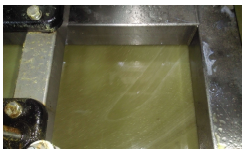
Klarwin Automotive & Industrial Technology

CASE STUDY

UPGRADE FILTERS FOR EFFICIENT WASHING AND LONGER FLUID LIFE



(1)

(2)

(3)

(4)

Application:

The internal circuits of diesel pump components are washed by flushing (turbulent flow), using a liquid made of water and detergent.

Afterwards, the components go through a final wash in a washing chamber machine.

Problem:

High dirt loading in the tanks (1), (2) leads to inefficient washing and end-user complaints due to component cleanliness.

Diesel pump failures in operation were traced back to mechanical contamination of the components.

Solution:

Previous filtration solution of the first washing machine consists in bag filters, down to 10µm nominal, with magnetic bars. The second washing machine includes POG bag filters of 50 µm and nominal Nexis candle filters 25 µm.

To ensure component cleanliness is in the specification, for less rewashes and fluid changes, the cleanliness of the washing fluid must be improved. Tramp oil coming from components and hydraulic circuit is also contaminating the washing fluid, leading to decreased washing efficiency. A process audit revealed that the process is a bottleneck since changing the washing fluid is a time-consuming process that is required every two weeks due to high contamination.

Improving the filtration on the first washing process was not enough to decrease end-user complaints, which is why the second washing processes was improved as well:

- The filtration on the flushing machine was upgraded from bag filters to Markman XLDM cartridge filters (3)
- The filtration on the final wash was upgraded from POG to BOS MAX bag, while the nominal candle filters to Profile Star (4) of 5 and 3 µm.

Coalescers were installed to separate the tramp oils to from the water-based fluid by coalescing media.

Benefits:

- ✓ The washing fluid and component cleanliness were improved significantly, as well as downstream processes.
- ✓ Washing fluid life was increased from 2 weeks to 2 months or more, which leads to an increased production capacity.
- ✓ The number of breakdowns decreased, improving the reliability of the machines.
- ✓ Cost reduction in direct costs (water, detergent, spare parts, filters).
- ✓ The real savings come from improvements in the production process and reject rates reducing client complaints.