

Technical Disclosure Commons

Defensive Publications Series

January 2022

NOVEL TRANSVERSE DYNAMICS HYBRID POWERTRAIN

Axel Unger

Bertrandt Ingenieurbüro GmbH

Follow this and additional works at: https://www.tdcommons.org/dpubs_series

Recommended Citation

Unger, Axel, "NOVEL TRANSVERSE DYNAMICS HYBRID POWERTRAIN", Technical Disclosure Commons, (January 31, 2022)

https://www.tdcommons.org/dpubs_series/4870



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

This Article is brought to you for free and open access by Technical Disclosure Commons. It has been accepted for inclusion in Defensive Publications Series by an authorized administrator of Technical Disclosure Commons.

NOVEL TRANSVERSE DYNAMICS HYBRID POWERTRAIN

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 PPHEV, 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.

Advantage:

By combining P2 and P3b-E machines, the system power in the vehicle can be significantly increased without the need for a new main transmission or an upgrade of the main transmission.

Technical implementation:

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

The combination consists of a VKM, a main gearbox with an integrated E-machine (P2-arrangement) as well as a controllable clutch system at the gearbox output, which enables a variable torque distribution between front and rear axle and a rear axle module which contains the so-called P3b-E-machine (arranged transverse to the direction of travel). The main transmission and the rear axle transmission are mechanically connected via a cardan shaft. The front axle can be disconnected via a clutch as described. This enables significantly controlled lateral dynamics in the overall vehicle compared to a static torque distribution of the mechanical centre differential.

