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DETERMINATION OF THE COEFFICIENTS OF FRICTION WITH RESPECT TO THE ROAD SURFACE IN A VEHICLE WITH AN ELECTRIC DRIVE SYSTEM

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DETERMINATION OF THE COEFFICIENTS OF FRICTION WITH RESPECT TO THE ROAD SURFACE IN A VEHICLE WITH AN ELECTRIC DRIVE SYSTEM

Initial situation:

Application parameters (depending on the drive select position) for the driving dynamics controls that are independent of the road and tyre conditions in the respective situation.

Disadvantage:

Additional computer power in the respective HCP control unit.

Solution:

Electric drive units enable significantly higher torque gradients than earlier drives with combustion engines. This property should be used to determine the current friction coefficients in the vehicle

Advantage:

Optimisation of vehicle dynamics control systems for increased performance of longitudinal and lateral dynamics with improved safety at the same time

Technical implementation:

A high torque (driving or braking) is applied to the axle machines for a short time (<1 s), so that the friction coefficients (adhesion and sliding coefficient) can be calculated from the speed response. The torque must be superimposed either impulsively or on the basis of a specific curve to any torques present in the current driving situation. The torque can be either driving or braking. For example, the driving directions on the front and rear axles can be directed in opposite directions in order to produce as little noticeable acceleration/deceleration of the vehicle for the driver as possible. The process can occur either once at the driver's request, or when a racetrack is detected. If necessary, the process can also be carried out regularly when the vehicle is in stable driving conditions. This additional information is intended to describe the condition of the road surface or its asphalt condition, e.g. on a racetrack, in combination with the tyres (possibly corrected via tyre pressure and temperature via the TPMS).