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A job well done

By Jack Roberts

Engine makers beat the odds to meet EPA's 2010 standards

The optimism – and even genuine excitement – seen by engine manufacturers as 2010 draws near is in sharp contrast to the industry’s general mood 10 years ago. By any measure, 1998 was not a good year for diesel engine manufacturers. Earlier, the U.S. Environmental Protection Agency had determined that a majority of manufacturers had employed electronic “defeat” devices that would meet current emissions guidelines in test conditions, but would allow the engines to go out of compliance in real-world operations, allegedly to ensure improved performance for customers.



Negotiations between EPA and diesel engine manufacturers had gone on for months before a settlement was agreed upon that year: More than \$1 billion in fines were assessed to the manufacturers, and EPA laid down a new set of emissions regulations that manufacturers would be required to meet over the next 10 years. The new regulations were tough, requiring a 95 percent reduction in emissions of nitrous oxide and a 90 percent reduction in particulate matter (soot) emissions by January 2010, phased in gradually over the coming decade.

Publicly, industry insiders called the new regulations “unprecedented” and “challenging”; privately, they used words such as “unrealistic” and “unattainable.” Engineers blinked in dismay at the task they were being handed. Many of them felt the government had overreached: Reductions of 95 percent for NOx and 90 percent for particulate emissions simply weren’t feasible, they said. “I don’t know how we’re going to do this,” one product specialist said at the time. “We’re going to try our best. ... But we’re going to have to schedule some inventions along the way.” Given EPA’s recent hammering of diesel engine suppliers in the wake of the defeat-code controversy, there was little manufacturers could do to protest the draconian new guidelines.

Luckily, technology was coming to the rescue. The first piece of the puzzle was a system called exhaust gas recirculation. In theory, EGR was simple: Instead of expelling NOx and soot directly out a truck’s exhaust stack after combustion, the gases were rerouted back into the engine and subjected to additional combustion cycles. In essence, the engine literally burned up a large percentage of the soot and NOx it was creating in the first place.

Using EGR, all North American diesel engine manufacturers were able to meet emissions regulations in 2002, 2004 and 2007. In fact, EGR – combined with advanced onboard electronics – proved to be so successful in reducing exhaust emissions that several manufacturers actually exceeded EPA requirements on lighter-duty diesel engines. As a result, EPA awarded those companies emissions credits – essentially an allowance that would allow manufacturers to sell engines with pre-2010 emissions systems after Jan. 1, 2010, as a reward for achieving superior emissions ratings early in the game.

Today, Navistar alone is sticking to its EGR-only guns. All other North American engine manufacturers have opted to go with selective catalytic reduction systems on their 2010 engines next year; this system doses hot exhaust gases with a urea-water mixture to convert NOx into harmless nitrogen and water. There are pros and cons to both technologies, and much of this issue of CCJ examines the competing claims from the EGR and SCR camps.

But putting those differences aside for the moment, I think it's important to give credit where credit is due: The bottom line is that the engine manufacturers delivered the goods in the face of seemingly insurmountable odds. Both technologies work – and work well. U.S. diesel engines soon will be the cleanest on the planet with either slightly improved, or comparable, pre-'10 fuel economy and performance. It is an incredible accomplishment, and all the manufacturers deserve a hearty “Well done!” – regardless of the path they've chosen. And remember, though this was a global effort, U.S. companies and divisions led the way. And in these trying economic times, that's something that ought to make all of us feel good.