En route to faster charging with the Audi e-tron route planner

- **Battery preconditioning optimizes charging performance to minimize charging times**
- **Predictive thermal management puts battery cells in the ideal temperature range while approaching a charging station**
- **The Audi e-tron route planner provides charging station information – including the number of available stations, payment options, and more**

Ingolstadt, April 17, 2025 – Audi offers helpful functions in its electric model series that significantly shorten charging times and make it much easier to find charging stations.

The key to optimal charging success

There are several basic factors that promote fast charging:

- Sufficient preconditioning
- Battery temperature in ideal temperature range of +25°C to +45°C
- Low state of charge (SoC) at charging start
- Moderate interior climate control during charging
- Sufficient power output at charging station

How battery temperature affects charging times

The temperature of the high-voltage battery (HV battery) has a significant impact on the maximum power output, the charging time, and ultimately the battery's own service life. In order to ensure optimal charging performance and fast charging stops in low or high outside temperatures, the HV battery must be sufficiently preconditioned.

The ideal range for charging the HV battery is between 25 and 45 degrees Celsius. Temperatures above 50 degrees Celsius can damage the battery's electronics and chemical components. At the same time, temperatures below 25 degrees Celsius increase the battery's internal electrical resistance, which means that charging will take longer. For this reason, the Q6 e-tron, A6 e-tron, e-tron GT, and Q4 e-tron model series feature a predictive thermal management system designed to put the battery cells in the ideal temperature range while approaching a DC fast-charging (HPC) station. The process of achieving this ideal charging condition is known as preconditioning. It works by heating the battery in cold temperatures and cooling it in warm temperatures. In many models, the central MMI display and the driver information display can display the battery temperature.

Preconditioning starts automatically when a fast-charging station is integrated into the navigation system as a destination in the route planner or is actively selected as such. Drivers can do this either automatically in the e-tron route planner (as an intermediate/charging stop on their route) or in the Q4 e-tron by entering it manually in the MMI system (“Charging” menu). If the driver is using a third-party app for navigation, for example via the Audi smartphone interface, it is not always possible to start preconditioning automatically. Audi therefore recommends always activating the Audi navigation system with the Audi e-tron route planner to reliably start preconditioning. However, preconditioning is not necessary when charging with alternating current at AC charging stations or a home Wallbox. Alternating current provides maximum charging power even when the battery temperature is outside of the ideal HPC charging range.

The right charge level for optimum charging performance

Maximum charging power when charging starts can be reached ideally when the HV battery has a low charge level, known as the state of charge (SoC). Ideally, the battery’s SoC will be between five and 40 percent when charging begins. It therefore makes sense to use a fast-charging station to briefly recharge with a low SoC. This is the only way to make the most of the HV battery’s fast-charging potential. In order to prolong the battery’s service life, it is crucial not to overload the HV battery during fast charging. Therefore, the maximum charging power is automatically reduced for SoCs above 40 percent. As the charging power drops for SoCs above 40 percent for physical reasons, the rechargeable range per unit of time decreases along with it. That’s why it makes little sense to use a fast-charging station with an SoC of 80 percent, for example. Ultimately, this means that the total drive time with multiple short HPC charging stops will be less than with one long stop. Choosing the right charging station is also important. A fast-charging station should at a minimum match the vehicle’s maximum charging power but ideally provide even more power to take advantage of its time-saving maximum charging capacity.

The advantages of the e-tron route planner

This is where the Audi e-tron route planner comes in. It provides just the right amount of preconditioning to put the HV battery in the ideal temperature range for top charging performance. It also provides current information on charging stations (number of available stations, power, occupancy, operator, technical availability, payment options). It enables dynamic and automatic planning of charging stops along the route based on a variety of parameters including route topography, traffic conditions, individual driving style, and personal settings such as minimum SoC at charging start and maximum SoC at charging end. With so many options, charging becomes a stress-free routine.

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