



In the Field with Donaldson

Clean Fuel & Lubricant Solutions



ROCK ON: FILTRATION INCREASES CRUSHER GEARBOX LIFE BY 3.5x

THE SITUATION

One of the nation's largest producers of construction aggregates operates a facility in North Carolina. Focused primarily on crushed stone and gravel, the company utilizes five Metso® crushers to reduce chunks of raw material up to 12 inches in size down to manageable 3-inch pieces for further processing.

The final product is sold to construction industry companies for use as a base material and to aid in erosion control for housing, roadways, commercial buildings, sewer systems, and airports.

The entire production process generates significant amounts of dust and exposes equipment to endless wear and premature component failure.

THE CHALLENGE

Given the extremely dirty operating conditions the crushers are forced to endure, the company faces the challenge of addressing the work environment and its potential impact on premature equipment wear and unplanned maintenance issues.

One of the primary concerns of the company was the cleanliness and life of the crushers' gearbox oil and its lubrication system, which protects ring and pinion gears as well as the brass bushings and steel shafts in the crusher.

The system's original filtration installation, though fully functional in optimal operating conditions, struggled to maintain even marginal oil cleanliness levels for an extended period of time. The original filters' ineffectiveness threatened to shorten the life of critical components due to the highly escalated levels of wear metals in the oil.

The unanticipated oil change-outs were costing \$2,000 each and adding unplanned downtime, leading to operational inefficiencies.

Donaldson solution shown in the front with a Mini Mess Sample Port attached to allow proper ISO code readings. The original filters in the back are disconnected, and fluid flows through the Donaldson filters.



THE CLEAN SOLUTION

Looking to decrease component wear and extend gearbox oil life, the company reached out to Donaldson for help.

An on-site fluid analysis of the crusher's gearbox oil revealed a distressing ISO cleanliness level of 23/22/19, more than 125x dirtier than the target ISO cleanliness level of 16/14/11.

The Donaldson Clean Solutions team recommended installing a manifold at the outlet of the gearbox oil tank with four Donaldson DBB8665 filters with a 7-micron efficiency rating at Beta 2000 (99.95% filtration efficiency on 7 micron and larger particles).

The company's Equipment Manager decided to put the recommendation to the test and installed the filter manifold on one of the cone crushers.

These filters cleaned the oil before it reached the crusher's gearbox and other sensitive components.

THE RESULTS

The newly-installed 7-micron filters plugged within two weeks—hardly surprising, given the extreme dirtiness of the current working conditions and gearbox oil.

However, fluid analysis after the first set of filters was replaced showed a new ISO cleanliness level in the reservoir of 18/16/13, meaning the filters were doing exactly what they were supposed to do: clean the oil, meet target cleanliness levels, and protect critical equipment.

In addition, the next set of filters established a predictable and acceptable 4-month filter lifecycle while maintaining the ideal 18/16/13 cleanliness target.

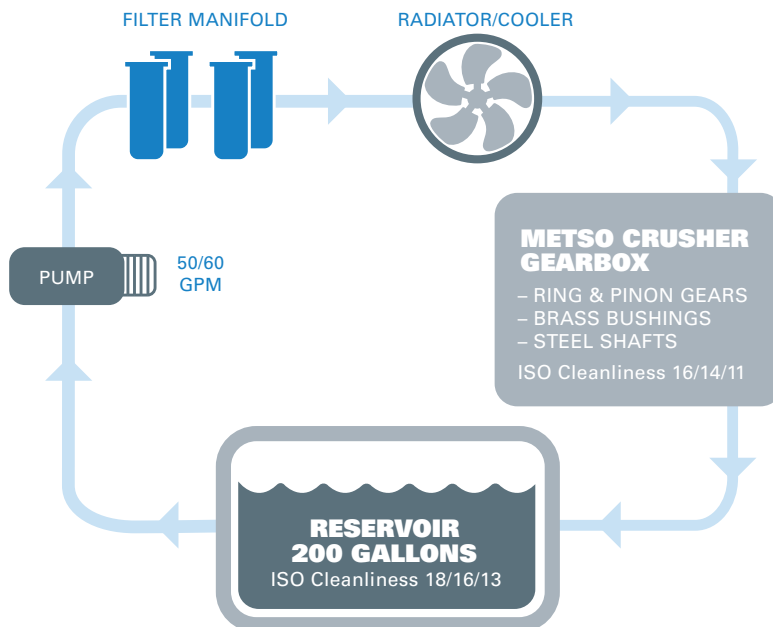
The Donaldson filtration system reduced the amount of contaminant reaching the gearbox by 8 ISO codes. The oil was 125x cleaner, thereby extending the life of the gearbox by 3.5x.*

CONCLUSION

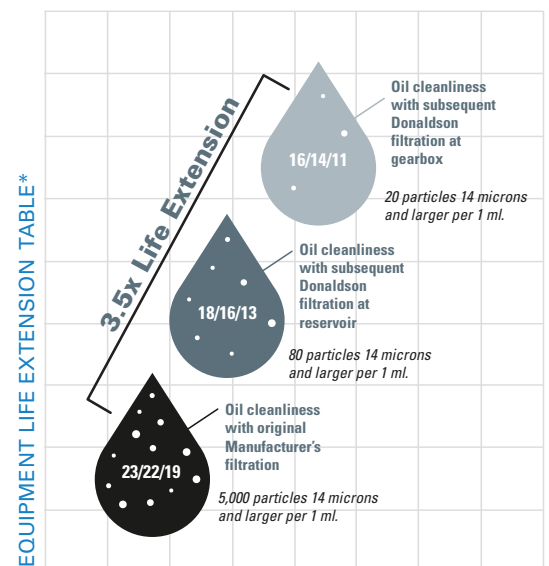
By filtering the oil before it reaches the gearbox, companies can significantly improve oil cleanliness levels, extend expensive equipment life and allow for longer intervals between oil changes.

It all adds up to less downtime and big savings.

OIL JOURNEY IN CRUSHER



CLEANLINESS ON THE RISE



ISO CLEANLINESS CODE

**By reducing the ISO cleanliness codes of the crusher oil by 8 ISO codes, the average expected life extension of the gearbox and components is 3.5x - Based on Noria Corporation's Life Extension Table.*

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Need a Clean Solution?

As a global organization, we have offices throughout the world. Please direct your inquiry to clean.solutions@donaldson.com. this will enable us to address your inquiry in the shortest possible time.

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