

PRESS INFORMATION

Versatility Concept Car – Combining high performance with low consumption

- 6 cylinders, 250 hp – but just 6.5 litres/100 km
- New turbo technology
- Direct Start&Stop
- Compression Auto Ignition
- Automated Shifted Manual with Electric Drive

The Volvo Versatility Concept Car, VCC, demonstrates that high performance no longer needs to go hand in hand with high fuel consumption and high environmental impact.

The VCC concept engine, an in-line direct-injected six-cylinder turbocharged engine with a displacement of 2.6 litres, producing 250 hp – yet consumes no more than 6.5 litres of fuel per 100 kilometres.

“New innovative engine and transmission technology makes this extremely low figure possible in a ten year perspective”, states Derek Crabb, Vice President Powertrain Engineering at Volvo Car Corporation.

With a spate of concept vehicles, Volvo Cars has been overturning many automotive traditions in recent years.

With its Performance Concept Cars, PCC and PCC2, the company showed that the customer who needs a family car need not compromise on performance and sports car dynamics.

The Adventure Concept Car, ACC, demonstrated that an SUV does not have to be aggressive towards smaller cars, and that it can have the reassuring and predictable driving properties of a regular passenger car.

The Safety Concept Car, SCC, showed with the utmost clarity that a car with the very highest safety level can in fact be neatly packaged and small in size.

And now with the Versatility Concept Car, VCC, it is time to show that a large, luxurious V-Range car from Volvo can have a clearly marked pro-environmental profile.

The technology in the Volvo Ambient Air Cleaner, VAAC, which cleans the air produced by other cars' exhaust emissions, is described in a separate press release.

The exceptionally low fuel consumption, at just 6.5 litres/100 km in a car topping 1300 kg, is achieved through a range of new technologies.

“These technologies are not yet ready for production, but we are evaluating them with a ten year perspective”, says Derek Crabb.

- The base engine, an in-line direct-injected six-cylinder unit with a displacement of 2.6 litres, features new turbo technology that puts the emphasis on combustion efficiency. This technology makes greater use of positive boost pressure to clear the combustion chamber of all traces of exhaust gases, thus improving the efficiency rating. The higher compression ratio is on a par with that of a natural aspirated engine.
- Direct Start&Stop means that the engine cuts out when the car stops, for instance at traffic lights or in a stationary line of traffic. When it is time to move off again and the clutch is at the drag point, fuel is injected directly into the engine, which ignites the mixture immediately and gently accelerates the car.
- Compression Auto Ignition, CAI, harnesses the benefits of a big engine to cut fuel consumption and lower exhaust emissions, however contradictory that might at first sound. The system creates a lean and homogeneous fuel/air mixture that is compression-ignited when the engine is being run on part load and at low to media REV.
- Automated Shifted Manual is a regular manual gearbox that can be shifted automatically with the help of electronically controlled actuators. The driver can thus use it exactly like a conventional automatic transmission. However, since a manual gearbox has a higher efficiency rating than an automatic – because the frictional losses are lower – the end-result is lower fuel consumption.

The torque-loss problem that arises at the moment of shifting in an automated manual gearbox has been solved in the Volvo Cars concept engine with ED, Electric Drive. The ED unit, which is powered by a separate 42 volt battery, also

provides extra propulsion power at low revs, before the turbocharger has reached the necessary boost, thus eliminating the problem of turbo-lag.

Electric Drive also gives the battery a free charge of energy. When the driver lifts off the accelerator to reduce speed, the car's forward motion powers the ED unit which in turn recharges the 42 volt battery.

This energy can be used, for instance, to drive the Versatility Concept Car for short distances on electric power alone, for example at very low speeds when crawling forward in congested traffic.

The ED unit can be installed either on the driven axle or directly on the rear wheels.

In the Versatility Concept Car, the above technologies are combined with the use of lightweight materials, mainly aluminium and carbon fibre. The result is a ten percent reduction in weight compared with a similarly sized Volvo S80.

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