

From range anxiety to charging time: Green NCAP tests show how today's EVs perform in the real world

LEUVEN, BELGIUM – Green NCAP's latest whole-life assessment of vehicles' environmental impact addresses drivers' top concerns over electric cars, including range anxiety, charging times, and even using the heater in cold weather.

Moving beyond environmental impact scores, Green NCAP highlights how the [Dacia Spring](#), [Hyundai Inster](#), and [Volkswagen ID.4](#) perform in the real world when faced with everyday practical factors like freezing temperatures, motorway driving, and rapid charging requirements.

The results, which include a conventional car benchmark, the [SEAT Ibiza](#), reveal significant differences in driver experience, particularly in cold weather, reinforcing the need for buyers to carefully match their vehicle to their driving needs.

Living with an electric vehicle: how the weather impacts range

One of the biggest concerns for many prospective electric vehicle (EV) owners is the reduced driving range in cold weather – a key focus of Green NCAP's 'Cold Winter Performance' tests, conducted at -7°C (19°F).

During testing, the Dacia Spring and Hyundai Inster – affordable, small electric hatchbacks – demonstrated contrasting real-world range capabilities. Green NCAP's findings show that, with such a small battery (usable battery capacity of 27.6 kWh, in a car weighing 979 kg), the Spring is best suited to local trips. Drivers undertaking a long journey in the Spring would need to plan charging stops carefully. In warm weather mixed driving, its range is estimated at 180 km; however, in cold winter weather, the mixed-trip range falls to just 133 km. Meanwhile, the motorway is clearly not its natural habitat, where its estimated range drops to 119 km in cold conditions. Overall, the Spring's range is rated as 'Poor.'

By contrast, the Inster has a usable battery capacity of 49.0 kWh and kerb weight of 1412 kg. This gives it a fundamental range advantage over the Spring, making it a more versatile small electric car. Its warm weather mixed-trip range is estimated at 322 km and rated as 'Adequate.' Its cold winter mixed range remains a usable 219 km. However, like the Spring, the Inster's motorway range drops sharply, to 267 km in warm and to only 199 km in cold winter conditions, putting its motorway performance in the Poor category.

The larger, heavier VW ID.4 Pure (usable Battery of 52.0 kWh, and a kerb weight of 1987kg) boasts more usability. Its warm weather mixed range sits at 304 km, slightly less than the lighter Inster. The cold weather mixed-trip range drops to 196 km, and 193 km on the motorway, a significant percentage drop, but still a practical distance for daily use. Overall, the

estimated real-world consumption values of the ID.4 are rated as 'Adequate' in the 'Consumption and Range' section, while the smaller and lighter Inster achieved the 'Good' label.

The hot topic: what's the penalty for using the heater?

One of the most energy-intensive activities for an EV is heating or cooling the cabin. In cold weather, an electric car cannot rely on waste heat from an engine. It is one reason why it is beneficial to pre-warm an electric car while plugged into a charging point at home: by using energy from the grid to warm the car, you don't drain the car's battery trying to warm it when starting from cold.

The Dacia Spring uses a simple PTC heater, a type of self-regulating electric heater that uses ceramic heating elements. While it can achieve a cabin temperature of 16°C in the front and rear head area relatively quickly, both the front and the rear footwell failed to reach the target altogether during the test. Critically, its small battery means the range benefit from pre-warming while plugged in is minimal.

In contrast, the Inster features a more complex setup, including a PTC heater and heat pump. While its cabin warm-up was slow in the front, it offers features like remotely activated heating for the front seats and steering wheel, which deliver comfort without drawing excessive power from the main battery.

The ID.4 impressed by heating the entire cabin quickly. Its driving range benefitted from pre-warming with an extra 46 km added to a mixed trip in cold weather, and 79 km in urban driving – helping offset range loss.

Fast charging: rating the recharge time highlights differences across EVs

For all three EVs, fast charging capability is rated 'Adequate.' This assessment reflects a functional, but not class-leading, ability to regain range quickly.

The Dacia Spring accepts a maximum DC power of just 34 kW and needs 40 minutes to recharge its battery from 10 percent to 80 percent capacity. Given its small battery, the resulting recharged range gain per minute is 'Poor' for highway driving, confirming its role as best suited to local driving. It does, however, offer Vehicle-to-Load (V2L) power supply (up to 3.7 kW), which is a surprising feature for such an affordable car and allows users to power a range of everyday devices using their car's energy.

The Inster achieved a peak charging power of approximately 81 kW and achieved the 10 percent to 80 percent recharge in about 31 minutes – quicker than the Spring but recharging a battery almost twice the size. Its recharged range gain per minute offers better long trip suitability across all scenarios. The Inster also offers the useful V2L functionality.

Accepting a maximum charging power that briefly reached 155 kW, the ID.4 achieves the 10 percent to 80 percent charge in approximately 27 minutes, provided that the battery has been preconditioned. This quicker time for a larger battery capacity points to the ID.4 being a

versatile family SUV, which is reasonably well suited to longer journeys. However, the ID.4 does not offer any form of bidirectional charging functionality, such as V2L.

The conventional benchmark: SEAT Ibiza

To provide context on real-world consumption against conventional vehicles, the SEAT Ibiza 1.0 MPI (a small family hatchback) was also tested. Green NCAP only introduces the 'Consumption' section in the Driving Experience assessment of conventional vehicles, and it is evaluated as 'Good' for the SEAT.

The Ibiza's estimated fuel consumption in warm weather mixed driving is 6.0 l/100 km, rising only marginally to 6.4 l/100 km in cold winter mixed driving. This small difference is achieved because it uses the engine's waste heat for the cabin, avoiding the significant energy draw seen in EVs. What's more, the consumption figures shown on the car's on-board computer matched the measured values well in all scenarios, highlighting a level of predictability that gives drivers confidence in both fuel and range calculations – a contrast to the range fluctuations seen in the EVs in cold weather.

Counting the overall environmental impact

While the focus of Green NCAP's 'Driver Experience' assessment concerns the everyday practicalities of living with an EV, Green NCAP also scores each car's lifetime environmental impact. Here, a clear picture emerges, where the efficiency and low production impact of small electric vehicles improve their overall Sustainability Rating.

The Dacia Spring achieved a five-star Sustainability Rating, with an overall score of 100 percent. It is greatly helped by being light and having a small battery, which translates into minimal cradle-to-grave CO₂ equivalent emissions of 90 g/km. The Hyundai Inster followed closely with a five-star Sustainability Rating (96 percent), and CO₂ equivalent emissions of 114 g/km.

The heavier Volkswagen ID.4 Pure secured a strong four-and-a-half-star Sustainability Rating (84 percent), but its weight is reflected in a higher life cycle CO₂ equivalent emission of 130 g/km. Although the Ibiza closely missed a fourth star, its performance illustrates that while ICE vehicles can be efficient, the inherent CO₂ penalty from fossil fuel combustion means they cannot match electric cars charged with the relatively green European average electricity mix.

Green NCAP's testing goes far beyond the official figures to give consumers a true picture of what daily life with a vehicle would be like.

Our test results clearly show that the 'Driver Experience' – especially during winter – is quite variable among electric cars. While the Dacia Spring is a spectacular achievement in overall environmental terms, its short range and slow charging limit its suitability to drivers who only need to make local journeys.

Whereas the Hyundai Inster and VW ID.4 provide more robust, if not flawless, solutions for longer trips and driving in cold weather.

Manufacturers must continue to optimise heating systems and charging speeds to fully address consumer anxieties and make the transition to electric mobility seamless for everyone.

— Dr. Aleksandar Damyanov, Technical Manager Green NCAP

About Green NCAP

Established in 2019, Green NCAP is an independent, non-profit organisation established to promote the development of more sustainable cars and trucks. For the first time, the introduction of Green NCAP's whole-life assessment of new vehicles means consumers can see and compare the true environmental impact of cars throughout their lifecycle, and compare their real-world efficiency, range, and charging capability.

Each car's Sustainability Rating is presented in a comprehensive report that can be browsed online or downloaded.

Editor's note

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About Green NCAP

Green NCAP is an independent initiative which promotes the development of cars which are clean, energy efficient and cause as little harm to the environment as possible.

Green NCAP uses a broad range of tests to address the flaws in approval tests and, through consumer information, rewards those manufacturers whose vehicles go beyond the minimum requirements and offer excellent, robust, real-world performance.

We believe that consumers need to be adequately informed about the energy consumption and related greenhouse gas emissions of the vehicle of their choice.