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Improving Reliability of Hydraulic Shears for Recycling Plant

Success Story

INDUSTRY DESCRIPTION:

In the waste recycling industry, larger waste materials must be cut down before they can be processed.

The scrapyards use large hydraulic shears for this that are powered by enormous cylinders and six pumps with a capacity of 500 l/min (132 gal/min). These hydraulic shears are vital for the operation of the scrapyard, so equipment reliability is essential.

THE CHALLENGE:

Dinos, a waste recycling company located in Slovenia that specializes in processing difficult materials, was having issues with the reliability of their equipment due to a highly contaminated and dusty environment. This resulted in excessive pump wear, multiple instances of downtime, and expensive component replacements and oil changes.

The ISO 4406 cleanliness code level of the oil was 24/23/17, which is a much higher contamination level than recommended by the OEM. Operating with this contaminated oil, the relative expected pump lifetime is only approximately one to two years. The price for replacing a single pump can go up to € 2.500 (\$2,941) excluding labor costs, downtime of the machine, and production loss.

EQUIPMENT SPECIFICATION

- **Cutting Force:** 8500kN (955 ton)
- **Oil Reservoir:** 8000 liters (2113 gal)
- **Oil Type:** Mineral oil ISO VG 46

THE SOLUTION:

As a part of the preventive maintenance for the hydraulic systems, the company reached out to an official Des-Case distribution partner to help improve hydraulic oil conditions. An RMF Systems Giant Off-Line Unit (GOLU) with a Contamination Monitoring Sensor (CMS) was installed permanently.

The RMF Systems GOLU was selected due to its high flow off-line filtration on high volume applications and for its quick micro filtration process. The unit has a flow of 80 l/min (21.1 gal/min) and can be used for fluids with a viscosity range from 12-800 cSt. The GOLU uses highly efficient micro-glass elements in multiple micron ratings, which are capable of removing up to 1 kg (2.2 lbs) of solid particle contamination.

Additionally, two Rebuildable Steel Desiccant Breathers (RS-15W) were installed to keep the air in the hydraulic reservoir clean and dry. Des-Case Rebuildable Steel (RS) breathers are utilized for applications where there are very high temperatures, extremely polluted air, or a corrosive environment. They are ruggedly designed to withstand harsh environments and were the recommended choice for this application by the distribution partner.

THE RESULTS:

Thirty days after the installation of the GOLU, the ISO 4406 cleanliness code level improved to 12/9/0, a level not often found in hydraulic systems. During this period, two 92G 1-micron filter elements were used to achieve this cleanliness code. Additionally, the relative humidity level decreased from 91% to 30% as measured by the CMS.

This resulted in an estimated pump lifetime extension of more than 10 times and estimated cost savings of approximately € 90.000 (\$105,881). Additionally, the customer was able to extend the life span of the oil, saving them more than € 32.000 (\$37,646) each time they did not need to change the oil due to contamination.



ISO 4406 Cleanliness Code Level

Before:

After:

24/23/17 to **12/9/0**

Estimate Savings:

€ 90.000 (\$105,881)

Pump Replacement

€ 32.000 (\$37,646)

Per Oil Change

HOW CAN WE HELP?

Managing fluid contamination levels is a key factor in hydraulic system reliability. Particle contamination in the oil is responsible for the majority of hydraulic valve failures. Let the experts at Des-Case get you on the path towards lubrication excellence and extended asset reliability.

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