FINNING
POWER ADVISOR

Sound Operation & Maintenance Advice For Your CAT® ENGINE From Finning Power Systems

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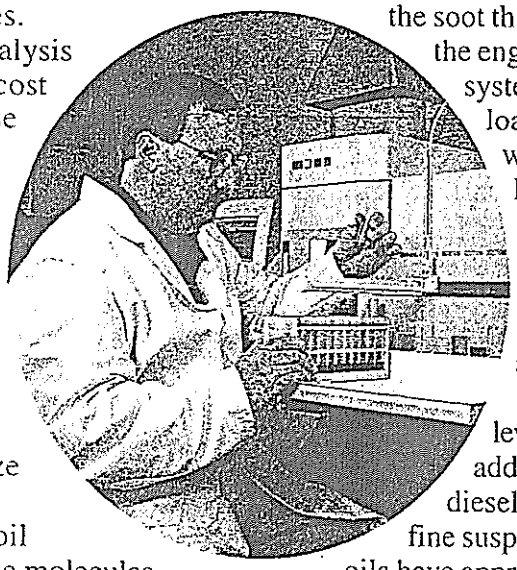
Benefits Minimal to Cost for Oil By-pass, Centrifugal Filtration

Over the past 10 years Caterpillar has tested oil by-pass and centrifugal filters on its engines to determine the true value of these oil efficiency devices. To date, Cat analysis has not shown a cost benefit from these devices nor has it seen a measurable improvement in oil cleanliness.



Additives not removed

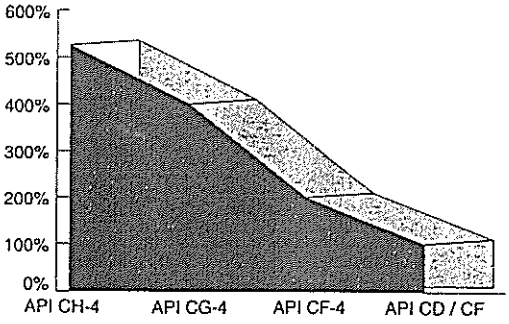
Additives are sub-micron in size (approximately the same size as oil molecules). These molecules are so much smaller than the passages through the filter that it would be incorrect to think that they would be "captured." Any filter capturing this minute a particle would clog. Therefore, neither by-pass nor centrifugal systems remove additives.

Soot marginally removed by centrifugal systems

Soot particles are also sub-micron sized and can pass through the passages in filter media. Centrifuges concentrate the soot particles by retaining them on the walls of the centrifuge. The effectiveness in doing so is related to rotational speed. Centrifuges powered by the oil remove no more than 30% of the soot that is generated in the engine. Note, these systems are a parasitic load on horsepower, which results in lower overall fuel efficiency.

Dispersion: a remedy to soot accumulation

Due to increasing levels of dispersant additives, modern diesel oils hold soot in fine suspension. API CH-4 oils have approximately 125% more dispersant than API CG-4 oils which have 200% more than API CF-4 which, likewise, have 200% more dispersants than API CD and CF oils.



continued on page 3

Ron Doll
Product Support Sales Rep.

Today's engine customers demand higher levels of service and support. As a member of the Cat Team, we provide Total Power Solutions for any application. This is more than product sales. It includes engineering support, project management assistance and operating and maintenance activities.

In this issue I've included an article that highlights key Cat information resources. As for Cat news, there's an article on the 3000 Series engines and also the Cat Marine Engine Hotline. And if you're one of the many who are seeking facts on by-pass/centrifugal filters, make sure you read the cover article. This article targets the truth behind these products and their value in total engine efficiency.

Remember—we are **OPEN FOR BUSINESS** and looking forward to working with you in 2000 for **all your power solution** needs. Give me a call.

Just pick up the phone from wherever you are and dial 1-877-CAT-9900.

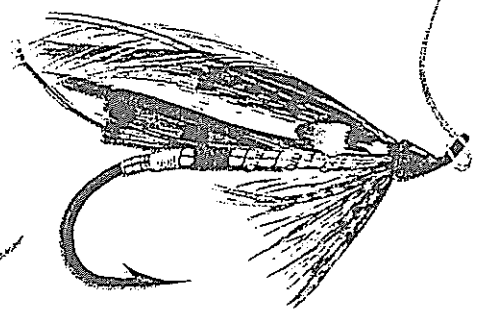
Caterpillar Engines Product Division has established a new toll-free Pleasure Craft Assistance hotline available 24 hours a day, 365 days a year.

The service provides all owners of Cat engine-powered boats with quick, convenient access to expert engine-related information. A trained service representative will answer customers' calls and guide them through inspection and maintenance procedures to help diagnose and resolve on the spot problems.

When an answer is not immediately available, the telephone service representative will relay the inquiry to appropriate Cat personnel, obtain the requested information and return the customer's call within an appropriate period of time.

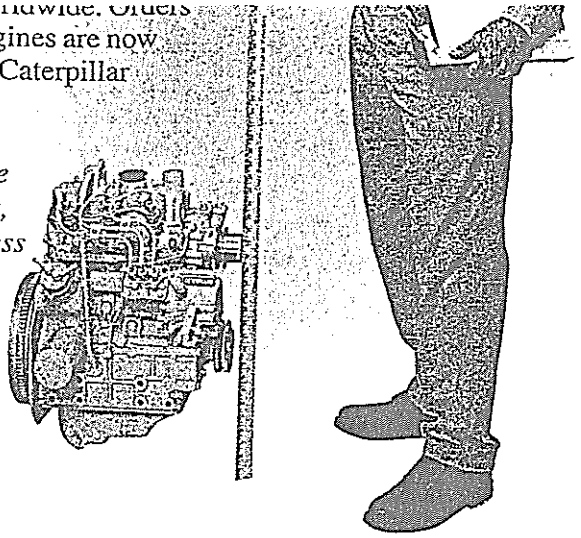
Remember 1-877-CAT-9900 and/or record it somewhere on your Cat engine-powered boat.

This is one number you won't want to leave home without.



emissions standards worldwide. Orders for the 3000 Family engines are now being taken though the Caterpillar dealer network.

For more detail on the Cat 3000 Engine Series, check the Diesel Progress reprint Cat Launches Perkins-built 3000 Series *(LEPH94520), on the information request card.*



continued from page 1

Because of this, the amount of soot removed via by-pass filtration may be insignificant to the total soot in the crankcase. Any filter removing this finely dispersed soot will clog almost immediately as filtration to less than one-third micron is necessary to remove soot or additives. Also, by-pass and centrifugal filtration may mask abnormal engine wear situations by pulling worn metals from the oil additives themselves out of suspension before oil analysis can detect increased wear from engine components.

Extending oil drain intervals

The real issue is cost effectiveness. If oil is being changed because soot is causing oil viscosity to increase, a centrifuge might extend the oil drain interval. However, oil is rarely changed due to soot content as the primary limiting factor.

Oil is normally changed for other reasons—the main reason being additive depletion (especially anti-oxidants). Therefore, there is rarely an economic justification for use of a centrifuge.

Some suppliers promote the concept that oil drain intervals are extended because the contaminants captured by their devices are removed so that they no longer contribute to additive depletion. In reality, captured particles are still exposed to the oil as it circulates through the lubrication system.

To date, there is no substitute for oil analysis such as Cat S•O•S to monitor oil constituents, and, if applicable, extend oil change intervals to reduce costs.

For more detail on proper oil change procedures, oil classification and filters check Optimized Oil Change Intervals *(PEDP 7035) on the information request card.*