



Looking the part

Now that brake discs are not just judged on function, automotive manufacturers are thinking about appearances.

Pre-heating by infrared radiators

For several years, the trend of alloy rims in the automotive sector has risen markedly. Thus, the attractive appearance of brake discs is increasingly important, in addition to the functional role.

Some discs manufacturers already offer customised finishes brake discs in their own colour. In order to meet these requirements with an automated coating system, Sprimag has developed a machine concept which enables the painting of varying types of brake discs with different paint and lacquer.

Two paint system for coating

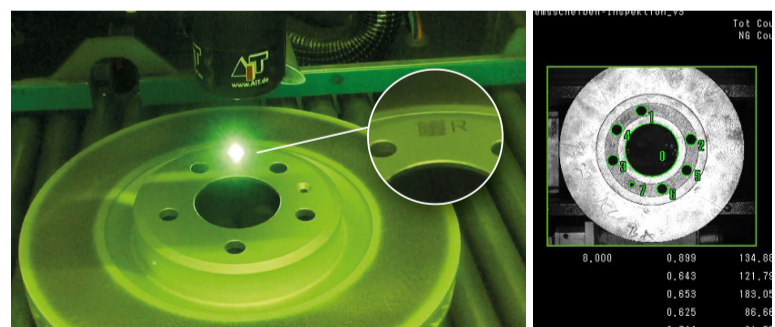
Nearly 40 machines for brake disc coating have been designed, manufactured and installed by Sprimag in the last two years. Sprimag has introduced at least one system for each type of lacquer that is available on the market. A special customer requirement which reached Sprimag last year, was an automated coating machine for brake discs that can be operated in mixed operation with two different paint systems. To meet the high demands of individual coatings with consistent high quality, a system concept was needed with a high level of tracking and identification.

The brake discs are coated in mixed operation with two different paints in silver or black. The discs are transported from two production lines on the conveyor belt to the machine. Every disc is identified by a mechanical measuring device or a camera. A special check can be done to identify different ventilation geometries of the brake discs like left or right rotation. These information will be stored at the following stations of the system dynamically. Even during a power failure, the parts data are stored on the positions (spindles). After the automatic loading of the brake discs on the chain conveyor, positioning is checked. They pass a cleaning station, where the machining dust is blown and extracted. The discs are then pre-heated by means of infrared radiators to the ideal temperature for paint adhesion.

Avoiding cross contamination

In the paint booth, the brake discs are coated parts specifically with multiple painting robots. The robots are equipped with spray guns with specific nozzle heads that can be programmed for selection. All coating parameters are managed, type-specific, in the control system. Each robot in the paint booth is equipped with two Sprimag Spray Guns, to selectively use lacquer 1 (silver) or lacquer 2 (black). Due to the Sprimag-nozzle technology in combination with the programmed robots, a partial coating of the brake discs without masking is possible. A spindle-cross contamination of neighbouring different types of lacquer is avoided by a special coating strategy and special covered sheets. With built-in cleaning stations, the nozzle heads of the spray guns are cleaned automatically at defined intervals. One coating position allows the machine cycle to automatically adapt direction of rotation corresponding to the detected part geometry.

After the visual control station, the parts are transported into the pre-dryer and final dryer. Parts are dried and cured accordingly to the specifications of the paint manufacturer, and then cooled.



The coated discs are unloaded automatically. **A Data Matrix Laser System** can be installed for automatic marking of each rotor, including the option to mark parts as “not ok”. Further handling systems are available to feed the discs to corresponding unloading areas for manual checks and packing or to feed automatic unloading. *