

utilizing

Ion Exchange Technology

Endorsed by

The Dow Chemical Company*
world leader in synthetic compressor fluids!

* Fluid Metrics, LLC is not affiliated with The Dow Chemical Company.

Rotary Screw Compressor

Continuous Bypass

Compressor Oil Purifier

*Increases Service Life of Oil & Separators
 Reduces Parts Usage & Maintenance Labor*



*Protects Bearings, Coolers, Valves & Seals
 Reduces Major Repairs & Downtime*

*Minimizes Separator Pressure Drop
 Reduces Compressor Energy Consumption*



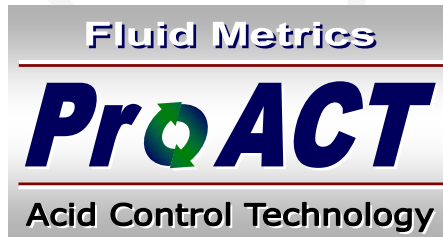
*Reduces Hazardous Waste Generation & Disposal
 Helps Protect the Environment*



Purify Protect & Save!

Proven Technologies

Acid Adsorption
 +
Ultrafine Filtration



Ion Exchange Technology

Tested & Proven by

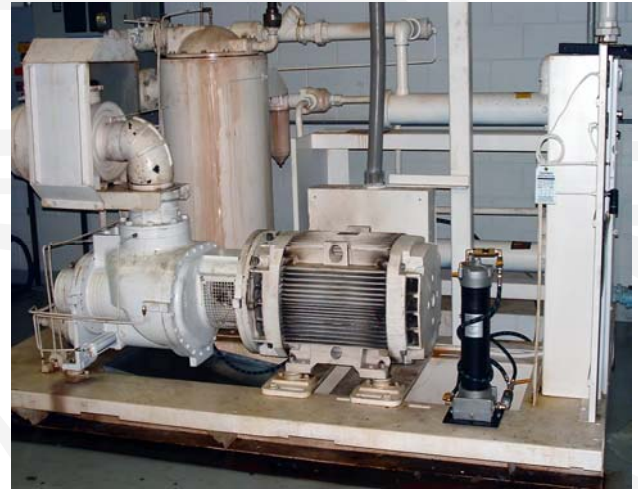
The Dow Chemical Company*

"...to be extremely effective at removing acids and extending the service life of synthetic compressor lubricants."

Contamination - The Hidden Enemy of Your Compressor!

Contamination of rotary screw compressor fluids is **the root cause** of high compressor operation and maintenance costs. Fluid contamination reduces the service life of the oil and every component it contacts by accelerating **oil degradation, acid production, wear, corrosion** and **fouling**. Unfortunately, rotary screw compressors have a **forced contamination** design that continuously ingests harmful solid and vapor contaminants and forces them directly into the oil. Inside your compressor, these contaminants chemically react with the oil in an extreme oxidative environment to **produce acids** and negatively impact the oil's **physical, chemical** and **performance properties**.

Traditional "preventative maintenance" only treats **the symptoms** of fluid contamination by simply replacing or repairing the affected components. This practice ignores the **acids** and **ultra-fine solids** that accumulate in the oil and reduce its ability to lubricate, cool and protect vital compressor internals. Ignoring these destructive contaminants drives up compressor operating costs by **increasing fluid and parts usage**, separator pressure drop and **energy consumption, maintenance frequency, major repairs**, unnecessary **downtime**, and **hazardous waste handling** and **disposal**.



Fluid Metrics COP-30 - Gardner Denver 150 HP

COP - The Proactive Solution

The **Fluid Metrics COP** is a **proactive maintenance** contamination control system specifically designed for oil-flooded rotary screw air compressors. The **COP** installs easily on any compressor to continuously remove the **acids** and **ultra-fine solids** known to reduce the service life of expensive compressor fluids, separators, bearings, coolers and more. By removing these harmful contaminants, the **COP** retards the oil degradation process which extends the oil's service life and helps protect vital compressor internals against destructive wear, corrosion and fouling.

The **COP** is **not just a filter**, it's an **OIL PURIFIER**. Standard full flow oil filters only remove coarse solids (~ 25 micron *absolute*) and do nothing to remove the more destructive **clearance-size solids** or the harmful **acids** produced from oxidation. **The COP's** unique **PROACT Acid Control Technology** combines two proven technologies to **proactively remove** both the **ultra-fine solids** and **catalytic acids** left in the oil by standard filters. This capability sets the **COP** apart as, "**The Best Practice in Rotary Screw Compressor Maintenance!**"

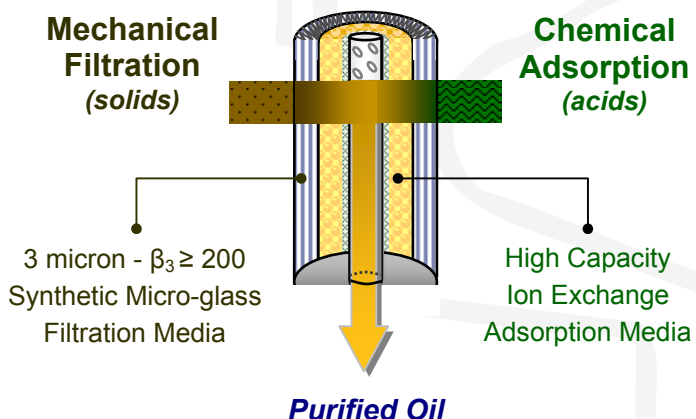
Compressor Oil Purifier



"The Best Practice in Rotary Screw Compressor Maintenance!"

Patent Pending

Dual Core Cartridge



The heart of the **COP** is its *patent pending* **Dual Core Cartridge** that combines state-of-the-art **Mechanical** and **Chemical** separation technologies. As a small slip-stream of contaminated oil flows from outside-in through the **COP's** cartridge, **ultra-fine** or **clearance-size** solids are removed down to **3 microns absolute**. The pre-filtered oil then passes through the **ion exchange media** which **adsorbs** and **neutralizes** both weak and strong acids that build up in the oil. **Fluid Metrics** utilizes a proprietary **high capacity ion exchange media** that is proven to **safely** remove acids in synthetic compressor lubricants without affecting the oil's protective additives. By **proactively** removing these harmful contaminants, the **COP** helps maintain the oil's original physical, chemical and performance properties; dramatically extending the oil's service life; and providing **increased protection** to expensive compressor components.

Savings & Performance - You Can Measure!



Fluid Metrics COP-60 - Sullair 400 HP

To become more competitive, companies are looking for new ways to reduce their operation and maintenance costs and improve equipment reliability. The **Fluid Metrics COP** achieves both by eliminating the root cause of most compressor component failures and generating measurable **SAVINGS** of up to **50%**. Continuous use of the **COP** is **PROVEN** to...

- ☑ **REDUCE** compressor fluid, separator and parts usage.
- ☑ **REDUCE** maintenance and repair labor and downtime.
- ☑ **REDUCE** separator energy consumption / pressure drop.
- ☑ **REDUCE** hazardous waste generation and disposal.
- ☑ **REDUCE** total compressor life-cycle cost.

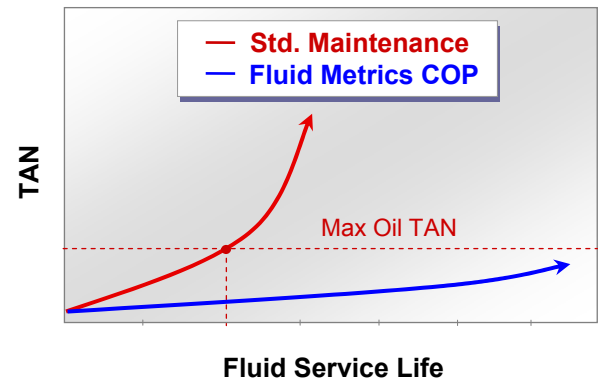
The **COP** is a superior method of maintaining one of the most important pieces of equipment in your plant. Let **Fluid Metrics** perform a **FREE SAVINGS ANALYSIS** and show you how you can **Purify, Protect & SAVE!**

Total Acid Number - TAN

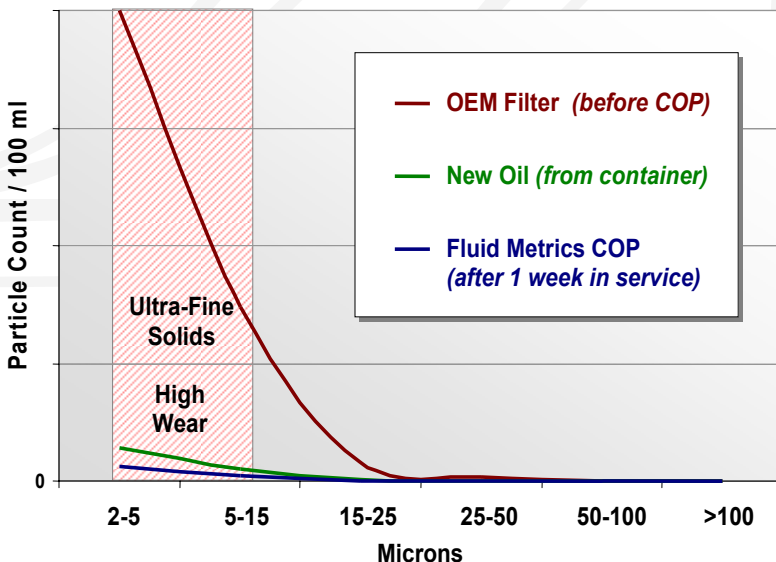
Regular oil analysis, **not operating hours**, is the most reliable way to accurately determine when compressor fluids should be changed. During normal compressor operation, **oxidation produces acids** in the oil which increases its **Total Acid Number** or **TAN**. **TAN** is a leading indicator of the oil's oxidative state and its remaining useful life. Over time, acid accumulates in the oil and acts as a catalyst to further accelerate oil degradation, increase corrosion, and deplete the oil's protective additives. Once the additives are sufficiently depleted, the oil's acid concentration and **TAN increases exponentially** placing bearings and other compressor internals at serious risk of corrosion and catastrophic failure. Extensive testing performed by **The Dow Chemical Company**, the world's leading maker of synthetic compressor lubricants, confirms ion exchange technology like that used in **Fluid Metrics' COP** to be "extremely effective at removing acids and controlling TAN" and, "extending the service life of synthetic compressor lubricants." Under normal operating conditions, the **COP** is proven to **extend fluid service life 3-5 times** that of fluids not using this technology.

Acid Removal

Acid Level (TAN) vs. Fluid Life



Ultra-Fine Solids Removal



ISO Particle Count

The **ISO Particle Count** is a standard test used to determine particle concentration and relative fluid cleanliness. This test measures the number of particles in discrete size ranges from 2 microns to 100 microns. The **Fluid Metrics COP** specifically targets the **Ultra-fine** or clearance-size particles (<15 μ) which are known to cause more damage by penetrating oil films and bearing clearances and increasing friction, wear, surface fatigue and fouling. **ISO Particle Counts** were performed on a brand new compressor fluid taken from its container and on two in-service fluids taken before, and one week after installation of a **COP**. After just one week, test results showed a dramatic **97% decrease** in the destructive clearance-size solids, and an in-service fluid with **fewer solids than brand new oil!** Fewer solids results in **less wear** to bearings and seals, **reduced fouling** of **separators**, and lower compressor **energy consumption**.

COP - Smarter Compressor Maintenance

The **COP** is available in three standard models to accommodate most every rotary screw compressor make, horsepower, and fluid type. A few of the compressor brands and fluids ideally suited for the **COP** are:

- **Ingersoll Rand** – Ultra Coolant, SSR H-1F
- **Sullair** – Sullube, SRF II/8000, SRF I/4000
- **Atlas Copco** – HD Roto-Fluid Plus, Roto-Extreme
- **Quincy** – QuinSyn Plus, QuinSyn PG, FG, HP
- **Gardner Denver** – AEON 9000 SP, PG, 6000-FG
- **Kaeser** – Sigma S-460, Sigma S-320

The **COP** also works with most non-OEM fluids including those with base stocks of **Polyglycol/POE, PAO, Food Grade PAO, POE, Hydrotreated Hydrocarbon, & Diester.**

Fluid Metrics, LLC is not affiliated with any compressor company.

Easy Installation & Service

The **COP** is a **continuous bypass** system that installs easily in an auxiliary bypass loop to the compressor's main oil circuit. A **small slipstream** of contaminated oil is simply diverted through the **COP** and purified oil is returned back to the compressor's air-end. The **COP** does not replace the compressor's standard oil filter or interfere with the functionality of the compressor's original lubrication system.

Specifically designed for rotary screw air compressors, each **COP** includes an **Installation Kit** containing all the accessories needed for a quick and easy installation. Servicing the **COP** is also quick and easy. An oil sample valve is included to make taking oil samples a snap, and isolation valves enable the user to change the **COP's cartridges** without having to shut down the compressor.



(3) Fluid Metrics COP-30s - (3) Sullair 150 HP



One Cartridge
fits all three models

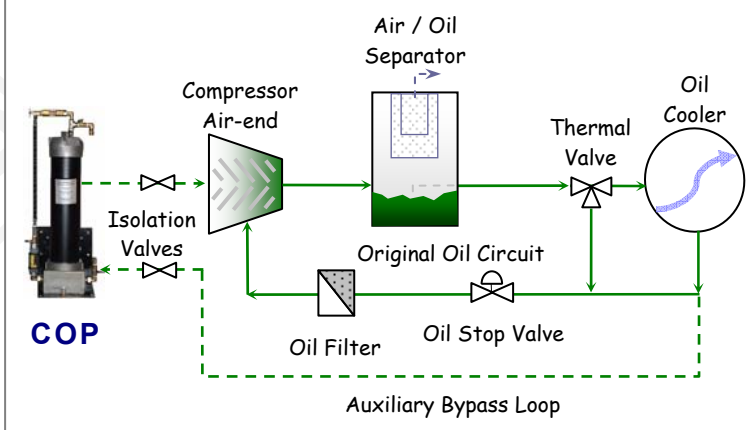
Minimizes Inventory!

COP Models



Consult Fluid Metrics
for larger fluid capacities.

Typical Compressor Oil Schematic



Installation Kit

Designed with the user in mind, the **COP's Installation Kit** includes all the following features to simplify installation and servicing of the unit:

- **Mounting Bracket & Hardware**
- **Supply & Return Hydraulic Hoses**
- **Isolation Valves**
- **Flow Meter**
- **Sample, Vent & Drain Valves**
- **Air Vent Sight Glass**
- **Pipe & Hose Fittings**
- **Premium Baseline Oil Analysis Kit**
- **Installation & Operation Manual**