

COT

Turbine Oil Conditioning Skids

Remove harmful particulate and water contamination and achieve target ISO Codes faster with the COT.

Ideal for preventing unplanned downtime and premature component failures in turbine lube systems.



hyprofiltration.com/COT



Size matters.

COT optimizes coalesce and separator flow density to rapidly remove gross free water ingress during steam turbine start-up or in the event of a seal leak. High single pass water removal efficiency that keeps up with ingress so your bearings don't see free or emulsified water.



Filtration starts with the filter(s).

COT combines high efficiency single pass particulate and water removal to ensure that your turbine oil is always in spec, eliminating premature component failures and downtime. With particulate media options down to $\beta_{2.5_{\mu m}} > 1000$ and 100% synthetic coalesce/separator elements that remove all free and emulsified water down to saturation point, your turbines will be protected and running more efficiently than ever.



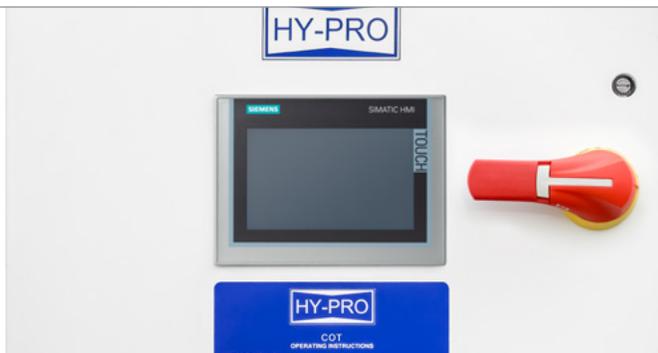
Setting the new standard.

Sampling and preventative maintenance are no longer optional, they're a necessity. That's why every COT comes standard with properly positioned sample ports to arm you with access to consistently accurate system conditions and letting you know exactly how well your filtration is performing.



Take control of your systems.

Smart relay and auto water drain make COT a 24/7 unattended, easy-to-operate solution that functions as an in-line contamination barrier for every drop of turbine oil that goes into your turbines. Optional PLC touchscreen enables custom programming so your COT can purify reservoirs on your schedule and even data log ISO Codes and water removal rates so you know your lube is clean and reliable when you're on and off the clock.



You can't beat the heat.

With no direct contact with the heating element, your turbine oil will safely and quickly get up to temperature without the risk of burning. The programmable temperature control with integral no-flow switch prevents oil damage and allows you to heat your fluids at your own pace. And what's more: all this comes standard on every COT.



Built to exceed your expectations.

Flexible dimension and process arrangement are available with every COT so you get the perfect contamination solution for your turbine lubrication system. Even choose from explosion proof models and color coordinate to fit perfectly with your existing safety standards for the ultimate system in turbine oil conditioning.



COT Reference Guide

COT30 model shown



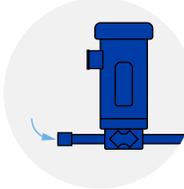
The COT Process

How it works

Oil from the system entering the COT through a positive displacement gear pump passes through low watt density heat to achieve the optimum turbine oil temperature for efficient liquid-liquid separation by coalesce, $>100^{\circ}\text{F}$ (38°C).

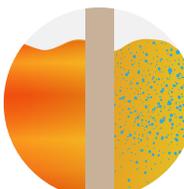
The first stage of oil conditioning is particulate removal by $\beta_{5_{[c]}} > 1000$ high efficiency glass media element. Next, the oil enters the two stage coalesce vessel where the oil passes through 100% synthetic media coalesce elements. The free and emulsified water coalesces to form larger droplets that overcome the specific gravity of the oil and drop to the bottom of the vessel. Stage two in the coalesce vessel is the separator/post-filter element that functions as a water barrier for emulsified and small droplets of water that have not reached a size large enough to drop of suspension. After passing through the water barrier, the oil passes through a final stage of particulate removal filtration by $\beta_{2.5_{[c]}} > 1000$ media to achieve even lower operating ISO Codes.

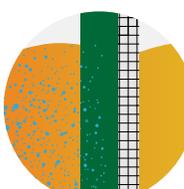
The coalesce vessel will achieve single pass water removal from 5000 ppm to <150 ppm under normal operating conditions and oil health. As water collects in the bottom of the coalesce vessel, a specific gravity float reaches a limit indicator that will open the automatic water drain valve and eject the separated water as it is removed to allow for 24/7 continuous operation. When fitted with a totalizing meter on the water drain line, quantity and timing for water removal can be established.

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1 Contaminated oil is drawn into the COT by the electric motor and suction pump
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2 Oil passes through the low watt density heaters to achieve optimal temperature for coalesce
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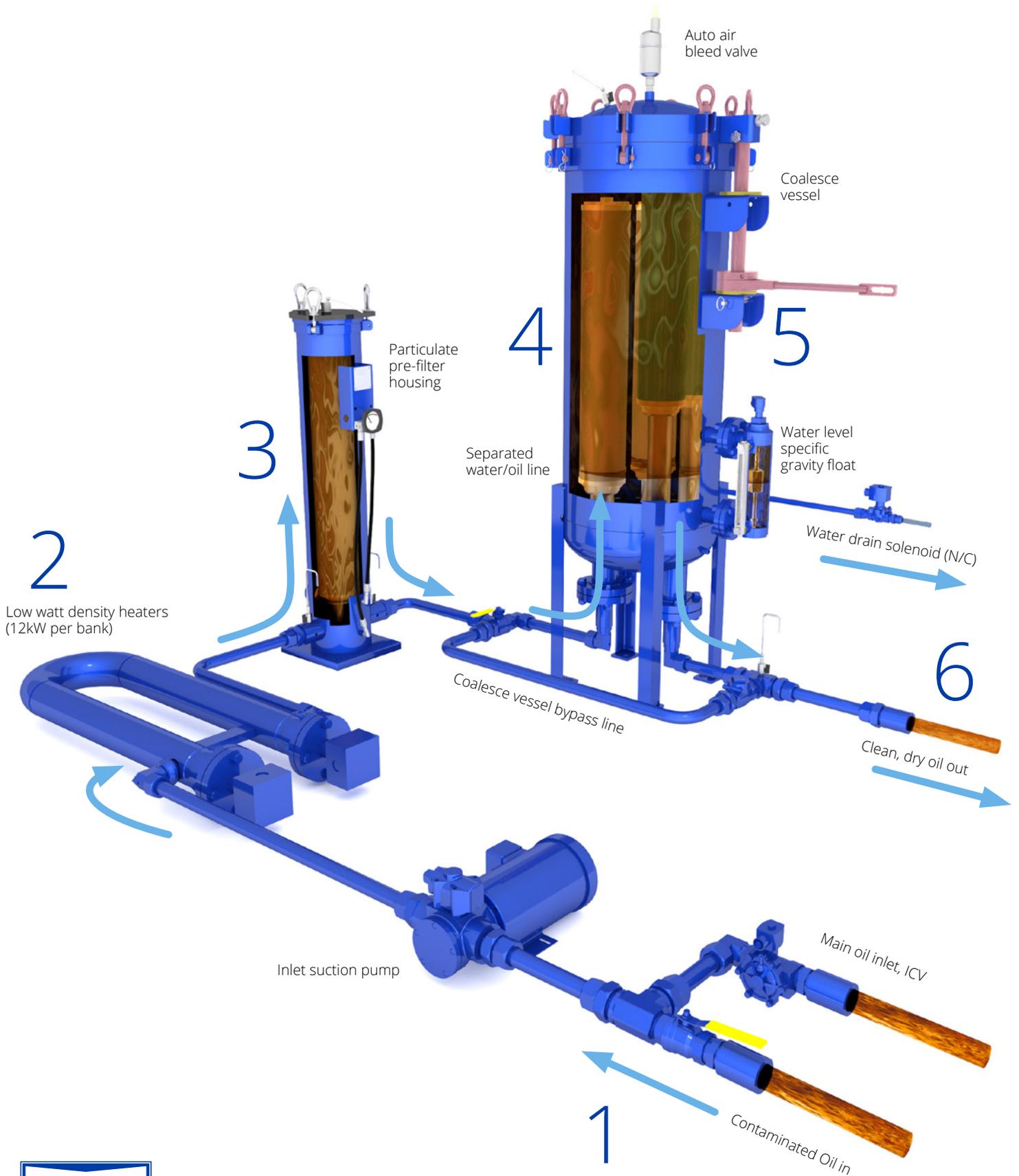
3 Oil passes through the $\beta_{5_{[c]}} > 1000$ particulate filter
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4 Oil/water emulsion moves from the particulate filter to the coalesce stage where water is divided from the oil
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5 Oil passes through the water barrier separating element, followed by a $\beta_{2.5_{[c]}} > 1000$ polishing media
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6 Clean, dry oil exits the COT to be returned to the system

The COT Process



COT Specifications

Model	COT5	COT10	COT30	COT60	COT100
Max Reservoir Size	800 gallons (3000 liters)	1600 gallons (6000 liters)	4000 gallons (15100 liters)	8000 gallons (30300 liters)	13250 gallons (50200 liters)
Height ¹	65" (165 cm)	83" (211 cm)	88" (224 cm)	88" (224 cm)	100" (254 cm)
Length ¹	56" (142 cm)	60" (153 cm)	84" (213 cm)	84" (213 cm)	96" (244 cm)
Width ¹	32" (81 cm)	40" (102 cm)	40" (102 cm)	60" (153 cm)	60" (153 cm)
Weight ¹	1400 lbs (635 kg)	2000 lbs (907 kg)	2700 lbs (1225 kg)	3400 lbs (1542 kg)	4400 lbs (1996 kg)
Inlet ²	1" (2.5 cm)	1.5" (4 cm)	2" (5 cm)	3" (7.5 cm)	3" (7.5 cm)
Outlet ²	1" (2.5 cm)	1" (2.5 cm)	1.5" (4 cm)	2" (5 cm)	3" (7.5 cm)
Motor Size	1 hp	1.5 hp	5 hp	7.5 hp	10 hp
Pre-Filter Elements	1	1	1	2	3
Coalesce Elements	1 x HP538L38-CS3MV ³	2 x HP731L39-CV	5 x HP731L39-CV	8 x HP731L39-CV	10 x HP731L39-CV
Separator/ Polish Elements	(combination element)	1 x HP582L30-S1MV	3 x HP582L30-S1MV	5 x HP582L30-S1MV	9 x HP582L30-S1MV
Seals	Fluorocarbon				
Operating Temperature	Fluid Temperature 32°F to 200°F (0°C to 93°C)		Ambient Temperature 40°F to 104°F (4°C to 40°C)		
Materials of Construction	Housings Carbon steel with industrial coating		Frame Carbon steel with industrial coating		
Media Description	M G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x_{Cl}}$ = 1000 (β_x = 200)		Coalesce/Separator Coalesce: 100% synthetic fiber media Separator: TEFLON® coated screen (water barrier)		
Fluid Compatibility	Mineral based turbine oil, call factory for synthetic. Cannot be used with AW hydraulic oils or phosphate esters. For water removal in AW hydraulic oils and phosphate esters, see VUD (page 136).				

¹Dimensions are approximations taken from base model and will vary according to options chosen.

²Female pipe port.

³HP538L38CS-3MV element combines coalesce and separator element functions into a single element.

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COT Part Number Builder

COT - -

Flow Rate Power Options Heat Capacity Seal Special Options

Flow Rate ¹	
5	5 gpm (18.9 lpm)
10	10 gpm (37.9 lpm)
30	30 gpm (114 lpm)
60	60 gpm (225 lpm)
100	100 gpm (379 lpm)

Power Options	60 Hz, 1750 RPM	50 Hz, 1450 RPM	
	23 ²	230 V ac, 3P	38
46	460 V ac, 3P	41	415 V ac, 3P
57	575 V ac, 3P	52	525 V ac, 3P

Heat Capacity	
12	12 kW
24	24 kW
36 ³	36 kW
48 ³	48 kW
64 ³	64 kW
72 ³	72 kW
84 ³	84 kW
X	No heaters

Seal	
V	Fluorocarbon

Special Options	
8	8" (20 cm) solid wheel upgrade
A ⁴	Auto water drain (manual drain included)
B	Adjustable coalesce vessel bypass loop
C	CE marked for machinery safety directive 2006/42/EC
H	Manual reset hour meter
J ³	Individual heater selector switches for limited amp circuits
K	Sight flow indicator
L	Lifting eye kit
M	Water discharge totalizing meter
O	On-board PM-1 particle monitor & clean oil indicator light
P	PLC touch screen control (does not include VFD)
Q ^{4,5}	Maintenance spares & repair kit
S	Oil sensing safety shut-off in water discharge line
T ⁴	10' (3 m) hose kit + wands (JIC female connections)
U	50' (15 m) electrical cord (no plug supplied)
V	Inlet control valve (for positive head application)
X	Explosion proof - Class 1, Div 2, Group C+D. Consult factory for other explosion proof options.
Y	VFD variable speed motor frequency control
Z ⁴	On-site startup training (1 x 10 hour shift)

¹Nominal flow rates at 60 Hz motor speeds.

²Only available with COT5.

³Possible high full amp load (consider special option J).

⁴Recommended option.

⁵Q option repair & spares kit includes several items such as fuses, common rely, panel bulb, and replacement element set for coalesce chamber & particulate housing.



Filtration starts with the filter.

Lower ISO Codes: Lower Total Cost of Ownership Hy-Pro filter elements deliver lower operating ISO Codes so you know your fluids are always clean, meaning lower total cost of ownership and reducing element consumption, downtime, repairs, and efficiency losses.

DFE Rated Filter Elements DFE is Hy-Pro's proprietary testing process which extends ISO 16889 Multi Pass testing to include real world, dynamic conditions and ensures that our filter elements excel in your most demanding hydraulic and lube applications.

Upgrade Your Filtration Keeping fluids clean results in big reliability gains and upgrading to Hy-Pro filter elements is the first step to clean oil and improved efficiency.

Advanced Media Options DFE glass media maintaining efficiency to $\beta_{0.7, \mu} > 1000$, Dualglass + water removal media to remove free and emulsified water, stainless wire mesh for coarse filtration applications, and Dynafuzz stainless fiber media for EHC and aerospace applications.

Delivery in days, not weeks From a massive inventory of ready-to-ship filter elements to flexible manufacturing processes, Hy-Pro is equipped for incredibly fast response time to ensure you get your filter elements and protect your uptime.

More than just filtration Purchasing Hy-Pro filter elements means you not only get the best filters, you also get the unrivaled support, training, knowledge and expertise of the Hy-Pro team working shoulder-to-shoulder with you to eliminate fluid contamination.

Want to find out more? Get in touch.

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MKTLITFCE-COT-022217-BC