

Diesel Exhaust Fluid Supply

Tips & Tools for Handling, Storing and Locating DEF

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SCR 2012 – The Road is Clear



SCR: Selective Catalytic Reduction is one of the most cost-effective and fuel-efficient vehicle emissions control technologies capable of reducing emissions to near-zero levels.

By Kim Doran

Finally, after all has been said and done, the road is now clear for selective catalytic reduction (SCR) as the proven choice for emissions control across North America. (*see Chronology sidebar on page 24.*)

With recent announcements by the only OEM hold-out, Navistar, who in July announced it would use “liquid aftertreatment” (or SCR) to meet emissions standards in 2013, the debate is over. SCR is, and always was, the clear winner.

Today, the supply infrastructure for diesel exhaust fluid (DEF) to support SCR systems is in place nationally. Ample quantities of affordable, high quality DEF are available everywhere – from truckstops to convenience stores, home terminals to retail outlets. Truck drivers have easily absorbed DEF fill-ups into their routines as a non-issue. Early adopters among trucking company owners today enjoy adding the up to 5 percent in fuel savings from SCR-equipped trucks back onto their bottom lines.

SCR is here for the long haul. Given the success of SCR and the early ramp-up of the supply infrastructure, the drive toward less proven emissions technologies has become unnecessary. If anything, refinements to SCR technologies will deliver greater reliance on SCR and

decreased use of EGR. These adaptations will improve energy use by optimizing the engine and taking weight out of the vehicle, thus, providing even greater fuel economies. SCR’s reign as the new industry standard is assured for decades.

Whether you’re a trucking company or part of the DEF supply chain, those that got on board early seem to be experiencing a clear and competitive advantage, now moving into larger forms of SCR use and bulk DEF purchasing, dispensing and storage.

On-Highway Long Haul Trucking

Integer-Research manages the U.S. web DEF location service at www.discoverDEF.com. Their firm reports that by mid-year 2012, more than 250,000 Class 8 SCR-equipped trucks will be loaded and rolling across U.S. highways. They project that DEF consumption for Class 8 trucks, alone, will reach more than 100 million gallons in 2012, and could be as much as 115 million. The firm also reports that DEF is now available at retail fuel islands and more than 524 DEF pump installations, with supply moving into larger volumes using above and underground bulk storage.

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Work Trucks and Vocational Trucking

Quixote Group completed research that took a first look into SCR adoption across the vocational truck market. This market is made up of the nearly 100,000 Class 6-8 SCR-equipped trucks in the U.S. that are used in severe duty applications like refuse, mining, construction and forestry as well as those used in the pick-up and delivery trades for the food and beverage industry and regional hauling. Because severe duty work trucks drive fewer miles, findings show many work truck companies are satisfied by the portability of DEF in jugs, drums and totes. Although they drive regionally, delivery trucks cover more miles than work trucks and use 5 times more DEF than their vocational counterparts. Delivery trucks are more likely to fill up their DEF tanks from drums or totes at home terminals rather than relying on small volume jugs and containers.

Voice of the DEF Customer

Additional research completed by Quixote Group into the practices and inclinations of DEF customers shows that, like fuel, DEF is likely to be a low involvement category with trucking companies. Although fuel costs represent a significant portion of operating expenses, most companies – particularly small to medium size trucking companies – claim that they do not spend a significant amount of time focused on fuel or DEF purchasing. Like fuel, the companies see DEF as an expense that is tracked, not highly managed.

On the other hand, there are a few things that are most important to trucking companies – whether it be on-highway or work trucks and vocational sectors. They are:

- Pricing must be competitive, but not necessarily the lowest.
- Service is expected. There is no room for missed or late deliveries of DEF to the company terminals.
- Invoicing must be accurate and easy to understand.
- Responsiveness is key. DEF providers must demonstrate the ability to meet unique and changing needs.

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Chronology of SCR Decisions & Development in North America

1990s

Daimler and others begin to investigate mobile applications and ways to adapt stationary SCR reduction technologies used to reduce emissions in power plants and utilities.

1994

U.S. Environmental Protection Agency announces emissions reduction standards.

2004

Europe and U.S. commit to reducing emissions.

- NOx chosen as first emissions goal in Europe.
- Particulate Matter chosen as first emissions goal in U.S. preceding the introduction of ULSD.

2005-2006

VDA and ACEA in Europe announce plans, incentives and commitment to SCR.

2007

U.S. introduces Diesel Particulate Filters.

Daimler and Volvo announce plans to offer SCR to meet U.S. EPA 2010 standards.

Cummins announces it will enhance its MidRange on-highway product performance and reliability by adding Selective Catalytic Reduction (SCR) to its existing product to meet the near-zero 2010 emissions standards.

2008

SCR Stakeholders develop SCR task force to deal with infrastructure needs and issues specific to trucking.

- Location and coverage are paramount. DEF supplies must be readily available.
- DEF quality is mandatory. DEF supplies must be API certified.

2012 Reality Check

So, there you have it. SCR is the clear choice. DEF supply is the new “it” stream.

Even in our uncertain economy, trucks will wear out and will be replaced. Forecasts show that today’s 30 percent of the truck fleet will turn into 60 percent of the truck fleet using SCR in the next 5 years. Going forward, 100 percent of new trucks, Classes 6-8, will be equipped with SCR. Nothing but upside in sight.

The odds for generating returns on investments into SCR technology and the DEF supply chain have never been stronger. Keep in mind, all of these calculations will be exponentially expanded as Tier 4 off-road vehicles and equipment come onto the scene in 2014 and as EPA mandates for locomotive and marine SCR applications come onto the horizon.

The road is clear. SCR is the first emissions technology that is as good for business as it for our environment. The sky is truly the limit.



**Kim Doran, CEO,
Quixote Group Research**

Quixote Group Research is an independent research and marketing communications firm that specializes in issues and analysis of the trucking industry. Kim Doran, Chief Executive Officer of Quixote

Group chairs the North American SCR Stakeholders Communications Sub-Committee and serves as editor of FactsAboutSCR.com. She can be reached at kdoran@quixotegroup.com.

Chronology of SCR Decisions & Development in North America

2008

Cummins announces that it will add Selective Catalytic Reduction (SCR) aftertreatment to its Heavy-Duty products for 2010 to deliver the best fuel efficiency for its customers. October 2008: Cummins debuts 2010 ISL9 engine equipped with SCR technology at the American Public Transportation Association (APTA) Expo.

Pilot Travel Centers and TravelCenters of America announce 100% support of DEF supplies.

2009

Mack Trucks debuts SCR truck at World of Concrete. Detroit Diesel debuts BlueTec SCR technology at TMC.

SCR Stakeholders join forces to showcase diesel exhaust fluid dispensing equipment and supplies at the Mid-American Truck Show.

American Petroleum Institute (API) develops and launches DEF quality certification program.

2010

Pilot Travel Centers open first fuel island DEF pump locations.

Petroleum Equipment Institute (PEI) publishes standards for DEF dispensing, storage and handling.

DEF for 2010 - producers, distributors and dispensing equipment manufacturers exhibit at the Mid-American Truck Show.

July 6, 2012

Navistar International Corp. announces it will seek Environmental Protection Agency approval for the use of a “liquid aftertreatment,” or selective catalytic reduction (SCR), in addition to exhaust gas recirculation (EGR), to help curb emissions. The company had previously disparaged the use of SCR technology as an emissions reduction solution.