



**EVERYTM CHALLENGE.
MET**



**TECHNOLOGY FOR EPA '07
ON-HIGHWAY EMISSIONS**



Every Challenge. Met.

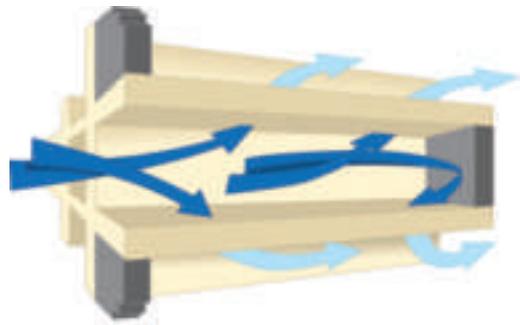
Cummins anticipated the need for reduced emissions back in the 1990s and designed engines with the capability to meet today's stringent standards. In 1998 we introduced the ISX and ISM engines with a totally integrated system approach. Cummins was the first engine manufacturer to meet emissions requirements in 2002, with the introduction of the cooled-EGR subsystem and our patented Variable Geometry Turbocharger (VG Turbo) which was backed by an unprecedented Uptime Guarantee. Every component controlled by a single robust Engine Control Module to ensure fuel efficiency, reliability and durability. In 2007 this same integrated system controls everything from the air intake to the exhaust aftertreatment.

Proven Technology. Total Integration.

Cummins emissions solution for 2007 takes proven engine technology and electronics, and adds a proprietary Cummins Particulate Filter. Because this particulate filter has been developed using in-house expertise, it has been integrated with the combustion and air-handling systems from the beginning for optimum performance.

Trapping Every Particle.

Cummins Particulate Filter automatically traps and burns microscopic particles. When there isn't sufficient heat in the exhaust, the Electronic Control Module initiates an active regeneration event, so the catalytic reaction can take place. Most on-highway engines operate at a duty cycle where active regeneration rarely takes place and fuel economy is not impacted.



Engine Performance.

Today Cummins is the fuel economy leader in the heavy-duty transportation industry. The ISX engine sets the standard for dependable, reliable performance. An inspection of components from a 2002 engine with nearly 600,000 miles (965,607 km) shows no discernable degradation from engineering design standards.

Because Cummins '07 solution uses the same base technology as the current engine, it is expected to match or exceed Cummins performance standards including fuel economy, power density and reliability under a wide array of operating conditions, and durability that is second to none.

All this will be achieved while running on Ultra-Low Sulfur Diesel (ULSD) fuel, which inherently produces less particulate matter from combustion. ULSD also reduces the production of sulfuric acid and has a positive effect on oil drain intervals.

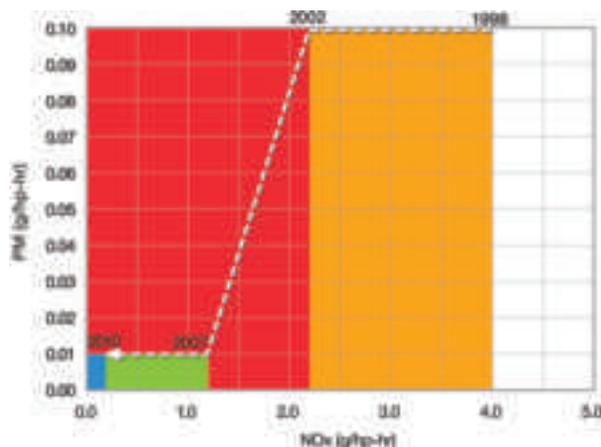
Reduced Maintenance.

Cummins Particulate Filter is designed to last for the life of your Cummins engine. The average line-haul truck owner will only perform filter maintenance one time in the first four years. The service interval will vary depending on your vehicle's duty cycle. The Cummins Particulate Filter is monitored through the ECM and in-cab displays, so it can be serviced at the optimal interval.

New specifications are being developed for lubrication oil compatible with low-emissions solutions. The primary focus will be to make the oils compatible with aftertreatment devices. For 2007 the immediate requirement is to reduce ash in order to enable extended maintenance intervals on the diesel particulate filter while maintaining the important lubricity capability of the lubricant.

Meeting Every Standard.

During the 2007-2010 time period, PM (Particulate Matter) and NOx (Nitrogen Oxides) must be reduced by 90% from 2004 levels. Specifically, PM had to be reduced to .01 g/hp-hr beginning in 2007. NOx must be reduced to .2 grams per horsepower-hour (g/hp-hr) on a "phased in" basis. Crankcase gases are included in emissions calculations, which is why you'll see a crankcase ventilation system on all our heavy-duty engines starting in 2007.



Proven Durability Today.

Cummins EGR engines are not like other EGR engines. The Exhaust Gas Recirculation system is simpler and more robust. Together with our patented Variable Geometry Turbocharger (which has only one moving part in the hot exhaust stream for reliability and durability) and proven engine components, it's a total package designed to last as long as its proven predecessor before an overhaul is needed. With our heavy-duty EGR engines, there is no reduction in life-to-overhaul.

The Right Technology.

Cummins is ready with an integrated solution that meets '07 emissions without compromise. Proven engines, electronics and Cummins Particulate Filter – working together to meet every challenge and deliver the goods. Every load. Every time.

Every Question. Answered.

For more information about Cummins engines, visit everytime.cummins.com, call us at 1-800-DIESELS (1-800-343-7357) or contact your local Cummins dealer or distributor.





Cummins Inc.
Box 3005
Columbus, IN 47202-3005
U.S.A.

Phone: 1-800-DIESELS (1-800-343-7357)
Fax: 1-800-232-6393
Internet: everytime.cummins.com

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