

Press Release

Sep 06, 2007 | ID: 15071

GROUNDBREAKING PLUG-IN HYBRID - THE VOLVO RECHARGE CONCEPT - UNVEILED AT FRANKFURT MOTORSHOW

- Plug-in hybrid with battery-only range of over 60 miles
- 66 per cent lower CO₂ emissions than best hybrids available today
- 1.6 Flexifuel engine provides backup and recharge power

Volvo is unveiling an innovative plug-in hybrid at the Frankfurt Motorshow. The ReCharge Concept is a specially designed Volvo C30 with individual electric wheel motors and batteries that can be charged via a regular electrical outlet. When fully charged the Volvo ReCharge Concept can be driven approximately 62 miles on battery power alone before the car's four-cylinder 1.6 Flexifuel engine¹ is needed to power the car and recharge the battery. The concept car also retains the Volvo C30's lively and sporty drive thanks to an acceleration figure of 0-62mph in 9 seconds and a top speed of 100mph.

"This is a groundbreaking innovation for sustainable transportation. This plug-in hybrid car, when used as intended, should have about 66 percent lower emissions of carbon dioxide compared with the best hybrid cars available on the market today. Emissions may be even lower if most of the electricity comes from CO₂-friendly sources such as biogas, hydropower and nuclear power. A person driving less than 60 miles per day will rarely need to visit a filling station. Also, thanks to the excellent electrical range from a fuel consumption angle, the Volvo ReCharge Concept is exceptionally kind to the car owner's wallet," commented Magnus Jonsson, Senior Vice President Research & Development at Volvo Cars.

Operating costs are estimated to be about 80 percent lower compared to a similar petrol-powered car when using battery power alone and even drivers who cover more than the battery-only range will benefit from the ReCharge Concept. For a 150 km (93 mile) drive starting with a full charge, the car will require less than 2.8 litres of fuel, giving the car an effective fuel economy of 1.9 l/100km (124 mpg).

The only extra cost will be the electricity used during charging. The Volvo ReCharge Concept can be charged at any regular electric plug socket at convenient locations such as at home or work and a full recharge will take three hours. However, even a quick one hour charge provides enough power to cover just over 30 miles.

During a journey the combustion engine starts up automatically when 70 percent of the battery power has been used up. However, the driver also has the option of controlling the four-cylinder Flexifuel engine manually via a button in the control panel. This allows the driver to start the engine earlier in order to maximise battery charge, for instance when out on a motorway in order to save battery capacity for driving through the next town.

An electric motor at each wheel

The Volvo ReCharge Concept combines a number of the latest technological innovations into a so-called "series hybrid" where there is no mechanical connection between the engine and the wheels.

- The battery pack integrated into the boot uses lithium-polymer battery technology. The batteries are intended to have a useful life beyond that of the car itself.
- Four electric motors, one at each wheel, provide independent traction power.
- Four-cylinder 1.6-litre Flexifuel engine drives an advanced generator that efficiently powers the wheel motors when the battery is depleted.

"There is a considerable difference between the Volvo plug-in hybrid and today's hybrids. Today's hybrids use the battery only for short periods to assist the combustion engine. Volvo's solution is designed for most people to run on electric power all the time, while providing the extra security that comes with having a combustion engine as a secondary source of electrical power," says Ichiro Sugioka, project manager for the Volvo ReCharge Concept.

Electric car with a combustion engine as backup

The Volvo ReCharge Concept is a battery electric car with an efficient generator, an Auxiliary Power Unit (APU), that steps in when battery charge becomes insufficient for adequate driving performance. The APU is designed to distribute electrical power to the individual motors at each wheel. Since the combustion engine only powers the APU, it can operate in an optimal fashion, both for regulated emissions and CO₂. The APU is powerful enough to supply an entire house with electricity. For example it could, in principle, with minor modifications, give the car owner an electricity generator right at his front door in the event of a power failure.

Specially developed electric motors

The central electrical components in the Volvo ReCharge Concept - the generator for the APU and the wheel motors - were developed together with British electromagnetic specialists PML Flightlink.

With an individual electric motor at each wheel, weight distribution as well as mechanical efficiency and traction are maximised and the friction in mechanical gears is eliminated. Since the car does not have the transmission found in ordinary cars, there is no need for a gear lever.

To help maximise the environmental benefits, the Volvo ReCharge Concept has high-efficiency tyres developed by Michelin which are specially designed to accommodate the wheel motors. The car also has All-Wheel Drive in the truest sense of the term as power to each wheel is controlled individually.

The energy that is generated during braking is transmitted to the battery pack. When the system is ultimately developed, traditional wheel brakes will be completely replaced by electrical brakes with minimal energy wasted through friction. To ensure reliable operation of the drivetrain and braking system, driver inputs are fed into a quadruple-redundant electronic control system.

Ends

Notes to Editors:

1. Volvo FlexiFuels run on E85 bioethanol (85 per cent ethanol and 15 per cent petrol) but, should E85 not be available, the car can also be powered by petrol - both fuels can go into the same tank in any mixture. As a renewable fuel, bioethanol is better for the environment than traditional fuels, emitting up to 80% less fossil carbon dioxide emissions than petrol.

Keywords:

ReCharge Concept, Press Releases, Product News

Descriptions and facts in this press material relate to Volvo Car UK's car range. Described features might be optional. All information is correct at time of going to press and may be altered without prior notification.

Related Images



[More Images >](#)

media.volvocars.com >

volvocars.com >

Copyright © 2025 Volvo Car Corporation (or its affiliates or licensors).