

## Ny dieselteknikk på vei.

Dette er ingen rykende fersk nyhet, men det begynner å nærme seg salgsklare biler.

Opel har laget en Vectra med en ny 1,9 liters dobbelturbo med 212Hk og 400Nm. BMW er også på vei med en motor basert på samme teknikk. Da er det snakk om 3-literen som får 272Hk og 560Nm. Det som vel er det beste med denne teknikken er at man får høyt dreiemoment helt fra bunnen av. Tradisjonelle turbodieseler er ofte omtrent døde før man får opp turtallet litt.

Men så er det slik at Land Rover er på vei bort fra BMW-motorer. Vel, ingen grunn til å fortvile. Også Jaguar er på vei med en versjon av 2,7-literen på 232Hk og 500Nm og da kan det godt være at det drypper litt på Land Rover også...



Jaguar R-D6 concept car. Ikke så mye vi ser av motoren, men den er der.

Nedenfor kan du lese Opels pressemelding;

### Opel Twin-Turbo Revolutionizes Diesel Engine Technology

Text & photos courtesy Adam Opel AG  
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#### Opel Twin-Turbo Revolutionizes Diesel Engine Technology

Premiere: Two-stage turbocharging for first time in diesel passenger car

World record: 1.9 CDTI twin-turbo in Vectra OPC with 112 hp per liter displacement

Up to 50 percent more power for same fuel consumption

With its revolutionary twin-turbo technology, Opel announces the next big step forward in the development of modern diesel engines for passenger cars. For the first time, Opel engineers have succeeded in applying two-stage turbocharging to a compression-ignition engine that is suitable for everyday driving: The Opel Vectra OPC engineering study presented at the Essen show in November 2003

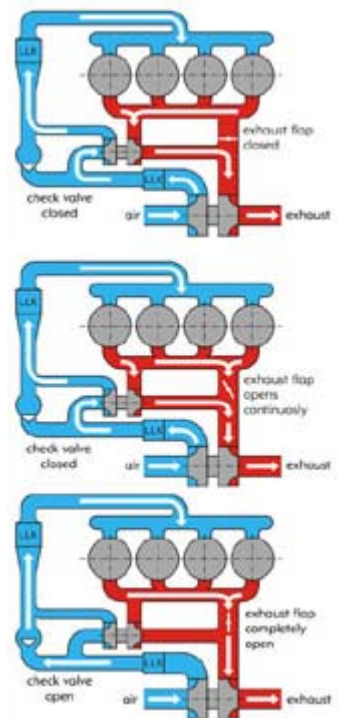


and now at the Geneva Motor Show has a 1.9-liter CDTI twin-turbo engine which produces 156 kW (212 hp). The specific power output of 112 hp per liter displacement is a world record for turbo-diesel powered passenger cars. The 1.9 CDTI twin-turbo unit starts to deliver its maximum torque of 400 Nm at only 1400 rpm, complies with Euro 4 exhaust emission standards, and uses only 6.0 liters of diesel fuel per 100 kilometers in the European test cycle.

The heart of the twin-turbo technology is forced aspiration of the diesel engine through two exhaust-driven turbochargers, which unlike "biturbo" systems operate in series rather than in parallel: A smaller, highly responsive turbocharger for the low engine speed range, a larger turbocharger designed for high output to take over as the revs build up. Thanks to its superior efficiency, the twin-turbo system can achieve an extremely high specific power output, without disadvantages in fuel consumption and exhaust emissions.

Hans H. Demant, Executive Director Engineering at Opel, says: "We are proud to be the first manufacturer to apply this two-stage turbocharging principle to a production diesel engine. Our twin-turbo technology is particularly economical, pro-environmental and fun to drive."

The secret behind "twin-turbo" is the clever two-stage forced aspiration principle. By using a small high-pressure turbocharger for the first stage, the engine responds readily to the gas pedal at lower speeds without suffering from "turbo lag". Up to 1800 rpm this high-pressure turbocharger works alone and compresses the intake air at up to 3.2 bar boost pressure. Between 1800 and 3000 rpm, a larger low pressure turbocharger joins in – both turbines run together in this engine speed range. Above 3000 rpm, only the larger turbocharger continues to deliver charge air to the cylinders. The complex control of both chargers is via a valve in the engine's exhaust system, controlled by engine speed and load.



Excellent basis: New generation of 1.9 CDTI ECOTEC engines

The twin-turbo system was developed by a team of specialists in the Opel motor sport department OPC (Opel Performance Center) led by Donatus Wichelhaus. "The enormous potential of our twin-turbo engine can be seen from the mean effective pressure values it achieves: Whereas traditional turbo-diesels have a mean effective pressure of 17 to 19 bar, the 1.9-litre twin-turbo reaches 26 bar," explains Wichelhaus. The mean effective pressure of an engine is average working pressure acting on the pistons during the combustion process – the higher the value, the higher the power output. Wichelhaus continues: "For the twin-turbo principle to be applied successfully, the engine block must be particularly robust and capable of withstanding the enormous pressures, even after the vehicle has covered a high mileage. In the new generation of 1.9 CDTI ECOTEC engines we have an excellent basis."

Vectra OPC: 212 hp from 1.9-liter engine with fuel consumption of only 6.0 l/100 km

Depending on the development objective, the twin-turbo can be designed either for high performance or for maximum efficiency in its consumption of fuel. Compared with a naturally aspirated diesel engine, power outputs can be raised by up to 50 percent without increasing fuel consumption. Alternatively, consumption can be reduced by as much as a quarter without loss of power. Opel has chosen the first route for the 1.9 CDTI twin-turbo engine used in the Vectra OPC study. This high-tech engine delivers a peak power output of 156 kW (212 hp) from just 1.9 liters displacement. The resulting specific power output of 82 kW (112 hp) per liter is a world record, not matched by any turbo-diesel in a standard production car.



Two-stage turbocharging combined with the latest common-rail fuel supply, variable multi stage fuel injection and twin charge-air intercoolers provide the increase in power and the maximum torque of 400 Nm, which is available over a wide engine-speed range from 1400 to 3600 rpm. With this engine the Vectra OPC accelerates from 0 to 100 in 6.5 seconds; the top speed is an electronically regulated 250 km/h. At 6.0 liters per 100 km in the European test cycle, fuel consumption is at the same low level as the production 1.9 CDTI units, and like these the twin-turbo engine can be fitted with a maintenance-free diesel particulate filter (DPF) that works without additives. Exhaust emissions already comply with the Euro 4 standard for new vehicles registered after January 1, 2006.



BMW 535d