

BORGWARNER COMBINES R2S AND VTG TECHNOLOGY
FOR THE FIRST TIME EVER IN THE BMW 740D

The joy of saving

Regulated two-stage turbocharger technology (R2S®) by BorgWarner has already set new standards twice in BMW diesel engines. But now, R2S and VTG technology have come together for the first time ever in the new BMW 740d – for the joy of saving.

The R2S turbocharger concept celebrated its world premiere in a diesel-powered passenger vehicle in 2004, when the BMW 535d was launched. Three years later, BMW's 2.0 liter diesel unit with BorgWarner's two-stage turbocharger technology then impressed everyone with its high performance and low fuel consumption. And in the BMW 740d, an R2S system has now been combined with variable turbine geom-

etry (VTG) for the first time ever in a passenger vehicle with diesel engine. Both of these systems have already received the PACE Award individually, but when combined they help BMW's new 3.0 liter (183 cubic inch) diesel unit achieve extremely impressive performance, while also reducing fuel consumption by 4%.

Smooth power delivery

The luxury sedan sprints from 0-62 mph in just 6.3 seconds and offers amazing average combined consumption of 34 mpg US (40 mpg UK). The smaller of the two turbochargers ensures optimum response at low revs thanks to the VTG. It is used as a high-pressure turbo here and is capable of covering a much broader range with high efficiency than a fixed geometry solution. This results in an increase of the boost pressure available, in particular at low engine speeds. Indeed, the unit is capable of deliver-



ing 75% of its maximum torque from just 1,000 rpm. Once the small turbo reaches the limit of its throughput, the larger turbo then takes over and secures plentiful power delivery at higher revs from the inline 6-cylinder engine.

Peak performance across-the-board

The combination of R2S and VTG technology not only enables silky smooth and economical power delivery (combined CO₂ emissions: 181 g/km, 334 g/mile), but also impresses with its excellent elasticity, maximum torque of 600 Nm (442 lb-ft) and nominal power of 306 HP at 4,400 rpm. With its new turbocharger technology, the engine offers performance figures that were previously reserved for 8-cylinder and 10-cylinder units. And it achieves all of this with a significant reduction in both weight and fuel consumption. The 3.0 liter (183 cubic inch) diesel engine with R2S and VTG therefore represents another milestone in the successful collaboration between BMW and BorgWarner.



Powerhouse: BMW's inline 6-cylinder engine offers better performance than many 8-cylinder competitors, while saving both weight and fuel.