

BMW

U.S. Press Information

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The BMW iX xDrive50 5th Generation eDrive and Sustainability

- 5th Gen. BMW eDrive technology with two motors producing combined 500 hp
- 300-mile range based on preliminary manufacturer estimates
- Sustainability in design and manufacturing
- US market launch expected early 2022
- US pre-orders to begin in June 2021

Woodcliff Lake, NJ – March 16, 2021... Today, BMW announces the second installment of the all-electric iX preview series, discussing the latest eDrive technology and the comprehensive sustainability measures taken to ensure that the iX is the most advanced and most sustainable vehicle yet to be brought out by the BMW Group.

The first installment of the iX preview series, detailing vehicle design, may be found [here](#).

The iX xDrive50 brings together the company's latest developments in the fields of Design, Connectivity, Electrification and Services. The expertise accumulated by the BMW Group over many years in the area of sustainability has been channeled into the product substance and manufacturing concept employed for the BMW iX xDrive50. And the most exacting environmental compatibility requirements have been put in place throughout the value chain and for the full life cycle of the car. Key components include closely monitored raw materials extraction, the exclusive use of electricity from renewable sources in the production process and an extraordinarily high proportion of recycled materials.

“Technology is driving the advances we need to tackle even the greatest challenges. This applies, in particular, to climate protection,” says **Oliver Zipse, Chairman of the Board of Management of BMW AG**. “We are in no doubt: mobility has to be sustainable if it is to represent a truly outstanding solution. For the BMW Group, premium mobility is not possible without responsibility.”

US pricing will be announced closer to market launch but the iX is expected to have an MSRP starting in the mid \$80's.

U.S. market launch is expected in early 2022 with pre-ordering to begin in June 2021.

Sustainability

Making responsible use of resources and minimizing a product's carbon footprint at all stages of its life cycle underpin the approach to premium mobility championed by BMW i. This all-encompassing concept has been implemented more rigorously than ever in the development and production of the new BMW iX xDrive50. To achieve this, advances have been made across all areas that affect the creation and use of vehicles from all the BMW Group's brands. Measures for improving sustainability are defined for every model and cover all phases – from the production of raw materials through manufacturing and subsequent recycling.

Utilizing green energy for production of both the battery cells and the vehicle and making increased use of secondary materials cuts CO2 emissions by 18 per cent compared with vehicle production where these measures are not deployed.

“Rather than simply passing the buck to the supplier network, we take responsibility together with our direct suppliers,” explains **Dr Andreas Wendt, Member of the Board of Management of BMW AG, responsible for Purchasing and Supplier Network**. “In so doing, we tap into our many years of experience and create processes for attaining greater transparency and traceability.”

Raw materials production: monitored, transparent and certified.

The sustainability targets for the BMW iX xDrive50 were set during the very early stages of vehicle development. This includes the upstream production chains. The focal points on the purchasing side are compliance with environmental and social standards, respect for human

rights, conservation of natural resources and reduction of CO₂ emissions. Measures for optimizing sustainability were established in partnership with suppliers, such as using recycled materials and harnessing renewable energy.

Besides an eco-friendly manufacturing process, consideration is also given to the recyclability of the components and to health-related aspects. The material properties of all components are meticulously documented and verified at the BMW Group's materials laboratory. The checks include ensuring that potentially allergenic materials, such as nickel, are not used in areas where they could be touched by customers.

This holistic approach to improving sustainability also embraces those technological developments that make it possible to reduce the use of critical materials, or even avoid them altogether. For instance, the electric motors in fifth-generation BMW eDrive technology dispense with the need for rare-earth materials. Instead of the customary magnets for which these raw materials are needed, electromagnetic fields are used to ensure both instantaneous and precisely controllable actuation of the electric drive. The BMW Group has thereby capitalized on its industry-leading development expertise in the field of drive systems to enable it to produce electric motors irrespective of rare earth availability.

During development of the latest generation of battery cells, the proportion of cobalt contained in the cathode material was reduced to less than ten per cent. In addition, the BMW Group procures the cobalt for the battery cells itself and then makes it available to the battery cell suppliers. The company can therefore ensure that environmental and sustainability standards are observed during the extraction and processing of cobalt and that there are no violations of human rights.

Although no cobalt from the Democratic Republic of the Congo (DRC) is being used in the battery cells for fifth-generation BMW eDrive technology, the BMW Group is involved in a pilot project there focusing on ecologically and socially sustainable mining of this raw material. The company, together with its supply chain partners, has commissioned the German Agency for International Cooperation (GIZ) to develop measures aimed at improving working and living conditions for both artisanal mine workers and the inhabitants of nearby communities. If the project is successful, having cobalt supplied directly from the DRC could become an option for the BMW Group once more.

Lithium is another critical-classified raw material that is vital for the production of high-voltage

batteries. The BMW Group sources this raw material directly before supplying it to battery cell manufacturers. This ensures complete transparency regarding the origin of the raw materials required for lithium-ion batteries. The lithium used in the high-voltage battery pack on board the BMW iX xDrive50 is mined from hard-rock deposits in Australia in accordance with the company's environmental and sustainability standards. The BMW Group has also commissioned two prestigious American universities to carry out a study into sustainable lithium extraction in Latin America. The aim of the study is to investigate the impact of lithium extraction on local water supplies.

Electricity from renewable resources for component and vehicle manufacture

Between 2006 and 2019, the BMW Group was able to lower CO₂ emissions from vehicle production by over 70 per cent. Compared with 2019 levels, the amount of CO₂ per vehicle is set to be reduced by a further 40 per cent by 2025 and 80 per cent by 2030. Since 2020, electricity generated entirely from renewables has been purchased externally for vehicle manufacture at all plants in the BMW Group's global production network. Only green hydroelectric power produced locally at the Isar and Lech rivers is used in the production of the BMW iX at BMW Group Plant Dingolfing and in the upstream component plants.

The manufacture of high-voltage batteries is an energy-intensive process. With a goal of minimizing the carbon footprint in this area of vehicle manufacture, the BMW Group has secured commitments from all makers of battery cells for fifth-generation BMW eDrive technology to only use electricity from renewable sources. The aluminum casings for the electric drive system are manufactured using purely green power.

In order to further reduce the CO₂ emissions from the production of aluminum components, the BMW Group is exploring new ways of sourcing this lightweight material. Since February 2021, the company has procured aluminum manufactured in the United Arab Emirates with the help of solar power. Electricity generated in a vast solar park located in the desert outside Dubai is used for producing the lightweight metal. The BMW Group plans to continue sourcing aluminum manufactured with green energy over the long term, enabling it to reduce carbon emissions by 2.5 million tons by 2030. The quantities of aluminum acquired using solar power cover nearly half the annual requirements of the light metal foundry at BMW Group Plant Landshut, whose output includes the casings for the latest-generation electric motors fitted in the BMW iX.

High proportion of recycled materials.

Besides the switch to green power, the other factor helping to make the manufacture of light-alloy components more sustainable in the BMW Group's production network is the ongoing increase in the proportion of secondary aluminum used. Targeted use of recycling methods for this high-grade lightweight metal can lead to a substantial reduction in the energy-intensive use of primary aluminum, which also generates high levels of CO₂ emissions when conventional manufacturing techniques are employed. The proportion of secondary aluminum used in manufacturing the castings for the BMW iX is up to 50 percent.

The cabin of the BMW iX xDrive50 features carefully selected sustainable materials. The key elements here are conservation of resources, energy efficiency in manufacture and suitability for recycling. The only touch of chrome anywhere in the interior is found in the BMW badge on the steering wheel. The optional Clear & Bold specification includes a control panel on the center console made from sustainably grown wood with the corresponding FSC certification. The Twist cloth forming part of the Loft Stone Grey interior appointments is made of natural wool fibers, while the leather upholstery is treated with olive leaf extract instead of conventional tanning agents. This is obtained from the leaves gathered following the annual pruning of the trees in European olive groves.

The carpeting and floor mats in the BMW iX xDrive50 are made from a synthetic yarn that is produced from recycled nylon waste material in a specially developed process. The source material for this includes fishing nets recovered from the sea along with worn flooring and residual waste from plastics manufacturing. These waste products are fed back into the reusable material cycle at a special facility in the Slovenian capital Ljubljana. For this, the material is first broken down into its chemical constituents and then processed to produce nylon granules. The resulting Econyl material forms the basis for making the floor coverings and mats in the BMW iX. As well as helping to preserve resources, the use of Econyl also serves to reduce climate-damaging emissions. The process for manufacturing the recycled plastic emits around 80 per cent less CO₂ than conventional production of petroleum-based nylon.

High-quality recycled material is also featured in a multitude of other components in the BMW iX. Recycled material accounts for over 20 per cent of the thermoplastic content in the vehicle. The substructure of the door panelling, the cowl panel cover, the bumper guides and the surround for the front bumper, for example, are all made entirely from reused plastic. The cable

ducts on the BMW iX xDrive50 are manufactured using between 60 and 100 per cent recycled plastic, while the tailgate panelling and the outer surfaces of the door panelling are both made up of around 30 per cent recycled material. Each BMW iX contains some 132 pounds of recycled plastic in total.

5th Generation BMW eDrive Technology

Two high-efficiency electric motors, driving four wheels will deliver around 500 combined horsepower and performance that owners have come to expect from their BMWs. The high level of drive system efficiency and higher density high-voltage batteries improve driving dynamics and electric power consumption. The drive system and battery technology in the BMW iX teams up with intelligent lightweight construction and an aerodynamically optimized design to create a package which delivers the sporting ability, sustainability and impressive practicality for which the brand is renowned.

The fifth generation of BMW eDrive technology is centered around a drive unit which brings together the electric motor, power electronics and transmission as a highly integrated package within a single housing. This design approach enables a power density around 30 per cent greater than earlier electric drive systems could offer. The highly integrated electric drive system is a key factor in the efficiency of the BMW iX xDrive50. It also allows a substantial reduction in the installation space required relative to the power the drive system produces.

Electric motors: more performance, less reliance on critical materials.

The BMW iX xDrive50 posts acceleration of 0 to 62 mph in under 5.0 seconds with a top speed of an electronically governed 124 mph.

The electric motors, developed in-house by the BMW Group, have an efficiency factor of 93 per cent. The specific qualities of these electric motors are the result of a design which marks a fundamental departure from the technology normally found in competitor units. They work according to the principle of a current-excited synchronous motor. The excitation of the rotor in the BMW iX motors is not induced by fixed permanent magnets, but the feed-in of electric energy. This allows the rare earths required for magnetic components to be entirely avoided in the manufacture of the motors.

The precisely controlled excitation of the rotor using electric power enables peak torque to be on tap immediately on pulling away. And – unlike with electric motors of conventional design – that torque is maintained over an extremely broad rev band. The defining trait of the driving experience on board the BMW iX is power development that is not only lightning fast but also consistent, underscoring the car's sporting capabilities.

Drive power from each electric motor is channeled via a single-speed transmission – installed in the same housing – to the front and rear wheels. As well as improving the overall efficiency of the drive system, this also enhances the agility, traction and directional stability of the BMW iX xDrive50 to noticeable effect. The centrally controlled electric all-wheel drive links up with the chassis control systems to enable extremely rapid and precise metering of power according to the driving situation, the road conditions and the driver's wishes.

Adaptive recuperation of energy.

The intelligently connected drive management means the intensity of the brake energy recuperation can be adapted to the road situation, as detected by data from the navigation system and by the sensors of the driver assistance systems. When approaching an intersection, for example, the degree of recuperation can be increased, while at the same time feeding energy back into the high-voltage battery and strengthening the deceleration effect.

On the open road, the coasting function enhances comfort and efficiency whenever the driver takes their foot off the accelerator. Adaptive adjustments according to the driving situation are carried out when the navigation system's route guidance is not activated, precise control of the adaptive recuperation enabling instantaneous responses to changes in the driving situation. For example, activating the turn signal while coasting immediately initiates recuperation.

Adaptive recuperation is one of the standard settings activated when D (Drive) is engaged. Alternatively, the driver can choose a high, medium or low Brake Energy Regeneration setting in the iDrive menu to apply across all driving situations. In position D, the new BMW iX xDrive50 pulls away at minimal speed as soon as the brake pedal is released, increasing comfort when maneuvering and in stop-start traffic. And activating driving position B with the selector lever generates the one-pedal feeling characteristic of the BMW Group's electric vehicles by providing particularly strong recuperation.

High-voltage battery: optimized energy density, increased range.

The fifth-generation BMW eDrive technology also includes a high-voltage battery with state-of-the-art battery cell technology. The gravimetric energy density of the lithium-ion battery has been increased by around 20 per cent gain over the previous-generation battery and provides an excellent mass to storage ratio. The latest generation of the high-voltage battery also delivers excellent qualities when it comes to performance, charging and discharging, durability and safety. The high-voltage batteries in the BMW iX xDrive50 are cased in aluminum and positioned low in the vehicle floor as an integral component of the body.

The latest advances in the field of battery technology are the result of many years of relentless research and development work. The BMW Group has been producing modules and batteries for vehicles with electrified drive systems since 2013. The company can call on immense reserves of expertise and experience when it comes to both battery cell technology and the manufacture of model-specific high-voltage batteries. The BMW Group has carried out research in the fields of cell chemistry and cell design, enabling it to give precise specifications – geared to the particular requirements of use in electrified vehicles – to external battery cell producers.

The prismatic battery cells supplied by these companies are grouped into modules at the assigned BMW Group production plant. An independently developed modular system enables flexible arrangement of the modules in model-specific high-voltage batteries. The BMW iX xDrive50 is fitted with a battery with a gross energy content of over 100 kWh.

A fully integrated liquid cooling system for the high-voltage battery ensures optimal temperature control both in highly dynamic driving situations with a high-power requirement and when rapid-charging from a direct current charging station. In low outside temperatures, the excess heat generated by the drive unit is used to warm up the high-voltage battery while on the move.

Combined Charging Unit for fast charging at up to 200 kW.

Alongside the new electric motors and the optimized high-voltage batteries, new charging technology is also part of fifth-generation BMW eDrive. The Combined Charging Unit (CCU) in the BMW iX xDrive50 enables an extremely high level of flexibility when it comes to using charging stations of different types. The CCU also supplies consumers connected to the 12V

on-board power supply of the BMW iX xDrive50– such as the lighting, audio system and air conditioning – with electric energy. It brings together the functions of the voltage transformer, charging electronics and power distribution, plus the management systems for the drive, high-voltage and charging functions of the drive unit and high-voltage battery into a single package.

Topping up the high-voltage battery from a Level 2 home charger can be done at up to 11 kW. Using this method, the BMW iX xDrive50 can recharge its battery from totally empty to 100% in under eleven hours.

A significantly higher charging output and the shorter charging times can be accessed by plugging into a DC fast-charging station. The BMW iX xDrive50 can charge its high-voltage battery at up to 200 kW. When hooked up to a DC charging station, the iX can take enough energy on board in just ten minutes to increase the car's range by more than 75 miles. The high-voltage battery's charge can be increased from 10 to 80 per cent of its full capacity in under 40 minutes.

BMW Group in America

BMW of North America, LLC has been present in the United States since 1975. Rolls-Royce Motor Cars NA, LLC began distributing vehicles in 2003. The BMW Group in the United States has grown to include marketing, sales, and financial service organizations for the BMW brand of motor vehicles, including motorcycles, the MINI brand, and Rolls-Royce Motor Cars; Designworks, a strategic design consultancy based in California; technology offices in Silicon Valley and Chicago, and various other operations throughout the country. BMW Manufacturing Co., LLC in South Carolina is the BMW Group global center of competence for BMW X models and manufactures the X3, X4, X5, X6 and X7 Sports Activity Vehicles. The BMW Group sales organization is represented in the U.S. through networks of 349 BMW passenger car and BMW Sports Activity Vehicle centers, 143 BMW motorcycle retailers, 116 MINI passenger car dealers, and 38 Rolls-Royce Motor Car dealers. BMW (US) Holding Corp., the BMW Group's sales headquarters for North America, is located in Woodcliff Lake, New Jersey.

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