CJC™ Offline Oil Filtration for the

Marine sector

Removal of particles, water, oil degradation products and acid from hydraulic fluids, lubrication oils, diesel fuel and EAL/biodegradable oils

Reliable machinery performance starts with clean oil

Do not change

FACT: The condition of oil will

C.C.JENSEN

Cleaning oil for more than 60 years.

Oil can be cleaned:

Most people change oil not because the properties of the oil are lost, but because the oil is dirty!
Oil can be cleaned and kept clean - while in operation!

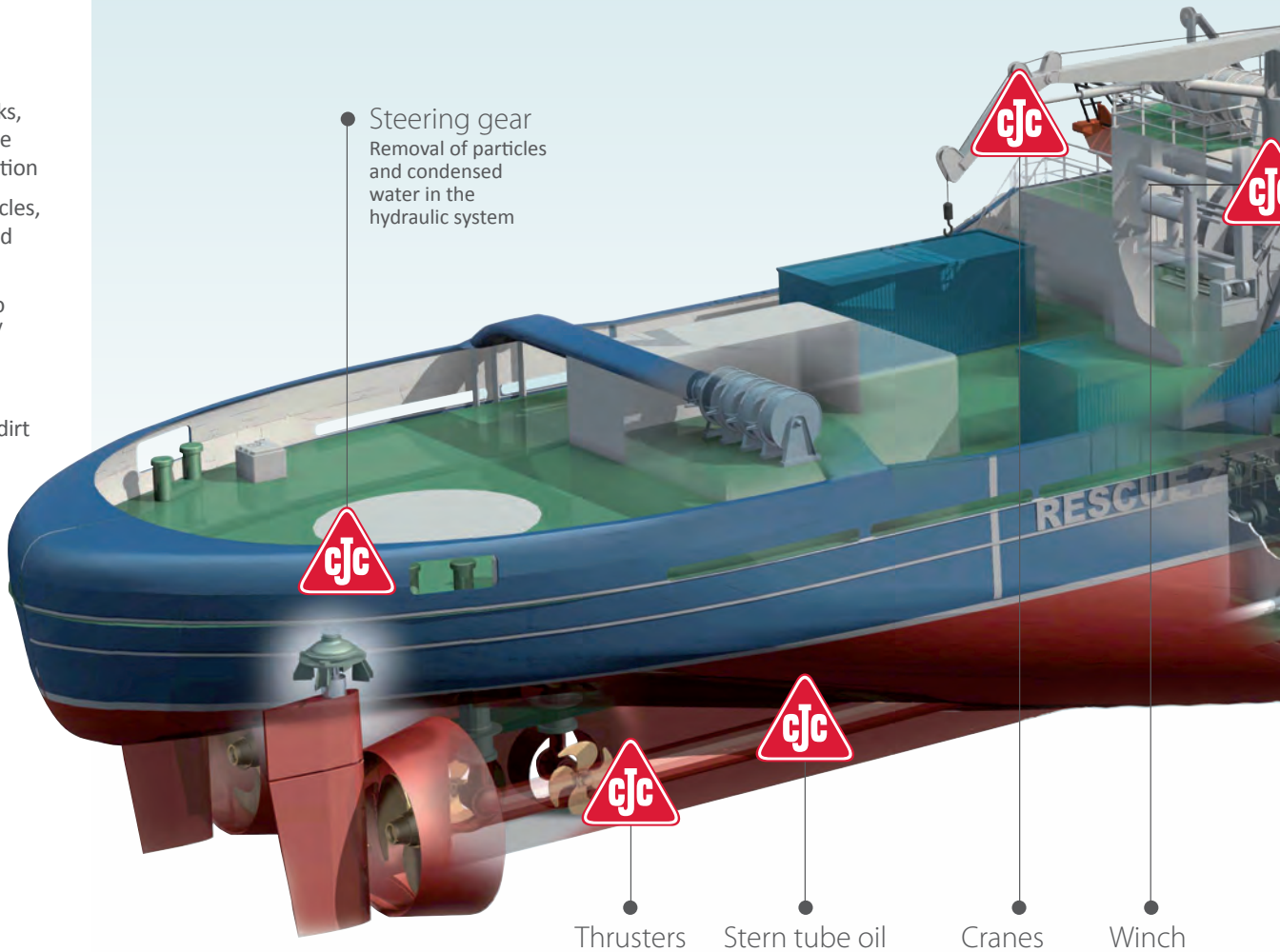
What do we do differently than other filtration systems?

- We clean oil, tanks, and systems while they are in operation
- We remove particles, water, varnish and acid
- We filter down to 0.8 µm nominal / 3 µm absolute
- Our filters have industry highest dirt holding capacity
- Our filter inserts are produced of 100% natural cellulose fibers from sustainable resources

Have you ever experienced..?

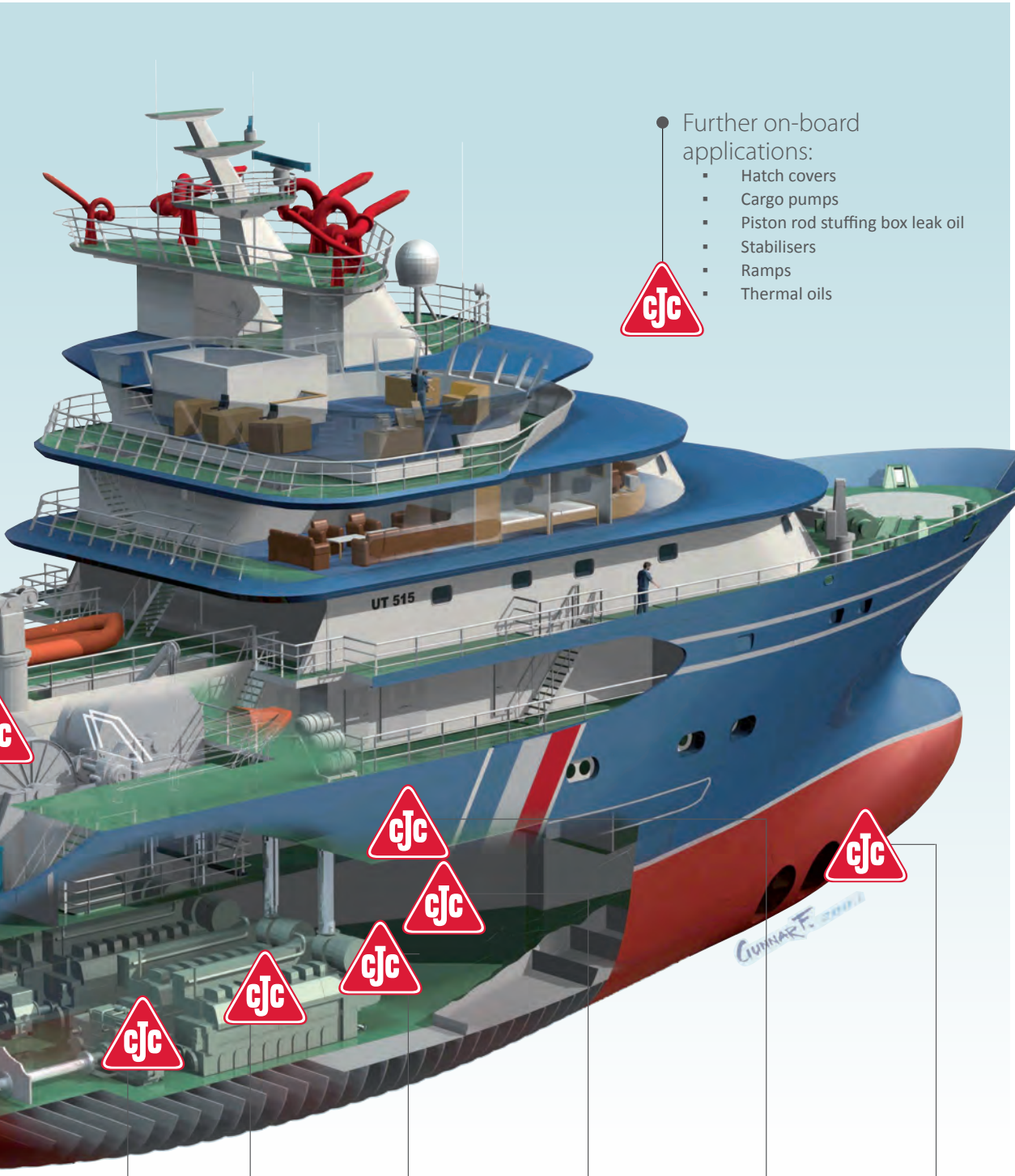
- Malfunction of hatch covers?
- Non-operational cranes?
- Excess water content in thrusters?
- Excessive wear in reduction gears?
- Extraordinary overhaul on fuel pumps and injection nozzles?

- all can be avoided by installing CJC™ Offline Oil Filtration Systems!



oil - clean it!

determine uptime and life of machinery!



Further on-board applications:

- Hatch covers
- Cargo pumps
- Piston rod stuffing box leak oil
- Stabilisers
- Ramps
- Thermal oils

Most common benefits:

- Reduced downtime – less planned as well as unscheduled shutdowns
- Industry lowest cost per kilo dirt removed
- Short pay-back time
- Reduced maintenance costs
- Reduced wear on pumps, cylinders, bearings, etc.
- Avoid diesel bugs
- Increased oil and component lifetime

Gears
Removal of oil degradation products and particles

Lube oil
Removal of particles and maintain TBN

MDO/MGO fuel
Removal of particles and water equals zero bacterial growth

Bilge water
Absorption of oil from bilge water to below 5 ppm

Hydraulic valves
Removal of oil degradation products and particles

Bow thruster
Removal of water and particles

Risk of failure on your

Each application performs specific tasks - and

The main cause for equipment breakdown

On-board oil systems have a hard time dealing with high levels of contaminants from the environment. Some applications face a high level of solid particles, some of humid air and water, some of developing varnish-like deposits, and most face a mix of all three contaminants in various degrees. CJC™Offline Oil Filters are designed to deal with all of them.

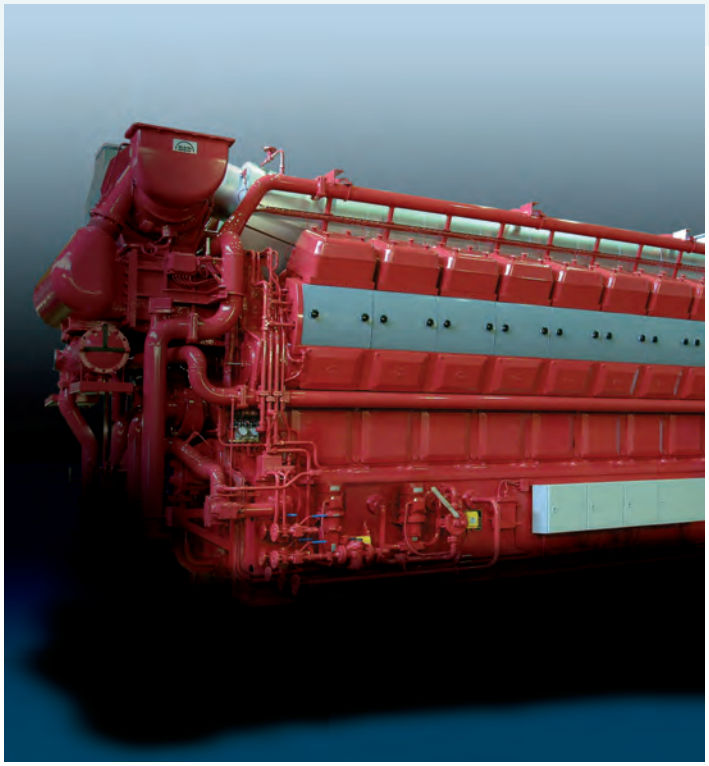
Hydraulic systems

Hydraulic systems are vulnerable in terms of particle contamination from external sources as well as internal sources and oxidation of the oil. This, combined with the fact that hydraulic systems are often used on critical operational equipment such as cargo cranes, cargo pumps, winches, ramps and hatches, makes reliability of high importance.

The CJC™ HDU series offers increased reliability as well as improved component lifetime and reducing maintenance costs.

CJC™ HDU 15/25

CJC™ HDU 427/108



Diesel engines

Diesel fuels & lube oil systems

Service- and settling tanks for diesel engines are often accumulating solids and water, seriously influencing the performance of fuel pumps and injectors. And especially on trunk engines, the lifetime of the oil is often reduced by the contamination of soot particles.

A combination of CJC™ HDU and PTU series filters ensures prolonged lifetime of your engine, reduced cost of maintenance and improved environmental performance.

CJC™ PTU 27/54

CJC™ Marine Lube Oil Purifier

CJC™ Marine Diesel Purifier

marine equipment

high performance depends on optimum oil cleanliness

80% of all oil related failures and breakdowns are related to contaminated oil

Oil care is important since 80% of all oil related machinery repair and maintenance costs can be tracked back to contaminated system oils and fluids. This has been substainciated by several independant analyses.
The main cause is wear induced by contamination through solid particles, water, acid and oil degradation products - which are not retained effectively by most in-line filters.

Thrusters

Thrusters operate in a difficult environment. Besides the contamination of particles and oxidation residues, there is a risk of continuous water ingress.

The CJC™ PTU and Desorber series are capable of removing water to very low levels continuously. If the oil will demulsify, the PTU series offer water removal and fine filtration in one unit. If the oil is emulsified, the Desorber series offer a solution to remove the water. In both cases you can avoid expensive unscheduled dry-dockings.

The CJC™ Desorber/Filter Combi Unit removes large amounts of water **and** particles from a wide range of lubricants including emulsified oils and EAL's (Environmentally Acceptable Lubricants) / Biodegradable Lubricants.

CJC™ PTU2 27/27

CJC™ Desorber/Filter Combi Unit

Bilge water

Overboard discharges from oily water separators receive increased attention from Port State Authorities. Regulations dictate an oil content of 15 ppm as a maximum in the effluent.

The CJC™ Blue Baleen System is capable of bringing the effluent below 5 ppm, reducing the environmental footprint and ensuring compliance with regulations, locally and globally.

CJC™ Blue Baleen 38/100

CJC™ Blue Baleen 2x38/100

J. Lauritzen Shipping Company

Application: ***Cranes***

Ole Svendsen, Senior Inspector, of the J. Lauritzen company

Small investment benefits both the environment and competitiveness

Problem
The J. Lauritzen shipping company has solved the problem of expensive crane breakdowns by buying simple oil filters

Solution
The small and simple CJC™ Fine Filter has provided the solution to a costly problem for the shipping industry. Crane breakdowns and nonworking hydraulic hatches are expensive and can create problems for both employees and the environment due to extended time in harbours and too frequent repairs and oil changes.

J. Lauritzen shipping company invested in filters for each of their current nine reefer vessels. In the years 1995 to 1999, one of the ships suffered no less than four crane breakdowns. Each time it required a ten-hour repair, the replacement of 1,000 litres of oil and a number of spare parts.

Mr. Ole Svendsen,
Senior inspector of the J. Lauritzen company
"Since we installed CJC™ Fine Filters on the cranes of all refrigerator ships in 1999, we have had just one crane breakdown," said senior inspector Ole Svendsen of J. Lauritzen. He added, *"This saves us money, but it is also advantageous for the environment. It is very important, both for us as a responsible shipping company and for our customers to protect the environment as much as possible."*

The J. Lauritzen shipping company is one of the major Danish shipowners

customers

are keywords in the marine industry

Bourbon Group, Les Abeilles Le Havre

Application:
Habour tug boat

Abeille Gascogne (22), Bourbon Group, Les Abeilles Le Havre, France

Problem

The oil was highly contaminated with blow-by debris, combustion particles, soot and wear metals. Resulting in oil changes every 1000 running hours. In order to extend the oil change intervals and to lower the running costs, the owner decided to install an offline Fine Filter.

Solution

CJC™ Fine Filter HDU 27/81 MZ, with 3 x CJC™ Filter Inserts B 27/27.

Test

In order to compare the oil sample reports, the Fine Filter was only installed on the port engine and samples were taken periodically to monitor the progress of the oil contamination and characteristics.

Result

The soot contamination has been reduced immediately and the TBN value in the port engine is stabilized so that the oil could be used up to 3,000 running hours.

The oil could be used
up to 3,000 running hours

Bourbon Offshore Norway

Application:
Main engines

M/S Bourbon Mistral, Bourbon Offshore Norway A/S

Problem

Ever since they were new, the engines have had problems with high levels of insolubles (0.7 to 1.0% wt) and getting very dirty inside.

Solution

A CJC™ Filter was installed on one of the four engines. After 18 days of operation, an oil sample was sent to Castrol for analysis, showing that insolubles were reduced to 0.1% wt.

Mr. Lars Inge Klauset,
Chief engineer,
M/S Bourbon Mistral:

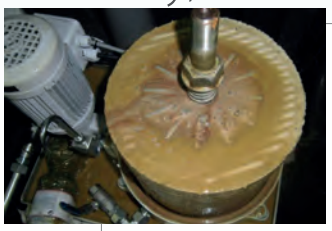
"I recommend that our LO separators are left ashore and that CJC™ Filters are purchased also for the other main engines."

Mr. Torbjørn Gravdal,
Technical Inspector,
Bourbon Offshore, Norway:

"I have sailed as a chief engineer for many years, and have good experience with the CJC™ Filters, so I was not surprised to see the effect of the filters. We are now going to install similar filters on the 3 other engines of the Bourbon Mistral, and on all 4 engines of the sister ship, the M/S Bourbon Monsoon."

TMS-Dry, Greece - EAL/biodegradable oil

Application:
Stern tube



Dirty CJC™ Filter Insert, saturated with highly emulsified EAL oil. After filtration, the stern tube oil is now free of water.

Fleet Manager,
TMS-Dry, Bulk Carrier:

"The CJC™ Combi Unit effectively removed the water from a very expensive lubricant, while our crew is very satisfied with easy installation and low maintenance cost of the CJC™ Units".

Problem

The EAL oil was highly contaminated with water, reaching a level of 366,502 ppm. The customer drained the oil from the stern tube and stored it in drums to avoid damage on components such as bearings and seals. As the oil was highly emulsified, water separation was not possible, neither by centrifugal forces nor by gravitational separation.

Solution

Before installation of the CJC™ Desorber/Filter Combi Unit, a sample was taken and analysed by a laboratory. This sample indicated that the water content reached a level of 351,900 ppm (35.19%). The CJC™ Desorber/Filter Combi Unit was installed on the drums and after 72 hours in operation, a second sample was taken. It appeared that the water content was now reduced to 600 ppm (0.06%). This successful water removal made the customer purchase the unit.
This solution combines a CJC™ Desorber D10 with a CJC™ Fine Filter HDU 27/27 with one CJC™ Filter Insert, type BLA (3 µm absolute).

Your challenges

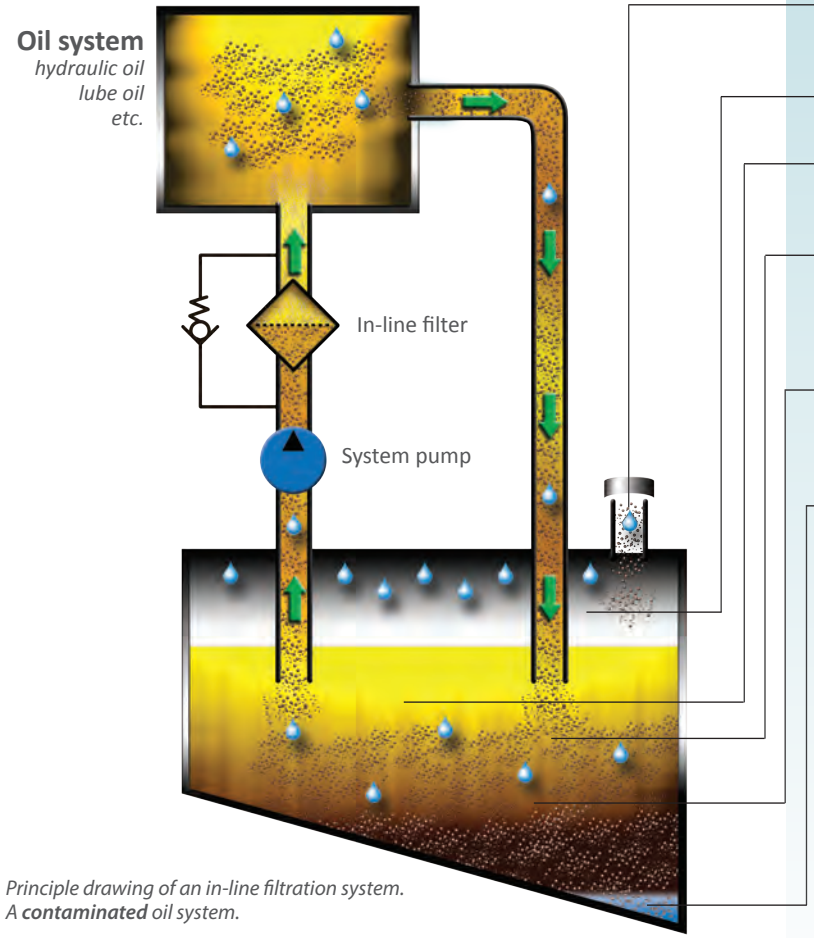
In most applications the in-line filter alone, cannot keep an oil system clean

Millipore membrane
- sample taken
before
installation of CJC™ Offline Oil Filter

Optimum oil cleanliness can rarely be achieved only by in-line filtration

Contamination of an oil system leads to various problems which can result in machine downtime, frequent repairs of equipment and reduced oil lifetime. All of which means inefficient production and unnecessary expenses spent on repair and oil change.

A contaminated oil system with only in-line filtration
without CJC™ Oil Filter



Principle drawing of an in-line filtration system.
*A **contaminated** oil system.*

Contamination

Air vent
Particles and water ingress through the air vent and worn seals

Internal environment
Water condensate in the oil reservoir

Oil reservoir
Contamination is returned to the oil reservoir from the system

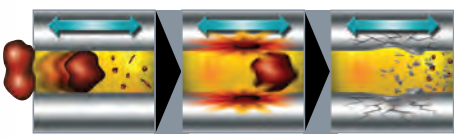
Oil degradation
Wear metals, water and high oil temperature act as catalysts and lead to oil degradation. The result is dirty oil, acid, sludge and varnish formation

Rust/corrosion
Water causes formation of rust particles which separate out at the bottom of the reservoir

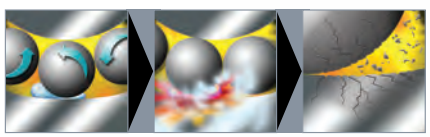
Bottom sediment
Water settles at the bottom of the oil reservoir resulting in bacteria growth, sludge and oil degradation. Wear particles act as catalysts to speed up the varnish formation

Most common types of contamination

Particles (abrasive wear / grinding)
When clearance sized hard particles are wedged between movable metal parts, they destroy the metal surface further and can result in additional wear.



Water (cavitation & pitting)
Occurs in areas where water is present and oil is compressed; the water implodes, causing the metal surfaces to crack and release more particles.



Oil degradation
Wear metal, water and high temperatures lead to oil degradation, which is the precursor of varnish. This results in sticky varnish that deposits on metal surfaces.

Acid
Acid can be found in oil as by-products of oil degradation, combustion of gas or fuel, hydrolysis of Ester-based fluids etc. The amount of acid in oil should be limited, since acid will cause chemical corrosion of machine components and shorten the lifetime of the oil, just to mention a few of the unwanted effects.

Your solution

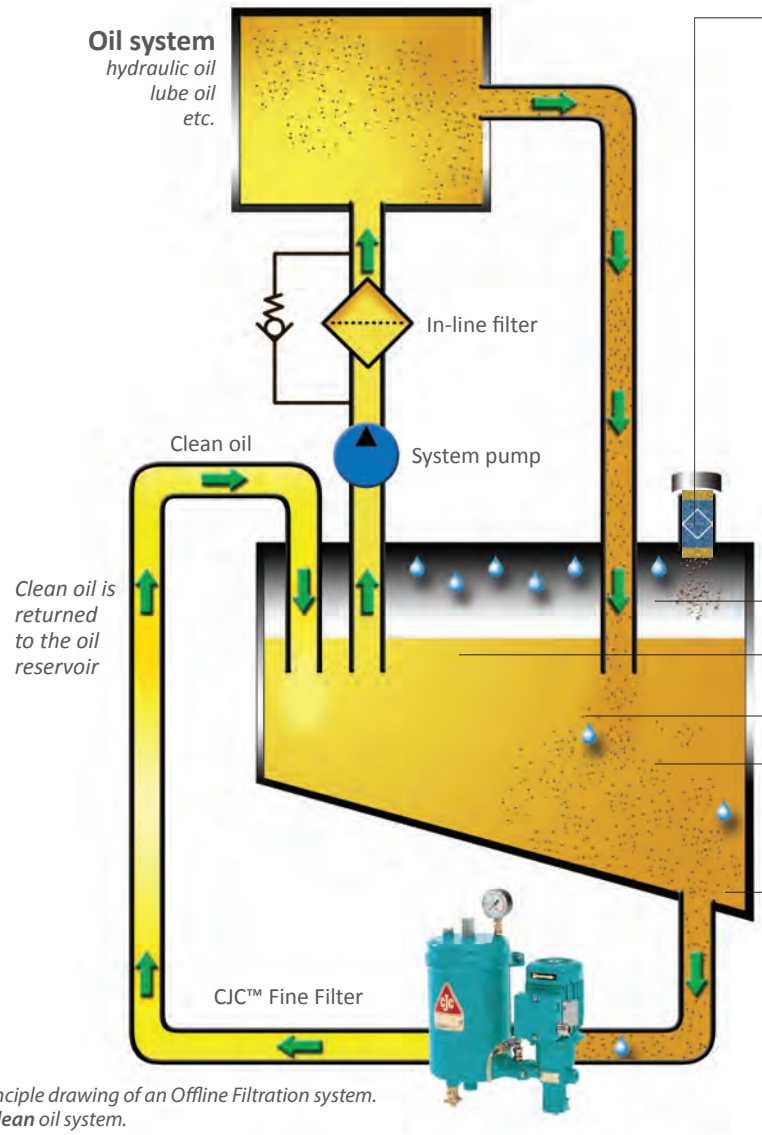
Round-the-clock removal of particles, water, acid and oil degradation products, all in the same operation

1 Filter - 4 Solutions

CJC™ Filter Inserts have a 3 µm absolute filtration ratio and will remove particles, water, acid and oil degradation products in one and the same operation. The CJC™ Filter Insert has a very large dirt holding capacity. The CJC™ products are almost maintenance free and have a very low cost of operation.

Millipore membrane - sample taken ***after*** installation of CJC™ Offline Oil Filter

A clean oil system
with CJC™ Offline Oil Filter



*Principle drawing of an Offline Filtration system. A **clean** oil system.*

Contamination - now under control

Air vent
Contamination can be reduced by adding an air breather filter that eliminates particles and moisture.

Internal environment
Water still condensates in the oil reservoir, but with the CJC™ Fine Filter it will be absorbed

Oil reservoir
Clean oil from the CJC™ Fine Filter is returned to the oil reservoir - ready to be used in the system

Oil degradation
The risk of developing acids, and oxidation by-products has been considerably decreased

Rust/corrosion
Contamination is still being created but is removed by the CJC™ Fine Filter

Bottom sediment
Water and particles no longer settle. No more bacteria or varnish

Contamination capacities

All CJC™ Filter Inserts have outstanding oil filtration capabilities with filtration degrees of 3 µm (micron) absolute. This means that 98.7% of all solid particles larger than 3 µm and approximately 50% of all particles larger than 0.8 µm are retained - in one single pass.

Capacities:	15/25 series:	27/27 Series:	
Particles	1.5 kg	4-8 kg	per insert
Water	0,75 L	2 L	per insert
Varnish	1 L	4 L	per insert

CJC™ Filter Insert **before** use

CJC™ Filter Insert **after** use

Our

All CJC™ Oil Filter series are of simple design,

Optimum oil performance
with CJC™ Offline Oil Filters & Purifiers

CJC™ HDU series

The CJC™ Fine Filters remove particles, water, and oil degradation products from hydraulic, gear and lubrication oils and have flow rates from 45 to 20,000 L/h.

CJC™ HDU 27/27

CJC™ Marine Lube Oil Purifier

CJC™ PTU series

The CJC™ Filter Separators combine depth filtration with water separation and are used for water contaminated diesel, hydraulic and steam turbine lube oils.

The CJC™ PTU Series continuously removes water from oil in large volumes.

CJC™ PTU2 27/27

CJC™ Marine Diesel Purifier

The CJC™ Filter Insert system

All CJC™ Filter Inserts have a 3 µm absolute filtration ratio and will remove particles, water, oil degradation products and acid. The CJC™ Filter Inserts are produced of **100% natural cellulose fibres** from sustainable resources.

- **Particles** down to 0.8 µm are retained in the unique CJC™ depth filter media (cellulose).
- **Water** is removed either by absorption or separation according to oil system requirements.
- **Oil degradation products** are removed by the attraction to the polar fibers.
- **Acid** can be neutralized with ion exchange resin media.

Modular build-up

The modular build-up of the CJC™ Filter Inserts means that a CJC™ Fine Filter can be designed to fit any applications and requirements

products

easy to install and almost maintenance free

CJC™ Desorber series

The CJC™ Desorbers provide solutions for removal of water in mineral, synthetic and high viscosity oils.

The Desorbers remove water even from stable emulsions and from oils with a density above 1.

CJC™ Desorber D10

CJC™ Desorber/Filter Combi Unit

The CJC™ Desorber/Filter Combi unit is a combination of a CJC™ Desorber D10 and a CJC™ Fine Filter, HDU 27/27.

The Desorber/Filter Combi unit **removes large amounts of water, varnish** and **particles** from a wide range of lubricants including emulsified oils and **EAL's** (Environmentally Acceptable Lubricants) / **Biodegradable Lubricants.**

CJC™ Desorber/Filter Combi Unit

CJC™ Blue Baleen series

CJC™ Blue Baleen System
The CJC™ Blue Baleen System absorbs oil from bilge water effluent and is capable of reducing the oil content to a value less than 5 ppm. This ensures that environmental performance, objectives and targets are met.

The CJC™ Blue Baleen OilAbsorb Insert ensures a fast return of investment due to its high yield compared to the cost of landing bilge water ashore

CJC™ Blue Baleen Insert

CJC™ Blue Baleen System

C.C.JENSEN
- contact us today!

1953-2016 63 Over 63 years of Increasing Reliability & Reducing Costs

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