Audi e-tron – Recuperation

From freewheeling to a one-pedal feeling: electric deceleration
The intelligent recuperation conceptis also tightly integrated into the Audi e-tron’selectronic management system. It is the most innovativesystem on the market andaccounts for up to 30 percent of the range.

The electric SUV can recover energy in two ways: by means of coasting recuperation when the driver releases the accelerator, or bymeans of braking recuperation when the brake pedal is depressed. In both cases, the electric motors function as a generator and convert the kinetic energy of the Audi e-tron into electric energy. Up to 0.3g, the SUV recuperates energy solely via the electric motors, without using the conventional brake –that covers well over 90 percent of all deceleration. So, energy is returned to the battery in practically all normal braking maneuvers.

The internally ventilated, 18-inch wheel brakes do not come intoplay until the driver uses the brake pedal to decelerate with more than 0.3g. The electric SUV decides whether to decelerate using the electric motor, the wheel brake, or a combination of the two depending on the driving situation –with this taking place individually at each axle. In case of a brake application at a speed of 100km/h (62.1 mph), for example, the Audi e-tron can recuperate with a maximum of 220kW of electric power; that corresponds to more than 70percent of its operating energy input. No other series production model can achieve such a value.

The driver can select the degree of energy recovery in three stages using paddles on the steering wheel. In the lowest setting, the Audi e-tron coasts with no additional drag torque when the driver releases the accelerator pedal. The Audi e-tron continues to roll forward. No electricity flows to or from the electric motor while the vehicle is moving. In level 1 (balanced – minimal deceleration) and level 2 (strong – high deceleration), the electric motors generate regenerative brake torque and produce electricity. The electric SUV reduces the speed noticeably – the driver can decelerate and accelerate using just the accelerator pedal. This creates the one-pedal feeling. There is no need to use the brake pedal in this case.

In addition to manually adjusting the recuperation level with the steering wheel paddles, the driver can also select automatic mode in the MMI. The predictive efficiency assist then regulates the deceleration as needed and predictively, for example in relation to the route or vehicles in front. The driver can adapt the deceleration effect by selecting the desired

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recuperation level via the shift paddles. It remains active until the driver operates the accelerator pedal again.

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