



Allied Concrete Nelson

HWR Richardson Group

A bypass filtration case study



ASTREA SYSTEMS INSTALLED

Mack metro concrete truck – Unit 660 on 20.11.2013

Systems installed:

- Hydraulics (hours = 17701)
- Crank case oil (hours = 17701)
- Fuel

The Astrea filtration system is a bypass oil filtration system that passes only a small portion of the total oil flow through a very dense filter cartridge at a rate of 1.9 to 2.8 litres per minute. At this speed it is possible to remove particles as small as 1 micron (2 absolute) and remove 99.95% of all water. While designed specifically for engine and hydraulic oil filtration, it can also be used as an excellent diesel fuel filtration system.

Cleaner oil = longer component life.

Engine oil results

An oil sample was taken from the engine and tested prior to installation. The oil quality was tested at ISO 20/19/17.

The oil was sampled at every 250 hour service interval after Astrea was installed. The Astrea cartridge filter was changed every 500 hours.

Oil quality increased to ISO 14/13/11.

Particles >4 micron have been reduced by 99.98%, from 7577 per 15ml to 141 per 15ml.

Particles >6 micron have been reduced by 99.98%, from 4127 per 15ml to 76 per 15ml.

Particles >14 micron have been reduced by 99.98%, from 703 per 15ml to 13 per 15ml.

Oil life was extended to 1500 hour oil drain intervals.

Wear rates reduced by 53% compared to before Astrea was installed.

Hydraulics results

An oil sample was taken from the engine and tested prior to installation. The oil quality was tested at ISO 20/19/16.

Oil quality increased to ISO 17/14/10.

Particles >4 micron have been reduced by 87.62%, from 5372 per 15ml to 665 per 15ml.

Particles >6 micron have been reduced by 96.65%, from 2926 per 15ml to 98 per 15ml.

Particles >14 micron have been reduced by 83% from 498 per 15ml to 84 per 15ml.

The hydraulic oil continues to maintain its cleanliness levels and additive package.

Wear rates reduced by 51% compared to before Astrea was installed.

Cost benefit analysis of installing Astrea filtration

ENGINE OIL

Analysis was completed on assumption that trucks in the concrete fleet would do between 1500 and 2000 hours per annum. On current servicing schedules, trucks were being serviced 3-4 times per year. Costing for this servicing schedule was compared with servicing costs when using Astrea filtration. Increasing the oil services interval meant that Allied concrete trucks only required between 1 and 1.33 oil services per year.

HYDRAULICS

Analysis was completed on assumption that trucks in the concrete fleet would do between 1500 and 2000 hours per annum. On current servicing schedules Allied trucks were being serviced between 0.5 and 0.67 times per year.

Costing for this servicing schedule was compared with servicing costs when using Astrea filtration. Astrea increased oil service intervals to 18000 hours which meant that services were reduced 0.08 and 0.11 per year. OEM filters are still changed as per current servicing schedule.

FUEL

Evidence gathered during the trial points to Astrea fuel filtration offering the following advantages:

- Filters removed from the trucks at the service intervals were extremely contaminated. The filter prevented a large amount of contamination from the combustion cycle returning to the sump and reducing the quality of the remaining diesel.
- Drivers reported an absence of black smoke on start-up and more power. This points to cleaner fuel being burned which can be attributed to the Astrea in line fuel filter.