

Caterpillar Emissions Solutions

FREQUENTLY ASKED QUESTIONS



What is the mission of Caterpillar Emissions Solutions?

Caterpillar Emissions Solutions provides the information, products and services needed to comply with emissions regulations on in-use or legacy diesel fleets of Caterpillar® machines and engines. These solutions allow owners and operators to comply with emissions regulations, become more competitive with bids that require incentives for lower emissions, reduce the risk of noncompliance fines and work stoppages and protect your business for the future.



Why should I be concerned with emissions compliance?

There are approximately 500 counties in the U.S. that do not meet the EPA's National Ambient Air Quality Standards (NAAQS). Many states need to find additional methods for improving air quality in order to comply with strict timetables to meet the NAAQS. Nonattainment for these standards could put federal highway dollars for the state at risk. This, coupled with greater knowledge and concern for the health effects of air pollution, has led to increased scrutiny of legacy diesel engines.



What penalties am I likely to face if my equipment is not in compliance?

Noncompliance can lead to substantial fines, work stoppage and potential job loss.

Increasingly, bid specifications for large construction projects require or reward emissions reductions from engines used on the project. Site permits may also require emissions reductions. Failure to comply may prevent you from landing new contracts.



Are there any positive incentives for retrofitting older equipment?

Federal, state and local agencies recognize that to address the legacy diesel fleet, meaningful levels of financial incentives and funding support are vital to reducing emissions from existing engines. Federal programs like the EPA's National Clean Diesel Campaign and state programs like Texas Emissions Reduction Program and New Jersey and California's Diesel Risk Reduction Programs are paving the way with significant funding.

There are also many social, political and public relations benefits to be gained from reducing emissions and contributing to a healthier environment. A special Caterpillar Emissions Reduction decal will be supplied with all Cat supported emissions reductions solutions.



Why should I have Caterpillar handle my emissions reduction project?

As the Original Equipment Manufacturer, Caterpillar's knowledge of our products, performance and reliability allows us to deliver the right emissions solution. Caterpillar and your local Cat® Dealer are committed in helping you find cost-effective emissions solutions tailored to your needs that will not compromise the safety or capability of your Cat powered equipment. Caterpillar has taken the initiative in developing emissions solutions to help you:

- > *Meet the stricter emissions requirements with minimum downtime*
- > *Become compliant in a cost-effective manner*
- > *Prepare for future business by meeting site and bid specification requirements*
- > *Extend the life of your machine*



Emissions Regulations and Compliance Issues

Q: Who is legally responsible for knowing what local, regional and national regulations apply to a customer's business?

A: As the end-user of your equipment, you are ultimately responsible for ensuring your equipment is compliant with all state and local laws. Your Cat Dealer can assist in locating the compliance information you need and advising you on the best, most cost-effective solutions for your situation.

Q: Which regulations are paramount—local, state or federal? Can the EPA overrule local regulators?

A: EPA sets the standards for newly manufactured engines, while the states and localities have authority to implement control measures on in-use engine emissions.

Q: Where can I find the latest EPA emissions standards for newly manufactured and future engines?

A: Visit: <http://www.epa.gov/diesel/comphelp.htm>. You can also use www.Cat.com/EmissionsSolutions to find information about the latest solutions and technologies.

Q: Are there local and regional incentive programs available as well? If so, where can I get details on them?

A: For more information go to <http://www.4cleanair.org> to visit the STAPPA/ALAPCO website. This site contains links to the air pollution control agencies by state and where you can find contact information for your local air-quality agency. They can tell you about current and future programs for retrofit implementation. Also, visit the EPA's National Clean Diesel Campaign at www.epa.gov/diesel.

Q: What is verification?

A: Verification is the process used to validate that retrofit products actually achieve the emissions results claimed by the manufacturers. Verification is completely voluntary. However, retrofit regulations and incentive programs generally require verified products.

The EPA and the California Air Resources Board each have their own verification protocols. Most retrofit incentive programs and regulations will accept technology that has been verified by either one.

Q: Has Caterpillar Emissions Solutions been verified by the EPA and California Air Resources Board?

A: Yes. For most of our solutions, Caterpillar has either directly achieved verification or has leveraged products verified by our suppliers. A complete list of verified products can be found at:

EPA: <http://www.epa.gov/otaq/retrofit/retroverifiedlist.htm>

ARB: <http://www.arb.ca.gov/diesel/verdev/verifiedtechnologies/vt.htm>

Caterpillar and Emissions Retrofit Solutions



What types of solutions does Caterpillar offer?

Caterpillar offers retrofit solutions for off-road machines, on-highway vehicles (*trucks, buses, etc.*) and stationary engines. Solutions fall into three general categories:

Engine Repower—Replaces an existing engine with a new or remanufactured lower emissions engine system, resulting in significant NOx reductions.

Emissions Upgrade Group—Upgrades your unregulated engine with proven components that, as a system, are EPA-verified to reduce NOx and PM emissions.

Aftertreatment—Reduces emissions by treating exhaust gas with an oxidation catalyst, a diesel particulate filter or selective catalytic reduction.



What aftertreatment products does Caterpillar offer for genset or stationary engines?

Caterpillar offers three different aftertreatment products to meet a range of emissions reduction requirements: **Selective Catalytic Reduction** for NOx reduction, **Oxidation Catalyst** for CO and HC reduction and a **Diesel Particulate Filter** for particulate matter reduction. For more information on each of these technologies, see: www.cat.com/EmissionsSolutions.



Are all Caterpillar emissions solutions customized for my specific needs?

Yes. The solutions you need are unique to your situation. They depend on the size and age of your fleet, the emissions standards of the region in which you work and the type of work you do. Your Cat Dealer will work with you to find the most cost-effective solution for your needs.



What information do I need to provide my Cat Dealer in order for Caterpillar to propose an effective solution?



You'll need to supply your Dealer with the following information:

- > *Equipment specifications and condition*
- > *Model and serial numbers*
- > *A copy of the bid specification (only applicable if clean diesel contractual language is inserted)*
If no bid specification, emission reduction goals or requirements.



How much downtime should I expect when I take a machine to my Cat Dealer for a retrofit?

Downtime varies depending on the project. For example, installing aftertreatment does not take as long as an engine repower.

You can limit downtime by having emissions retrofits completed at the same time as other major service operations, such as an engine or transmission overhaul. Combining an emissions retrofit with another service operation will also help reduce the cost of both operations compared to the cost of doing them individually.



What Caterpillar machines do these emissions solutions apply to?

Caterpillar Emissions Solutions can be applied to a variety of different machines and engines, and we are continuously adding new offerings. For the most up-to-date listing, please contact your local Caterpillar Dealer. We now offer solutions for hundreds of applications within the following product families:

- | | | |
|------------------------|-------------------------|--------------------------|
| > Track Type Tractors | > Track Type Loaders | > Wheel Tractor Scrapers |
| > Agriculture Tractors | > Compactors | > Wheel Loaders |
| > Off-Road Truck | > Motor Graders | > Skid Steer Loaders |
| > Excavators | > Multi-Terrain Loaders | > Backhoe Loaders |
| > On-Road Vehicles | > Stationary Engines | > Generators |



Further Information

Q: Where can I get information on the current offerings for Repower and Engine Upgrade Group solutions?

A: Contact your local Cat Dealer.

Q: What Cat engines are compliant with EPA's non-road Tier III standard?

A: All Cat non-road engines with ACERT™ Technology are Tier III certified for applicable machines.

Q: What is Caterpillar's position on the use of alternative diesel fuels in Cat engines?

A: New emissions standards are driving the use of alternative diesel fuels. While ultra-low sulfur diesel (*ULSD*) is the fuel of the future, other fuels like biodiesel and water-emulsified diesel fuels do have some risk. Contact your local Cat Dealer for more information.

On-Highway Applications

Q: Does the Diesel Oxidation Catalyst (DOC) and Diesel Particulate Filter (DPF) take the place of a muffler?

A: Yes. The muffler is removed and replaced with a DOC or DPF.

Q: Do I need to use ultra-low sulfur fuel with aftertreatment?

A: You need to use ULSD with a DPF but not with the DOC.

Q: Can I use Caterpillar aftertreatment on other manufacturer's engines?

A: In some cases we can retrofit other manufacturer's engine applications.

Q: Will I need to install aftertreatment on my 2007 or newer Caterpillar On-Highway engine?

A: No. All 2007 EPA-compliant on-highway diesel-powered vehicles will have DPFs installed as part of the engine system.



On-Highway Applications *(continued)*

Q:
A:

If I use a diesel particulate filter, do I need to modify the exhaust system?

Most filters are a direct replacement for the existing muffler or tailpipe. Additional mounting brackets to support the added weight must be added to the other parts, but further alterations are not needed.

Q:
A:

Will my engines attain the necessary temperature to regenerate the diesel particulate filter?

Datalogging is the best way to find out if your engine will attain the required temperature. Over a week's time of general operating, datalogging will record the temperature of the engine. It will take one hour to install a datalogger, 45 minutes for removal and a couple of hours to analyze the data collected.



This project was undertaken pursuant to an agreement with the United States in connection with settlement of disputed claims in an enforcement action under the Clean Air Act.

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