

### **New Technology**

#### **Everything in-line**

*Openair Plasma technology is a patented atmospheric pressure plasma process. It is characterised inter alia not only by its uniform and speedy treatment of particularly thin plastic films but also in that the special jet technology can be integrated into existing plants and processes.*

A complete production cell consists of a two-component injection moulding machine, a hexaxial robot and an Openair Plasma system.

Photo Krauss-Maffei



## Keeping things holding on

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**In-line plasma pre-treatment in injection moulding** Out of the multiplicity of pre-treatment methods in industrial processes the use of plasma at normal pressure is arousing steadily rising interest. The Openair Plasma process is equally suitable for the secondary cleaning of surfaces as well as for improving adhesion in the sandwich moulding of plastic and plastic-metal composites.

Applications such as coating removal from metallised plastic parts and novel combinations of materials in two-component injection moulding point to new possibilities in production. The company Plasmatrete GmbH based in Steinhagen manufactures plasma systems which operate at atmospheric pressure without vacuum using air as the plasma gas and without the direct action of high voltage on surfaces. The key to the application lies in the effectiveness of the Openair Plasma employed. Using this surfaces can be freed of impurities up to the limit of detectability. Plastic surfaces resistant to adhesion are modified in such a way that adhesives, for example, stick durably and without aging.

### Joins possible everywhere

With this technology the jet systems employed are always positioned in-line, that is directly in the assembly line regardless of whether this is in the injection moulding or printing machine or in the bonding or painting unit. As a result of this it is not necessary to have resource- and cost-intensive transport routes for supplying the workpieces to be processed and for the user this means rationalisation of the entire process.

Target technologies for plasma treatment include two-component injection moulding as well as upstream and downstream processes such as painting, bonding, printing and coating of surfaces. By means of pre-treatment with the aid of plasma not only is the joining of incompatible materials made possible but also the reliability of the process is optimised and high quality requirements are met.



### Better adhesion

Plasma is outstanding for providing enduring surface effects. Surface energies can be achieved which allow reliable painting of plastics with water-based paint systems.

The Openair-Plasma jet can be integrated into the process flow directly in the in-line application. Photo: Krauss-Maffei

In two-component injection moulding, integral composites can be achieved in specific applications involving combinations which hitherto adhered only moderately or not at all. At the same time the achievable level of adhesion is increased. Another advantage is the lower impact of processing parameters influencing adhesion. Furthermore, the joining of standard materials is improved.

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