

Hymat Services

**AUTHORISED DISTRIBUTOR OF BHARAT PETROLEUM CORPN. LTD. (BPCL)
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HYDRAULIC OIL FILTRATION PROCESS AND PROCEDURE

OIL FILTRATION TROLLEY WITH LASER PARTICLE COUNTER – PODS (Portable Oil Diagnostic System)



RESULTS OF OIL FILTRATION – ACTUAL PHOTO OF BEFORE AND AFTER FILTRATION



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LASER PARTICLE COUNTER – PODS (PORTABLE OIL DIAGNOSTIC SYSTEM)



ACTUAL FILTRATION REPORT INDICATING CLEANLINESS LEVEL BEFORE AND AFTER FILTRATION

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PODS by ART Instruments, Inc.
OIL FILTER REPORT

Sample: BOND10L110.1.10
AUGUST 11, 2015 Unit ID: 1
Start Time: 11:26:17 Duration: 00:53:10
Stop Time: 12:19:27
Volume: 10 mL/RUN Flowrate: 50 mL/min
Viscosity: 30 cSt Fluid Temp: 29.5 C
Reported Concentration: Parts/100 mL
Set NAS Class: 08
Start NAS Class: 12
Stop NAS Class: 08

---Starting Concentration---

SIZES	RUN1	RUN2	RUN3	AVG
5-15u	2147080	2949610	3461780	2852823.3
15-25u	37390	42820	42370	40860.0
25-50u	8300	6380	6860	7180.0
50-100u	1770	1020	970	1253.3
>100u	780	510	320	536.7

---Stopping Concentration---

SIZES	RUN1	RUN2	RUN3	AVG
5-15u	68320	62070	57110	62500.0
15-25u	930	480	990	800.0
25-50u	330	240	190	253.3
50-100u	20	0	80	33.3
>100u	30	30	0	20.0

Oil Filtration of Baxbali
Qty: 258 Ltrs.

For HYMAT SERVICES
V.S. Dave
Mr V. S. DAVE
(Proprietor)

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Special Water Removal Trolley and & Results.

Filtration Process : Oil Filtration is nothing but dialyses of Oil. Unless it is carried out professionally with proper instruments and is tested as per International standards the filtration will not be real filtration. The most damaging Micron Size contamination which cannot be seen by necked Eyes, WILL continue to circulate in the system damaging the Expansive components as well as Oil itself. Though Up Front cost of Filtration seems to be high, real cost of Filtration is a fraction of the cost of all the damages and hidden cost of loss of Production and Productivity of Machine as well as Manpower. We have established following set of Procedure for real Filtration of Oil after filtering almost 1.8 Million Liters of Oil of 300 satisfied Indian as well as Foreign customers across India.

1. **First Stage Filtration for water removal (In case if water is mixed with Oil)** – By a special Filtration unit to remove free & emulsified water, bigger solid particles, sludge and silts by Special CJC – Denmak make imported Filtration Unit fitted with 3 Micron cellulose based Filter Element.
2. **Second State Super fine Oil Filtration by Special Off Line Filtration System Fitted with Laser Particle Counter.** - Our ARGO GERMANY MAKE Imported Filtration trolley is fitted with very high capacity Pump and its pumping capacity is **3000 Ltrs. / hour** approx. Filter will be of 3 Micron absolutely rated with BETA ratio of 200+ and is IMPORTED FROM ARGO GERMANY. The trolley is inter-phased with **Laser Particle Counter to measure the oil Cleanliness Level ON - LINE.** When this Combined unit is programmed to clean the oil at a particular level (Say - NAS – 08 Level), and switched on, The Laser Particle Counter will automatically draw the First Sample of the oil and will test its Cleanliness Level. Trolley will go on filtering the oil and at fixed intervals Laser Particle Counter will go on drawing the oil sample automatically and will measure the oil cleanliness Level. This process will continue till it reaches to the programmed Oil Cleanliness Level. No sooner it reaches to this set level, the entire system will be switched off automatically and Laser Particle Counter will print out the report indicating the oil cleanliness level before and after filtration. Since this entire process is completely automatic and is very much fast and accurate, chances of any human error are eliminated. A copy of such filtration report is already sent to you.

It is to be noted that Laser Particle Counter measure concentration level of solid particles only and will not be able to measure the Gaseous Contamination (Mainly dissolved gas, air or water vapour). When air bubbles are present excessively it will either switch off the system or will go on measuring the contamination level as it will count air bubbles as solid particles. In such situation, if on line testing is not feasible, oil will be circulated minimum 7 times through our filter as per international practice and Oil will be tested separately by Oil sample Method after reasonable time as Oil Samples will need to

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allow air bubbles to get released and will required to be cooled down. If possible Oil samples will be tested at site itself with the same Particle Counter or at our place if not possible at site. We also may get the oil sample tested for NAS level along with water content from NABL approved Lab in Bombay. In such situation a separate Test report will be submitted in place of On Line Test report. Similarly Laser Particle Counter checks the oil viscosity based on some functional parameters just to give the indication of Oil Viscosity but it cannot be 100 % accurate as it is a derived value.

Filtration Procedure : Oil will be removed from the reservoirs in barrels & oil tank will be cleaned thoroughly from inside, Oil will be Transferred back to the Oil tank and actual filtration will be carried out inside the oil tank only. This is subject to oil tank design and provisions available for inserting oil suction and discharge lines in the oil tank. This method ensures that the residual sludge and silt along with other heavy particles are also removed from the tank. In case if Suction and discharge lines of Filtration unit is not possible to get inserted in to oil tank, oil will be filtered in Barrels and after achieving the results, will be transferred back to Oil tanks. Filtering the Oil without getting the oil tank cleaned is not advisable but it depends upon the working condition requirement.

Also please note that after Oil Filtration is completed, no hydraulic maintenance / fitting work should be undertaken which exposes any wet part to the environment. Oil Filtration must be the last exercise. Needless to mention that NAS – 8 level is clean oil and sustaining and maintaining that level needs extra care in managing the oil. **Our responsibility ceases after submission of the report.**

NOTE –

1. Oil Filtration Exercise must be carried out in properly ventilated and closed premises and not in Open area. All equipments must not be exposed to rain, wind, dust or direct Sun Light since they have sensitive Electronic Instruments Like Laser Particle Counter is being used. Since if it may not be possible at site, you will provide free of cost suitable Tent / Container preferably having Air Conditioner as during Oil Filtration there will be high temperature rise during continuous running which may affect the electric Motor and Particle Counter.
2. Our Particle Counter Calibration has expired and we did not get it recalibrated due to high cost. It is also not possible to get it calibrated in India and we have to send it to OE in USA which will take lot of time and will have very high cost. Therefore as per international practice periodically we get the results validated by getting the Oil sample tested by NABL approved Lab. If you insist, we can get the particle counter calibrated but it will have extra charges and Time of almost 10 to 12 weeks before we undertake the job.

OIL TESTING PROCEDURE

1. For Oil Filtration - Oil Testing is carried out Automatically ON LINE.
2. Oil Sample Testing - We also can Test the Oil Sample Separately for oil Cleanliness Level as per NAS / ISO standards with Laser Particle Counter.
3. For other properties of Oil like viscosity, Acidity and Water Content etc - we have a tie up with Intertek Laboratory – Mumbai. Till we have our own Testing Lab. we will get the oil sample Tested by Intertek.

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V.S.Dave
(Proprietor)

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