

## ROBOTS THAT SORT NEW CARS

A new Audi covers the final meters prior to loading onto the rail wagon autonomously and under electric power – riding piggy-back on the driverless transport system known as Ray. Two of these free-moving and highly flexible robots have been in use at Audi since February. They go about their independent work on the sorting level on the third floor of the so-called process house – in an area reserved specifically for the pilot phase.

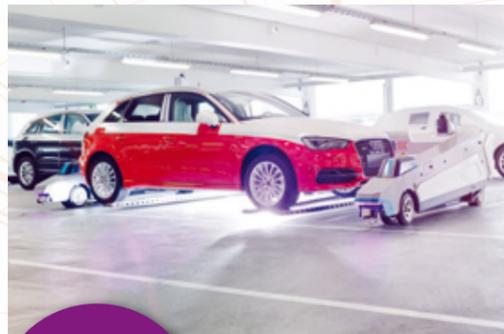
Ray starts its job as soon as the Audi that has been prepared for dispatch is set down on the marked area and a logistics worker initiates the process at a terminal. The six-meter-long and three-meter-wide structure approaches, first scans the prepared car with its sensors at 200,000 measurement points then gently grips the wheels and lifts the car up to ten centimeters from the ground. Ray receives instructions from the control software where to bring the precious load and on which available surface it should be set down. The transport robot, which was developed by Bavarian company Serva Transport Systems, can cover up to three meters per second. Ray uses laser scanners to orientate itself via fixed points on the sorting level and calculates its position ten times per second to an accuracy of around four millimeters. The sensors check even more frequently, i.e. 100 times per second, that the route is clear.

As soon as the delivered cars are called up for dispatch, Ray arranges them into the correct order for transportation. “The autonomous sorting of our cars brings benefits in terms of efficiency and ergonomics,” explains Claudius Illgen from vehicle dispatch control. “We can significantly reduce our handling work, especially by cutting out the lengthy distances walked by the employees.”

### Autonomous sorting of our cars brings benefits in terms of efficiency and ergonomics.

Claudius Illgen

**Automatic sorting –**  
The driverless transport system known as Ray piggy-backs prepared vehicles to a free spot.



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## Automatic sorting

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**RAY**

**RFID**

## Transponder

Fixed to the inside front left of the front bumper is an RFID transponder (radio-frequency identification), the information on which can be accessed wirelessly.

## WIRELESSLY NETWORKED THROUGHOUT THE PLANT

The goods deliveries that arrive every day by truck include the front bumpers preassembled by a supplier. In future, a small RFID (radio-frequency identification) transponder will be fixed on their inner left side. This chip is packed with everything there is to know – once the bumper has been assembled, the vehicle can then be identified quickly and easily throughout the entire production and delivery chain, wirelessly and without visual contact.

On the assembly line, shortly after the bumper is mounted, the car’s electronic baptism will take place automatically in future – with the VIN number being stored on the chip. From then on, it will be possible to identify the car with certainty at specified points – on the line, on transport routes or at entry points to buffer zones. It will be possible to trace the route taken by every single car from start to finish, without interruption. “The use of RFID technology will soon be reality in Production as well as in Logistics and Distribution,” comments Jörn Elberfeld from Production and Factory Planning, offering a glimpse into the near future.

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Jörn Elberfeld

## Electronic baptism

The information written on the chip includes the car’s individual VIN.

There are a great many usage examples. When loading trucks or freight trains, wireless identification saves an enormous amount of time. Shortly before vehicle dispatch, facilities such as the fueling point, car wash or wheel test rig can automatically identify the cars and initiate programs specific to those particular vehicles.

RFID is already in use at the Győr plant in Hungary. Jörn Elberfeld is currently working with an interdisciplinary team on the universal introduction of the technology at the Ingolstadt plant. His colleague Dr. Bernd Herrler from Transport Logistics Vehicles is looking forward to the new opportunities presented by this wireless data exchange. “Thanks to RFID, driverless transport systems like Ray will be able to identify their loads by themselves in future. This is all bringing us one big step closer to the Smart Factory.”