

GreenOil installed on Papermill

SCA-packaging in Greenaa, Denmark had experienced major breakdowns in some of the hydraulic systems, and isolated the cause to poor fluid quality and insufficient in-line filters. It was decided to apply by-pass filtration to the system with the highest failure rate.

A GreenOil WP1-B1-100 filter unit was installed on the 1.500 liters' hydraulic oil tank. The inlet was connected to a drain connection in the bottom of the reservoir tank, and the return hose was let directly into the top of the tank. During the first weeks of operation oil-samples were taken at regular intervals to monitor progress and results. Samples were tested by the Central Laboratory of the Danish Army Materiel Commando.

Reference Oil

A sample of new unused oil was taken as reference. This is the oil which is used to topping up or for replacement. The sample shows relative poor cleanliness level and an especially high water content for a new oil.

| Oil sample test complete new oil | |
|----------------------------------|----------|
| Particle Class | Count |
| 2 – 5 µm | 478.654 |
| 5 – 15 µm | 31.198 |
| 15 – 25 µm | 1.300 |
| 25 – 50 µm | 136 |
| 50 – 100 µm | 4 |
| >100 µm | 0 |
| ISO 4406 | 19/15/11 |
| NAS 1638 | 7 |
| Water PPM | 110 |

Before installation of GreenOil filter

Prior to the installation of the GreenOil filter samples were taken in different locations in the installation. The filter in-let (bottom of tank) showed above 500 ppm of water.

The samples before and after installation in the sidebar tables are taken in the upstream flow from the hydraulic pump.

As seen both contamination and water content are high before filtering was initiated.

| Oil sample test before installation of GreenOil | |
|---|-----------|
| Particle Class | Count |
| 2 – 5 µm | 3.550.707 |
| 5 – 15 µm | 396.634 |
| 15 – 25 µm | 5.130 |
| 25 – 50 µm | 1.404 |
| 50 – 100 µm | 201 |
| >100 µm | 24 |
| ISO 4406 | 22/19/13 |
| NAS 1638 | 11 |
| Water PPM | 130 |

After installation of GreenOil filter

The period between installation of the GreenOil filter and the last sample taken was 20 days.

After installation of the by-pass filtration the contamination level is very safe within recommended cleanliness levels (18/14/11 Ref: JCF, Pall, Exxon). Water content is extremely low considering the fact that the production process involves huge quantities of water.

Results

During a period of one year the production facility has not reported any component failures in the system. In the years before filter installation maintenance has been expensive. The direct cost for the last breakdown was almost reach a level of 20.000 EUR.

| Oil sample test after installation of GreenOil | |
|--|---------|
| Particle Class | Count |
| 2 – 5 µm | 18.648 |
| 5 – 15 µm | 1.561 |
| 15 – 25 µm | 105 |
| 25 – 50 µm | 23 |
| 50 – 100 µm | 0 |
| >100 µm | 0 |
| ISO 4406 | 15/11/7 |
| NAS 1638 | 3 |
| Water PPM | 30 |