

BMW Advanced Diesel Web News Conference Media Questions - Technical

November 2008

BMW Advanced Diesel with BluePerformance

Models: BMW 335d Sedan, BMW X5 xDrive35d

Engine: Both with 265 HP; 425 lb-ft inline six-cylinder and Sequential Twin Turbo technology EPA Fuel Economy Estimates: 23 mpg City /36 mpg Highway (335d); 19/26 (X5 xDrive35d)

Acceleration 0-60mph: 6.0s (335d); 6.9s (X5 xDrive35d)

Emission level: Tier II, BIN5 – 50 State – Low Emission Vehicle

Emission technology: Particulate filter and Urea injection with SCR catalyst

Market introduction: December 2008

1. Is the widely varying Cetane level of U.S. diesel fuel, as compared to European diesel fuel, a problem? How does the engine compensate for this difference?
Although a Cetane level of 51 will produce optimum performance in BMW Advanced Diesel models, the engine software is capable of adapting to various Cetane levels.
2. What is the emission control level for the diesel engine? *The two BMW Advanced Diesel models meet Tier 2 Bin 5 standards.*
3. You meet Tier 2 Bin 5, the toughest standards in the world, but those standards will tighten in the future. Seeing as how difficult -- and expensive -- it has been to meet the current standards, what problems do you anticipate in meeting the standards yet to come? *The two 50 State BMW Advanced Diesel models meet EPA Tier 2 Bin 5 standards. It is too early to make these projections publicly, but BMW engineers work closely with the regulatory bodies, suppliers, and other automakers when necessary to ensure BMW vehicles always lead the industry from the standpoint of balance between performance and “emissions signature.”*
4. Have the spring rates been modified, specifically in the ZSP (Sport Package)? And has the DSC been adjusted for the change in weight balance compared to other models? *BMW's commitment to ensure each model lives up to its “The Ultimate Driving Machine®” slogan means each model must be custom-tailored by the engineers. Such adjustments include suspension and DSC calibration, among other things.*
5. What percentage of bio diesel is allowed? Missouri is going to use 5% bio diesel in the near future? *BMW recommends a maximum of 5% bio diesel for its Advanced Diesel models.*
6. If the Urea supply is depleted and not able to be refilled immediately, will the engines still operate normally? *As covered in the online news conference, diesel models will give the driver about 1000 miles of warning before the diesel exhaust fluid is totally depleted. This should give most drivers ample warning before engine restart is not possible.*

7. Discuss durability of diesel engines vs. gasoline engines please. Diesels have a long history of durability because the fuel is more similar to oil than gasoline and far less cylinder wall wear is typical. There are no spark plugs and the electronics are designed to be trouble free. A diesel engine is built more robustly to take the higher combustion pressures so overall they are expected to last a long time.
8. Price per gallon of the ad-blue? Urea is derived from natural gas so the price will vary. A range may be \$6 to \$12 depending on market value and container size, but we don't have the actual over-the counter price yet.
9. Will the ad-blue tank use up the spare tire space? The SCR tanks on the 335d replace the shallow storage space located in the luggage compartment in the gasoline models. Current 3 Series vehicles don't carry a spare tire. On the X5 xDrive35d, the SCR tanks are located within the vehicle where it doesn't compromise the existing spare tire space.
10. How involved is replenishing the exhaust cleaning fluid tank? At the oil change the old DEF will be drained and new DEF poured into a filler neck under the hood (X5) or in the trunk, a process similar to adding washer fluid.
11. Some other manufacturers say their injection pressures are higher than the 18,000psi stated. Comment - Bosch 3rd generation CRD system? As stated in the news conference, our new diesels operate at 1800 bar, or approximately 26,000psi. Higher operating pressures are constantly in development.
12. Are the maintenance requirement intervals similar for BMW gasoline and diesel engines? Yes.
13. What is the expected lifetime of the fuel injectors? It's too early to answer this question, but keep in mind the injectors are not considered maintenance items.
14. Are fuel injectors susceptible to fouling over time? This is unlikely if clean fuel that meets industry specifications is used.
15. Is diesel a clean enough fuel source so that we don't have to worry about it degrading/affecting the performance of the fuel injection system? Clean fuel from a reliable source is very important for any engine.
16. Does BMW foresee meeting future emissions requirements without SCR, by improving combustion/engine-out emissions? BMW is working hard to make improvements that save costs and minimize consumer inconvenience, but for now the catalysts are still needed.
17. How will you cope with the wide variety in Cetane ratings in ULSD fuels across the US, Canada, Mexico? The systems will adjust up to certain ranges but buying fuel from a clean and reliable source is very important.
18. What added technology (or technologies) needs to exist before diesel engines will be clean enough to pass 50-state emissions regulations without the need for a Urea fluid sprayed into the exhaust stream? Currently, selective catalytic reduction

(SCR) via injection of Diesel Exhaust Fluid is the best available technology for controlling NOX emissions on diesel vehicles.

19. Is BMW developing diesel technology that could meet emissions rules without needing urea, even in larger engines? "Cleaner and more efficient" is a core principal of BMW EfficientDynamics, but there are no breakthroughs to announce at this time.
20. How often will the particulate filter need to be changed? It's a maintenance-free device that regenerates automatically as needed, depending on driving conditions. Use of Ultra Low Sulfur Diesel fuel from a reliable source is very important.
21. How will scheduled maintenance be different (schedule wise, etc) than gasoline? It will be very similar.
22. Will the X5 diesel have a water separator? No.