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CCV SOLUTION FOR RICE NESHAP

Stationary engine regulations require crankcase filtration systems for tens of thousands of engines



Two Racor CCV12000 crankcase filters are shown, attached to a Caterpillar 3616.

BY CHAD ELMORE

The Environmental Protection Agency's (EPA) Reciprocating Internal Combustion Engines National Emission Standards for Hazardous Air Pollutants (RICE NESHAP) works to limit the emissions of toxic air pollutants from stationary reciprocating internal combustion engines.

RICE NESHAP applies to what the EPA calls "existing" stationary reciprocating internal combustion engines, which are those that were installed before June 12, 2006.

Among the list of RICE NESHAP requirements that need to be met by engine owners is one that requires the installation of a closed or open

crankcase filtration system to prevent crankcase emissions from being emitted to the atmosphere.

Specifically, existing nonemergency compression ignition stationary engines greater than 300 hp now require that crankcase filtration systems be installed. Or, according to Racor's Danny Berkowitz, about 160,000 engines out of the 1.5 million that are covered by the RICE NESHAP rule.

"It's a small percentage, but it's still tough for many people to realize there are that many engines in the U.S. that will require the addition of a closed or open crankcase filtration system," said Berkowitz, Air & CCV product manager at Parker Hannifin Corp.'s Racor Division, Modesto, Calif.

The engines that will require crankcase filtration are divided into five categories using North American Industry Classification (NAIC) codes — electric power generation, crude, petroleum and natural gas production, natural gas liquid production, national security and irrigation equipment.

"The greatest number of engines that are affected by the rule is in electric power generation," Berkowitz said.

A closed crankcase ventilation system filters crankcase gases and returns it to the clean air intake manifold to help keep particulate matter and oil aerosols from escaping into the atmosphere. Without filtration, the charge air system would become fouled with contaminant.

Crankcase gases are routed from the engine through the CCV (closed crankcase ventilation), passing through



The Racor division offers three models of CCV filters for different horsepower ranges covered by RICE NESHAP.

a regulator valve (which regulates the pressure between the crankcase and the intake system), and then into the media. The oil is then coalesced from the blow-by gases when it passes through the media.

Oil collects at the bottom of the canister and returns to the crankcase. The filtered gases are then routed either back to the engine air intake or directly to the atmosphere, depending if the crankcase system is open or closed.

The Racor Division has developed three different models each of closed and open crankcase filters based on the engine horsepower range, such as the CCV12000 closed system filter for engines rated 750 to 1800 hp.

“Closed-loop filtration requires less media surface area because you’re connecting into the intake system which creates a vacuum from the turbo,” said Berkowitz. “However with an open system, typically used on an older engine without a turbo, you don’t have that intake vacuum available. Normally you need about double the media surface area in order to maintain crankcase pressure at an ideal operating level. With an open system, engines may need two units compared to one.”

For cold weather applications, Racor offers a heated option. “It’s a heater band surrounded by an insulating wrap that attaches around the bottom of the CCV housing,” Berkowitz said. “Once installed, it heats the oily aerosols, which prevents the particles from coagulating into thick foam.” **dp**

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