

Air/Oil Separators

http://www.mikropor.com.tr/uploads/Air_Oil_Separators.pdf

With over **3000 air/oil separator designs** for compressors, Mikropor is one of the leading air/oil separator manufacturers in the world today.

The primary purpose of Mikropor air/oil separators in rotary screw and vane type air compressors is to separate oil from compressed air. Mikropor separators trap oil by allowing it to coalesce and drain down to a sump - while allowing compressed air to pass through. From the sump, oil will be removed by a scavenge line of some type and returned to the reservoir to be recompressed in a continuous cycle.

Mikropor separators are constructed of a **depth loading media** and have excellent oil removal capabilities that provide vital air/oil separation required in high-performing compressor systems. Mikropor separators have an oil removal rating of 1-2 ppm (parts per million) - so the oil loss in a compressor working with Mikropor air/oil separators is negligible.

Mikropor separators feature a unique **Helix Tube Construction** that provides added strength and collapse resistance.

In addition, some special Mikropor separators use fluted - not punched or perforated - steel. The flutes provide a diagonal air/oil flow and **improve the coalescing performance** of Mikropor separators over competitive products. This fluted steel design is unique to Mikropor.

Spin-on Separators: Mikropor Spin-On Type Air/Oil Separators permit uncomplicated and quick replacement without dismantling the compressor unit. Spin-on separators do not require a compressor separator housing. Spin-On Type Air/Oil Separators are available for 0.6 to 7m³ /min flow rates operating at 7 bar.

SEP-in-SEP: The patented Mikropor Sep-in-Sep design is a departure from "3S" separator design. Sep-in-Sep designs reduce "3S" separator size by more than half without performance compromise. Benefits include a much smaller separator tank and lower handling costs.

Pleated Designs: One approach to increasing separator capacity is to use pleated media. Simply, pleating puts more media in the same space so higher capacities can be reached. Mikropor regularly manufactures hundreds of pleated separator designs.

'3S' Separator: The revolutionary Mikropor '3S' Separator is designed to fit smaller separator housings without downgrading operating performance. The '3S' separator has double to triple capacity when compared to conventional separators of the same dimensions. The '3S' separator has 1/2 -1/3 of the volume of a conventional separator functioning in the same operating conditions. '3S' capacity increase is achieved by using specially designed progressive type, deep bed, coalescing media and an increased number of wraps.

ConWrap: Mikropor 'Conwrap' separators are "conventional wrapped" separators. These separators are designed for either outside to inside or inside to outside flow and can be used with all types of oil injection rotary vane and rotary screw compressors. Conwrap separators operate between 2 to 60 m³/min flow rate at 7 bar with 1 to 3 mg/m³ oil carry over.

Specifications for Conventional, 3S and Pleated Separators

- Pressure Drop at Load: 2-3 psi (150-200mbars)/100psi (7 bar)
- Collapse Strength: 50 psi (3.5 bars) minimum
- Oil Carry Over Rate: 1-3 ppm / 1-3 mg/m³
- Operating Temperature: 180°-250° F / 82°-121° C
- Conductivity: Grounded, 100% tested
- Materials: Urethane (or epoxy), galvanized steel and various media configurations.
- Service Life: Installed correctly and maintained properly, expected life is 4000 - 8000 hours. However, this will vary considerably depending on maintenance, application, installation, usage and environmental conditions. (i.e. dust, humidity, smoke, pollution, etc.) Air intake filter, oil filter and coolant quality can have an impact on the separator service life. Mikropor offers unique high efficiency air intake filters made of nano glass fibers to stop short service life problems on separators. Mikropor separator construction and high-performance Microglass fiber media provides additional protection and maximum separator life.
- Quality Control: Mikropor separators are 100% inspected for structural integrity & conductivity.

Specifications for Spin-On Type Separators

- Standard Thread Sizes: M22X1.5, M24X1.5, M32X1.5, M39X1.5 (Others are available)
- CFM Ranges : 21CFM (0.6m³/min) up to 250 CFM (7m³/min)
- Max pressure. 290 psi (20 bars)
- Pressure Drop at Load: 2-3 psi (150-200mbars)/100psi (7 bar)
- Collapse Strength: 50 psi (3.5 bars) minimum
- Oil carry over rate: 1-3 ppm / 1-3 mg/m³
- Operating Temperature: 180° - 250° F / 82°-121° C
- Materials: Urethane (or epoxy), galvanized steel and various media configurations.
- Service Life: Installed correctly and maintained properly, expected life is 4000 - 8000 hours. However, this will vary considerably depending on maintenance, application, installation, usage and environmental conditions. (i.e. dust, humidity, smoke, pollution, etc.) Air intake filter, oil filter and coolant quality can have an impact on the separator service life. Mikropor offers unique high efficiency air intake filters made of nano glass fibers to stop short service life problems on separators. Mikropor separator construction and high-performance Microglass fiber media provides additional protection and maximum separator life.
- Quality Control: Mikropor separators are 100% inspected for structural integrity & conductivity.

Troubleshooting Air/Oil Separators

In general, oil separators are designed to provide 4,000 to 8,000 service life hours. However, service life is dependent on many factors including:

1. the compressor package design.
2. the lubricant/coolant in the compressor.

3. the amount of liquid oil removed before the air reaches the oil separator.
4. the amount of contaminant getting past the compressor intake filter.
5. the environment.
6. the type of oil separator being used.

Here are some tips:

If the oil **separator pressure drop or differential builds up**, it usually means that the separator is plugging with dirt or water.

If, on physical inspection, the oil separator appears to be plugged with dirt check your **compressor inlet filter**. Contaminant bypassing the inlet filter will stop in the air-oil separator.

If **water** is the problem, it usually means that the system is running too cool or that there is poor discharge piping. A symptom of water contamination is the presence of rust on and in the oil separator.

If you are experiencing **oil carryover downstream** of the separator, it may be caused by one of several things:

- A plugged scavenge line
- A scavenge line not properly installed
- A scavenge line not reaching the bottom of the oil separator housing or not cut at a 45° angle
- An overfilled oil sump.
- An air/oil separator not compatible with the compressor lubricant
- A crack in the oil separator's bonding materials.
- Complete separator failure caused by not properly grounding it – or a severe surge in demand.