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Audi uses drones to locate vehicles at Neckarsulm site

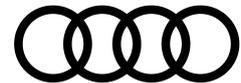
- **Drone flies over parked vehicles autonomously**
- **Exact vehicle locating with drone, GPS, and RFID technology**
- **Project manager Steffen Conrad: “The fast locating of the vehicles creates even higher process quality and is a further stepping stone on the path to digital production.”**

Neckarsulm, 28. July, 2020 – Audi is using a specially developed drone system to locate vehicles that are ready for dispatch at the Neckarsulm site. The flying device flies over the vehicle dispatch area at the Audi site in Neckarsulm autonomously. The drone uses GPS and RFID technology to identify and save the exact position of all vehicles it flew over, thereby helping Audi employees to plan the necessary steps from completion of the vehicles to dispatch to the customers.

Many different Audi models roll off the lines at the Neckarsulm site every day: the Audi A4 Sedan*, the A5 Cabriolet*, the Audi A6*, the Audi A7*, and the Audi A8*, as well as the Audi R8* from the Böllinger Höfe. Following production, employees park the vehicles in the designated areas in the plant. Ensuring that each Audi finds its way to its new owner from here requires exact planning from production to dispatch. As of recently, the Audi employees in Neckarsulm are getting help from above with this process. They use a drone that makes it even easier and more efficient to locate the vehicles at the site.

Given that so many different models are built there, the site is one of the most complex in the Volkswagen Group. This makes precise order planning particularly challenging. “The fast locating of the vehicles creates even higher process quality and is a further stepping stone on the path to digital production. The drone provides support from a completely new perspective. We will now share our experiences with other Audi sites and within the VW Group,” explained Steffen Conrad, project manager in the area of Innovation Management at the Audi site in Neckarsulm.

The basis is a technology that the four rings have been using for quite some time: the RFID (radio frequency identification) chip with the associated vehicle identification number that each Audi already receives in the body shop. The specially developed hexacopter, a drone with six propellers, flies over the vehicle dispatch areas on predefined routes at a height of around ten meters (*32.8 ft*) and determines the exact position of the cars parked there. The drone



uses an RFID reader to read out every vehicle while flying directly over the dispatch area and saves the GPS position identified. As soon as the flying device has landed, the data is transmitted to a database via Wi-Fi automatically. After the flight, the result is then displayed on a digital map for the employees.

The drone takes off, flies, and lands in a completely autonomous manner. The trained Audi employees start and monitor the flight from a laptop or tablet. In the event of an emergency, they can use a remote control to intervene in the otherwise fully automatic operation. Four employees have already been trained on how to use industrial drones. As part of this training, they also obtained what is known as a “drone license.”

Before each flight, the drone receives the weather conditions around the plant premises in Neckarsulm automatically. If the wind is too strong or gusty or there is too much rainfall, the drone will not take off. In addition, the software checks the drone’s battery level and battery temperature before each flight. Should something not fall within the specified safety parameters, it will remain on the ground.

The pilot project is currently being transferred to permanent series testing, as part of which the experts at the Neckarsulm site will gather further experience. It is conceivable that drones will be used to locate vehicles at other Audi sites as well in the future.

– End –

***Fuel consumption of the models named above:**

Audi A4 Sedan:

Combined fuel consumption in l/100 km: 6.7–3.7 (35.1–63.6 US mpg)

Combined CO₂ emissions in g/km: 160–98 (257.5–157.7 g/mi)

(Fuel consumption, CO₂ emission figures and efficiency classes given in ranges depend on the tire/wheel sets used)

Audi A5 Cabriolet:

Combined fuel consumption in l/100 km: 7.0–4.6 (33.6–51.1 US mpg)

Combined CO₂ emissions in g/km: 163–122 (262.3–196.3 g/mi)

(Fuel consumption, CO₂ emission figures and efficiency classes given in ranges depend on the tire/wheel sets used)

Audi A6:

Combined fuel consumption in l/100 km: 7.2–4.0 (32.7–58.8 US mpg)

Combined CO₂ emissions in g/km: 165–104 (265.5–167.4 g/mi)

(Fuel consumption, CO₂ emission figures and efficiency classes given in ranges depend on the tire/wheel sets used)

Audi A7 Sportback:

Combined fuel consumption in l/100 km: 11.6*–4.3* (20.3–54.7 US mpg)

Combined CO₂ emissions in g/km: 265*–113* (426.5–181.9 g/mi)

(Fuel consumption, CO₂ emission figures and efficiency classes given in ranges depend on the tire/wheel sets used)



Audi A8:

Combined fuel consumption in l/100 km: 11.4–5.7 (20.6–41.3 US mpg)

Combined CO₂ emissions in g/km: 260–151 (418.4–243.0 g/mi)

(Fuel consumption, CO₂ emission figures and efficiency classes given in ranges depend on the tire/wheel sets used)

Audi R8:

Combined fuel consumption in l/100 km: 13.3–12.9 (17.7–18.2 US mpg)

Combined CO₂ emissions in g/km: 301–293 (484.4–471.5 g/mi)

(Fuel consumption, CO₂ emission figures and efficiency classes given in ranges depend on the tire/wheel sets used)

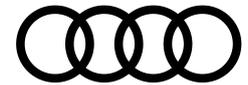
The specified fuel consumption and emission data have been determined according to the measurement procedures prescribed by law. Since September 1, 2017, certain new vehicles are already being type-approved according to the Worldwide Harmonized Light Vehicles Test Procedure (WLTP), a more realistic test procedure for measuring fuel consumption and CO₂ emissions. Starting on September 1, 2018, the New European Driving Cycle (NEDC) will be replaced by the WLTP in stages. Owing to the more realistic test conditions, the fuel consumption and CO₂ emissions measured according to the WLTP will, in many cases, be higher than those measured according to the NEDC. For further information on the differences between the WLTP and NEDC, please visit www.audi.de/wltp.

We are currently still required by law to state the NEDC figures. In the case of new vehicles which have been type-approved according to the WLTP, the NEDC figures are derived from the WLTP data. It is possible to specify the WLTP figures voluntarily in addition until such time as this is required by law. In cases where the NEDC figures are specified as value ranges, these do not refer to a particular individual vehicle and do not constitute part of the sales offering. They are intended exclusively as a means of comparison between different vehicle types. Additional equipment and accessories (e.g. add-on parts, different tire formats, etc.) may change the relevant vehicle parameters, such as weight, rolling resistance and aerodynamics, and, in conjunction with weather and traffic conditions and individual driving style, may affect fuel consumption, electrical power consumption, CO₂ emissions and the performance figures for the vehicle.

Fuel consumption and CO₂ emissions figures given in ranges depend on the tires/wheels used and chosen equipment level. Further information on official fuel consumption figures and the official specific CO₂ emissions of new passenger cars can be found in the "Guide on the fuel economy, CO₂ emissions and power consumption of all new passenger car models," which is available free of charge at all sales dealerships and from DAT Deutsche Automobil Treuhand GmbH, Hellmuth-Hirth-Str. 1, 73760 Ostfildern, Germany, or under www.dat.de.

The Audi Group, with its brands Audi, Ducati and Lamborghini, is one of the most successful manufacturers of automobiles and motorcycles in the premium segment. It is present in more than 100 markets worldwide and produces at 16 locations in 11 countries. 100 percent subsidiaries of AUDI AG include Audi Sport GmbH (Neckarsulm, Germany), Automobili Lamborghini S.p.A. (Sant'Agata Bolognese, Italy) and Ducati Motor Holding S.p.A. (Bologna, Italy).

In 2019, the Audi Group delivered to customers about 1.846 million automobiles of the Audi brand,



8,205 sports cars of the Lamborghini brand and 53,183 motorcycles of the Ducati brand. In the 2019 fiscal year, AUDI AG achieved total revenue of €55.7 billion and an operating profit of €4.5 billion. At present, 90,000 people work for the company all over the world, 60,000 of them in Germany. Audi focuses on sustainable products and technologies for the future of mobility.
