The Lotus Evora 414E showcases new developments in plug-in, range-extended electric propulsion, new electronic technologies to enhance driver involvement, the adaptability of the Lotus Versatile Vehicle Architecture (VVA) that underpins the Lotus Evora and a dramatic new roof system and interior concept from Lotus Design.

Lotus and HARMAN have created a next generation intelligent pedestrian warning system, integrating the advanced HALOsonic sound synthesis system with video technology. This cutting-edge enhanced version of the HALOsonic safety system incorporates input from imaging sensors to enhance the quality of the sound synthesis system.

HALOsonic has been developed specifically for hybrid and electric vehicles.

**SIMULATED GEARSHIFT**

The car has a simulated paddle shift gear change offering ultra quick gear changes reminiscent of a dual clutch transmission. This enhances the driver interaction with the vehicle and provides a driving experience similar to current internal combustion engine high performance sports cars.

The drive torque is also modulated to simulate a physical feeling of a gearshift jolt. This offers the driver the ability to control the vehicle deceleration by simulating engine braking through a virtual downshift in gears.

The Lotus system effectively allows the driver to select the appropriate level of regeneration by simulating a sequential stepping down of gears. The simulation of engine braking through both the gear noise change and the retardation of the vehicle is fully intuitive to a driver familiar with a conventional gearbox.

**VEHICLE SPECIFICATION**

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<table>
<thead>
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<tbody>
<tr>
<td>Power</td>
<td>414 PS (410 HP)</td>
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<tr>
<td>Torque</td>
<td>1,000 Nm (738 lb/ft)</td>
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<tr>
<td>Top Speed</td>
<td>130 mph (209 km/h)</td>
</tr>
<tr>
<td>Acceleration</td>
<td>0-60 in around 4.4 seconds</td>
</tr>
<tr>
<td>Electric Range</td>
<td>30 miles (48 km)</td>
</tr>
<tr>
<td>Full Range</td>
<td>300 miles (483 km)</td>
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<tr>
<td>CO₂ Emissions</td>
<td>55 g/km (NEDC)</td>
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</tbody>
</table>

**KEY FEATURES**

- Range extended hybrid electric drivetrain
- Eco mode or sports mode featuring simulated seven speed paddle shift with energy recuperation
- HALOsonic internal and external electronic sound synthesis
- Torque vectoring for improved dynamic stability
VERSATILE VEHICLE ARCHITECTURE (VVA)

The VVA chassis used on the Lotus Evora is a low volume evolution of the architecture used on the Lotus APX concept and allows for the development of a range of vehicles up to a gross vehicle weight of 1,900 kg.

The VVA architecture has been designed so that it can be stretched in width, length and height vastly increasing the number of vehicles that could be developed from this vehicle architecture. Front and mid engine installations have been considered, as well as hybrid and electric vehicle applications.

ELECTRIC DRIVETRAIN

Each drive wheel is connected to a 150 kW axial flux drive motor with integrated inverter which allows for independent rear wheel control. The inverters convert DC voltage from the battery into three-phase voltage for the drive motors.

ENERGY STORAGE SYSTEM

The vehicle energy storage system is made up of the latest lithium polymer battery chemistry providing 14.4 kWh energy storage capacity. The battery pack is optimised for energy density, efficiency and high power demand, with over 300 kW discharge capability. For everyday commuting journeys, up to 30 miles (48 km) can be travelled using battery power. The battery can be charged overnight using a conventional domestic mains supply.

For longer journeys, exceeding the battery capacity, the highly efficient range extender engine is used as a generator to supply the motor with electrical power and top up the battery.

HALOSONIC

HALOsonic technology synthesises internal and external engine sounds for enhanced pedestrian safety, driver feedback and enjoyment. The HALOsonic system is now integrated with an advanced driver assistance system providing warnings to both pedestrians and the driver of potential danger.

Selectable engine sounds from the HALOsonic system combined with a simulated seven speed paddle shift transmission provide increased driver involvement.

LOTUS EVORA 414E REEVOLUTION OVERVIEW

REEV/uni00A0is a Collaborative R&D project funded by the Technology Strategy Board that is creating new high performance Range Extended Electric Vehicles (REEV) and Plug-in Hybrids Electric Vehicles (PHEV).

The REEVolution consortium, led by Jaguar Land Rover consists of three suppliers: Axeon Technologies Ltd, EVO Electric Ltd and Xtrac Limited; and three vehicle manufacturers: Jaguar Land Rover, Lotus and Nissan Motor Company Ltd. for INFINITI brand.

Three demonstrator vehicles 414E, Emerge-E and XJ-E showcase innovative new technologies. The cars are 'best in class' and combine and build on the skills of all of the businesses involved.

The driving force behind this is to build a UK supply chain for new ultra low carbon vehicle technologies and position suppliers so that they can exploit the global market. The total cost of the project including industry investment is over £20M. Just over £9M of this was grant funding from the Technology Strategy Board.