

Hydraulic Shovels

Application Description

Hydraulic shovels are used to load ore onto haul trucks, and are critical to the mining process.

Maintenance expenditure over the life of a hydraulic shovel can exceed its original purchase price. Expenses associated with pump failures, oil changes, and unscheduled downtime are key contributors to the equipment's Total Cost of Ownership (TCO).

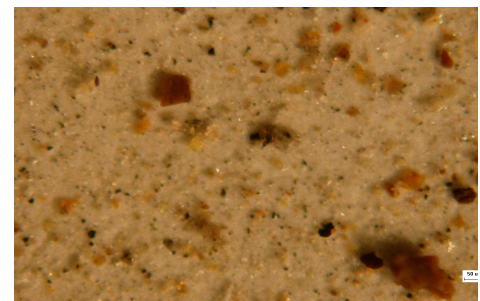


Hydraulic shovel in a hard rock mine

Contamination Challenge

Typical hydraulic shovels have several high pressure hydraulic systems for implement (bucket, boom, arm, level, dump), swing and travel, which sharing a common reservoir.

Each of the return lines is typically OEM-fitted with a 10 µm nominal filter element and a 1.5 bar bypass; change-out is done per intervals, and fluid cleanliness levels can reach ISO 4406 cleanliness codes of 21/18/16, which not sufficiently clean to protect critical system components such as direction valves, gear or piston pumps and dual-action hydraulic cylinders.



Typical contamination at 100X magnification

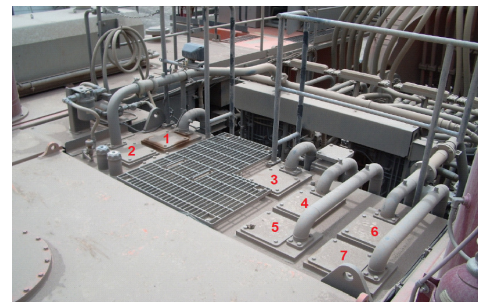
Pall Solution

Pall recommends upgrading all return line filters with Pall-fit filter elements employing Ultipor® SRT filtration technology, rated at 12 µm(c).

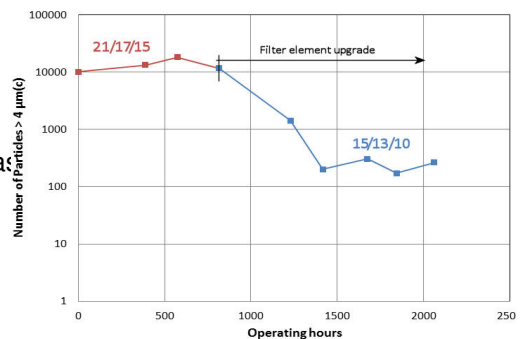
These filter elements offer significantly reduced clean differential pressure, maximized surface area and consistent performance, and are capable of improving fluid cleanliness levels in the hydraulic system to ISO 4406 cleanliness codes of 15/13/10.

According to Noria¹ Corporation's "Life Extension Table" for hydraulic reservoirs, this improvement in fluid cleanliness would translate to an estimated life extension factor of 5 for critical hydraulic system components.

In addition, the upgraded filter elements are proven to last twice as long as the originally fitted filtration, offering the mine site significant cost reduction benefits.



In-tank return line filter locations.



Contamination Levels in Hydraulic System

1: Noria is a registered trade mark of Noria Corporation.

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