Steinhagen,

**Robot controlled plasma treatment of door handle recesses for vehicles**

Successful cooperation between Plasmatreat and TF Automation

**In close cooperation with Plasmatreat, the British special machine builder TF Automation has developed and manufactured two stand-alone systems with robot-controlled plasma treatment for a customer in the automotive industry. The use of plasma guarantees the long-term stable adhesion of a decorative film to plastic and enables significant increases in efficiency and performance.**

As a long-standing partner of the automotive industry, Plasmatreat accompanies the industry with trend-setting innovations for more than 100 components that fully meet the high requirements for process reliability, reproducibility, quality and efficiency. The application in question involves plastic door handle recesses for vehicle interiors to which a decorative film is to be applied. To increase the surface energy of the polymer, a targeted surface activation is carried out by means of plasma treatment, thus ensuring reliable adhesion when the door handle recess is bonded to the film. This effect is based on a simple physical principle: the addition of energy causes aggregate states to change. If further energy is added to a gas, it is ionized and enters the high-energy plasma state as the fourth state of aggregation. When plasma with its high energy level comes into contact with materials, the surface properties change. During activation, for example, the organic structures on the surface of the material are specifically broken up and modified by the introduction of oxygen- and nitrogen-containing groups into the substrate. In this case, this ensures full-surface and homogeneous wettability of the door handle recesses with adhesive and also long-term stable adhesion of the decorative film.

**Greatest possible flexibility when processing different component geometries**

The RD1004 plasma nozzles, which Plasmatreat developed especially for thermally sensitive materials such as plastic, are used. They are mounted on a 3-axis gantry in the machines that TF Automation designed for plasma treatment of the door handle recesses in order to be able to react flexibly to the different profiles and variants. The unique rotation principle of the RD1004 nozzles distributes the plasma effect evenly over the surface of the door handle recesses. The plasma nozzle was precisely matched to the customer's requirements and treats the 150 mm x 120 mm area potential-free at a speed of 12 to 15 meters per minute. The movement pattern of the plasma jet is automatically adapted to the selected carrier variant orcomponent. After plasma treatment, the door handle recesses can be processed immediately.

**Working together for success: Teamwork ensures customer satisfaction**

Plasmatreat sees itself as a "process understander" and pursues a holistic approach in all its projects. The cooperation with TF Automation was also characterized by an intensive examination of the individual requirements and manufacturing processes of the end customer as well as the machine manufacturer. This customer-oriented approach, as well as Plasmatreat's special plasma expertise and broad support, impressed TF Automation across the board. "Plasmatreat provided us with all the relevant data sheets, models and information, and was a great partner throughout the project, offering us consulting support when needed and always being on hand," says the project manager at TF Automation.

(3.484 characters with spaces)

For more information, please visit: [www.plasmatreat.com](http://www.plasmatreat.com)

***Info box:***

**How plasma technology optimizes industrial processes**

When plasma with its high energy level comes into contact with materials, it changes the surface properties, e.g. from hydrophobic to hydrophilic. Fine cleaning of metal and glass, for example, with Openair-Plasma from Plasmatreat gently and safely removes dust, grease, release agents and additives from surfaces. In the case of plastics, in addition to cleaning, an increase in surface energy is brought about by so-called activation through the introduction of hydroxyl groups into the plastic surface. In both cases, an optimized wettability of the substrate surface can be achieved and the adhesion ability significantly increased. In this way, long-term stable adhesion of adhesives and coatings is achieved. With Plasmatreat's PlasmaPlus technology, the application (deposition) of nanocoatings can additionally produce specifically functionalized surfaces with defined properties, e.g. an adhesion promoter layer.

(947 characters with spaces)

**About Plasmatreat**

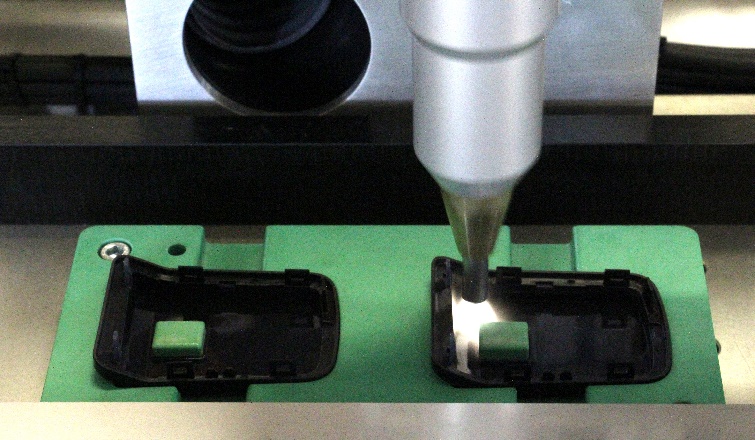
Plasmatreat is an international leader in the development and manufacture of atmospheric plasma systems for the pretreatment of substrate surfaces. Whether plastic, metal, glass or paper - the industrial use of plasma technology modifies the properties of the surface in favor of the process requirements.

Openair-Plasma® technology is used in automated and continuous manufacturing processes in almost every industrial sector. Examples include the automotive, electronics, transportation, packaging, consumer goods and textile industry, but the technology, cost and environmental advantages of the plasma technology are used in medical technology and in the renewable energy sector as well.

The Plasmatreat Group has technology centers in Germany, USA, Canada, China, and Japan. With its worldwide sales and service network, the company is represented in more than 30 countries by subsidiaries and sales partners.

(968 characters with spaces)

**Image:**



The surface of the plastic switch for motor vehicles is activated by plasma. (Image: TF Automation)