48-volt vehicle electrical system

Alongside the standard 12-volt vehicle electrical system, the 48-volt vehicle electrical system is an additional system that enables mild hybridisation of the drive train. Drive concepts are called mild hybrids when an electric motor supports the internal combustion engine, the power of which is not sufficient, however, to drive the vehicle alone. 48-volt vehicle electrical systems are currently mainly integrated in modern high-end passenger cars.

Function

The new vehicle electrical system was developed to cover the increasing demand for electrical power in the car. This is because the number of electrical consumers, such as assistance systems

Advantages

As a subsystem, the 48-volt vehicle electrical system supplements the 12-volt network with a voltage of 48 volts. The higher voltage enables the power limit to now be increased to up to 20 kW.

A further advantage is provided by the potential for smaller cable cross-sections (up to 75 percent). This results in less generation of heat. The required installation space is also smaller.

48-volt technology can be integrated in the architecture of conventionally driven cars with comparatively little outlay. Here, it can enable functions which are otherwise only offered by high-voltage systems in <link https: www.my-cardictionary.com engine hybrid-drive.html external-link-new-window external link in new>full hybrid models.

Lower consumption

This also includes technical solutions for the recuperation of braking energy. The recuperated energy can be used for driving with electrical power, or for a temporary performance increase to accelerate more quickly. A mild hybrid with 48 volts is also sufficient for driving off, for floating along electrically in traffic jams, or for actively “sailing”. Sailing is the function when the internal combustion engine is switched off when driving and disconnected from the drive train. This has the advantage of using the existing kinetic energy for onward movement, and to not lose this in the form of drag power

A hybrid module with 48 volts can significantly reduce consumption compared to conventional drives. The higher system voltage also guarantees a higher alternator power, which helps with regenerative braki

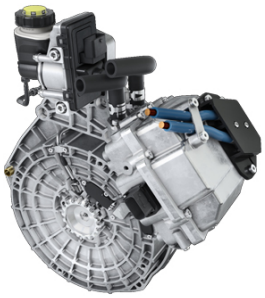
Safety

The 48-volt vehicle electrical system is part of the low-voltage systems, and is therefore still in a harmless range for humans. This means there are no special safety requirements as is the case for high-voltage systems in full hybrid models, for example.

Protection of the environment

A 48-volt hybrid module lowers consumption by over 15 percent compared to conventional drives. This means fuel consumption and CO2 emissions can be significantly reduced at a reasonable cost.

Bilder



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