

Solid-state batteries ireland

o Cost of EV batteries to drop by 50% by 2030
o Battery efficiency to increase by 30%
o 3 Toyota self-charging hybrids have carbon emissions savings equivalent to only 1 battery electric
o Over 18 million Toyota hybrids sold to date
o Toyota's forthcoming battery electric bZ4X aiming for 90% battery capacity after 10 years of use
o Toyota solid state battery car currently in road testing phase

Given that renewable energy is not yet widely available for the masses in many countries, Toyota, which is the worldwide self-charging hybrid (HEV) leader, maintains that HEVs still have a pivotal role to play in immediate CO₂ reduction. Without an abundant supply of renewable energy BEVs cannot effectively capitalise on their promise to deliver zero emissions in a mass market scenario.

By Toyota's calculations, the CO₂ emissions reduction effect of three HEVs is almost equal to the reduction effect of one BEV. Looking at the extrapolation of Toyota's calculations, the 18.1 million Toyota HEV drivers are reducing the same amount of CO₂ as 5.5 million BEV owners.

Toyota is already making major step changes in battery development across HEVs, plug-in hybrids (PHEVs) and battery electrics (BEVs). For HEVs, its focus is on continuing to drive improvements in instantaneous power, and for PHEVs and BEVs it is focusing on battery capacity and endurance. This can be seen in the new RAV4 Plug-in Hybrid which has best-in-class electric range of up to 74Km. Toyota believes its multi-billion investment will make for safer, longer lasting, and more reliable high-performance batteries at a lower cost, paving the way for more affordable zero-emission BEVs.

Applying the technologies it has cultivated through the production of more than 18 millions hybrid vehicles sold to date, Toyota said it will achieve battery cost reductions of more than 50% by 2030, while also achieving improved power consumption of 30%.

Furthermore, its newly developed batteries will have a significantly higher capacity retention rate after 10 years compared to what has gone before, and for the forthcoming Toyota bZ4X BEV, Toyota has set a target of 90% endurance performance after 10 years of use, which is one of the highest in the world. This aligns with Toyota's long-established focus on the quality of its products, and aim to produce the best batteries in the world.

In Ireland, Toyota has long been a leader in sustainable transport, reducing CO₂ emissions by over 100,000 tonnes through its hybrids sold in 2019 and 2020. Along with this Toyota has the lowest average CO₂ of the top ten selling brands in the last five years and continues to lead the electrification of the fleet, with 92% of its 2021 sales being hybrid vehicles, and selling no diesel passenger cars since 2018.

In regions where there is an abundant supply of renewable energy, Toyota believes the increased use of

zero-emissions vehicles such as BEVs and FCEVs is crucial, and it intends to ramp up its development of same through its R& D investment. In terms of next-generation battery technology, Toyota is investing in the development and commercialisation of solid state batteries, which it believes will provide the best opportunity for mass market adoption of affordable BEVs, providing high output, significantly longer cruising range and shorter charging times.

Toyota is already road testing a solid state powered electric car and is continuing to invest in the refinement and improvement of the technology to ensure it delivers upon its three key measures of safety, security and reliability.

Toyota's ongoing strategy is to increase the selection of affordable electrified vehicles it offers to customers to ensure the right solution is available depending on where a particular region is at on its renewable energy journey. As such, Toyota will continue to develop hybrid HEVs, BEVs, PHEVs as well as zero emission hydrogen fuel cell vehicles.

Ultimately the company believes that the best way to effectively meet the urgent need for carbon reductions worldwide is to implement a fully holistic solution to achieve carbon neutrality. That means ultimately reducing CO2 emissions to zero throughout the entire life cycle of a vehicle, starting with the procurement of raw materials and ending with the eventual recycling and disposal of batteries.

Zo? Bradley, Head of Marketing Communications in Toyota Ireland said, "As leaders in electrification for the past 20 years Toyota is leveraging the expansive knowledge and customer feedback gained through its experience in manufacturing over 18 million self-charging hybrid vehicles. Toyota continues to invest heavily in innovative technologies such as solid state batteries, fuel-cell electric cars, as well as continuing to create ever-more efficient hybrid batteries.

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