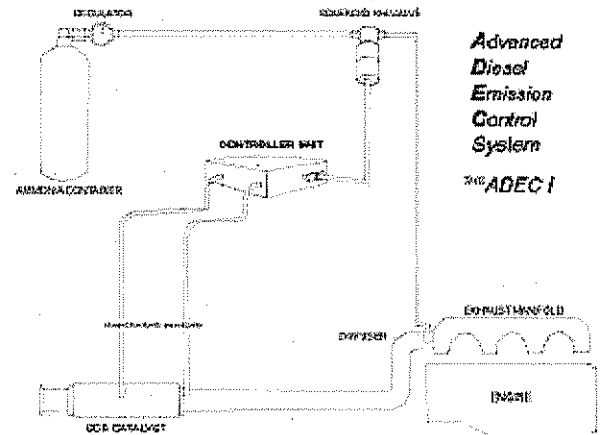


ADEC System<http://www.extengine.com/adece.htm>07-6-2
June 14, 2007**Extengine® Advanced Diesel Emission Control (ADEC) System™**

Extengine's ADEC System – the first and only mobile SCR engine-exhaust-retrofit system to be verified by the California Air Resources Board (CARB) – reduces NO_x emissions by 80-90% without any negative effect on engine performance or fuel efficiency. The key to the system is a proprietary software-based electronic control unit that diffuses precise amounts of an ammonia-based reductant, either anhydrous ammonia or urea (quickly converted to ammonia), into the exhaust stream at different RPMs and engine loads. The result is a retrofit selective catalytic reduction (SCR) system that responds instantaneously to transient (non-steady-state) mobile source NO_x emissions, such as those produced by heavy-duty diesel or natural gas trucks, buses, compressors, or equipment.



Many ADEC systems are now operating in various city, state, and private vehicle fleets including: Waste Management, Inc. – garbage trucks; Bechtel Corporation – off-road digging equipment, and the City of Houston – on and off-road diesel equipment.

The ability of ammonia to significantly reduce NO_x has been well-known for over 25 years, but until recently this process has only been applied to large, steady-state stationary power generation equipment. Because the Extengine ADEC System is so efficient, on-board reductant storage is minimized, making this mobile NO_x control method highly effective, practical, cost-effective, and safe.



The system, which has been under development, tested, and installed on diesel engines for more than five years, is specifically designed for retrofitting higher-cost, heavy-duty diesel vehicles and engines such as urban buses, refuse haulers, gensets, dump trucks, off-road construction equipment, street sweepers, and local heavy-duty delivery trucks, and it produces CARB-verifiable results that are superior to any other mobile NO_x-reduction retrofit system in the world. At the same time, ADEC System components are based on time-tested mechanical applications, so they can be easily manufactured and assembled here in the U.S.

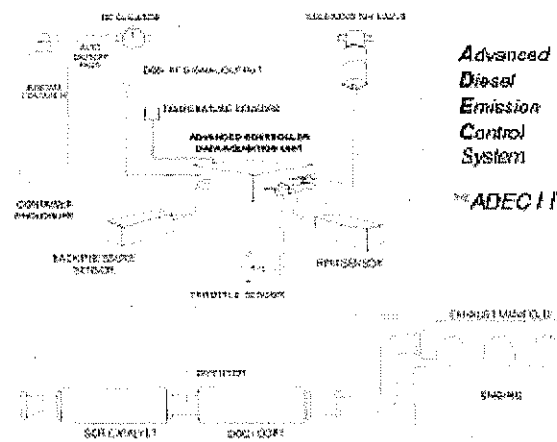
for durable, real-life use anywhere in the world. Extengine has applied for and is in the process of receiving a patent on its own proprietary components in the ADEC System.

The ADEC System can be easily installed in one or two days on most on and off-road diesel/CNG power vehicles or equipment. To date, Extengine-trained technicians have done most ADEC installations, but once the new urea-based ADEC II System is CARB/EPA verified, fleet operators will be given the option of being trained to do the installation internally or contracting with Extengine to manage the installations and or refills.

CARB or EPA verification is the industry's "gold standard" in that it officially quantifies for the prospective

ADEC Fuel Considerations

The new urea-based ADEC II SCR system will incorporate new, advanced self-calibrating NOx sensors that will continuously adjust the amount of urea needed to maintain optimum NOx reduction in mobile applications. The new ADEC System will not require extensive in lab dyno engine mapping for each potential sales/retrofit application. Real-time NOx data will be logged either on-board or transmitted via a wireless connection to assist fleet operators in tracking urea use.



Integrated with Extengine's MaxTRAP™

When ADEC is integrated with Extengine's MaxTRAP active DPF retrofit system, the result is the Best Available Control Technology (BACT), with greater NOx and PM reduction than any other combined retrofit system available anywhere.

ADEC System Advantages And Benefits

- **PERFORMANCE** – NOx reduction averages 80-90% over most engine operation ranges
- **HIGHLY COST EFFECTIVE** – In most diesel retrofit applications it produces the highest level of NOx and PM reduced (80-95%) and lowest cost per ton of combined NOx and PM reduced. The new urea-based ADEC II system when EPA/CARB verified may be classified nationally as the Best Available Control Technology (BACT) and therefore mandated for retrofit use on various fleets by many larger cities and state agencies to help meet their State Implementation Plan (SIP), such as in NYC, LA, and Houston. ADEC is also cost-effective compared to purchasing new engines, repowers, or converting to alternative fueled operations.
- **RELIABLE** – The ADEC System has few moving parts: the tank of urea or anhydrous ammonia and the electronic and mechanical components that regulate the amount of ammonia injected into the engine system. There are no multiple components that are dependent upon the engine performance to accomplish their task. Consequently, the ADEC system has proven to be extremely reliable.
- **DURABLE** – The ADEC System has a five-year and/or 150,000-mile warranty. This compares favorably to warranties offered by after-market products sold to our targeted market sector.

- **REDUCTANT AVAILABILITY** – The ADEC System injects either aqueous urea or anhydrous ammonia from a replaceable or refillable DOT-approved tank into the diesel exhaust stream, where the urea or ammonia is consumed in the process of reducing the NOx. Accordingly, the reductant will need to be replaced periodically. This represents an additional, although relatively minor expense to the fleet owner. Urea and ammonia are easily available through established dealers and distribution channels. Companies such as Hills Brothers, Air Products, Air Liquide, Scott Specialty Gas, and BOC Gas distribute urea and ammonia throughout the United States.
- **SAFETY** – Because the ADEC proprietary controller is able to operate precisely in mobile transient conditions and because every ADEC System contains a guard/slip catalyst to oxidize any ammonia that may go through the SCR catalyst, there is no ammonia wasted or diffused into the atmosphere (slippage)
- **INDEPENDENCE** – Operates independently of any fuel type or engine operating parameters
- **PARTS AVAILABILITY** – Off-the-shelf component parts are readily available
- **FLEXIBILITY** – Can be used in conjunction with its own or other PM traps/filters or DOCs
- **REGULATORY COMPLIANCE** – Technology may allow fleet owners to comply with federal, state, and local clean air regulations
- **MERCs** – Fleet owners may become eligible for mobile emission reduction NOx credits

For more information on Extengine's ADEC I and ADEC II Systems, contact Dick Carlson by email at rcarlson@extengine.com or by phone at 714-774-3569.