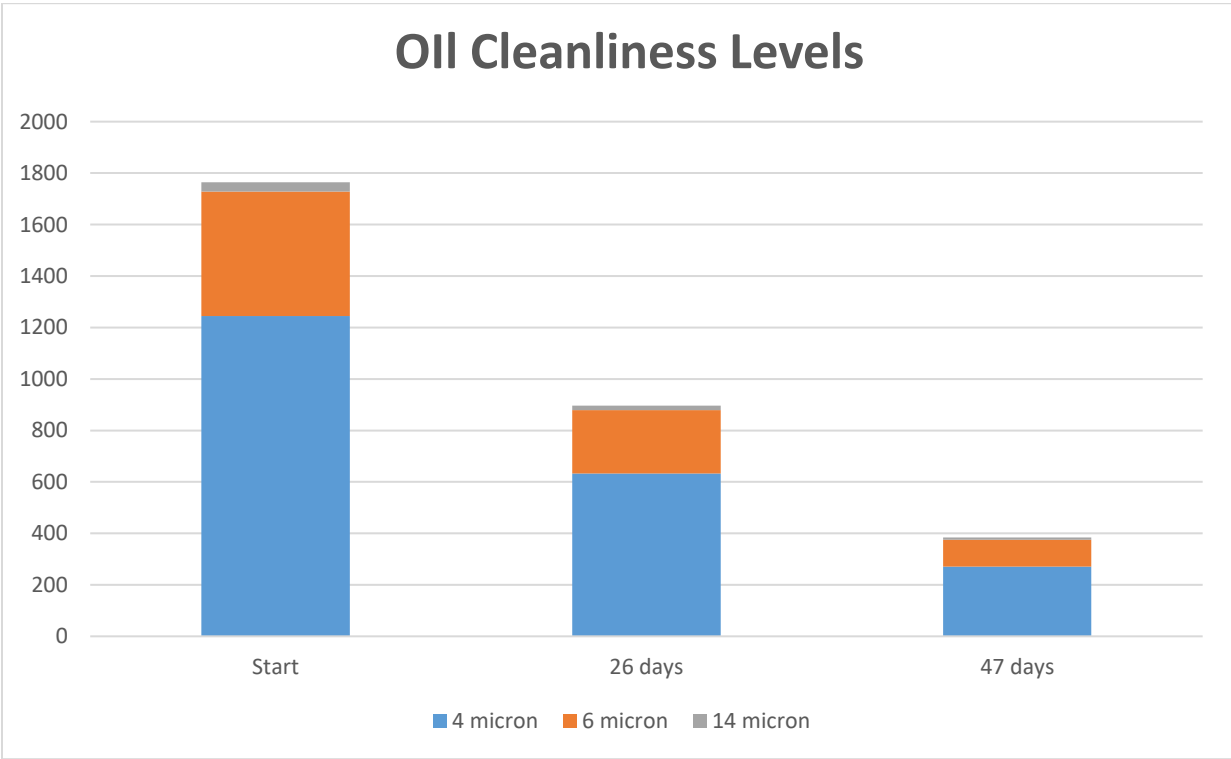


A Midwestern engine manufacture was experiencing high contamination levels in the hydraulic oil of a high precision machine, a hydraulic grinder. There are many servo valves, so cleanliness levels are critical to accurate machining. This company prides itself on making high quality products, so when the hydraulic system started to need filter changes of the high pressure filters (\$420.00 ea.) every 7-10 days and the ISO codes were continually higher than recommended, action was required. Changing the oil only provided temporary relief of the contamination levels. So further research indicated that improved filtration was needed to keep the oil contamination levels in the oil down below the ISO of 17/15/12 levels.

The company decided to try one Harvard tee frame system for an evaluation. As the chart shows the oil was cleaned to a level that is “servo clean”. This did not require any down time to production, and all the oil was cleaned without needing to change the Harvard filters. Since the oil stayed in service the hydraulic system was cleaned of contamination including the valves, cylinders, motors, and hoses. An added result was that the expensive high pressure filters did not need to be changed during this time, reducing the operating cost of the machine, and the resulting down time for these filter changes. The reduction of 78% in the 4 micron size material, the small silting contamination that is the principle cause of servo valve failure. With the dirt holding capacity of the Harvard filters, they not only extended the life of the high pressure low micron filters, but all of the filters used on this hydraulic system. The ISO code of 15/14/10 showed the customer the cost effect of the Harvard system in keeping the oil clean and the economic return on investment of less than 6 months



Since this test demonstrated the excellent performance of the Harvard system the other companion machines have been outfitted with the same systems. An additional benefit has been that the Harvard filters can be changed without stopping production.



Picture of Harvard system

Oil contamination control with a kidney loop system has saved this company in the following ways

1. Reduced cost of high pressure filters (6-10+ times longer life) all filters (\$1000 per set)
2. Reduced cost of unscheduled operational down time
3. Increased up time production
4. Increased oil service life, reduced cost of oil changes.
5. Lower labor cost of maintenance.
6. ROI of less than 6 months.