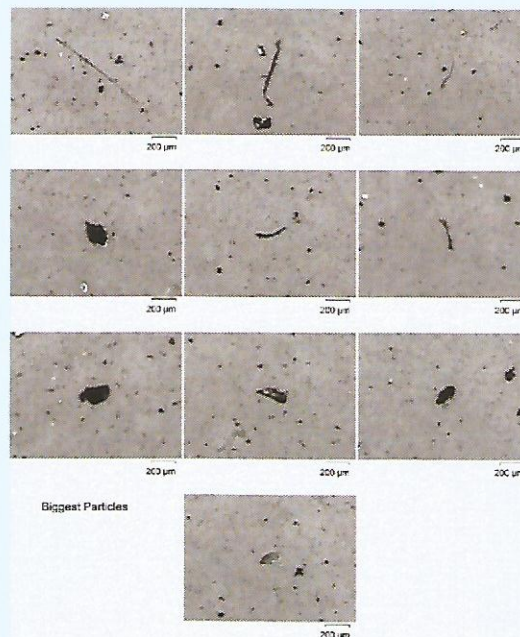
Supply Of Sample Preparation Kit
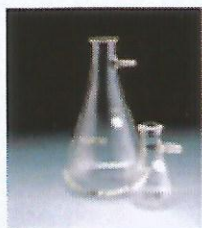## (Millipore Contamination Analysis Kit)

VACUUM / PRESSURE PUMP

This oil free pump is a portable AC powered source of vacuum to 585 mm /23" Hg (at mean sea level) or pressure to 4 bars / 58 psig for filtration of liquids or gases or other continuous or intermittent use with all types of filter holders.

VACUUM FILTERING FLASK, 1L

Used for vacuum filtration with Merck Millipore filter holders. Side arm connects to vacuum source with vacuum hose. Also used as water trap to prevent liquid/mist entering the pump

Hot Air Oven

Hot air oven with PID controller, Temperature range: Ambient + 2C to 200 C, Uniformity achieved by circulating hot air using time controlled continuous rated blower, Inside stainless chamber with perforated trays- 2 nos, I.d: 175 X 175 X 175mm, Outside body powder coated M.S, Temp. Accuracy +/- 1 C and user manual
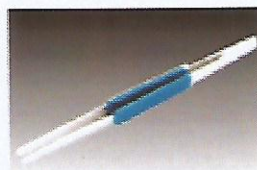
HYDROSOL SST FILTER HOLDER, 47MM

Vacuum filtering liquids for analysis of particulate or biological contamination analysis via vacuum filtration. Funnel, base and support screen are made of SS, anodized locking ring, Teflon gaskets, grounding set and silicon stopper

FILTER FORCEPS SS

Used to handle Merck Millipore Membrane filters without damage using highly polished SS forceps blades with beveled, unserrated tips

Petri slides for contamination Analysis(100/pk)

Holds filter securely in place. Transparent cover allows microscopic examination without removal. Rectangular base has rounded corners for mounting on microscope stage. Recommended for storage

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