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Accelerating Battery Design and Production for a New Era of E-Mobility

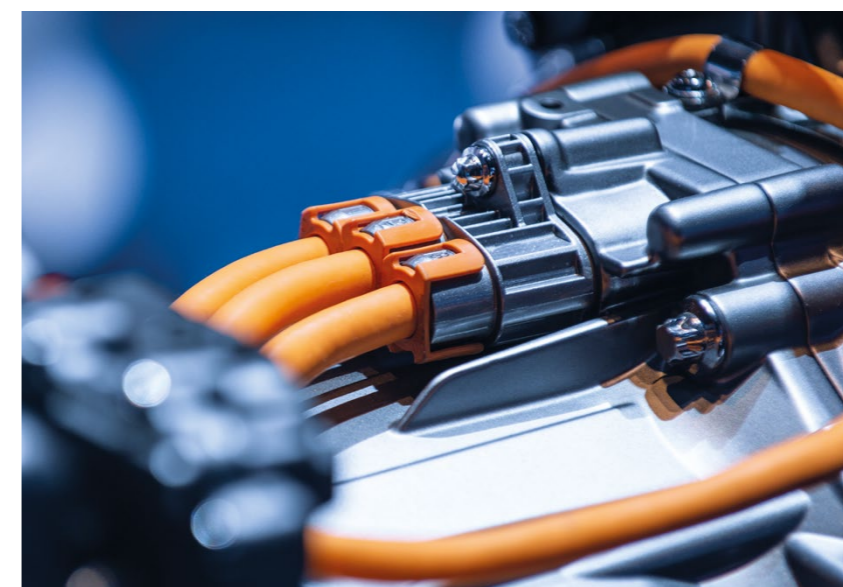
Volkswagen Group is poised to lead the automotive industry through its most significant transformation in a century. The 'NEW AUTO' strategy and Giga-factories program set ambitious targets, including scaling up electric vehicle (EV) production to a capacity of 240 GWh by the decade's end and investing € 73 billion in future technologies.

A major focus is on EV batteries and charging infrastructure, with the unified cell concept aimed at reducing battery production complexity and costs by up to 50 % while increasing raw material recycling to 95 %. Volkswagen is determined to maintain its competitive edge and win the global e-mobility race.

Achieving these goals requires a successful digital transformation, with enterprise-level agility to accelerate innovation and sustainability. Hexagon, a long-time partner of Volkswagen, provides the necessary suite of solutions for process automation, precision, and scalability. Across the Group, Hexagon devices are used to provide dimensional quality assurance, including in the form of automated PRESTO solutions. Together, Hexagon's digital reality software and hardware enable Volkswagen to connect the digital and physical worlds, optimize operations, and embed quality across the entire production spectrum.



For example, Hexagon's recently supplied a customised version of their PRESTO System as an automated inspection solution for the new Passat and Superb models due to be produced in Bratislava. PRESTO System is a turnkey solution based on a modular suite of automated robotic inspection cells which transform the landscape of 3D measurement for automotive manufacturers. PRESTO is a future-proofed system, enabling scalable, versatile and seamlessly integrated automated quality inspection.



Another prime example of this successful partnership is at Volkswagen's Zwickau plant, where Hexagon's advanced photogrammetry inspection system, implemented in 2022, has revolutionized production. The system allows for rapid determination of dimensional accuracy, significantly accelerating testing times while maintaining high e-mobility quality.

The Zwickau plant, which transitioned to producing electric cars with the Volkswagen ID.3 in 2019, required more efficient processes to handle increased model variety and the complexities of e-mobility production.

Hexagon's DPA (digital photogrammetric analysis) industrial photogrammetry system provided the solution, working in combination with the advanced software platform to deliver a fully automatic workflow that can be managed by any user with minimal training, from signalling and shooting through calculation and reporting.

The benefits are clear: Volkswagen Zwickau can now complete tests in just 15 minutes, significantly improving efficiency and sustainability. This case study highlights how Hexagon's technology helps Volkswagen save time, reduce costs, and minimize risks, supporting a more agile and sustainable production process.



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The 'NEW AUTO' strategy permeates all Volkswagen Group activities. In a competitive market, Volkswagen aims to balance innovation with practicality, reducing product development lifecycles while adhering to sustainable practices. The Group partners with suppliers that prioritize ESG responsibility and plans to localize battery production in Gigafactories to reduce emissions. To achieve these goals, Volkswagen seeks a 'single source of truth' to ensure collaboration across departments and brands.

Hexagon's expertise in creating a fully digitalized and interconnected manufacturing ecosystem is critical to this effort. Hexagon's solutions, including CAD/CAM tools, simulation capabilities, and zero-defect manufacturing, integrate seamlessly with Volkswagen's systems, continuously adapting to evolving standards and ensuring global quality assurance and uniformity.



The success of EVs depends on range, charging speed, and efficiency, with an added focus on self-driving technologies. As other OEMs enter the e-mobility race, Volkswagen must innovate quickly to maintain its market share. Hexagon's advanced sensors, machine learning, and AI capabilities support Volkswagen's R&D, design, and testing initiatives, enabling faster development of components and reducing time-to-market. Hexagon's technology also aids in management streamlining, helping Volkswagen and its suppliers develop sustainable business models to protect products, the planet, and profits.

Hexagon's partnership with Volkswagen extends beyond EV batteries. For instance, AUDI, part of the Volkswagen Group, leveraged Hexagon's CAE simulation technology to optimize vehicle weight and quality. AUDI used Hexagon's software, Simufact, to virtually test different joining processes, saving time and costs while enhancing vehicle performance. Hexagon's simulation capabilities mean Volkswagen Group can reliably simulate complex fixturings and assembly of complex assemblies with hundreds of joints, and also perform a "virtual tryout" before the first part is fabricated.

The accelerated shift toward electrification is central to Volkswagen's 'NEW AUTO' strategy. Hexagon's digital solutions help the Group refine existing product ranges, align R&D efforts with high standards, and reduce product development lifecycles. Hexagon's contributions to creating a fully digitalized and interconnected manufacturing ecosystem are essential for Volkswagen's success in the e-mobility era.

In summary, Hexagon's holistic manufacturing solutions empower Volkswagen to accelerate and scale innovation across every stage of production, especially for EV batteries. This strategic partnership enables Volkswagen to maintain its competitive edge, deliver the next generation of smart, connected transportation, and dominate the global e-mobility market.



<https://shorturl.at/3Xdmw>

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