
Audi e-tron – e-quattro

Efficiency, performance and quiet tranquility – the Audi e-tron offers the driving experience of a new technological era. Two electric motors drive the electric SUV powerfully, free of emissions, and almost silently, with a system output of up to 300 kW. Its high-voltage battery stores 95 kWh of energy to provide a range of over 400 kilometers (248.5 mi) in the WLTP cycle. The Audi e-tron is thus predestined for long distances. The new electric all-wheel drive system combined with cutting-edge suspension solutions provide for optimal traction and handling in all driving situations and any weather.

High traction in any terrain: electric all-wheel drive

In the Audi e-tron, the brand with the four rings introduces a new quattro generation as standard: electric all-wheel drive. It ensures the continuous and fully variable regulation of the ideal distribution of drive torque between the two axles – within a fraction of a second. The electric SUV thus offers optimum traction in all weather conditions and on any type of surface. Its talents really shine on low-friction surfaces such as a snow.

In most cases, the Audi e-tron mainly uses its rear electric motor in order to achieve the highest efficiency. For reasons of efficiency, the drive torque is generally distributed with a rear-axle bias. If the driver demands more power than the rear electric motor can supply, the electric all-wheel drive redistributes torque as required to the front axle. This also happens predictively even before slip occurs in icy conditions or when cornering fast, or if the car understeers or oversteers. It takes just around 30 milliseconds from the system detecting the driving situation and the torque from the electric motors kicking in – much faster than with conventional quattro technology. The reason is that with the electric all-wheel drive a mechanical clutch is not engaged but electricity is simply distributed. And that is almost instantaneous with absolute precision. So even with sudden changes in the coefficients of friction and extreme driving situations the full quattro performance is guaranteed.

The key to the electric all-wheel drive is the intelligent networking of numerous control systems. The central control unit for the chassis integrates both the handling controller of the quattro drive and the wheel-selective torque control for the first time. If understeer is detected during sporty driving, it gently brakes the inside wheels, which are under a reduced load, thus directing the drive force to the outside. The car turns into the curve and precisely follows the steering angle. Furthermore, an innovative traction control provides high traction and stability. Wheel slip is controlled directly at the power electronics of the electric motors, 50 times faster than before and even more precisely

matched to the driving situation. For the driver, this is particularly noticeable in combination with the four-stage Electronic Stabilization Control (ESC). It offers a sport and offroad program in addition to normal mode, and can also be switched off entirely. The driver can thus increase performance in certain situations and choose to extent to which the ESC helps to stabilize the vehicle.

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