ADVANTAGES OF USING HYBRID CARS IN EVERYDAY LIFE FROM A TECHNICAL VIEWPOINT

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With the development of the transport industry, the demand for cost-effective and environmentally friendly solutions is growing. One of these solutions is hybrid cars, which are already being actively used by millions of people in everyday life. Such cars combine an internal combustion engine (ICE) with an electrical system (electric motor and battery/starter generator). From a technical point of view, the use of such vehicles in everyday life has a number of significant advantages, such as:

The first is – *the efficient use of fuel*. Hybrid systems can significantly reduce fuel consumption through the use of regenerative braking, in which the kinetic energy generated during the braking process is converted into electrical energy and stored in an electric battery (in the case of hybrid systems with an electric battery). In urban environments, this is particularly effective, as frequent deceleration and acceleration contribute to the active use of electric traction.

The second is – *the increased reliability of components*. Due to the reduced load on the internal combustion engine (part of the traction work is performed by the electric motor), wear and tear on the mechanical elements of the engine, transmission and brake system is reduced. This leads to a longer service life of the components and a reduction in the frequency of maintenance.

The third is – *a high level of automation*. Modern hybrid powertrains are controlled by electronic control units that automatically optimise the performance of both engines depending on the load, driving style and road conditions. This increases operating comfort and reduces the requirements for energy-efficient driving.

The fourth is – *low noise and vibration levels*. The electric motors are quiet and have a smooth running, which ensures comfort in everyday use, especially in urban environments.

The flexibility of the power unit should be highlighted separately. In low-load modes, such as when driving in traffic jams or in residential areas, the car can operate on electric traction alone, with zero emissions and minimal energy consumption. When more power is needed, the internal combustion engine automatically switches on, creating an effective symbiosis.

Thus, hybrid cars are technically a favourable option for daily use. They combine energy efficiency, reduced wear and tear on major systems, a high level of automation, and operational comfort. In the future, further improvements in battery technology and control systems will facilitate even wider adoption of hybrid solutions in the transport sector.

In addition, their adaptability to different climates and road conditions makes them suitable for a wide range of users. As engineering innovations progress, hybrid vehicles will continue to play a key role in sustainable mobility.

Hybrid cars also contribute to the reduction of urban air pollution and greenhouse gas emissions.