



APRIL 2007





APRIL 2007

- How OILKLEEN and _____ will work together
- Training
- Start-up of program
- Equipment needed
- Long term Business relationship

Oil and Oxidation

- Base oils contain additives (Soluble)
- Insoluble's represent all contamination including both the traditionally measured solid & hard contaminants along with sub-micron soft contaminants composing of decomposed oil additives and oxidation by-products
- Oil additives naturally decompose and breakdown through normal use over the life of the oil
- All chemicals break down through a process called oxidation

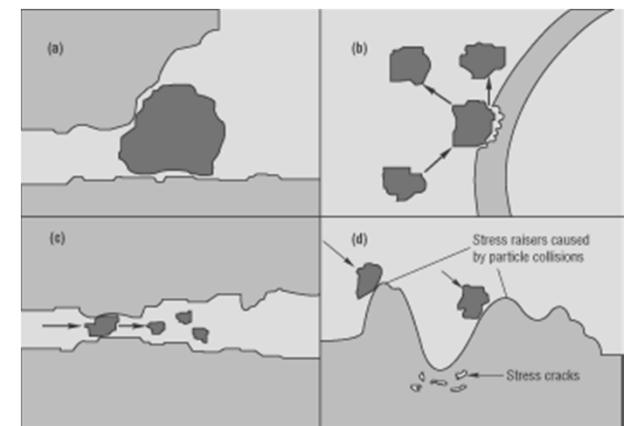


IGV Servo Pencil filter before OILKLEEN

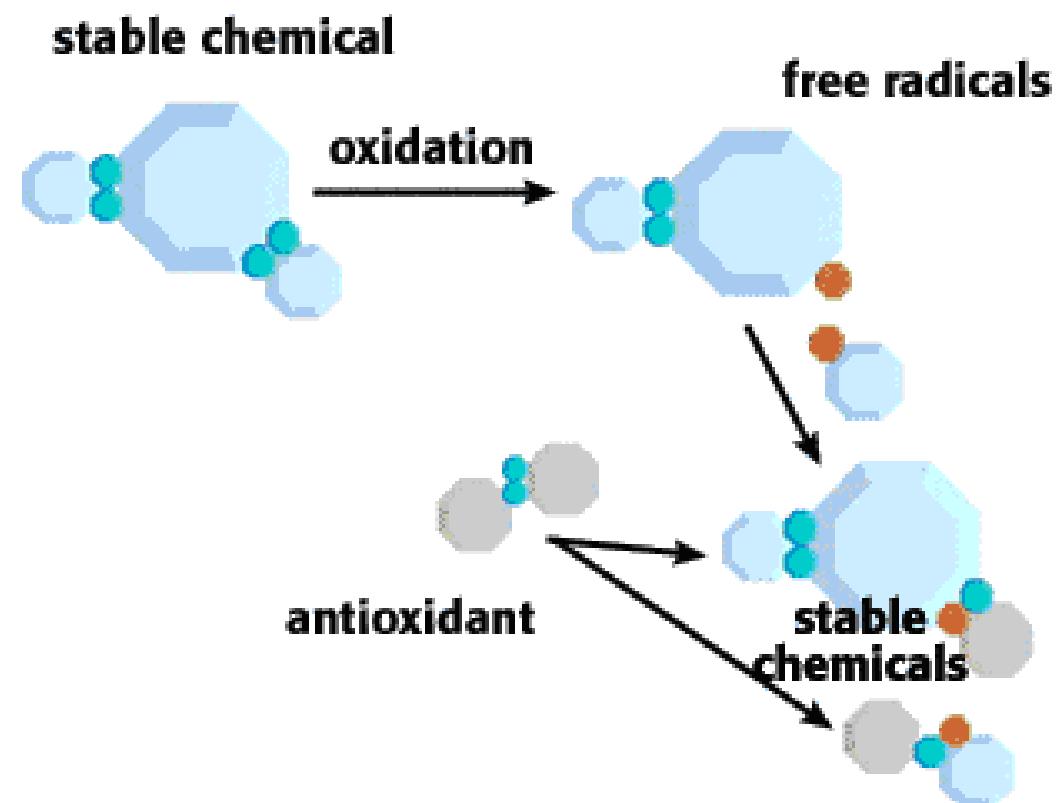


Oil Contamination

- Research indicates that oil contamination problems are mostly products of oil oxidation
- The contaminants which cause the majority of lubrication problems are not limited to micron size
 - 40 micron is smallest size you can physically see with your eye
 - Servo Valve clearances are less than 1 micron in size.

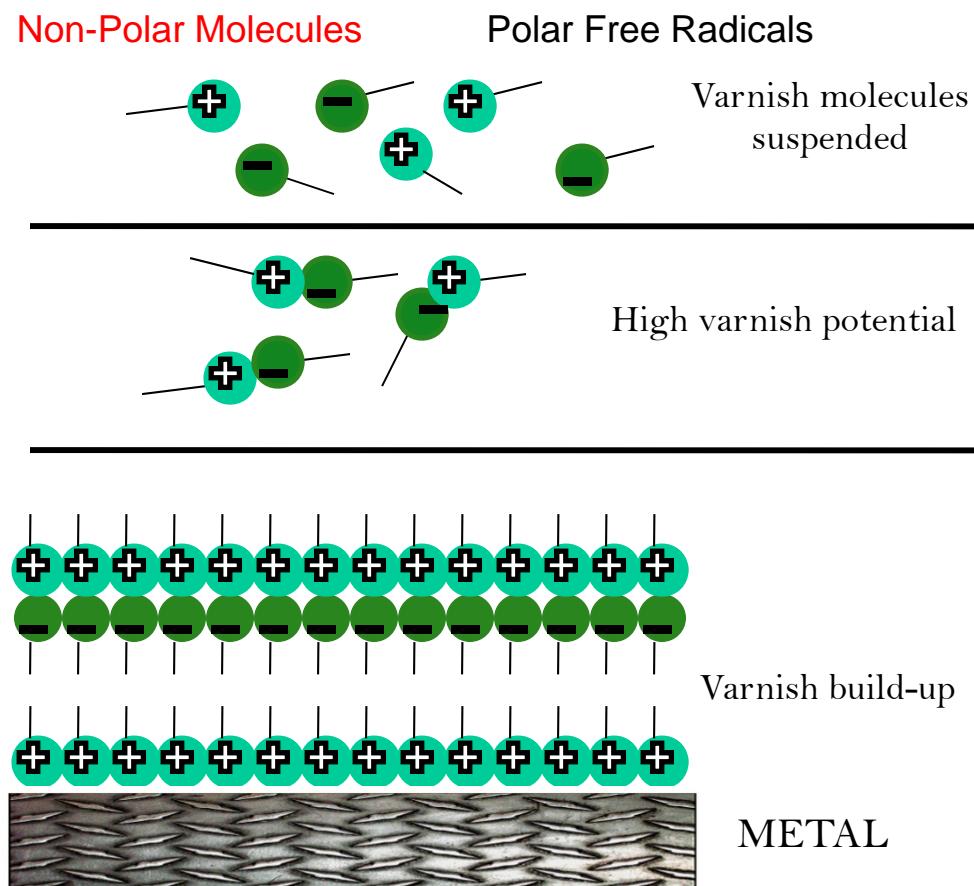


Antioxidant additives will deplete over time



How is Varnish Formed?

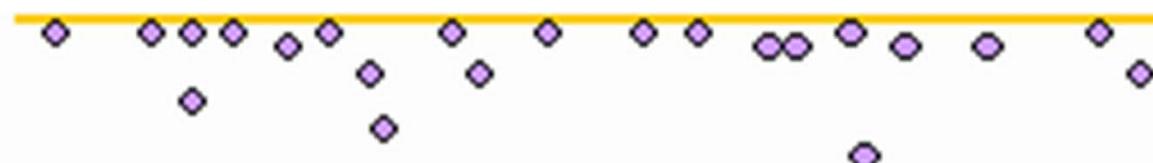
- Oil is non-polar
- Non-polar molecules bond with polar free radical molecules.
- This process keep happening until the Oil reaches its ability to hold the varnish in suspension.
- Colorimetric patch testing measures the amount of varnish in suspension.



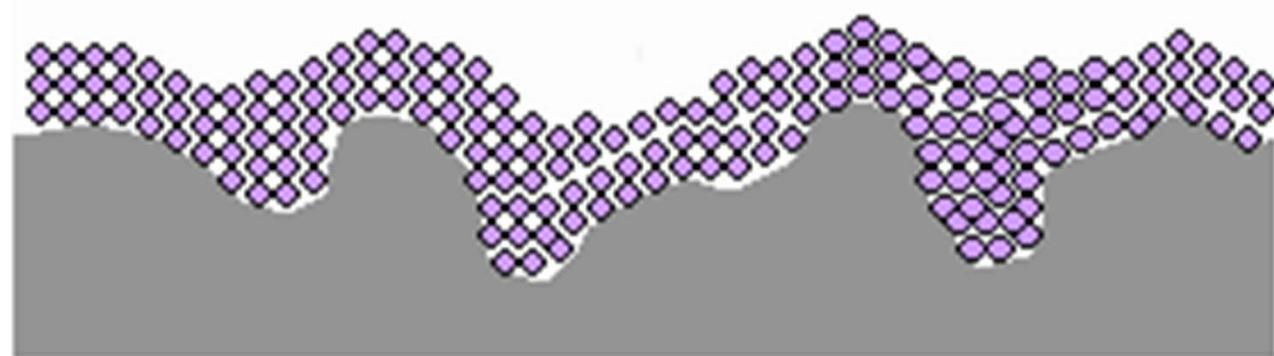
How is Varnish Formed?

Polar oxidation molecules bond to Metal surfaces.

Varnish in the oil
(VPR)

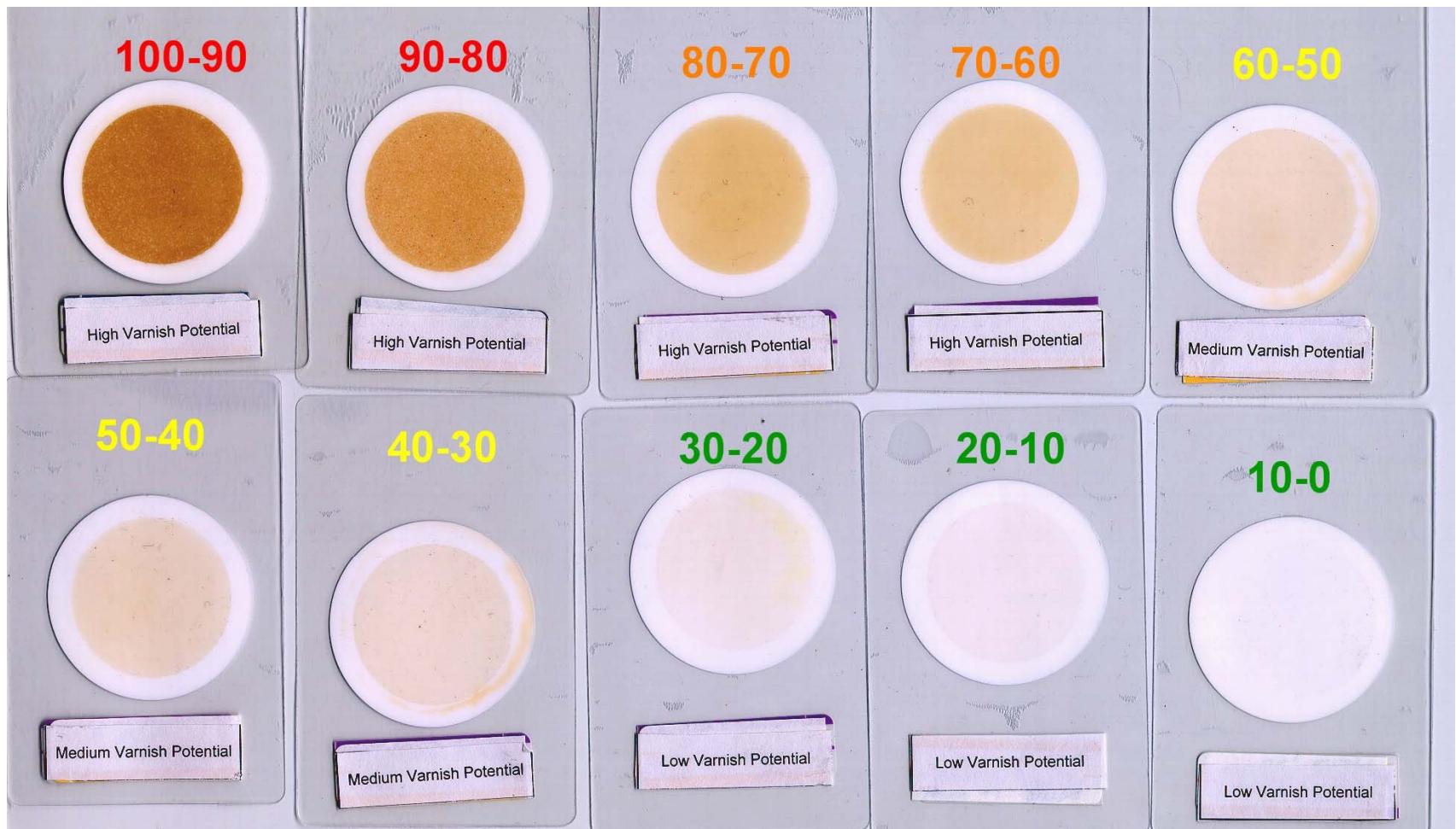


Varnish Build up



Metal Surface inside system

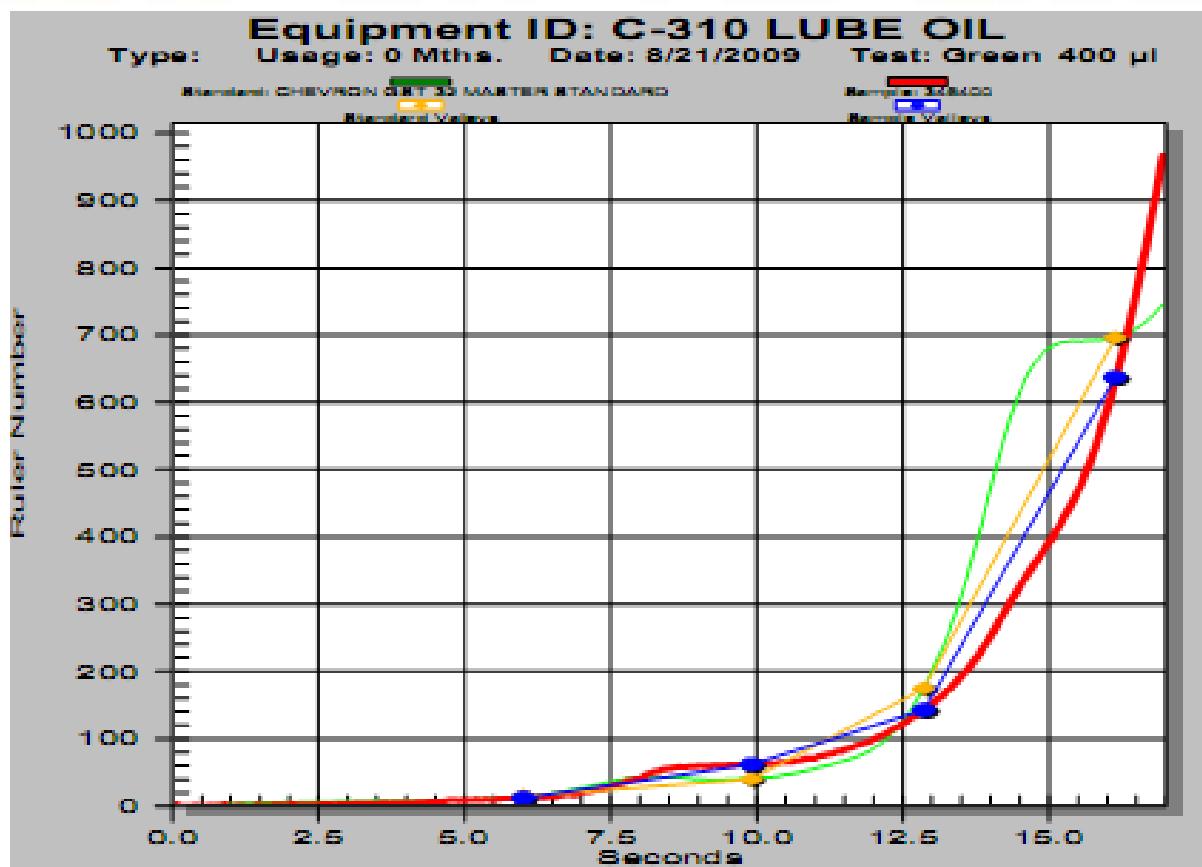
How do to Identify Varnish?





APRIL 2007

OILKLEEN varnish prevention analysis



Test Information

Solvent Type: Green
Sample Amount: 400
Ruler Serial Number: FW04233
Test Date: 8/8/2009 10:16:54 AM

Ruler Areas

Standard: 5538
Sample: 4507
RUL%: 81.3

Additive RUL%

#1: 58.1
#2: 0
#3: 0

Varnish in your System



wear





OILKLEEN

APRIL 2007





APRIL 2007

Varnish in your System





APRIL 2007

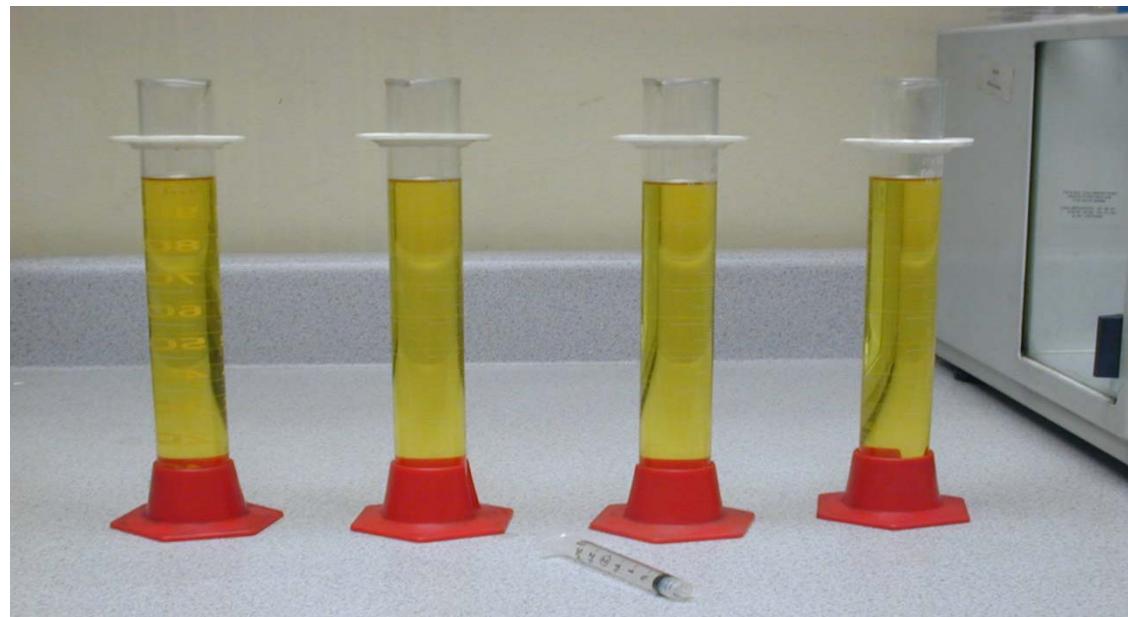
Varnish in your System





APRIL 2007

Color doesn't matter with Varnish!



Varnish in New Oil?

- Notice how the varnish is reabsorbed back into the new oil and thus contaminating the new oil
- The Oil will absorb the varnish much like a cloud does moisture.
- Just changing the oil will not fix a varnish problem.





APRIL 2007

How do we strip Varnish?





APRIL 2007

OILKLEEN has the solution

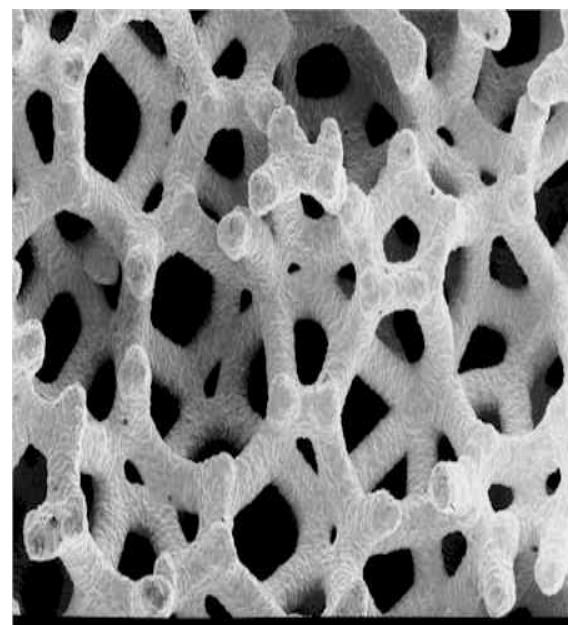
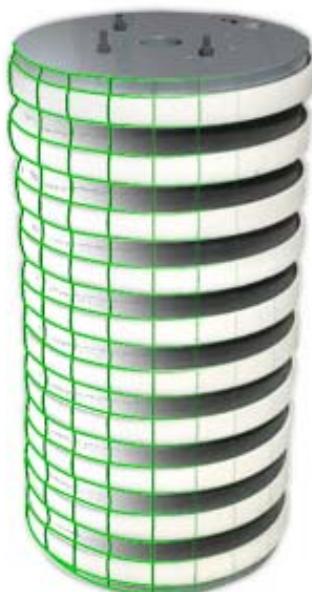


OILKLEEN electrostatic oil cleaner technology



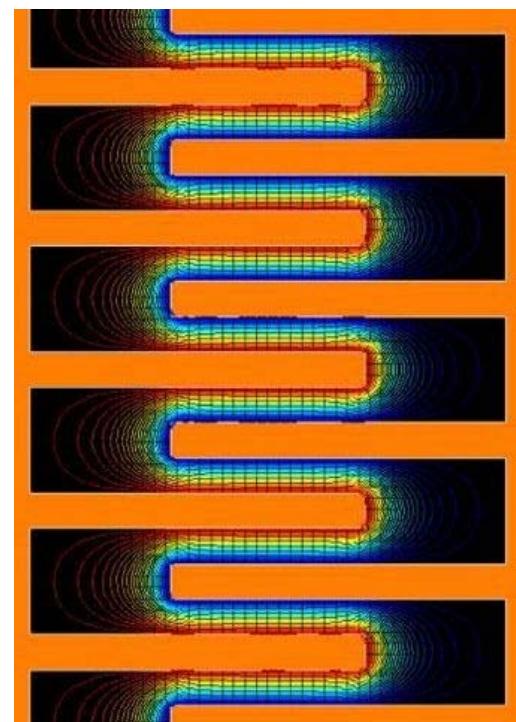
APRIL 2007

OILKLEEN has the solution



0008 15KV

100µm WD53



OILKLEEN electrostatic oil cleaner technology



APRIL 2007

Before and After OILKLEEN!





APRIL 2007

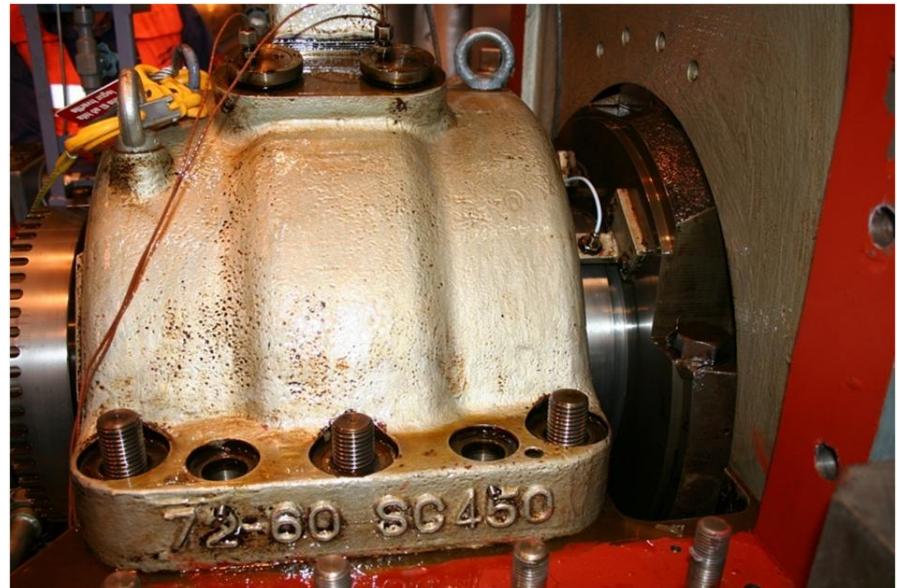
Before and After OILKLEEN!





APRIL 2007

Before and After OILKLEEN!

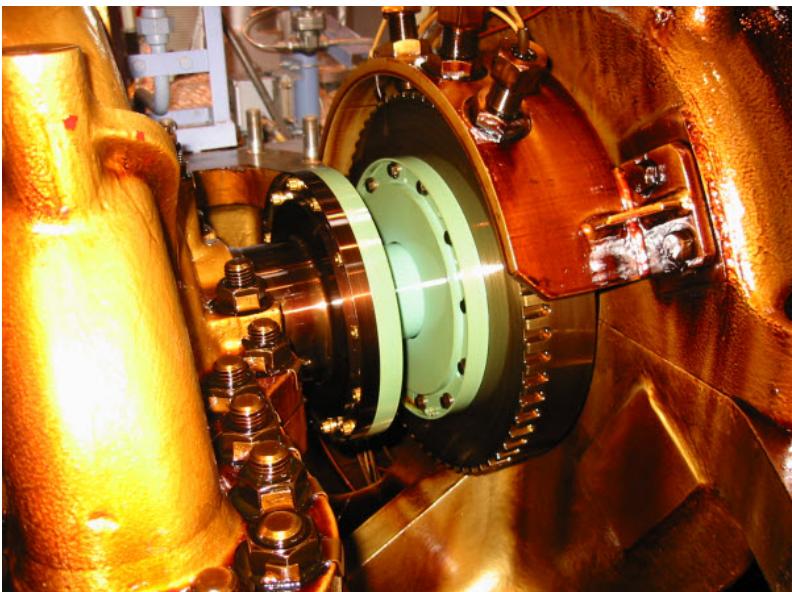


After only 1 month of using the OILKLEEN System



APRIL 2007

Before and After OILKLEEN!



After only 1 month of using the OILKLEEN System



APRIL 2007

Traditional filtration isn't enough!

STRAINER (100 microns)

CENTRIFUGE (10 microns)

MECHANICAL (3 microns)

MAGNETIC (1 micron)





OILKLEEN

APRIL 2007

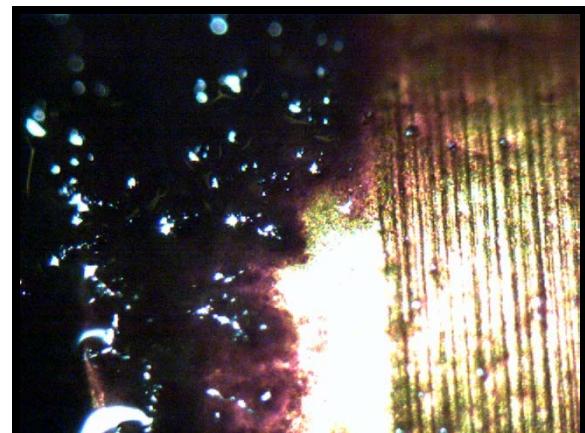
OILKLEEN Results

IGV pencil filter before and after OILKLEEN

IGV Servo Pencil filter before OILKLEEN



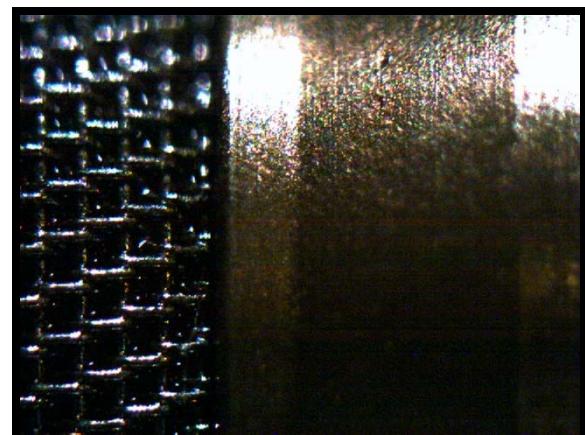
Before



IGV Servo Pencil filter - After OILKLEEN



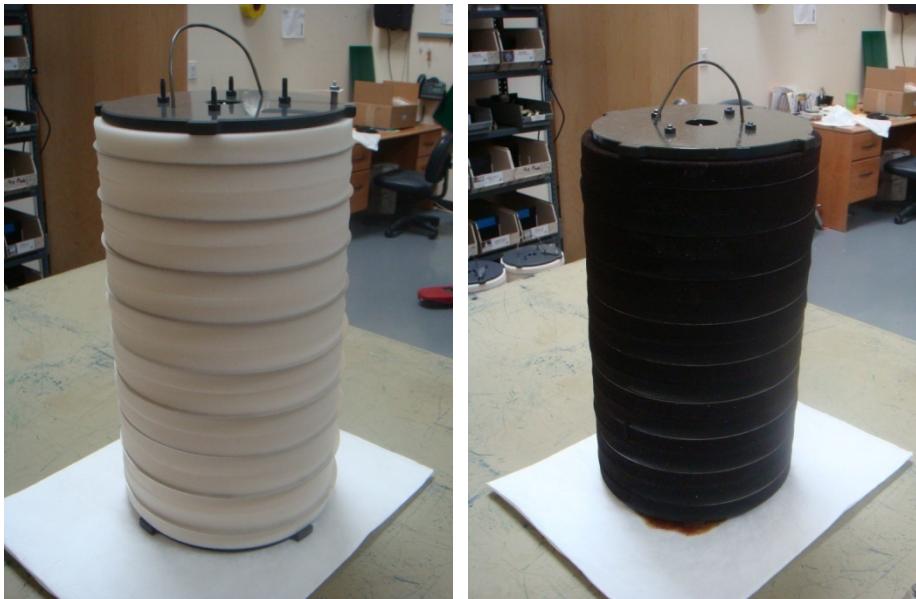
After





APRIL 2007

OILKLEEN Results



BEFORE

AFTER



10,000 Gallon Steam Turbine
after 2 months



APRIL 2007

OILKLEEN Results

10,000 Gallon Steam Turbine after 2 months

Particle Count	START	AFTER
>4 micron	116,613	89
>6 micron	72,130	20
>14 micron	3,879	1
>21 micron	192	1
>38 micron	1	0
>70 micron	0	0
ISO Cleanliness Code	24/23/19	14/11/7



APRIL 2007

OILKLEEN Results

Microscopic Photo Analysis



Before OILKLEEN



After OILKLEEN



GREEN MACHEEN 300

- Fast and Efficient
 - Single filter element
 - Can handle up to 7500 gallons
- Small and self contained
- 9 built in safety features





APRIL 2007

GREEN MACHEEN 300

- Computer controlled
- Pressure and Vacuum
- Stainless steel tank
- Single phase inputs
 - Universal 50/60hz
- Easy to change filter
 - Computer instructed



GREEN MACHEEN 300 EXP

- Explosion Proof
 - Class I Division II certified
 - Can be operated in Hazardous areas
- Small and self contained
- 9 built in safety features
- Easy to operate





APRIL 2007

GREEN MACHEEN 300 EXP





APRIL 2007

