



AUTOMATION

Automated Tire Release Agent Cell:
resource saving, flexible and efficient

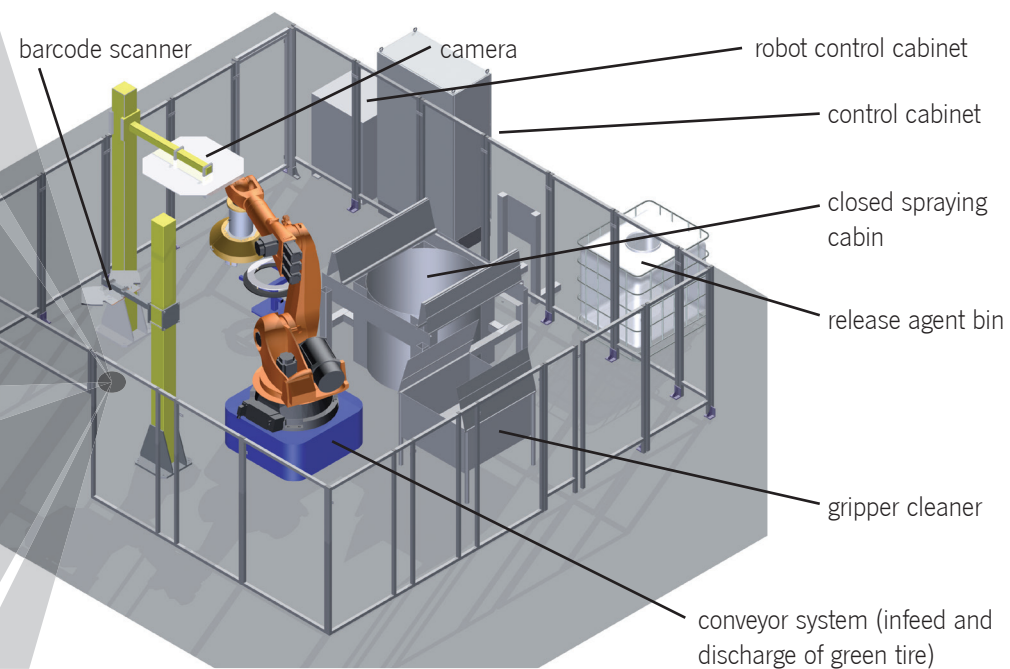
Automated Tire Release Agent Cell, a system solution from SAR: resource saving, flexible and efficient

Principle

Development of a flexible system solution for application of release agent for different types of tires - no matter if they're for cars, trucks, motorcycles, agricultural vehicles or earth movers. Integration of various components for quality control and to ensure traceability. Efficient, material saving and clean application of release agent. Productivity gains through flexible expansion capabilities of the system. Flexible layout options due to a modular concept.

Solution

The automated tire release agent cell from SAR with integrated quality control - resource saving, flexible and efficient.



Functional principle

The conveyed tires are verified by a camera system. Inner and outer diameters as well as height and weight of the tire are compared with the determined values from the database. The tire can be clearly identified by a barcode scanner. Then a robot picks up the tire with a gripper at the upper tire bead and transports it to the spraying cabin.

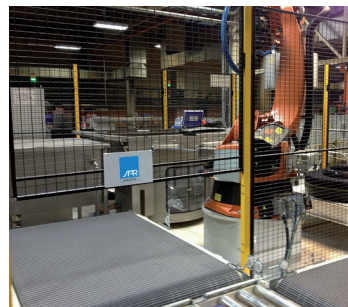
The downholder pulls the underside of the tire bead down and thus, the variable nozzles can spray the complete inner surface with release agents. Therefore the gripper with the tire is rotated inside the cabin by up to 390 degrees. The application of release agent is realized by using an airless system. Occurring overspray is extracted directly at the nozzles.

An automatic cleaning of the gripper arm is made according to experience and then dried by air nozzles.

Various options for the tire feeding system:



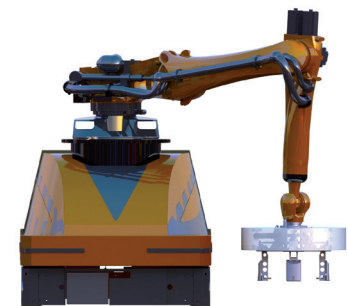
shuttle



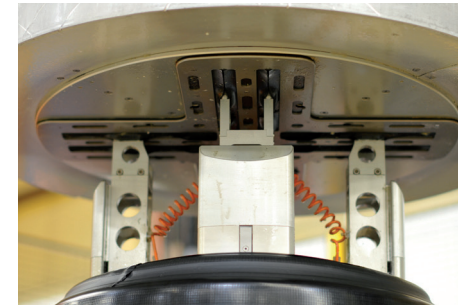
conveyor system



transport carrier



AGV (Moiros, Adam etc.)



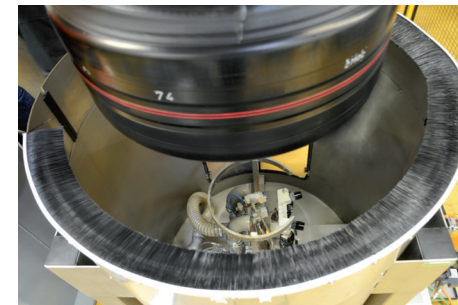
The gripper system

- handling of different types of tires of the same range without rebuilding
- tire ranges:
 - motorcycle tires: 10" bis 21"
 - car tires: 12" bis 26"
 - truck tires: 15" bis 24,5"
 - agricultural & OTR tires: 17" bis 46"
- gentle handling of the green tires



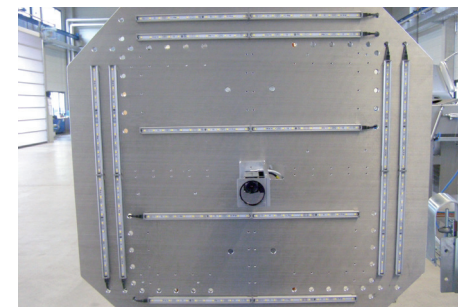
The spraying cabin

- downholder pulls one side of the tire bead down
- exact positioning with servo drives
- release agent can be applied at different angles
- application of different release agents possible with one system
- no contamination of surrounding area due to closed system



The „airless spraying method“

- high surface capacity with big operation range
- little overspray and thus less contamination of surrounding area
- exhaust system prevents overspray and uncontrolled spraying
- splice free spraying possible
- application with pressure of 6 bar to 50 bar
- spraying of 2 different release agents possible



The quality control

- camera system determines the inner diameter, outer diameter, width of tire and position of the barcode label
- barcode scanner identifies tires and compares data with determ. values
- possibility of an integrated weighing system
- automatic data acquisition, visualization, processing and backtracking by control system
- recipe management by database or control system

FURTHER ADVANTAGES

- **Increased productivity** with flexible system solutions:

1 robot/1 spraying cabin	cycle time: 18 seconds	production: 4.800 tires/day
2 robots/1 spraying cabin	cycle time: 14 seconds	production: 6.200 tires/day
2 robots/2 spraying cabins	cycle time: 9 seconds	production: 9.600 tires/day
- **Flexible layouts are possible** with **easy integration** into existing systems and equipment
- **Power saving:** 23,14 kWh power with one in-feed, air consumption of 0,09 m³/min. Gripper cleaning either with water consumption of 500 l/month or waterless with static brushes. Advanced concepts for efficient energy usage can be integrated.



SAR realizes projects from tire construction to the final assembly of the tire.

Realized projects in the tire industry:

- automated high bay storages
- warehouse management systems
- electrical installation and software programming of conveyor systems
- color coding of green tires
- green tire loading station with robot

Realized projects in the automobile industry:

- automated reading system for tire codes
- adapter identification for tire anti-theft protection
- automated tire supply for rim fitting
- automated tire fitting at the vehicle

SAR is your partner in professional industrial and process automation since 1985. Besides its various branches in Germany, SAR is also present in the USA, South Africa, UK, Switzerland and Slovenia with more than 500 employees worldwide.

The products and services in the main business segments Automation, Environmental Technology, Test & Measuring Technology, IT Services, Surface Application Systems, Plastics Systems and Green Energy together with switchgear assembly, installation, training and after sales service are offered worldwide.

Our customers include well-known globally operational industrial concerns, medium sized businesses and an assortment of municipalities.

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