

Case Study: Subsea Hydraulics October 2014-February 2015

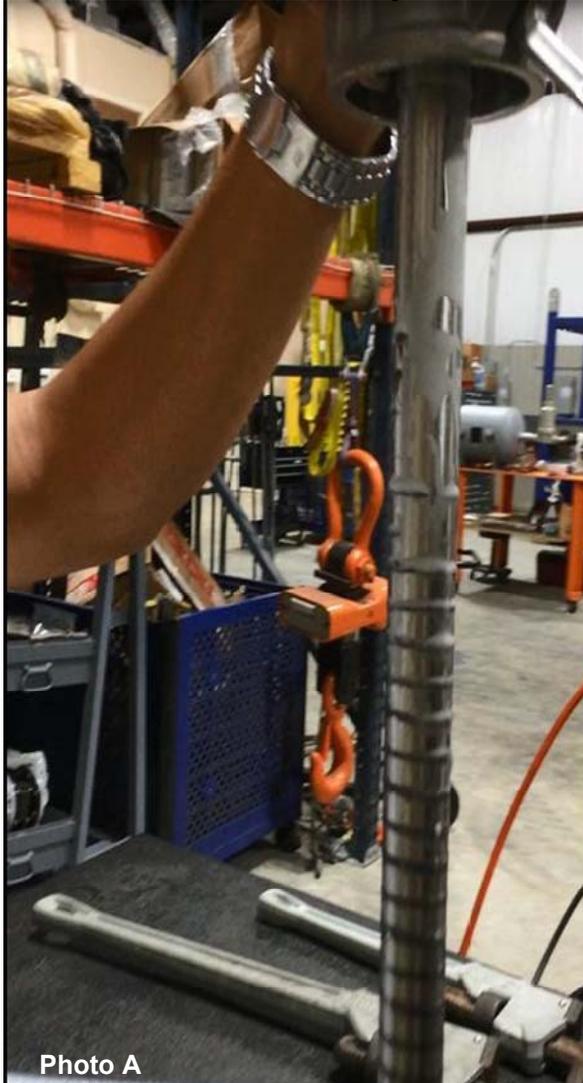


Photo A

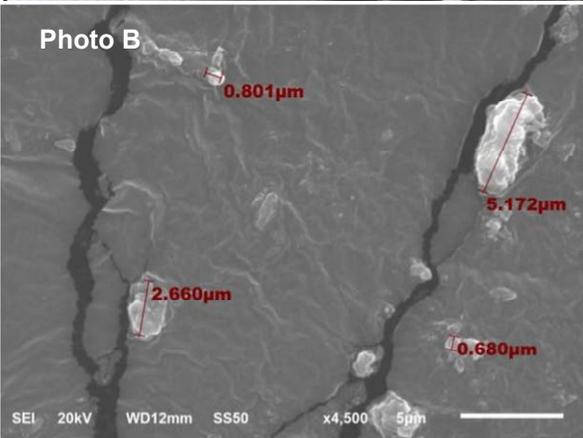


Photo B

Ocean Edge Services Houston, TX, USA

APPLICATION: Hydraulic Power Unit (HPU) on Subsea Well Pod.

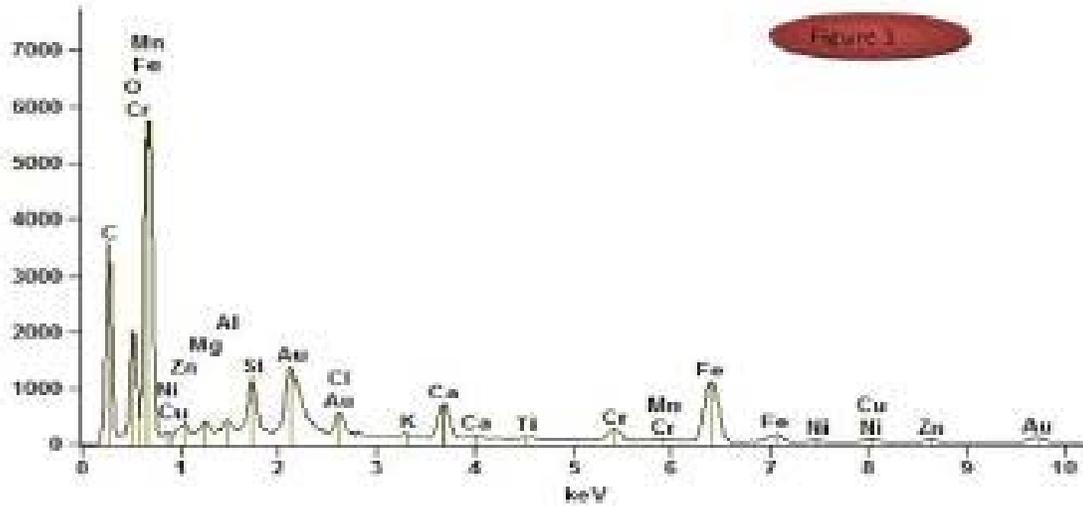
PROBLEM: Inadequate filtration allowing ferrous and non-ferrous contamination 5 microns to under 1 micron in size in the water based glycol hydraulic fluid used to operate the sub-sea HPU. The contamination is causing damage to the DC valves which have tolerances below 1 micron and if any contamination is present the effects can cost millions of dollars to resurface the HPU for repairs. A cleanliness level of 6

NAS is the standard for subsea control systems. When conducting fluid treatment traditional filtration takes 10 to 12 hours to achieve a NAS 6 and still leaves the system vulnerable to valve failure.

SOLUTION: Frank Hemmen, Oil and Gas Specialist for AIT in Houston recommended employing OEI magnetic filtration on the flush units to remove the ferrous and non-ferrous contamination under 5 microns in size.

RESULTS: After a 4 hour cleaning cycle the glycol was at a NAS 3 for contamination 5 microns and higher. Analysis of the contamination trapped on the magnetic filters identified ferrous and non-ferrous contamination down to and below 1 micron was removed from the glycol fluid, leaving it cleaner than ever recorded prior (Photos A & B). This will result in a higher level of reliability during operation of the equipment. Another value realized was reducing the cycle time for cleaning the fluid by 2/3. Chili Santiago Gomez, President of Ocean's Edge Services stated that "this is probably one of the best filtration technologies I've ever seen. The fact that I don't have to buy any more traditional filters is going to greatly improve my profit margins". During this test the particles removed from the magnetic filters consisted of 79.4% non-ferrous and 20.6% ferrous contamination to sub-micron levels. If left in the stream it may have cost up to \$3.4 million to repair the pair of PODS.

RECOMMENDATION: Employ OEI magnetic filtration on all rotating equipment applications and increase reliability and profitability. For more information, contact our office at 403-242-4221 or visit our website at www.oneeyeindustries.com



Quantitative Results for: V10004(1)

Element Line	Net Counts	Weight %	Atom %
C K	25402	42.89	69.17
O K	15583	8.37	10.15
Mg K	880	0.24	0.19
Al K	521	0.37	0.27
Si K	7567	5.58	3.85
Cl K	5067	3.80	2.08
K K	857	0.52	0.35
Ca K	7070	5.66	2.74
Ti K	485	0.45	0.38
Cr K	2712	3.04	1.11
Au K	183	0.23	0.08
Fe K	17851	23.67	8.22
Ni K	524	0.34	0.28
Cu K	1101	2.07	0.63
Zn K	1073	2.28	0.68
Total		100.00	100.00