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Contact: **Thomas Plucinsky**
BMW Product and Technology Communications Manager
Tel. 201-307-3783
Thomas.Plucinsky@bmwna.com

David J. Buchko
BMW Advanced Powertrain and Heritage Communications
Tel. 201-307-3709
Dave.Buchko@bmwna.com

BMW 4-Cylinder Engines Return to US in 2011 in the Z4 sDrive28i

New 2.0-liter turbocharged four-cylinder offers performance of a six

Woodcliff Lake, NJ – Embargo: April 18, 2011 1:00PM EDT... Following the announcement in February of the return of a 4-cylinder engine to the US BMW line-up, BMW today announced that the new 2.0-liter TwinPower Turbo 4-Cylinder will first power the Z4 sDrive28i that will arrive in BMW Centers this fall. Like the company's latest TwinPower Turbo 3.0-liter turbo inline-6, the new 2.0-liter engine will combine high-pressure direct-injection and BMW's VALVETRONIC intake control (hence the name: TwinPower) with a forced induction system consisting of a single twin-scroll turbocharger. With 240 horsepower and 260 lb-ft of torque, it offers more power and torque than BMW's normally aspirated 3.0-liter inline-6 that it replaces in the Z4 sDrive30i.

The maximum output of 240 horsepower is achieved at 5,000 rpm, 1,500 rpm lower than in the normally-aspirated 3.0-liter inline six. The peak torque of 260 lb-ft, comes on stream at just 1,250 rpm. Not only is that 30% more torque than the aforementioned inline-6, it also peaks 1,500 rpm earlier. The vigorous power comes on early and climbs steadily all the way to redline.

The 4-cylinder engine with its all-aluminum crankcase is lighter and more compact than a 6-cylinder engine of equivalent power. The turbocharger is a twin-scroll system. The exhaust streams leaving the two pairs of cylinders are kept completely separate as they flow through the exhaust manifold and the turbocharger, taking a spiral path to the turbine wheel. This configuration results in very low exhaust back pressure at low engine rpm, and allows the energy of the exhaust gas pulses to be optimally managed and translated into powerful rotation of the turbine blades, without a delay in throttle response.

The patented BMW VALVETRONIC system with seamlessly variable intake valve lift control dispenses with the throttle valve system typical of conventional engines. Instead, combustion air mass is controlled inside the engine, resulting in much faster response. Pumping losses are kept to a minimum, making the engine more efficient.

The High Precision Injection direct-injection system also helps to improve efficiency. Centrally positioned between the valves, solenoid injectors with a maximum injection pressure of 200 bar (2,900 psi) precisely control the supply of fuel. The fuel is injected very close to the spark plug, resulting in clean and homogeneous combustion.

The cooling effect of the injected fuel also allows for a higher compression ratio than might otherwise be possible. This results in further efficiency improvements. In the Z4 sDrive28i, we expect a fuel efficiency gain of approximately 20% over the naturally aspirated engine it replaces when combined with the 8 speed automatic transmission.

Detailed performance and efficiency specifications will follow at a later date, but this is clearly a new chapter in the story of BMW EfficientDynamics.

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