



Fulton Hogan

A bypass filtration case study



Dirt and wear metals will always be present in hydraulic and engine oil. Lubricant is changed to get rid of the dirt and contaminants. Standard full flow filters the oil down to approximately 35 microns in size in engines and 20 microns in hydraulic systems. Accelerated wear and damage occurs when particles greater than 3 microns are present. Using the Astrea bypass filtration system, you can filter the lubricant down to 1 micron in size, reducing wear and ultimately reducing the number of engine failures and rebuilds that would have been needed to be performed during the life of the unit.

Key points

Fitted in addition to standard full flow filtration (as provided by the manufacturer).

Filters particles down to 1 micron (3 absolute rating) in size.

Removes 99.95% of water.

Does not remove (unused) additive package components in the oil.

Works on engine and hydraulic systems.

Purchase once, transferable to another vehicle.

Our results

We achieved 3,099 hours (approximately 120,000kms) before the oil needed changing! Previous change period was 20,000kms.

Over a 12 month period we reduced the service cost by 68% and saved \$2,423.25. The payback on the capital investment (\$1,350.00) is less than one year and this device can be transferred to another similar sized plant item in the future.

The cleanliness level of the tested oil was 14/11, well below our limit of 18/16/13. At this level we can expect a 4 times increase in component life. Astrea offers a smaller unit than others tested which has proved easier to install.

Small engine testing

To see if bypass filtration was economic for small engines, a reduced size Astrea device (KU16) was fitted to a late model Mazda BT50 utility of which Fulton Hogan operates over 1,400 in the fleet.

The OEM service interval is 10,000km and again with oil conditioning monitoring we changed the Astrea cartridge at 10,000km. We achieved well past 40,000km without needing to change the oil and OEM filter.

The yearly service costs on the utility would be reduced by 24% or \$76.25. The capital investment has a payback of 6 years which may be acceptable given we keep utilities for 5-8 years typically and this device can be transferred to the replacement utilities offering long term savings.

Our conclusions

With regards to larger vehicles, it appears bypass filtration offer an attractive option on vehicles with a sump size of 9 litres or more. It is estimated this applies to about 40% of our fleet (over 1300 plant items).

We achieved between 64% and 68% reduction in PM Service costs. The larger the sump size (more oil) the greater the saving. Conservatively, we should expect at least a 30% reduction in the mobile fleet servicing costs, which are currently around \$1,150,000.00 per year.

The trials had focused on the fitment of bypass filters to diesel engines on mobile plant. There are a substantial number of hydraulic systems on mobile plant and a large number of significant hydraulic systems in our fixed plant that would see the same savings/benefits of bypass filtration. Hydraulic systems require much cleaner oil than diesel engines. Our cleanliness target is 16/14/11 which is easily maintainable using Astrea bypass filtration, offering extended drain intervals and component life.

"The Astrea bypass filtration system certainly exceeded expectations and convinced me that we should be installing them throughout Fulton Hogan."

GRAHAM EATON