BMW Advanced Diesel with Blueperformance

BMW X5 xDrive35d and 335d Sedan continue to impress with outstanding performance and efficiency

Woodcliff Lake, NJ – March 31, 2010…In 2009, BMW embarked on a new chapter of its EfficientDynamics story with the introduction in the United States of two models equipped with the BMW Advanced Diesel with BluePerformance technology – the X5 xDrive35d and the 335d Sedan. Both models continue for the 2011 model year.

The response to these vehicles shows the potential for clean diesel technology in the US. In the first two months of 2010, 335d sales saw a 77% increase over the same period in 2009 when the car was first being launched. Also in the first two months of 2010, more than 25% of all BMW X5s delivered were were the BMW Advanced Diesel powered X5 xDrive35d.

Both the X5 xDrive35d Sports Activity Vehicle® and the 335d Sedan feature BMW’s most sophisticated six-cylinder diesel engine, the 3.0-liter inline-six featuring Sequential Twin Turbo Technology – an engine widely acknowledged as the unchallenged benchmark for sporting performance, refinement and superior efficiency in other markets around the world. This engine produces 265 horsepower @ 4,200 rpm and an impressive 425 lb-ft of torque between 1,750 and 2,250 rpm. To put that later number into perspective, that is nearly as much torque as produced by the 6.0-liter V12 in the previous generation 760Li. In order to ensure full compliance with the demanding emission standards in California and other US states, BMW uses SCR technology to reduce nitric oxides (NOX).

Leading the way:
BMW diesel competence for the US.
The history of BMW diesel engines began in 1983 when the BMW 524td was introduced as the fastest diesel in the world at the time. The 524td was sold in the US for the 1985 and 1986 model years and offered significantly better performance than more widely known diesel competitors. From that starting point, BMW has spent 25 years continuously developing diesel technology. Today’s BMW Diesels are characterized by dramatically improved power and performance; fuel consumption and emissions levels – reflecting the principle of BMW EfficientDynamics in every respect.

Through their refinement alone, BMW diesel engines have helped to significantly eliminate reservations regarding the acoustic properties of a diesel engine. In fact, great demand for BMW diesel engines has helped BMW achieve increased market share not just in Europe, but in regions all around the world. Today no less than 67 percent of all new BMWs delivered to customers in Europe are powered by a diesel engine.

While diesel engines of today represent an impressive standard for fuel efficiency and emissions on the whole, BMW Advanced Diesel engines take this a step further, setting the standard for torque and pulling power that could never be achieved by a similar displacement gasoline engine – while consuming 25 percent less fuel on average than an equally powerful gasoline engine.
New generation of diesel technology:
Maximum responsiveness, minimum emissions.
Maximum power, outstanding efficiency: The first BMW Advanced Diesel with BluePerformance
is particularly well-suited to combine the driving dynamics and refinement of a premium
automobile with the most current and demanding standards for preserving resources and reducing
emissions. Featuring exceptional power and torque, the 3.0 liter inline-six diesel is one of the most
fuel-efficient engines in its class.

Applying Sequential Twin Turbo Technology, a small turbocharger first spools up at low engine
speeds. Thanks to its low inertia, this turbocharger develops boost (and extra power) in response
to even the smallest movement to the accelerator. As engine speed increases the second, larger
turbocharger begins to spool up and at mid-range engine speeds both turbos work together. At
higher engine speeds boost comes exclusively from the larger turbo which enables this engine to
develop maximum torque of 425 lb-ft at just 1,750 rpm. Interaction of the two turbochargers is
controlled by the high-performance electronic engine control unit.

In addition to the above Sequential Twin Turbo Technology, new technical highlights of BMW
Advanced Diesel – presented for the first time in 2007 – include an aluminum crankcase and
third-generation common-rail direct fuel injection. Featuring precision-quality piezo-injectors to
deliver the precise dosage of fuel into the combustion chambers with the smallest volume of pre-
injection, this third generation system ensures a particularly clean injection process with optimized
fuel consumption, emissions and running smoothness.

Given all of these qualities, BMW’s 3.0-liter diesel with Variable Twin Turbo has won the
prestigious International Engine of the Year Award multiple times – more than any other prize or
acknowledgement. In its first year on the US market, this engine won a coveted Ward’s “Ten Best
Engine” award.

In spite of its popularity in Europe, modern clean diesel technology is still a new phenomenon.
Mindful of that, BMW’s diesel engineers invested additional energies in making the engine even
quieter for the US market. Additional sound insulation was added. Wrist pins on the pistons were
moved slightly off center to improve engine smoothness and quietness.

The BMW 335d Sedan featuring Advanced Diesel with BluePerformance offers maximum output
of 265 hp and peak torque of 425 lb-ft. On the road, this means acceleration from 0–60 mph in six
seconds flat and an EPA fuel economy rating of 23/36 mpg (city/highway). The 335d Sedan is not
only the most fuel efficient BMW in the line-up today, but is the most fuel efficient BMW ever
offered in the US.

Like the 335d, the X5 xDrive35d offers sporting character through BMW Advanced Diesel with
BluePerformance, while standing out as a high-torque Sports Activity Vehicle® with excellent
qualities for long-distance motoring. The BMW X5 xDrive35d accelerates from 0–60 mph in just
6.9 seconds and offers an EPA fuel economy rating of 19/26 mpg (city/highway).

Based on their highway fuel economy ratings, both BMW Advanced Diesel models can travel up
to 585 miles on a single tank of fuel.

Most advanced exhaust gas management:
Selective Catalytic Reduction.
To optimize emission management, Advanced Diesel with BluePerformance incorporates an
oxidation catalyst placed just downstream of the exhaust manifold with a diesel particulate filter
housed in the same unit and a Selective Catalytic Reduction catalyst with urea injection. In addition to filtering out even the smallest particles from the flow of exhaust gases, this combination ensures effective reduction of nitric oxides (NOX) by way of a chemical reaction within the exhaust system initiated by the injection of a small dose of urea referred to as Diesel Exhaust Fluid. The ammonia (NH3) generated in this process within the SCR catalyst subsequently converts the nitric oxides (NO and, respectively, NO2) in the exhaust gas into environmentally compatible nitrogen (N2) and water vapor (H2O).

**SCR technology by BMW:**
**Optimized emissions without requiring additional maintenance.**
To introduce SCR technology in the vehicle, BMW has developed a two-tank system ensuring convenient use of this new technology with all the benefits and ease required by the customer. The amount of Diesel Exhaust Fluid required in each case is injected from the active tank (approximately 1.6 gallons in volume) by means of a dosage pump. Since the DEF would freeze at a temperature of 12oF this active tank, as well as the dosage pipes are heated.

The active tank is connected to a second reservoir, referred to as the passive tank. With its additional capacity of approximately 4.5 gallons, this passive tank offers a plentiful supply of the DEF. The average range provided with this supply capacity is generally sufficient to have the tank system replenished only when the driver needs to change the engine oil. Hence, the large amount of DEF stored in the reservoir enables the customer to enjoy continuous driving, without having to change his/her service intervals. The driver therefore benefits from the advantages of this environmentally friendly emission technology throughout the entire running life of the vehicle typically without any additional service or visits to a BMW Center. Since all BMWs sold in the US benefit from The BMW Maintenance Program, the refilling of the DEF tanks will be a no-charge service for the first 4 years or 50,000 miles.

DEF from the active tank is delivered to the dosing valve and atomize into the exhaust system. Consistent distribution of DEF within the flow of exhaust is ensured by the SCR mixer. The ammonia generated in the hot exhaust flow subsequently acts as a reduction agent in the SCR catalyst and converts environmentally harmful nitric oxides into nitrogen and water vapor in a process referred to as a selective catalytic reaction (SCR). This process gives the special SCR catalyst its name.

The control of the SCR system is masterminded by BMW’s powerful engine management computer. A nitric oxide sensor downstream of the SCR catalyst provides feedback on the concentration of NOX in the exhaust emissions.

Due to packaging limitations, the position and location of the DEF tank and refill port varies from one model to another. In the BMW 335d, the active and passive tanks are at the rear of the car, while in the BMW X5 xDrive35d, the active tank is housed in the front right section of the engine compartment, and the passive tank is under the floor next to the transmission. The refill ports in both models are easily accessible to ensure that, should the need arise to replenish the supply of DEF before a scheduled service visit; this can be accomplished neatly and easily.

**BMW diesel misfueling protection:**
**Helping to avoid a costly mistake**
The popularity of diesel vehicles has lead to the unfortunate incidence of diesel drivers accidentally refuel their vehicles with gasoline. In order to avoid this, BMW developed a diesel misfueling protection system. A typical unleaded gasoline refueling nozzle has a diameter of 21mm (0.83 inches) whereas a typical ultra-low sulfur diesel refueling nozzle has a diameter of 24 mm (0.94 inches). Both the X5 xDrive35d and the 335d are equipped with a spring-loaded flap
covering the refueling opening. If anyone attempts to insert a refueling nozzle that is smaller than 24mm, the door will not open, preventing the accidental insertion of an unleaded gasoline nozzle.

In the event that a driver encounters a diesel pump that has been fitted with a gasoline nozzle that the protection system will not accept, each BMW Advanced Diesel comes with an adapter housed in an air-tight container.

**BMW’s competence in diesel technology:**
**A story of success since 1983.**
The performance and fuel economy offered by new BMW Advanced Diesel with BluePerformance is a further example of the exceptional potential this engine concept has to offer. In recent years BMW has worked continuously to further the development of its EfficientDynamics strategy. As a result, BMW has consistently enhanced the benefits and attractiveness of diesel technology, increasing engine output (performance), while reducing fuel consumption and emissions.

The story of success of BMW’s diesel engines is characterized by numerous milestones in technical development, dating back to 1983. Back then BMW presented the first inline-six diesel in the history of the company, with maximum output of 115 hp and peak torque of 155 lb-ft. The BMW 524td that featured this engine was acknowledged as the fastest diesel of its time and was sold in the US during the 1985 and 1986 model years.

In the intervening years, BMW’s engine development specialists enhanced a wide range of innovations, ensuring their alignment with series production standards, increasing power and performance, reducing fuel consumption and emissions in the process. In 1987, for example, BMW introduced Digital Diesel Electronics followed three years later by BMW’s first diesel engine with an oxidation catalyst.

**BMW diesel engines:**
**Making a unique contribution to The Ultimate Driving Machine.**
Right from the start BMW’s engine development specialists recognized the potential of diesel in enhancing efficiency. They focused on the unique performance characteristics offered by diesel, providing an entirely new concept of The Ultimate Driving Machine. Above all, they used the performance of the diesel engine to develop superior torque from low engine speeds.

As a result, the BMW diesel was soon able to offer its unique sporting character – in everyday driving situations, as well as on the race track. A BMW was the first diesel-powered race car to win a 24-hour endurance race when a BMW 320d won the 24 Hours of Nürburgring in 1998.

In the same year BMW presented its first diesel engine with direct fuel injection ensuring even greater spontaneity in the development of power. In the process, the precise dosage of fuel helped to reduce fuel consumption and optimize combustion in the interest of even greater smoothness and refinement. Ultimately, given these qualities, the BMW diesel was appropriately prepared for the luxury performance class, with the first V8 diesel engine featuring direct fuel injection, which made its debut in the BMW 7 Series luxury sedan in 1999.

**Milestones in progress:**
**Common-rail direct fuel injection, Sequential Twin Turbo Technology, maintenance-free diesel particulates filter, BluePerformance.**
In the years that followed, BMW made significant – perhaps revolutionary – progress in the areas of injection technology and diesel turbocharging. As early as 2001, the second generation of
common-rail fuel injection pumped fuel into the combustion chambers at a pressure of up to 1,600 bar, or over 23,000 psi. In 2004, the BMW 535d became the first car to feature an inline-six diesel with Sequential Twin Turbo Technology.

BMW also introduced the second generation of the diesel particulate filter now featured as standard equipment in all its diesel models. The exhaust gas-cleaning unit is positioned directly on the exhaust manifold itself in order to ensure optimum efficiency very quickly and smoothly. The particulate filter does not require any maintenance and regenerates itself by incinerating the diesel particles. This filtering function is performed at all engine speeds and under all loads, without any reduction of engine power or increase in fuel consumption.

BMW’s current range includes a number four-cylinder and six-cylinder diesel engines. Both the six- and four-cylinder engines have aluminum crankcases helping to significantly reduce the weight of these engines. A traditional handicap of the diesel engine, which adds weight due to the use of a cast iron crankcase (a much heavier material than aluminum), has nearly been phased out completely. The reduction of weight enhances the car’s agility and, as a result, the sporting character of BMW’s diesel models.

Comparing the first six-cylinder BMW diesels from 1983 with the most powerful diesel engines of today, one can easily appreciate the progress made. Consider the following facts and figures: Maximum output of the inline-six engine is up 135 percent, maximum torque is up an even more impressive 170 percent. And despite this immense increase in power and muscle, average fuel consumption of the 3.0-liter engine featuring Sequential Twin Turbo Technology is 20 percent lower than diesel engines of 1983. At the same time, exhaust emissions have been reduced dramatically, thanks to several new technologies. For example, a BMW diesel in the 2008 model year generates only 1 percent of the particulate emissions originally contained in the exhaust gas of a 1983 diesel model.

**The world’s most sporting inline-six diesel:**

**On the road today in the USA.**

Despite these impressive facts and figures, BMW is continuing to upgrade the diesel engine to an even higher standard, and BMW Advanced Diesel with BluePerformance marks the next stage of development. This innovative technology now also fulfills US market demands in terms of power, performance, running smoothness, efficiency and emission limits.

The 2011 BMW 335d has a base MSRP of $44,825 and is eligible for an alternative fuel tax credit of up to $900. The 2011 X5 xDrive35d has an MSRP of $52,175 and is eligible for an alternative fuel tax credit of up to $1,800.

**BMW Group In America**

BMW of North America, LLC has been present in the United States since 1975. Rolls-Royce Motor Cars NA, LLC began distributing vehicles in 2003. The BMW Group in the United States has grown to include marketing, sales, and financial service organizations for the BMW brand of motor vehicles, including motorcycles, the MINI brand, and the Rolls-Royce brand of Motor Cars; DesignworksUSA, a strategic design consultancy in California; a technology office in Silicon Valley and various other operations throughout the country. BMW Manufacturing Co., LLC in South Carolina is part of BMW Group’s global manufacturing network and is the exclusive manufacturing plant for all X5 Sports Activity Vehicles and X6 Sports Activity Coupes. The BMW Group sales organization is represented in the U.S. through networks of 338 BMW passenger car centers, 335 BMW Sports Activity Vehicle centers, 143 BMW motorcycle retailers, 91 MINI passenger car dealers, and 31 Rolls-Royce Motor Car dealers. BMW (US) Holding Corp., the BMW Group’s sales headquarters for North America, is located in Woodcliff Lake,
New Jersey.

The BMW Group
The BMW Group is one of the most successful manufacturers of automobiles and motorcycles in the world with its BMW, MINI and Rolls-Royce brands. As a global company, the BMW Group operates 24 production facilities in 13 countries and has a global sales network in more than 140 countries.

The BMW Group achieved a global sales volume of more than 1.43 million automobiles and over 101,000 motorcycles for the 2008 financial year. Revenues for 2008 totaled EUR 53.2 billion, with earnings before interest and taxes (EBIT) of EUR 921 million. The company employed a global workforce of approximately 98,000 associates as of September 30, 2009.

The success of the BMW Group has always been built on long-term thinking and responsible action. The company has therefore established ecological and social sustainability throughout the value chain, comprehensive product responsibility and a clear commitment to conserving resources as an integral part of its strategy. As a result of its efforts, the BMW Group has been ranked industry leader in the Dow Jones Sustainability Indexes for the last five years.

Information about BMW Group products is available to consumers via the Internet at:
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