Central vehicle dynamics computer – Vision

On the road toward an integrated vehicle dynamics brain

Audi consistently drives the idea of integrating chassis and powertrain technology. In the future, an integrated vehicle dynamics processor will handle longitudinal and lateral dynamics control as well as energy and powertrain management: recuperating energy during a braking event, determining the damper compression rate within milliseconds and keeping the vehicle precisely on track – all practically at the same time. The development objective for future chassis generations is clear: besides an even greater spread between sportiness and comfort, the integration of efficiency technologies will play a central role.

The future vehicle dynamics processor will be centrally controlling nearly all functions in longitudinal, lateral and vertical dynamics: chassis, powertrain and recuperation functions, and be clearly more powerful than today's ECP, for instance. It will operate about ten times as fast as current systems and be able to control up to 90 system participants – compared to about 20 in the case of the current ECP. New as well will be its modular usability for diverse types of powertrains, in other words, ICE-powered, hybrid or electric vehicles, as well as front, all-wheel or rear-wheel drive systems for electric models. As a result, the central vehicle dynamics computer, in addition to car-to-x functions, will enable function-on-demand features as well. Its precise data computation will also execute the requirements of advanced driver assistance functions.

Chassis technology development at Audi emphasizes intensified interlinking of individual mechatronic chassis components and vehicle functions using smart electronic control. The Electronic Chassis Platform (ECP) made its debut in the Audi Q7 in 2015. Today, it interlinks the individual component assemblies of the chassis systems in Audi's mid-size, full-size and luxury models. Due to this smart ECP interlinking of chassis technologies that have undergone continuous further development such as permanent quattro all-wheel drive, the adaptive air suspension and Dynamic All-wheel Steering, Audi has forged a successful link between superior ride comfort and high-level driving dynamics.

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