



Next Generation Car – Vehicle Concept

Urban Modular Vehicle

At DLR, the Next Generation Car (NGC) project is aimed at developing various vehicles that incorporate the trends, technologies and development methods of future generation vehicles. The main goals of the NGC are:

- Improved safety and comfort
- Environment-friendly mobility
- Use of renewable energies.

Automation levels and intermodal journey assistance

The various levels of automation from assisted to fully automated and driverless are reflected in the modularisation. The UMV incrementally offers full 360-degree environment detection and C2X networking for coordination with the rest of traffic. Furthermore, the focus is also being placed on the areas of mobile device integration and intermodal journey assistance.

Connection of overall vehicle energy management and powertrain

An intelligent, overall, vehicle energy management system is being developed for the UMV that efficiently combines the existing heat and material flows from cabin, battery and electric motor climate management.

The powertrain is distinguished by a modular electric drive via 2 x 25 kW electric motors (in the UMV Basic Figure 3) with high speed spreading on the rear axle. In addition, the drive can optionally be combined with an integrated air-conditioning compressor and a PCM energy storage device.

Innovative lightweight chassis

The modular, mechatronic, integrated lightweight chassis using innovative materials offers steer-by-wire, brake-by-wire, and drive-by-wire control with close-to-wheel drive on the rear axle. Assisted vehicle manoeuvres can be carried out superbly via integrated chassis control.

Part of the NGC family of new road vehicle concepts is the UMV – Urban Modular Vehicle (figure 1) – whose focus is on increasing urbanisation, electrification and the introduction of autonomous assistance systems.

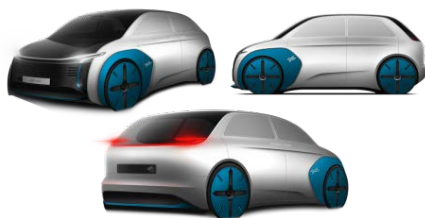


Figure 1: UMV Basic, 2 + 2 seats, length 3.7 m

Modularity and flexibility in production

The UMV is a unique way of illustrating the ability to move from conventional self-driven road vehicles to completely autonomous vehicles. Flexibility in production while optimising costs is a must when the production volume of highly automated vehicles is still low as they are brought onto the market. The NGC UMV offers this flexibility via an intelligent, modular platform concept in the vehicle body structure, in the powertrain and in the different levels of automation. The variants of the UMV (figure 2) are: Basic, Long, Cargo, Peplemover and Cargomover.

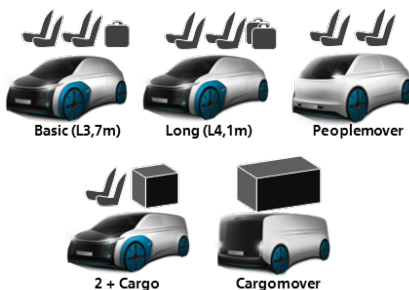


Figure 2: UMV derivatives

Modular MMD body in white

The function-integrated modular body of the Multi-Material Design offers optimised structures, especially for battery-driven electric vehicles as part of the purpose design. The design philosophy is reflected in an aluminum intensive frame structure with profiles and nodes with functionally integrated sandwich surfaces and flat components in FRP surface components.



Figure 3: UMV Basic and Package