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NOVEL HYBRID POWERTRAIN INCL. TV

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NOVEL HYBRID POWERTRAIN INCL. TV

Initial situation:

Normally, today's PHEV models are built and offered on the market in a so-called P0, P1, P2, P3 a/b or P4 arrangement.

Disadvantage:

In the performance PHEV, the circumstance has arisen that the transmission input power has not been sufficient for the project-specific driving performance. Thus, in our case, the singular P2 arrangement cannot meet the requirements.

Solution:

In order to extend the power/torque limitation of the P2 arrangement, a combinatorics of P2-E machine has been combined with a powerful P3b-E machine. In contrast to today's applications, the P3b-E machine is arranged transversely to the direction of travel. The P3b-E machine delivers power directly to the wheels without putting additional load on the main transmission. In addition, a torque vectoring system is integrated into the new module containing the P3b-E machine to increase lateral dynamics. This can alternatively be implemented electro-mechanically, electro-hydraulically or purely electrically including a superimposed transmission.

Advantage:

Through the combinatorics of P2 and P3b-E machines, the system performance in the vehicle can be significantly increased without requiring a new main transmission or an upgrade of the main transmission. Despite mechanical locking centre differential, increased lateral dynamics can be offered by the novel rear axle module.

Technical implementation:

Shown below is one of the possible realisations of the drive system.

The combinatorics consists of a VKM, a main gearbox with an integrated E-machine (P2-arrangement) as well as an integrated mechanical centre-lock differential and a rear axle module which contains the so-called P3b-E-machine (arranged transverse to the direction of travel) and the torque vectoring unit. The main gearbox and the rear axle gearbox are mechanically connected via a cardan shaft.

