Handling the Norwegian winter with Audi e-tron

- **The electric quattro even masters difficult winter road conditions**
- **Pre-air conditioning offers a large degree of comfort**
- **Intelligent thermal control system ensures that you can drive without any worries when it's cold**

**Norway, February 28, 2022 – How does an electric car work in the Nordic cold? A Norwegian family who has driven the
Audi e-tron* since 2019 shares their experiences. Alongside explanations from Audi's own technicians, this will give you the best insight into how the Audi e-tron* performs in a cold climate and on icy roads.**

"We wanted to drive electric, but for a long time there were no electric cars able to meet our needs," says Liselotte Lunde (36). The family, which now counts five, had high standards when they searched for their new family car: enough space for everyone including luggage (e.g. prams, bicycles, skis, and sleds). In addition, they needed a range that took them where they wanted to go, even in wintertime, and with three kids in the active family first-class safety for everyone.

The first electric car to thoroughly meet their requirements was the Audi e-tron*. The techy family committed early when Audi launched its first all-electric car and the Lunde family had already received their e-tron 55 quattro* by the spring of 2019.

Perfect car for the cabin

"It was important for us to be able to drive to the cabin without stopping, even in the winter," Lunde says. Uphill driving and winter roads are no problem at all for the electric drivetrain. And the last part of the road to the family cottage is steep. That's why they really appreciate the quattro system: "The electric four-wheel drive in the Audi e-tron* gives us safety. We are never worried about not arriving at our destination, regardless of the conditions. And it is especially important for us now, with a baby in the back seat," says Lunde.

When they switched from a traditional car to an electric car in 2019, the biggest difference they experienced was the technological leap: "Our car has LED-Matrix lights, which are absolutely superb in the Norwegian winter darkness. We also have a night vision assistant, which is a great help in warning us if there's a moose in or near the road. In addition, it is incredibly convenient to be able to do so much via the app. We can set the pre-air conditioning of the car from our bed. The Audi e-tron* is not just a car, but a car offering service. It solves challenges in our everyday

**The collective fuel/electric power consumption and emissions values of all models named and available on the German market can be found in the list provided at the end of this text.*

life," says Lunde.

The air suspension, which can be raised and lowered, is also one of the technical solutions that make the Audi e-tron suitable as a winter car in Norway.

Increased range

When they got their car, the range was stated to be 417 km (WLTP). In the autumn of 2021, this was increased to 436 km with an update to the car's software. "For our part, the range has always been sufficient, even in winter. We have a charging option both at home and at the cabin and can start every morning with a 'full tank'. Normally, we only charge to 80 percent, and that gives us an everyday life completely free of range worries," says Lunde.

In addition, climatization of the car before departure offers great benefits through the Norwegian winter: "It's great to be able to drive off in a heated car that's free of ice. With a baby on board, it's much easier to not have to get into the car wrapped up warm," Lunde observes.

Intelligent thermal control

The reason behind the trouble-free everyday life is also thanks to Audi's intelligent thermal control system: "The Audi e-tron* has four thermal circuits. A heat pump draws surplus energy from both the propulsion components and the environment, so that both the passenger compartment and the battery is tempered efficiently. "It is up to three times more efficient than using a traditional heater with electric heating elements," explains Pierre Woltmann, who has been responsible for the development of the thermal control of the high-voltage battery in the e-tron* at Audi. He also emphasizes the importance of using pre-air conditioning, as the Lunde family does: "When the car is preheated using the Wallbox, a significant range gain can be achieved, especially for short driving distances. If you drive short trips with a cold car, a relatively larger share of the energy will be used for heating compared to what is used for propulsion," he continues. In the Nordic countries, the Audi e-tron is supplied with increased capacity for heating the battery. This can be delivered as part of the Winter Package, which is also offered in other European countries.

Smart heating tip

The Lunde family has learned several practical tips that both contribute to comfort and control through the Norwegian winter. "If we haven't had time to use pre-heating, we use the heating in the steering wheel and heat the seats for maximum comfort from the start of a trip. And on the shortest trips this is sufficient," says Lunde. "Proximal heating, as Lunde describes here, is a smart tip to save range on short trips. It requires far less energy to heat the car's contact surfaces in the seat and steering wheel than to heat the entire car," Woltmann explains.

Always driving with active navigation

Another tip the Lunde family picked up was to always use navigation with a destination for the slightly longer trips.

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"We always drive with active navigation to the cabin, even though we obviously know the way by heart," says Lunde. "Without navigation set up with a destination, the system bases the range estimate on the last 100 kilometers driven. With the navigation target activated, the e-tron route planner has access to current information about the road you are going to drive on and can calculate energy consumption and range tailored for the upcoming drive. Therefore, you get the best estimate of the remaining range when driving with active navigation. If necessary, the system will then also recommend a charging stop, and include the charging time in the estimate for the arrival time," Woltmann explains.

Thermal benefits also for fast charging

The Lunde family uses fast charging to a small extent, since they have such good access to home charging. But for longer trips they occasionally have to charge along the way, for example on holiday trips, which makes them appreciate the fast and stable charging performance of the e-tron. "The maximum charging power of 150 kW makes the charging stops short. But perhaps the most important thing is that the high level of power is available for a large part of the charging process," says Lunde. "Even with fast charging (DC), the Audi e-tron utilizes the intelligent thermal control of the battery. This means that the high charging power can be used over a longer period of time than without this possibility of thermal regulation," Woltmann explains.

No way back

"The most important learning from our transition to an electric car is how easy it is in everyday life. Inserting the charging cable when we park in the evening and using the 'myAudi' app to set departure times are things we just do and no longer think about," says Lunde. In addition, they appreciate the tech experience they get with the Audi e-tron*: "We discovered that Audi had made a modern and smart car when they first arrived in the EV market," Lunde says. Since the spring of 2019, they have so far, at the beginning of 2022, driven over 30,000 kilometers with their e-tron 55 quattro*. "Audi e-tron* has really convinced us that electric cars do work, even through a Norwegian winter. This is the future and we will never choose anything other than an all-electric car again," Lunde concludes.

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In 2021, the Audi Group delivered around 1.681 million cars from the Audi brand, 8,405 sports cars from the Lamborghini brand and 59,447 motorcycles from the Ducati brand to customers. More than 85,000 people all over the world work for the Audi Group, around 58,000 of them in Germany. With its attractive brands, new models, innovative mobility offerings and groundbreaking services, the premium brand group is systematically pursuing its path toward becoming a provider of sustainable, individual, premium mobility.

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Fuel/electric power consumption and emissions values of the models named above**

Audi e-tron
Combined electric power consumption in kWh/100 km (62.1 mi): 26.1–21.0 (WLTP); 24.3–20.9 (NEDC); combined CO_2 emissions in g/km (g/mi): 0 (0)

Audi e-tron 55 quattro
Combined electric power consumption in kWh/100 km (62.1 mi): 26.1–22.2 (WLTP); 24.3–22.0 (NEDC); combined CO_2 emissions in g/km (g/mi): 0 (0)

***The indicated consumption and emissions values were determined according to the legally specified measuring methods. Since September 1, 2017, type approval for certain new vehicles has been performed in accordance with the Worldwide Harmonized Light Vehicles Test Procedure (WLTP), a more realistic test procedure for measuring fuel consumption and CO2 emissions. Since September 1, 2018, the WLTP has gradually replaced the New European Driving Cycle (NEDC). Due to the more realistic test conditions, the consumption and CO2 emission values measured are in many cases higher than the values measured according to the NEDC. Additional information about the differences between WLTP and NEDC is available at www.audi.de/wltp.*

At the moment, it is still mandatory to communicate the NEDC values. In the case of new vehicles for which type approval was performed using WLTP, the NEDC values are derived from the WLTP values. WLTP values can be provided voluntarily until their use becomes mandatory. If NEDC values are indicated as a range, they do not refer to one, specific vehicle and are not an integral element of the offer. They are provided only for the purpose of comparison between the various vehicle types. Additional equipment and accessories (attachment parts, tire size, etc.) can change relevant vehicle parameters, such as weight, rolling resistance and aerodynamics and, like weather and traffic conditions as well as individual driving style, influence a vehicle's electric power consumption, CO2 emissions and performance figures.

Further information on official fuel consumption figures and the official specific CO2 emissions of new passenger cars can be found in the "Guide on the fuel economy, CO2 emissions and power consumption of all new passenger car models," which is available free of charge at all sales dealerships and from DAT Deutsche Automobil Treuhand GmbH, Hellmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen, Germany (www.dat.de).