Audi A5: efficient and sustainable production in Neckarsulm

- **Modernized facilities and optimized production processes for the start of production of the new Audi A5**
- **Lower energy consumption and sustainable water use in vehicle production**
- **Increased level of automation and innovative technologies for the highest quality standards**

Neckarsulm, July 16, 2024 - With the new Audi A5 family, the first models based on the Premium Platform Combustion (PPC) with partially electrified drive systems and new electronic architecture are rolling off the production line in Neckarsulm. The brand with the four rings is consistently gearing vehicle production towards sustainability [1]. The goal: In line with the "360factory" production strategy, all models manufactured at the Neckarsulm site from 2025 will be net carbon-neutral[1]. To achieve this, Audi is relying on more efficient production lines, a higher degree of automation, and innovative technologies. From 2025, the renovated paint shop will be one of the most modern in the automotive industry.

As production of the new Audi A5 in Neckarsulm commences, the largest start-up phase in the plant's history has begun. "Thanks to many years of experience in the production of vehicles with combustion engines and expertise in complex ramp-ups, the Neckarsulm team has the ideal prerequisites," says Board Member for Production Gerd Walker. Fred Schulze, Plant Manager of Audi Neckarsulm, adds: "For the new Audi A5 family, the Neckarsulm workforce has acquired further qualifications for new systems and automotive production technologies. At the same time, we have created a future-proof production plant infrastructure." Rainer Schirmer, Chairman of the Works Council at Audi Neckarsulm, is also confident: "Neckarsulm employees can handle complexity and are flexible. With these skills, we will contribute to the success of the Audi A5 for our site and Audi."

The Four Rings' vision for the production of the future is thus continuing to take shape: The company is modernizing, digitalizing, and transforming its plants to manufacture sustainably. By 2025, Neckarsulm, like all Audi sites worldwide, is set to achieve CO_2-neutral production[1].

[1] Audi defines balance sheet CO_2 neutrality as a state in which, after exhausting other possible reduction measures with regard to CO_2 emissions caused by Audi products or activities, CO_2 emissions that are still present and/or currently unavoidable in the supply chain, production, and recycling of Audi vehicles are offset, at least in terms of quantity, by voluntary compensation projects carried out worldwide. CO_2 emissions occurring during the use phase of a vehicle, i.e., from when a vehicle is handed over to the customer, are not taken into account here.

Significantly lower energy consumption in renovated paint shop

When it is completed in 2025, the renovated paint shop at the Neckarsulm site will be among the most modern in the automotive industry. Numerous processes have already been optimized, and environmentally friendly procedures have been introduced for the launch of the Audi A5. While sustainable water-based paints have long been standard at Audi, the latest models also undergo a new painting process. The filler is replaced by a pre-zone paint that can be applied wet-on-wet. The previous separate drying of the filler is no longer necessary, allowing the four rings to reduce energy consumption significantly: Up to 140 kWh can be saved per vehicle.

In Neckarsulm, Audi relies on modern and effective methods to prevent corrosion. Cathodic dip painting, for example, includes dipping and rotating the body upside down in the tank using a rotation process. This is more space-saving and thorough, as it avoids minimal air bubble formation and dirt deposits. A new, more energy-efficient process is also used for drying the cathodic dip coating. Instead of the previous external drying process, a so-called transverse drying process is now used. Air is blown into the interior, and the body is heated from the inside. In addition to being more energy efficient, the transverse dryer is better suited to future electric and hybrid vehicles and their strengthened floor assemblies.

Audi achieves a further energy saving of around 50 kWh per vehicle thanks to a new paint separation process. Previously, the paint mist was collected in water with 100 percent fresh air and disposed of. In the new dry separation process, it is captured by state-of-the-art filters instead. This process allows more than 90 percent of the filtered air to be reused, largely eliminating the need for energy-intensive fresh air conditioning. At the same time, in contrast to conventional wet separation, the use of fresh water and chemicals is eliminated.

Sustainable water use in production

Audi is committed to using valuable water resources responsibly across all its sites: The company aims to halve its ecologically weighted water consumption in production by 2035. To this end, the Four Rings in Neckarsulm relies on a closed water cycle using the Unteres Sulmtal Wastewater Association's wastewater treatment plant adjacent to the site. New pipes and plant technology ensure that no more process water will be taken from the nearby Neckar canal. This will save up to 70 percent of fresh water from 2025. Audi will further treat the water purified by the wastewater treatment plant with the help of filter systems and membranes. The process water then flows back into the treatment plant. Last year, Audi joined the Alliance for Water Stewardship (AWS), once again underlining its commitment to the economical and efficient use of water.

A high degree of automation for premium quality

Neckarsulm is the first site in the Group to install all add-on parts in the body shop fully automatically. In this way, Audi improves the fitting accuracy of the add-on parts and minimizes external influences. Seven robots are used simultaneously for the highly complex fender attachment alone.

As part of Audi's "360factory" production strategy, its supply chain relies on the smart, automated provision of materials. Automation roadmaps have been created for each location and are gradually becoming a reality. Neckarsulm was the first Audi site worldwide to put the freely navigating, driverless transport systems (DTS) into operation back in 2014. With the start of production of the new Audi A5, over 80 percent of the material volumes in the body shop are now provided automatically.

Virtually smokeless fixing is a world-first in car body construction. It involves attaching glued components, such as doors with small soldering points, to prevent the inner and outer parts from slipping. Previously, numerous soldered fixing points had to be cleaned, as smoke is corrosive. The new process almost eliminates residue build-up thanks to a rotating gas flow. Audi works more than twice as fast with the new method compared to previous techniques.

State-of-the-art quality monitoring in the body shop

Quality control measurements in the body shop are mainly carried out inline, i.e., without removing a vehicle from the line. New measuring technology is used at two stations. Four robots at each station use measuring sensors to determine the components' dimensional accuracy. The measurement result is evaluated using software, visualized, and made available to the employees. With this new technology, every vehicle produced can be measured directly on the line. Consequently, Audi significantly increases the number of measurements and can react faster to any deviations. Continuous, interruption-free quality control is also possible thanks to the high degree of automation.

Employees use innovative technologies such as augmented reality (AR) to inspect car bodies. An AR app on commercially available tablets with an integrated camera shows the connection points to be checked in real time. This makes it possible to check and directly document whether, for example, weld seams or points are present and executed according to target specifications. The increase in efficiency through digitalization is enormous. For example, inspectors once had to go to great lengths to determine the specifications for a bonded seam. With the tablet, this work is now done in just a few seconds.

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The Audi Group is one of the most successful manufacturers of automobiles and motorcycles in the premium and luxury segment. The brands Audi, Bentley, Lamborghini, and Ducati produce at 21 locations in 12 countries. Audi and its partners are present in more than 100 markets worldwide.

In 2023, the Audi Group delivered 1.9 million Audi vehicles, 13,560 Bentley vehicles, 10,112 Lamborghini vehicles, and 58,224 Ducati motorcycles to customers. In the 2023 fiscal year, Audi Group achieved a total revenue of €69.9 billion and an operating profit of €6.3 billion. Worldwide, an annual average of more than 87,000 people worked for the Audi Group in 2023, more than 53,000 of them at AUDI AG in Germany. With its attractive brands and numerous new models, the group is systematically pursuing its path toward becoming a provider of sustainable, fully networked premium mobility.