



Triple your oil and asset lifetimes with CJC[®] Onboard Oil Filtration

Always **on**
board



GUIDE:

Discover how continuously clean hydraulic oil improves your cost-per-tonne mined

Contaminated oil is a continuous challenge

Hydraulic oil is the lifeblood of your mining operation

Mining is a tough environment, presenting operational difficulties unseen in any other industry. As a result, hydraulic oil contamination in Heavy Mobile Equipment (HME), such as haul trucks, shovels, loaders etc., is a continuous challenge.

For many businesses, this has simply become the norm and is managed through frequent truck shop services, offline oil filtering or replacement, and spare part installations – all of which has a huge impact on OPEX.

Why is your hydraulic oil so valuable?

Hydraulic oil plays a critical role in the safe, reliable, and efficient operation of your Heavy Mobile Equipment. It is used to reduce wear on moving parts, dissipate heat, and transmit power by transferring energy from the pump to various components, such as cylinders and motors.

However, in a mining environment your hydraulic oil can quickly exceed OEM-recommended levels of oil cleanliness only hours after an oil change. This has devastating consequences, including short oil lifetimes and excessive component wear, potentially leading to system failure or breakdowns.

Your equipment only produces revenue when operational. This means excessive servicing and downtime can be extremely damaging to your bottom line, especially when you include the associated costs of labor, spare parts, replacing dirty oil, and waste oil handling.

Mining businesses spend an extremely high percentage of their annual operating budgets on general equipment maintenance and repairs.

Contaminated hydraulic oil can have serious consequences for your equipment, including:

- **Poor lubrication** – leading to component wear and potential failure
- **Clogged in-line filters** – reducing oil flow, causing poor operational efficiency
- **Increased corrosion** – leading to reduced lifetimes and potential failure

These issues are very expensive to fix, amounting to thousands of dollars per truck, through:

- **Repair costs** – increased wear on components means more maintenance
- **Replacement costs** – new components are costly and time-consuming to replace
- **Downtime costs** – when equipment stops, so does your productivity and revenue
- **Environmental costs** – shorter oil lifetimes means more waste

But - there is a better way!



Clean hydraulic oil, all day, every day



CJC® Onboard Oil Filtration is a game-changing solution.

In essence, this is where a CJC® Oil Filter is installed directly onto the Heavy Mobile Equipment, providing continuous hydraulic oil filtration via a kidney loop installation.

With CJC® Onboard Oil Filtration, your hydraulic oil is always kept within OEM-recommended oil cleanliness levels all day, every day, significantly increasing its operational lifetime and maximizing the performance and availability of your equipment.

When introducing CJC® Onboard Oil Filtration to an entire fleet, the potential financial savings and increase to your productivity are enormous.

Lower your cost-per-tonne mined

CJC® Onboard Oil Filtration brings a wealth of operational and financial benefits to your fleet and business.

Extended component life

Clean hydraulic oil minimizes wear, prolonging oil lifetimes by 3-5x, extending component and filter insert lifetimes, and minimizing repairs and replacements.

Improved system reliability

A clean hydraulic system means fewer failures, increasing equipment availability, reducing downtime, and lowering cost-per-tonne mined.

Enhanced performance

Clean hydraulic oil allows for optimal power transmission, enabling your Heavy Mobile Equipment to operate at peak performance.

Reduced maintenance costs

By reducing the need for frequent maintenance, you can save on labor hours, training, replacement parts, and other associated costs of downtime.

Short payback

Only considering direct oil costs, CJC® Onboard Oil Filtration has an estimated payback period of 1.5 years (or less if you include equipment availability and component life extension).

Environmental benefits

By reducing oil consumption and waste and increasing equipment performance, you can minimize your environmental impact and meet challenging sustainability targets.

Significant financial savings

With CJC® Onboard Oil Filtration, the reduction in overall mining costs can amount to several thousands of USD per truck per year.

Always **on**
budget



Improve sustainability, component lifetimes, and your bottom line

With standard inline filtration, the oil flows at high speed through the machine's internal filter. The entire volume of the tank may flow through the internal pressure filter in just a matter of minutes.

An offline oil filter normally processes the Heavy Mobile Equipment's oil in a few hours. This slower, finer filtration results in significantly cleaner oil, reducing the risk of premature oil degradation and oil-related machine failures.

Protect your machine's internal components

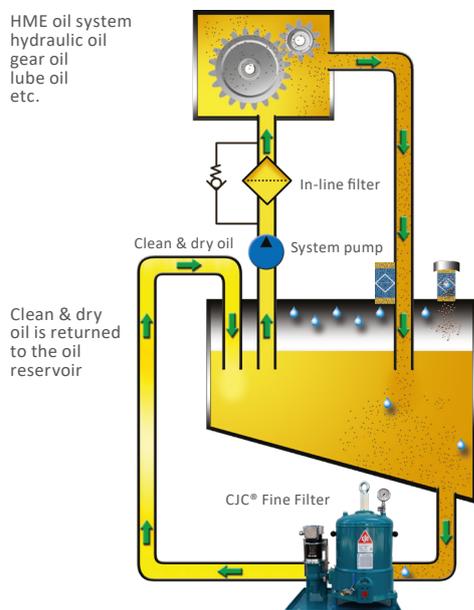
Metal particles, dirt, and water cause many problems for your Heavy Mobile Equipment's oil lubrication system. With the addition of offline filtration, you can considerably reduce scheduled and unscheduled downtime.

Cleaner oil in your Heavy Mobile Equipment's system will also reduce wear and tear, increase reliability, and strengthen environmentally sound practices.

Improve sustainable practices and your bottom line

Reducing the micron-size particle count in your oil with offline filtration will significantly reduce your oil consumption over time. Fewer oil changes and less handling of oil leads to both environmental benefits and improved working conditions for employees. So, micro filtration really can have a macro effect.

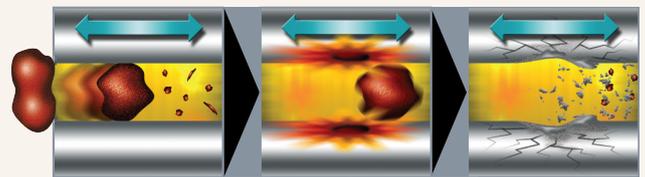
A clean and dry system with offline oil filtration



How does dirty oil affect your Heavy Mobile Equipment's performance?

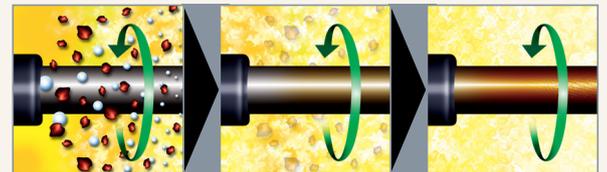
Abrasive Wear

Hard, clearance-sized particles wedged between movable metal parts destroy the metal surface and result in additional wear.



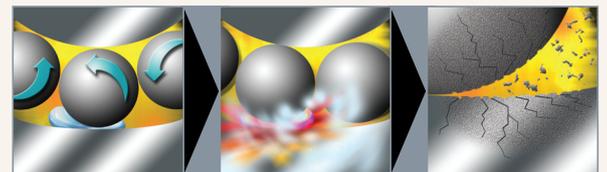
Oil Degradation

Wear metals, water, and high temperatures lead to oil degradation resulting in sticky varnish deposits on metal surfaces.



Cavitation & Pitting

In areas where water is present and oil is compressed, the water implodes, causing metal surfaces to crack and release even more particles.



Case studies: CJC® Onboard Oil Filtration at work

Saving costs for Caterpillar 794ACs

Challenge

One of our customers has conventional open-pit mine operations in an iron ore mine in Brazil. They were facing contamination levels exceeding OEM recommendations, even on new oil stored in onsite storage tanks, with an average contamination level of new oil at ISO 22/20/16.

Results

With CJC® Onboard Oil Filtration, oil was kept to OEM-accepted oil cleanliness levels of 18/16/13 during a 4,000-hour period, which in turn increased the usable oil lifetime and equipment availability. No system-related components had to be replaced during this time.

- With an operational life of 70,000 hours, the six CAT 794AC haul trucks would save a total of **255,000 liters hydraulic oil** each
- This represents a **saving of \$637,500** in hydraulic oil alone, not including additional potential savings for associated labor and maintenance
- The customer was able to minimize waste oil handling, **improving their environmental profile**

EXTENDED
oil lifetime from
1,500 hrs
to
4,000 hrs

SAVED
~4,250 liters
of oil per truck
per year



Increasing oil lifetimes for Komatsu 830Es

Challenge

Another customer faced frequent oil changes for its fleet of Komatsu 830E haul trucks, in an effort to limit costly component replacements due to excessive wear from contaminated oil. At the beginning of the process, particle levels were at ISO 23/21/15.

Results

By installing CJC® Oil Filtration, the customer obtained significant benefits:

- **95% reduction of particle** contamination within the first two weeks
- Two months after installation, particle contamination level had dropped from ISO 23/21/15 to ISO 17/15/11, and after **3,000+ operating hours** the hydraulic oil was still in good chemical condition for further use
- By extending oil lifetimes, the customer **saved 74,000 liters of hydraulic oil**
- The process also **lowered GHG emissions** related to oil production



EXTENDED
oil lifetime from
2,000 hrs
to
~6,000 hrs

SAVED
~\$185,000



Case studies: CJC® Onboard Oil Filtration at work

Minimizing oil changes for CAT 775s

Challenge

A customer was struggling with high contamination levels in the hydraulic oil of their CAT 775 Haul Trucks, requiring frequent oil changes every 1,000 hours. This meant that the oil had to be changed six times per year.

Results

With CJC® Onboard Oil Filtration, smaller particles were removed from the hydraulic fluid, significantly extending oil lifetime and the service life of components. During a 5-month test period, contamination was kept within OEM-recommended levels and the oil lifetime increased to 5,000 hours.

- With a fleet of 24 CAT 775 Haul Trucks, this saves 144 annual oil changes, or **46,368 liters hydraulic oil** every year
- This represents an overall **oil saving of 80%**
- The customer was able to minimize waste oil handling, **improving their environmental profile**

80%
OIL SAVINGS

Oil changes
REDUCED
from 6 to 1
per year
per truck



Tripling oil lifetimes for CAT 6060s

Challenge

A customer faced high oil contamination levels in their CAT 6060s, resulting in frequent oil changes every 2000-3000 hours. With 9,400 liters of oil in the hydraulic system, this was an expensive process.

Results

A CJC® Onboard Oil Filter was fitted onto newly purchased CAT 6060 in bypass of the hydraulic system, ensuring efficient retention of particles and oxidation by-products, such as varnish. As a result, the oil remained consistently at OEM-recommended oil cleanliness levels, even during months of operation.

- Reduced contamination level **from 21/19/15 to 15/13/09** after approx. 2,500 hours of operation
- New oil lifetime was estimated to be 9,000 hours, **three times better than before**
- Despite this increase, **the oil's chemical condition was maintained**, ensuring stability in additives and viscosity
- With an oil cost of \$7.35 / liter, the annual savings in oil cost alone **is an estimated \$107,500 / year**, yielding in a PBP less than 6 months



3x longer
oil lifetimes

SAVED
\$107,500
in oil costs

Applications of CJC® Onboard Oil Filtration

CJC® Onboard Oil Filtration is ideal for mining operations that use Heavy Mobile Equipment, including:

- Haul trucks
- Loaders
- Shovels
- Wheel loaders
- Dozers
- Drills
- Graders
- Scoops



CJC® Onboard Oil Filtration solutions:



HD HDU 15/25



HD HDU 27/27



HDU 27/108



HDU 427/108

About CJC®

We care for you

Established in 1953, C.C.JENSEN is an international, family-owned company that has become the global leader in oil maintenance. Headquartered in Denmark with 12 subsidiaries and over 50 distributors worldwide, we offer a unique range of CJC® Offline Oil Filters covering tailor-made solutions for all system volumes – removing particles, water, acidity and oil degradation products (varnish) from hydraulic oils, lube oils, gear oils, diesel fuels, and more.



See what you can save

With CJC® Offline Oil Filters installed you ensure continuous clean and dry oil, increase uptime, and extend component and oil lifetime, resulting in savings on your maintenance costs. All of which leads to reduced environmental impact due to many litres of waste oil saved every year.



Our CJC® Filter Inserts are made of 100% natural cellulose fibres from sustainable resources. That means no metal, no plastics and no chemicals.





C.C.JENSEN

Contact us today



Manufacturing & headquarters

Denmark

C.C.JENSEN A/S
Løvholmen 13
DK – 5700 Svendborg
Denmark

Tel. +45 6321 2014
sales@cjc.dk
www.cjc.dk

Find your local contact at www.cjc.dk/contact

