

Press Release

Jan 10, 2005 | ID: 2516

A Sustainable Mobility Concept Beyond The Car

PRESS INFORMATION

North American International Auto Show

Volvo Car Corporation is rewriting the rulebook on how we will use our cars in the future with its 3CC prototype being unveiled to the American public for the first time at the Detroit NAIAS 2005.

From the outside, the Volvo 3CC has an iconic funky-cool tapered shape designed to make a dynamic statement that nonetheless is unmistakably Volvo. Under the hood is an electric powertrain that quietly propels the Volvo 3CC to a governed top speed of over 135 km/h (85 mph) and delivers zero to 100 km/h (62 mph) acceleration in approximately ten seconds – with zero emissions!

Just 3899 mm long (153.5 inches), 1624 mm wide (63.93 inches) and 1321 mm high (52.0 inches), the Volvo 3CC has dimensions similar to a classic 2-seater sports car – but that is where similarities end. For the sporty vehicle packs a surprise: a unique two-plus-one configuration, providing seating for two adults in the front and a unique rear seat solution for an additional adult or two children. This 3-seat configuration provides a unique experience with regards to the occupants' communication, unprecedented rear occupant's comfort and all-around visibility for all passengers.

“With the Volvo 3CC, Volvo Cars is pioneering a new way of looking at mobility so future generations can enjoy the same freedoms the car has given my generation. We believe it is necessary to show new ways to help reduce pollution and congestion,” says Lars Erik Lundin, Vice President & General Manager of the Volvo Monitoring and Concept Center VMCC.

The Volvo 3CC is the brainchild of the designers, engineers and business people at the Volvo Monitoring and Concept Center think-tank in California. Their task was to create a ‘future-proof concept’ that would enhance sustainable mobility. To create a car that was not only fuel-efficient, versatile, comfortable, and safe, but also exciting to drive and look at.

“We want to connect in a positive way with consumers so that they say ‘I want to be seen in this car’,” Lars Erik Lundin explains. “We want to add emotional value to people’s lives by offering an environmentally compatible car that appeals to all the senses, and which people want to drive.”

Despite its compactness, the Volvo 3CC has been designed to feel spacious through organic lines, and light colors. Inside, the fixed eye plane ergonomics and low profile A-pillar create a sense of openness aided by three transparent panels in the roof. As the doors open by swinging upwards, a floating dash panel slides forward to ease ingress and egress. A unique sliding seat system also assists ingress and egress to the rear seat. The pedals also adjust for individual requirements.

But Volvo Car Corporation’s aim was not just to make the 3CC look good – they also wanted to deliver on overall sustainable mobility goals by providing excellent efficiency. Volvo has achieved this objective through good aerodynamics on a compact footprint, lightweight body materials, and an electric powertrain.

Volvo opted to give the Volvo 3CC a high strength steel space frame and composite sandwich floor panels for safety and light weight. The outer body is a bonded one piece carbon fiber shell. The resulting chassis rigidity and its innovative suspension also give the car great handling characteristics. "The double floor used to house the electric energy storage makes the concept future-proof in that the layout can be adapted for the most appropriate powertrain in the future, whether it be gasoline, diesel, biogas, or hybrid electric," explains Ichiro Sugioka, Science Officer at VMCC in California.

"In Detroit, we are demonstrating the electric powertrain, one of the most challenging to package into a vehicle, to highlight its potential where there is abundance of renewable energy that can be converted to electricity."

Meticulous wind tunnel tests resulted in an enhanced aerodynamic efficiency that is 30 per cent better than the new S40 sedan. With a potential driving range of over 300 km (180 miles) under certain driving conditions, the torque-to-weight ratio is roughly comparable to the powerful T5 model, but available over 0–3500 rpm.

This performance is achieved using a drive train specifically designed for the Volvo 3CC, although it too is a prototype. The power source is an 80kW AC induction motor, providing a torque of 220 Nm continuously at lower revs, for rapid acceleration. The maximum power of 107 hp is delivered up to 12,000 rpm. The motor can also be used for braking the car (at a torque of 110Nm). While braking, the energy is used to recharge the batteries, thereby extending the driving range. Up to 20 percent of the energy can be recovered by regenerative braking.

The electric power comes from lithium-ion cells identical to those used in modern laptop computers that are packaged in the thin sandwich floor. 3,000 cells are combined to provide between 330 and 420volts at up to 250 amperes. The batteries can be charged from any 110–240 volts, 50–60 Hz AC, outlet.

The charging is controlled by the same power electronics that controls the motor. The motor weighs 50 kg (110 lbs) and the power electronics unit weighs 30 kg (66 lbs). Both units are cooled with blower fans. Front wheel driven, the Volvo 3CC has double wishbone front and rear suspension. The front suspension includes horizontally mounted adjustable coil over shocks that give a low hood line. The rear suspension includes vertically mounted adjustable coil over shocks.

Due to the vehicle's light weight and the power of the regenerative electric braking, unassisted brakes provide good stopping power. The 3CC uses Michelin Pilot Sport 215/45 ZR18 tires that are normally found on supercars for utmost performance.

The interior of the Volvo 3CC offers dynamic ergonomic positioning for both driver and front passenger. Unique solutions include replacing instrument panel toggles with proximity sensors that are activated by a finger as it gets to within 5 mm (2/10 inches) to adjust lights, climate, and audio system.

"Rather than refining existing cars and technologies for new markets, Volvo has listened, questioned and speculated about the future and developed this all new concept," says Lex Kerssemakers, Senior Vice President Brand, Product & Business Strategy. "We think the Volvo 3CC opens a door into that future and we will develop the concept further."

Keywords:

3CC, Press Releases, Product News

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