BMW GROUP
Corporate Communications

Tech Facts – Neue Klasse
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Charge faster, drive further: the electric drive concept for the Neue Klasse takes BMW driving pleasure up not just one level but two

The figures, data and facts at a glance

- 800V technology; new BMW cylindrical battery cells with 20% higher energy density; charging speed up by 30%; range increased by over 30% compared to current Gen5
- All-new high-voltage battery concept has significant advantages in terms of installation space, vehicle integration and efficiency
- The BMW Energy Master: integration of a host of new and improved functions in a new and intelligent battery central control unit
- Range of BMW electric motors takes a leap forward on three fronts: 40% less energy loss, cost efficiency improved by 20%, weight reduced by 10% compared to current Gen5
- Fitting vehicles with up to four electric motors promises electric driving pleasure at a whole new level

The best and most efficient drive system comes from BMW – this claim has been the driving force for engineers at Bayerische Motoren Werke for over 100 years. The challenges the engineers encounter along the way may change, but the claim they strive to fulfil remains the same – and never more so than with the Neue Klasse.

The cell and high-voltage battery:
The **cylindrical BMW cell of Gen6 technology has a 20 per cent higher volumetric energy density** than the prismatic battery cell of Gen5. Cell design and cell chemistry provide our customers with the overall optimum in terms of performance, charging time and range. **The lithium-ion cell with 46mm diameter will be used in two height variants: 95 mm and 120 mm.** The new cell makes the all-new high-voltage battery concept possible. This dispenses with modules and no longer includes internal struts.

This means that the battery's energy content can be scaled as required by adjusting the number of rows of cells, as per the **"cell-to-pack"** principle.

Thanks to its new, even flatter design, the battery can be used even in the lowest models in the portfolio including high-performance models from BMW M GmbH.
At the same time, the battery takes on the role of a structural component in the body. **(„Pack to Open Body“)**. This provides **further weight and torsional benefits,** which in turn have a positive effect on **efficiency and driving dynamics**. Apart from the cell sensors, there are no electrical or electronic components within the battery housing.

The BMW Energy Master:
The electronics of the high-voltage battery can be found in the Energy Master.
In Gen6, it is located as a control center on all high-voltage batteries and is the interface for the high-voltage and low-voltage power supply and for data from the high-voltage battery.

If necessary for the charging station, it switches from 800 to 400 volts and back. The Energy Master ensures safe, intelligent and efficient battery operation. In terms of hardware and software, it is a complete BMW in-house development and enables rapid development steps and remote software upgrades. The Energy Master is manufactured at the BMW Group plant in Landshut. The Lower Bavarian site thus supplies all high-voltage battery assembly plants worldwide.

Bidirectional charging:
This means sending electricity in two directions. The Neue Klasse models **can take on enough electricity for 300 km / 186 miles of range (WLTP) in 10 minutes** and also perform the role of energy storage devices. The electricity stored in them can be used in the owner's home or to power other electric devices, or be fed back into the energy grid – "to-home", "to-load" or "to-grid", in other words.

The Gen6 electric motors from BMW:
More technologies and more efficiency: The intelligent combination of different electric motor types – ASM (asynchronous motor) and EESM (electrically excited synchronous motor) with 800V technology ensures that BMW customers will in future **be able to**

choose between models equipped with one, two, three or four electric motors. The upgrades made to the EESM drive units are particularly impressive. The weight and rigidity of the central housing have both been improved; further efficiency gains have been achieved through the use of an inverter with SiC technology developed by BMW; internal energy losses **have been reduced by 40%**; and noise levels have also been significantly reduced once again thanks to optimisations to the transmission.

Intelligent use of the latest technologies and consistent improvement of all subsystems on a detail level have allowed the **overall vehicle efficiency of the Neue Klasse** to be **increased** by around **20 per cent.** With a comparable electric range, **the costs for the overall drive system in Gen6 are up to 50 per cent lower** than for Gen5.

Dr Joachim Post, Member of the Board of Management of BMW AG, Purchasing and Supplier Network: "For the BMW Group, electric mobility is the future and a key area of growth. We are leading the way with this drivetrain technology. At the same time, we are deliberately taking a technology-open approach, recognizing that mobility needs vary between different regions of the world. We want to offer our customers the best drive concept for every need. It is possible to do both: offer the best drive technology for every need and be at the forefront of electric mobility."

Dr Mike Reichelt, Head of Neue Klasse:

"The Neue Klasse is more than a car. It is the dawn of an all-new generation of BMW models. Getting to this point involved an uncompromising rethink of how cars are made. The first Neue Klasse model will go into series production later this year at Plant Debrecen in Hungary. We will bring six models onto the market within the space of two years and also use them as a basis for high-performance M models. The centrepiece here is our new drive system: extremely flexible, powerful and bringing huge technological leaps forward in terms of battery cell energy density, charging speed and range. The result is driving pleasure taken not just to the next level but to a higher level still."

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The BMW Group

With its four brands BMW, MINI, Rolls-Royce and BMW Motorrad, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial services. The BMW Group production network comprises over 30 production sites worldwide; the company has a global sales network in more than 140 countries.

In 2024, the BMW Group sold 2.45 million passenger vehicles and more than 210,000 motorcycles worldwide. The profit before tax in the financial year 2023 was € 17.1 billion on revenues amounting to € 155.5 billion. As of 31 December 2023, the BMW Group had a workforce of 154,950 employees.

The economic success of the BMW Group has always been based on long-term thinking and responsible action. Sustainability is a key element of the BMW Group's corporate strategy and covers all products from the supply chain and production to the end of their useful life.

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