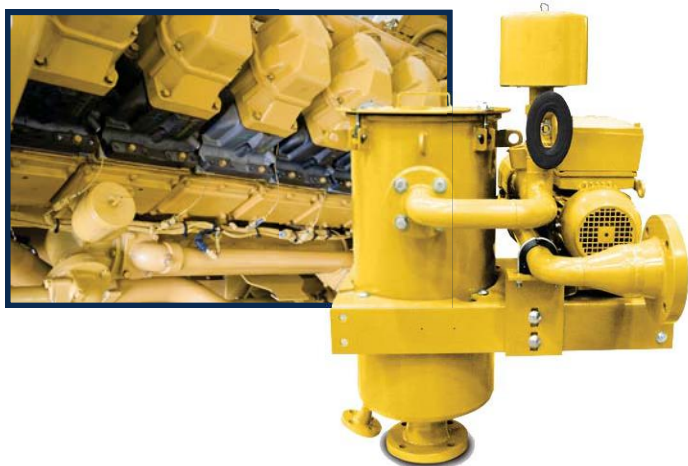


Vacuum Assisted Oil Mist Eliminators Reciprocating Engines and Turbines



Our Vacuum Assisted Oil Mist Eliminators are designed for field upgrades and new reciprocating engines and turbine installations around the world. Our high efficiency filtration systems eliminate vented oil mist emissions while controlling engine pressure in crankcases and turbine lube oil reservoirs. We offer either vapor extractor and static options based on application requirements.

Series Specific Applications



Reciprocating Engines: Stationary

- Crankcase ventilation systems ensure environmental compliance and protect surrounding workplace from harmful oil mist emissions
- Open and closed system designs
- Prevents engine intake system contamination and seal leakage
- Improves engine performance
- Controls crankcase pressure
- Applications: landfill gas to energy, standby power, prime power, and mechanical drive

Gas & Steam Turbines

- Retrofits and upgrades to replace outdated and inefficient vapor extractors for lube oil systems
- Typical systems include: high efficiency coalescing element, vacuum / pressure controls and integrated bypass device to simplify maintenance and reduce operating costs
- Applications: peaking, nuclear, and base load power plants



Reciprocating Engines: Marine

- Crankcase ventilation systems ensure safety and reliability
- Unique piping configuration for easy installation, self regulation and seal leak prevention
- Captures vented oil mist emissions and reduces breathing and slipping hazards
- Applications: passenger ships, workboats, military vessels





Features

- Eliminates visible oil mist emissions
- High efficiency and long lasting replaceable coalescing elements
- Rugged carbon steel construction
- Industrial grade powder coat finish
- Drain ports for oil recovery
- Control valves for precise pressure regulation
- Large assortment of motor options (Explosion proof, ATEX, etc.)
- Integrated vacuum relief for motor protection
- Contact factory for specific flow ratings and sizes.

Technical Specifications

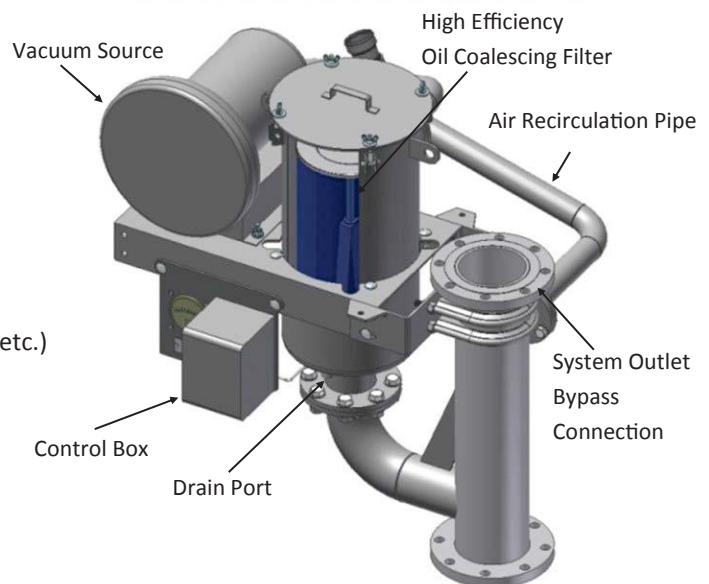
- 0.3 micron media; 99.97% efficiency
- Flow range: 1-1,500 ft³/m (1-2550 m³/h) std, higher flows are available on request
- Pressure Rating: 1 bar full vacuum (most models)

Environmental Compliance

Based on the 2013 U.S. EPA's RICE NESHAP* ruling, stationary engines over 300HP should have been equipped with a crankcase ventilation system. The objective was to reduce the harmful crankcase emissions emitted into the environment.

Solberg is committed to partnering with plant operators to update their equipment and lessen their environmental impact.

* *Reciprocating Internal Combustion Engines National Emissions Standards for Hazardous Air Pollutants*



Recirculation System Configuration Example

Options

- Redundant equipment to ensure continuous operation
- Full automation: PLC and DCS compatible
- Stainless steel construction for harsh environments
- Custom coating and colors
- ASME Section VIII or PED pressure certifications
- Explosive environ. options: ATEX, Class I Div. 1, etc.
- Motor listings: UL, CE, IEC, CSA, IEEE, KOSHA, etc.
- Motor accessories: Heaters, starters, switches, VFD, etc.
- Skid mounted units for ease of transport & installation
- Service and maintenance platforms
- GOST certification

Closed Crankcase Ventilation Systems Capture Vented Crankcase Emissions



CCV Series

Solberg designs and manufactures high efficiency Closed Crankcase Ventilation Systems to capture oil mist and particulate emissions (blow-by) from the crankcases of a reciprocating engine.

Solberg's closed systems protect an engine's turbocharger, intercoolers and exhaust catalysts from oil mist and particulate contamination. The results are optimized engine performance and a reduction in costly repairs and maintenance.

Solutions Designed For

- Caterpillar
- Jenbacher
- Waukesha
- MTU
- Guascor
- Wartsila
- Cummins
- Fairbanks Morse



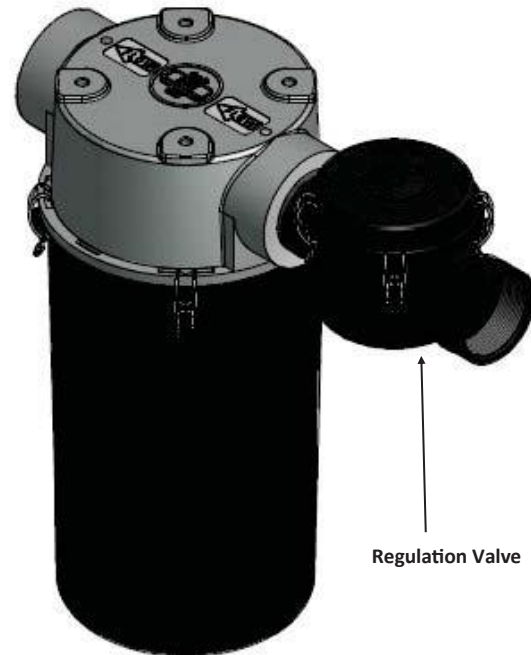
Closed Crankcase Ventilation System
Guascor Engine Installation

Typical Applications

- Electric Power Generation
- Marine Power Generation
- Marine Propulsion
- Gas Compression

Benefits & Purpose

- Captures the hazardous oil mist and particulate emissions "blow-by" vented from the crankcase.
- Achieves 99.97% efficiency for 0.3 micron oil mist and particulate
- Protects the turbocharger, intercoolers and exhaust catalysts from contamination and damage.
- Prevents potential health hazards from entering the surrounding environment and workplace
- Maintains required crankcase vacuum via integrated self-regulating valve
- Recovers expensive lube oil lost during the venting process, which allows for efficient operation and lower maintenance costs



Solberg Closed Crankcase Ventilation System with
Integrated Vacuum Regulation Valve

CLV Package

Note: Model offerings and design parameters may change without notice. See www.solbergmfg.com for most current offering.

Series Specific Applications

- Vents for Oil Reservoirs, Crankcases, Bearings, Coupling Guards
- Compressor, Turbine, Gearbox, Engine Applications

Features

- Eliminates visible vented oil mist emissions
- High efficiency fiberglass filter elements: 99.97% removal efficiency for 0.3 μm oil mist
- Corrosive resistant carbon steel construction
- Powder coat finish
- Low back pressure filter element design: Pleated and wrapped fiberglass options
- Extensive flow range
- Continuous operating temp: 68°F (20°C) to 180°F (80°C)
- Contact factory for specific flows and sizes.

Options

- Stainless steel construction
- Special coatings and finishes
- Internal drain-back mechanism
- Alternative filtration media (wire mesh demister, vane separator)
- Multiple configurations
- Vacuum assisted oil mist eliminators (See page 5-10 to 5-11)



Gearbox Application



CVH Series



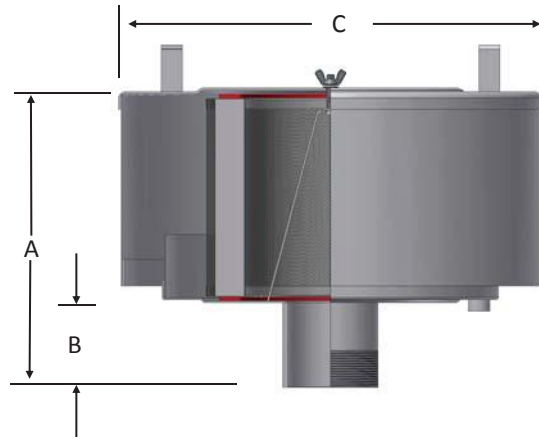
CV Series



Static Vent Oil Mist Eliminators w/Internal
Drain-Back Mechanism

Drawings and photos for
reference purposes only

Static Vent Oil Mist Eliminators CVB Series



Features

- Eliminates visible vented oil mist emissions
- Carbon steel construction with powder coat finish
- Low back pressure wrapped filter element design
- External drain-back

Series Specific Applications

- Air/Oil Separation Vents for oil reservoirs, crankcases, bearings, coupling guards
- Compressors, turbines, gearboxes, and engines

Technical Specifications

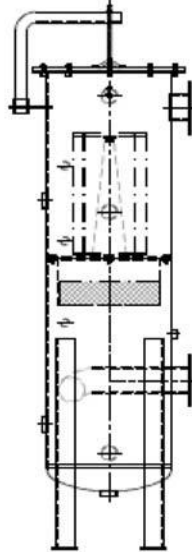
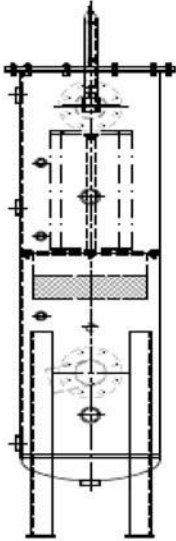
- 0.3 micron media; 99.97% efficiency;
- Typically 5 PPM or less (Consult factory for challenge)
- Continuous operating temp: 68°F (20°C) to 180°F (80°C)

Options

- Stainless steel construction and resistance coatings
- Alternative filtration media (Wire mesh demister)
- Pleated coalescing elements
- Vacuum assisted style available
- Extensive flow range available upon request

| Outlet | | Assembly Part Number | Dimensions - inches | | | Approx. Wt. lbs | Replacement Element Part No. |
|--------|------|-------------------------|---------------------|-------|--------|--------------------|------------------------------------|
| Size | Type | | A | B | C | | |
| 1" | MPT | CVB-WP848-100 | 7 1/2 | 2 | 6 1/8 | 3 | WP848 |
| 1 1/4" | MPT | CVB-WP848-125 | 7 1/2 | 2 | 6 1/8 | 3 | WP848 |
| 1 1/2" | MPT | CVB-WP848-150 | 7 7/16 | 2 | 6 1/8 | 3 | WP848 |
| 2" | MPT | CVB-WP850-200 | 12 | 2 1/2 | 10 1/4 | 5 1/2 | WP850 |
| 2 1/2" | MPT | CVB-WP850-250 | 11 7/8 | 2 1/2 | 10 1/4 | 5 1/2 | WP850 |
| 3" | MPT | CVB-WP274-300 | 14 3/4 | 3 | 20 | 15 | WP274 |
| 4" | MPT | CVB-WP274-400 | 16 1/8 | 4 | 20 | 15 | WP274 |
| 4" | FLG | CVB-WP274-400F | 15 3/4 | 4 | 20 | 20 | WP274 |
| 5" | FLG | CVB-WP374-500F | 20 | 4 | 20 | 38 | WP374 |
| 6" | FLG | CVB-WP374-600F | 21 5/8 | 5 | 20 | 40 | WP374 |

Note: Model offerings and design parameters may change without notice. See www.solbergmfg.com for most current offering.



Note: Drawings are for reference purposes only.

Series Specific Applications

- Landfill and Bio-Gas recovery
- Fuel gas purity for
 - Reciprocating Engines
 - Gen-Sets
 - Turbines
- Gas compression
- Oil sealed screw compressor discharge
- Gas pipeline boosting

Features

- Protects equipment from condensate, oil, and particulate entrained in the gas stream
- Multi-stage separation
 - 316 SS vane pack and/or demister pad for heavy condensate and oil removal
 - 99.97% efficient at 0.3 micron separator for oil mist
- Corrosive resistant carbon steel construction
- Contact factory for model offering and availability



Options ATEX Available

- Special standards: PED, CRN, ASME Vessel code sec. VIII division I
- Stainless steel construction
- Special coatings or finishes
- Replaceable filter elements in various efficiencies for particulate removal
- Gauge ports, float switches
- Custom leg supports
- Flush port for vessel cleaning
- Davit arm for vessel lid removal