



“Importance to pro-actively refine industrial oils from water in regards of the improvements related to sustainability and productivity in various applications”

LUBRICATION EXPO 2022



AGENDA



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CLEAN OIL TECHNOLOGY

Background



Today exist a lot of different high quality performing lubrication oils. Fossil-based oils are still most common but biodegradable fluids are increasing rapidly to prevent the hazardous impact on our global environment.

These oils are performing as expected if they are not contaminated. In use, in any application, will always the oil be contaminated leading to lowered performance and affecting negatively the application and related components.

Since long have various systems been available to purify the lube oil (or any industrial oils). Either as a service solutions like centrifugal/vacuum systems, also including oil change intervals, or as pro-active solutions like filters. These are aimed to remove contaminations like particles but sometimes also water (mainly free).

CLEAN OIL TECHNOLOGY

What is the problem of water in oil?



Water can be present in the oil as free, emulsified and/or dissolved.



CLEAN OIL TECHNOLOGY

What is the problem of water in oil?



- Shorter life of the components as water causes micro-dieseling and cracking in the system
 - Erosion and Cavitation
 - Fragilization
 - Oxidation of the oil
 - Wear caused by loss of oil film or hard water deposits
- Leaky fittings
 - Leaky gaskets
 - Breathers
 - and more



Contributes to create particles and varnish!

CLEAN OIL TECHNOLOGY

Win - Win



1. **End-users:** If you can proactively and continuously keep the oil free from water you will minimize service downtime and reducing cost of oil exchange and component repairs. Keeping oils free from water will reduce service stops with up to 50% or more and very importantly improve productivity of the application.

€ / US\$ / GB£ / SEK

2. **Environment:** Will lead to lower the CO₂ foot-print of the application due to less oil used and need of replacement of components due to service/maintenance.
(Every single litre saved of the generated annual +6 billion litres of dirty oil saves approx. 3,8kg CO₂)



COT Oil Refiner System uniqueness

What we do!



We provide a solution to the growing industry-wide problem of water contamination of oil in machinery equipment as well as extending service life of the lubrication-/hydraulic equipment and improved productivity.

We develop and market technology for continuous reduction of water contaminations in lubricating and hydraulic oils during operation of industrial and mobile equipment.

- Continuously purifies oil from water to lower levels (ppm) than traditional systems available on the market meaning well below 200 PPM and often below 100 PPM
- A flexible system/solution both in terms of capacity as well as installation and integration
- Reduces the creation of particles and varnish in the oil
- Due to the efficiency of the system, it supports the transition from fossil-based oils to bio-oils in all applications
- Our proprietary technology manage, compared to other available technologies, to take out also dissolved water

COT Oil Refiner System uniqueness

Why we do it!



ENVIRONMENTAL BENEFITS = Lowered CO₂ footprint

- Significantly extends the life-span and usage of the oil
- Facilitates conversion from fossil oil to bio-based oil
- Reduces the consumption of component spare parts
- Low energy consumption - 50% less or more (depending on alternative solution)
- No generation of any residuals/waste hazardous for the environment

CUSTOMER/END-USER BENEFITS = Improved Total Cost of Ownership (TCO)!

- Extended life for system components (pumps, valves, bearings, gears, seals, gaskets...)
- Reduced oil change costs
- Minimizes unplanned service stops
- Solution do not require any maintenance/service actions to remove water
- Improves the productivity of the application
- Short investment payback – typically 3-12 months

COT Oil Refiner System uniqueness

Why we do it! (cont.)



OTHER CUSTOMER/END-USER BENEFITS

- Pro-active solution to protect the oil and the application/system
- Scalable related to capacity needs
- Energy consumption is very low (50% less or more compared to alternative solutions)
- Small foot-print & Low weight
- Fits “every-where” for system integration and for retro-fit
- Solution for Mobile applications
- Adaptable to different environments and applications

COT Oil Refiner System uniqueness

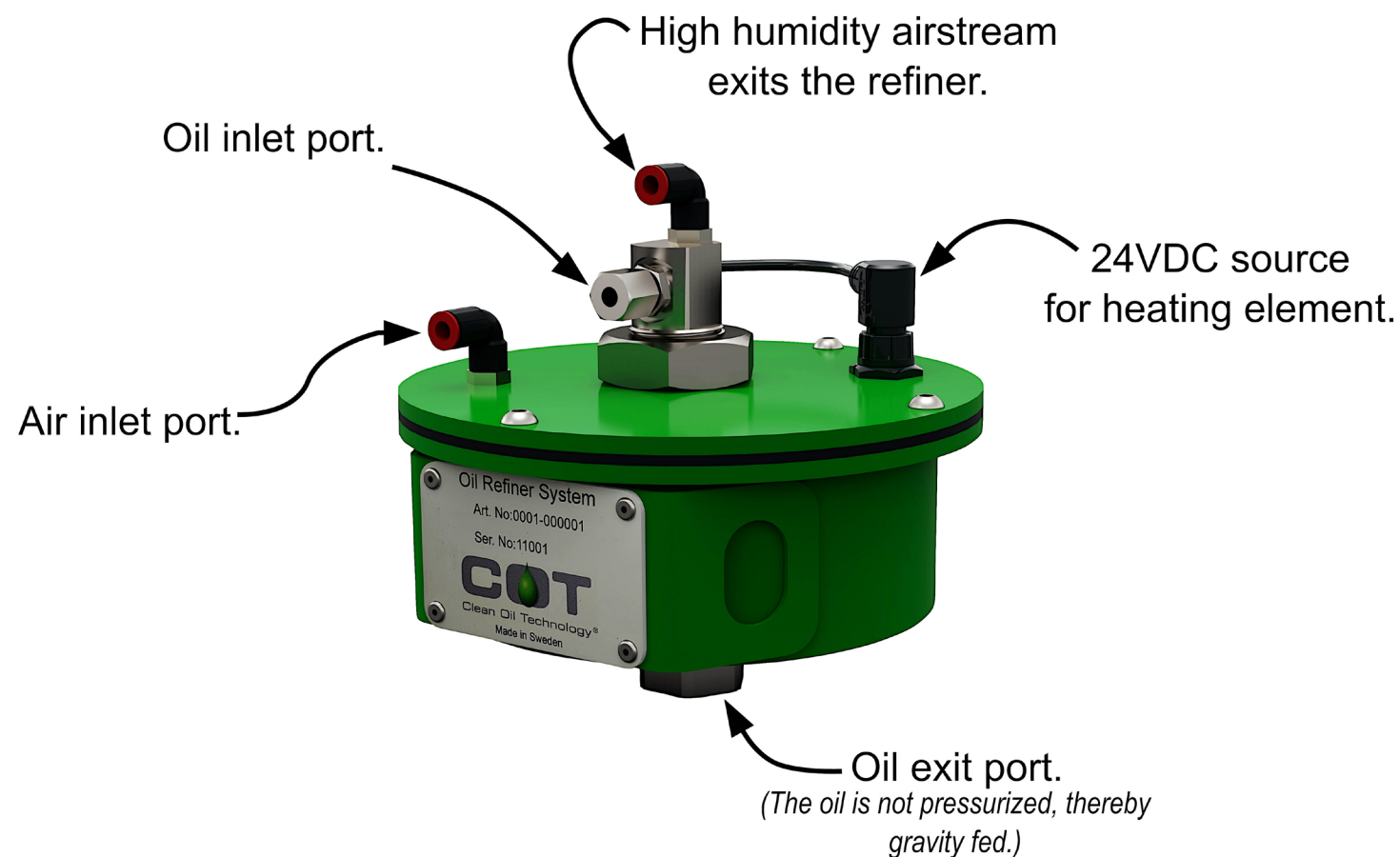
Solution



The COT-600 refiner principle.



It's the precisely controlled interaction between air, oil and heat, across very specific geometry, that gives the refiner its ability to extract the oils water content. Pushing it to the surrounding atmosphere in the form of high humidity airflow.



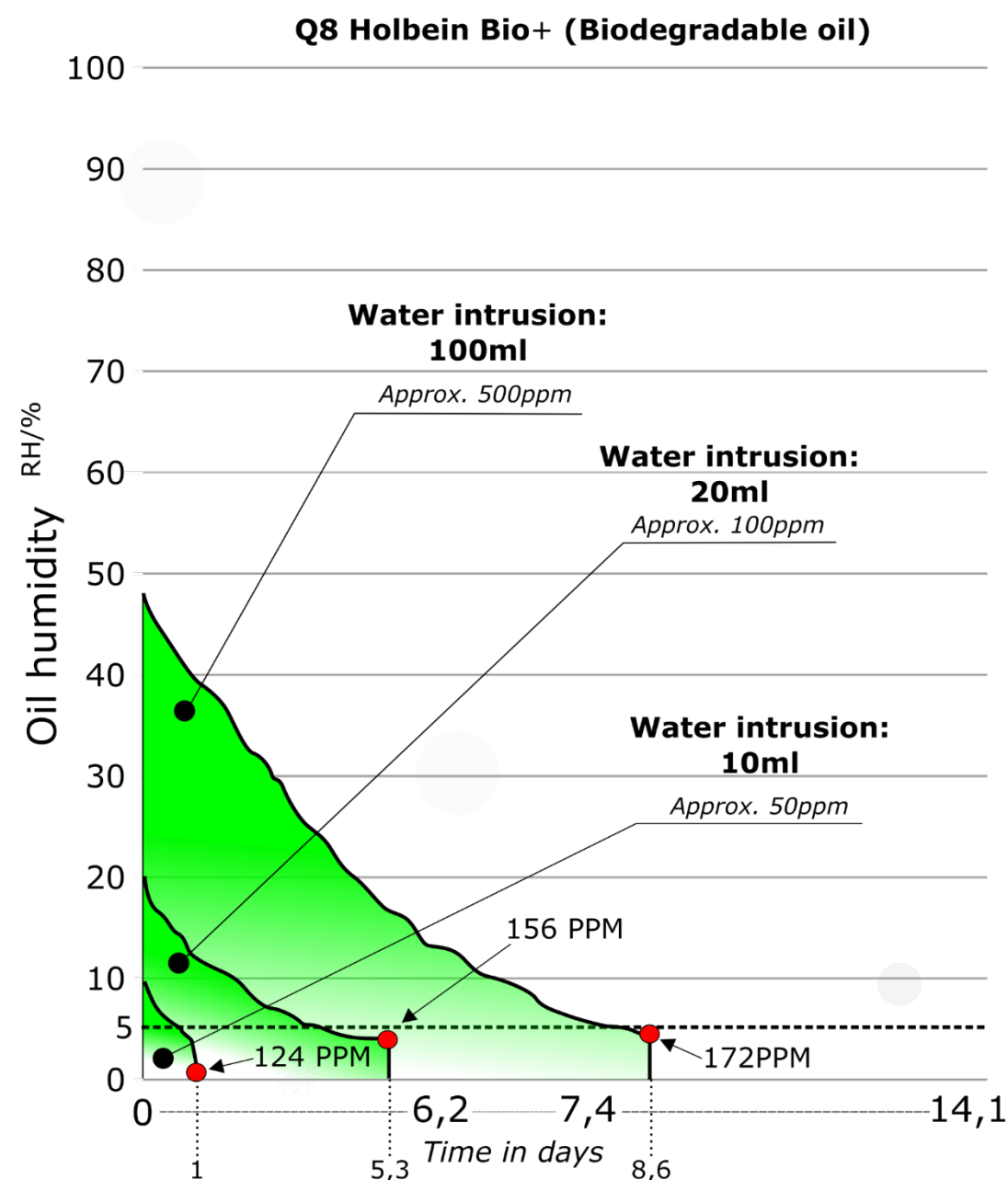
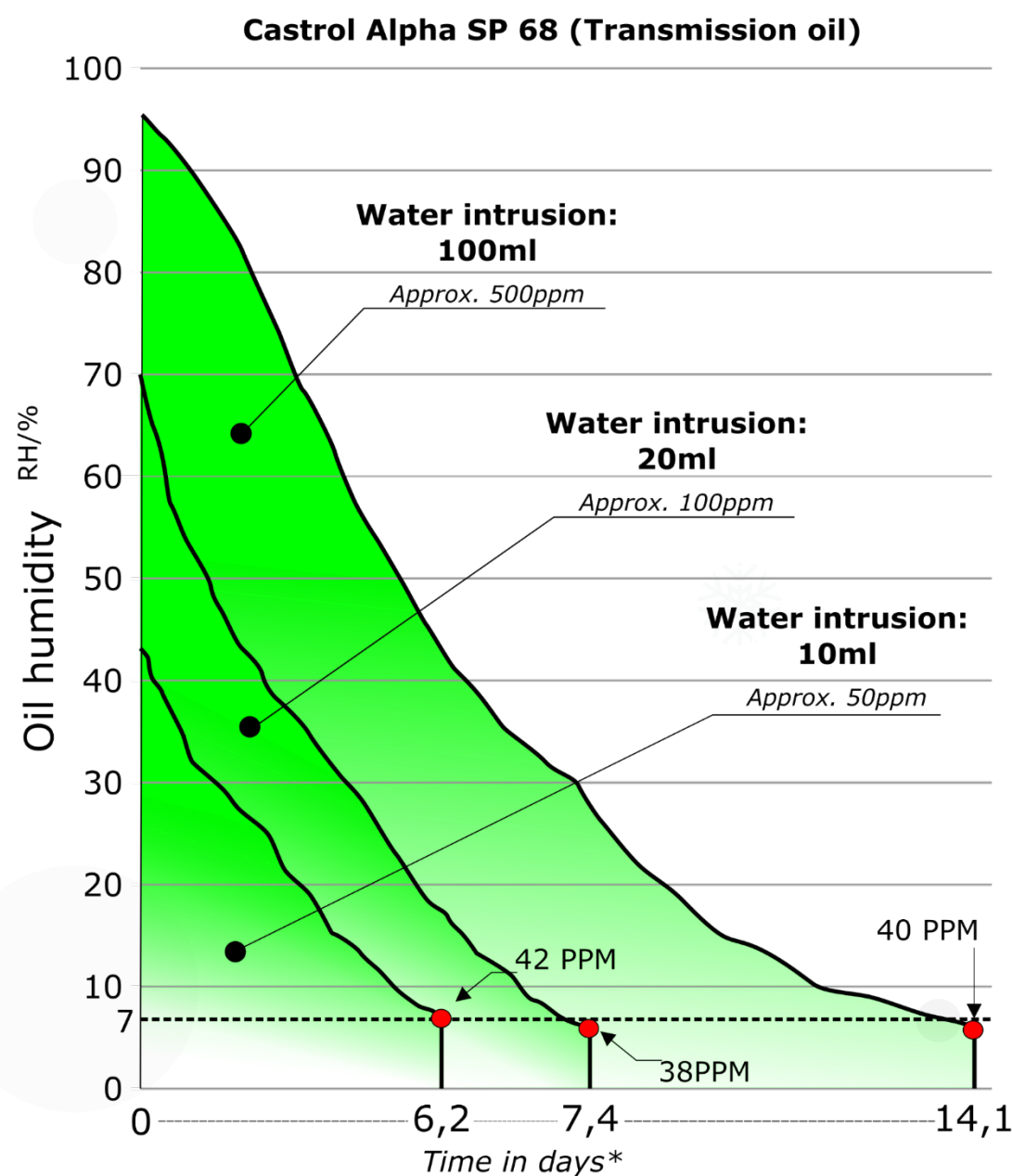
www.cot.se

COT Oil Refiner System uniqueness

Result



COT system: **COT-600-E-0-D-0-K-P**
 Volume: **208l**, Oil temp at source: **40°**
 Air source: **Compressor, 15l/m@6bar**, Air humidity into COT system: **10%Rh**
 Water used: **Saltwater@30PPM Salinity**



COT Oil Refiner System uniqueness

Water level effect on machine life



Moisture level effect on machine life

Current level of moisture, ppm	Machine life extension by factor								
	2	3	4	5	6	7	8	9	10
50 000	12 500	6 500	4 500	3 125	2 500	2 000	1 500	1 000	782
25 000	6 250	3 250	2 250	1 563	1 250	1 000	750	500	391
10 000	2 500	1 300	900	625	500	400	300	200	
5 000	1 250	650	450	313	250	200			
2 500	625	325	225						
1 000	250								

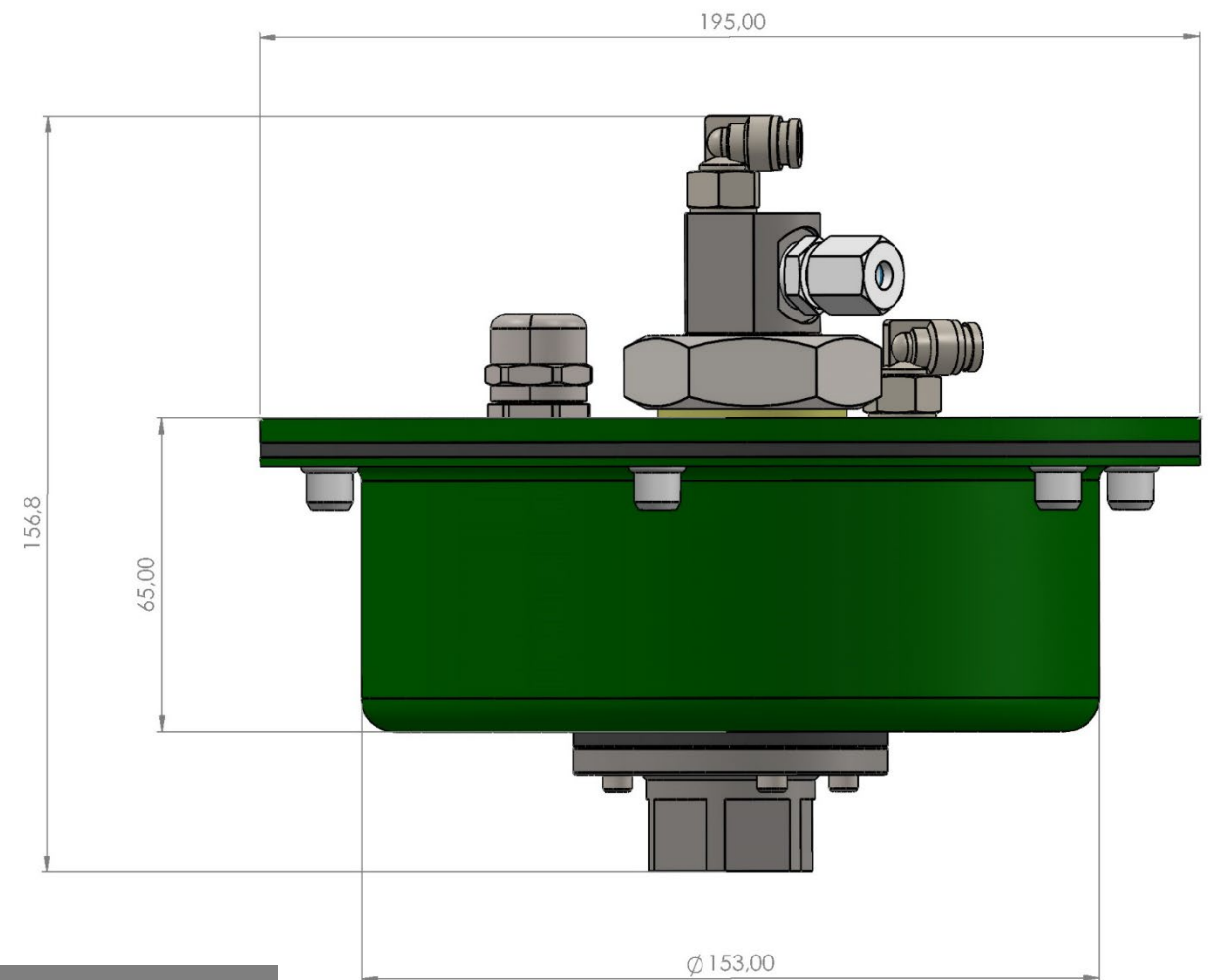
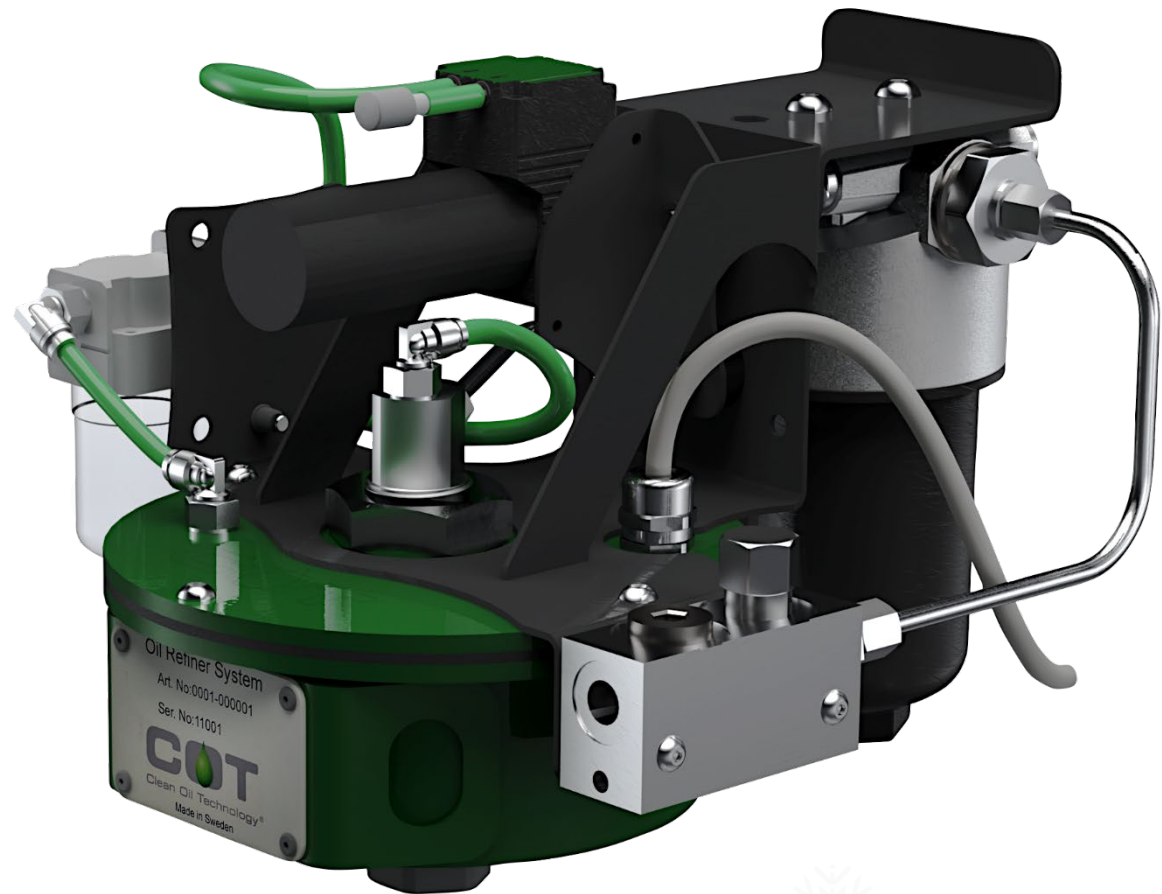
This chart is an estimate of the prolonged lifetime of machinery as an effect of clean oil.

Source: Alfa Laval – White paper: The Importance of Lube Oil Cleaning

COT Oil refiner can purify the oil well below 200ppm and often below 100ppm!

Product portfolio

COT600-Modular products for wide coverage



+ 12 different STD versions

Equipment:

Flow valve, air control, air pump, particle/water filter.

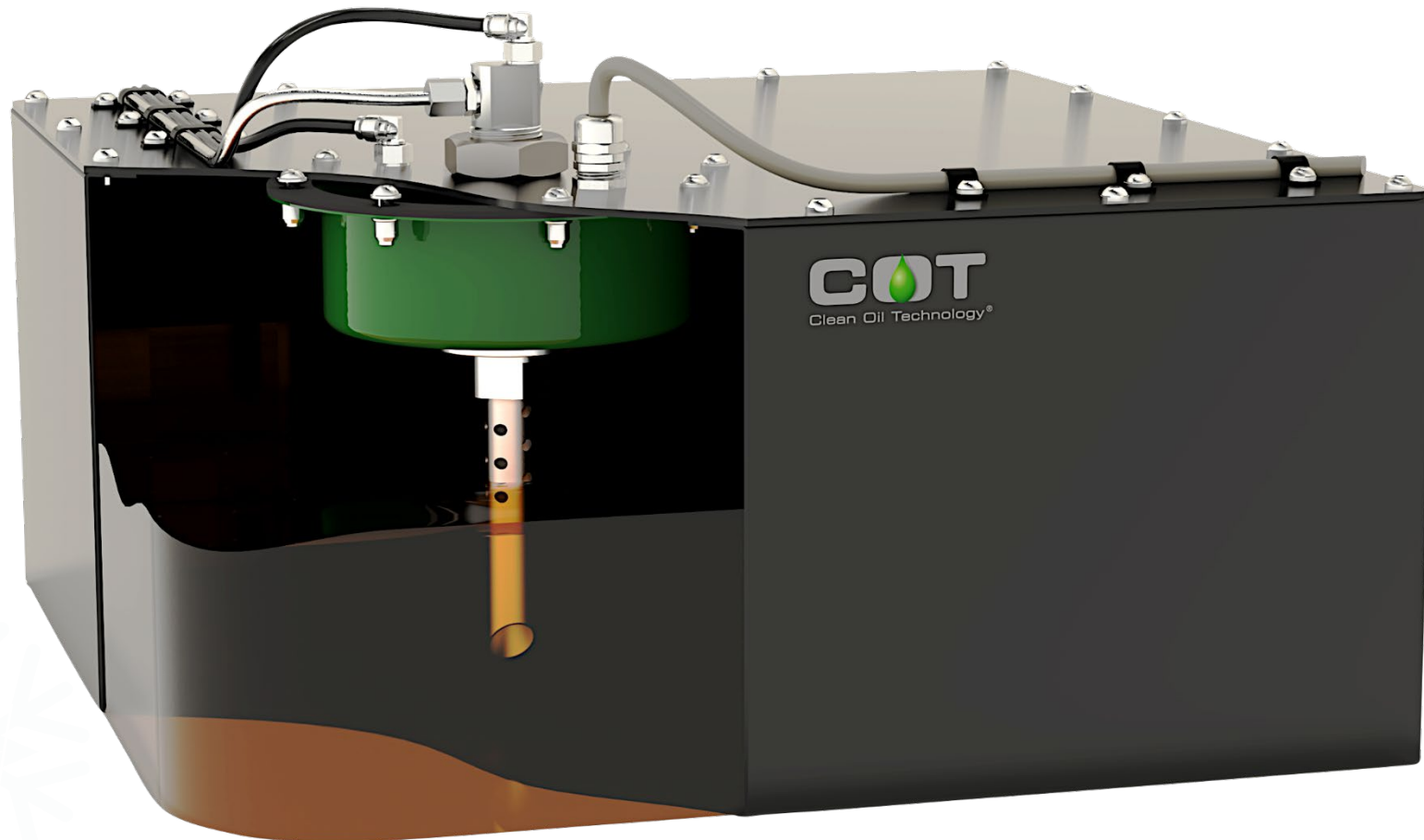
Typical application:

Customer without compressed air, providing oil feed from main system.

Need for additional oil filtration/water buffering.

Product portfolio

COT600 – In tank installation



In tank installation:

- Minimal footprint
- Few components
- Possible to retro fit
- Single unit up to 600l* of volume.
- Multiple units can be used per system.
- High performance at great value.

*Volume might be greater/less depending on level of water intrusion.

Product portfolio

COT2000 – Self sustaining circuit



Oil volumes >1000 litre



Technical data COT 2000	
Weight	45 kg (87 lb)
Measurment	610x467x700 mm
Power supply	110-230AC/10A
Power consumption	100-600 W (dep. oil temp)

Why the COT Oil Refiner System?

Summary:



SOLUTION

- Continuously purifies oil from water to lower levels (ppm) than traditional systems/filters.
- Reduces the creation of particles and varnish in the oil.
- Supports the transition from fossil-based oils to biodegradable oils in all applications.
- Flexible system in terms of capacity and installation with the small foot-print and modularity. Greatly supports the integration in applications and as a retro-fit unit.
- Much lower energy consumption compared to available systems on the market.
- Requires no maintenance/service and only normal supervision.

WIN-WIN: SAVING THE ENVIRONMENT AND MONEY

- Does not generate any residues/waste for the environment.
- Minimized CO₂ foot-print for the application due to less usage of oil and components.
- Low upfront investment cost compared to available systems on the market and improved TCO ("Total Cost of Ownership") leading to short pay-back time (ROI).

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