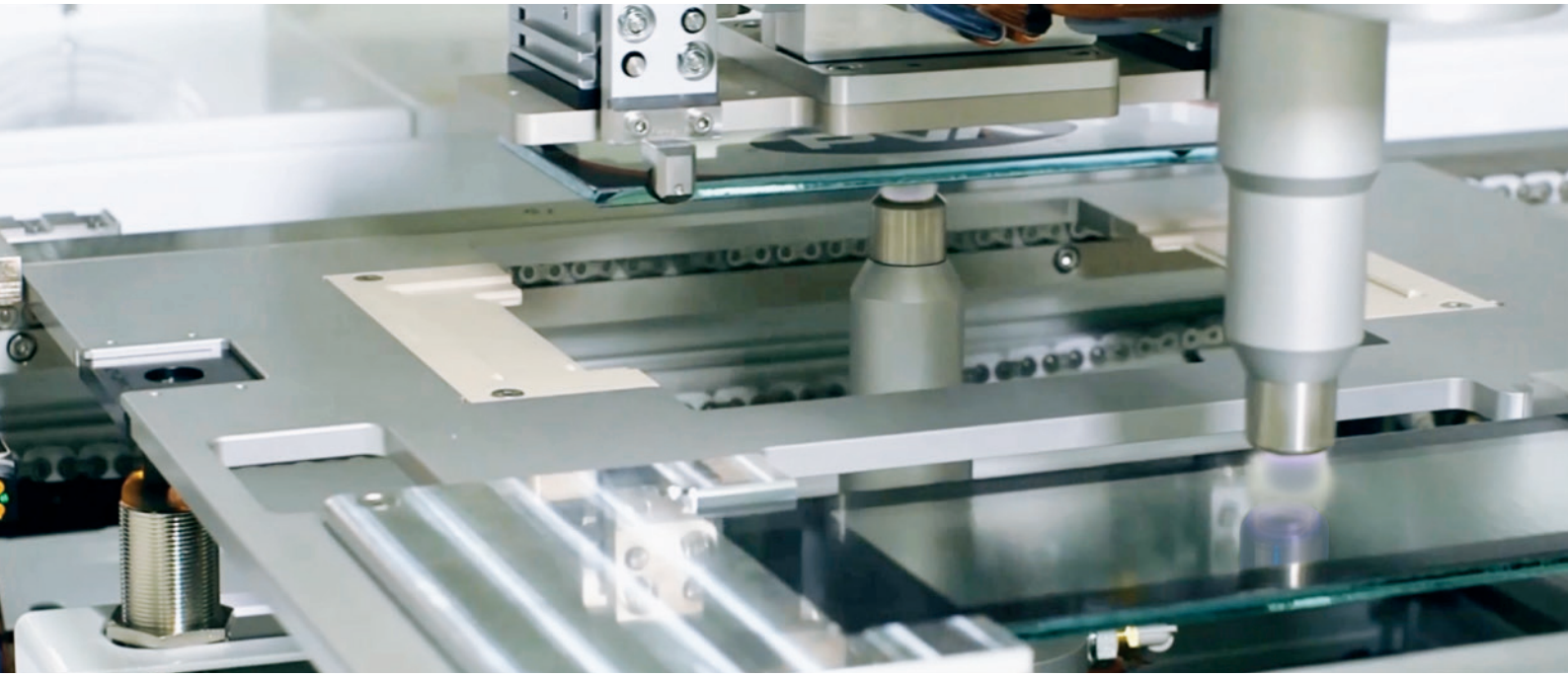


APPLICATION INFORMATION

Dust- and bubble-free optical bonding

Cleaning and activation with Openair-Plasma® – fast, functional and reliable

The market for display screens has grown rapidly across all sectors in recent years. Virtually every new car now includes at least one screen. At the same time, as the demand for smartphones increases, so too do the demands placed on the quality of their screens. As a result, the display screen market is constantly facing new challenges. For example, flexible display screens are now being manufactured which can be folded or stretched. And there are new concepts for using curved displays, in cars for instance.

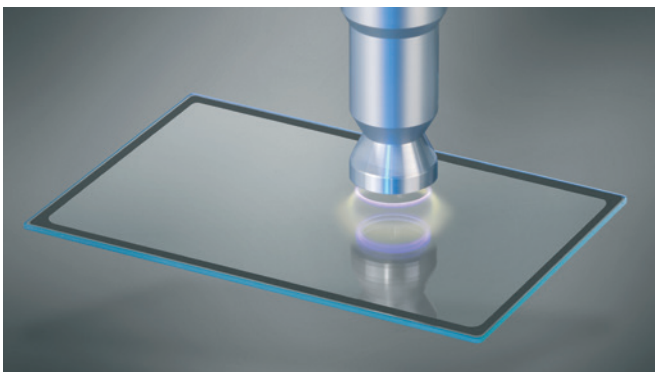
To satisfy the quality standards in the face of these exacting requirements, a transparent liquid adhesive is applied in a process known as optical bonding.

The advantage of optical bonding compared with conven-tional processes is that it enhances the output of the backlight and significantly reduces reflection. Another major benefit is that the process can be automated.

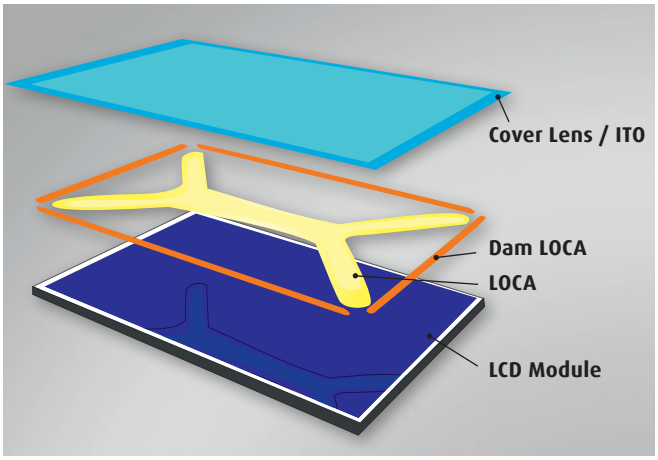
Openair-Plasma® for optical bonding

Plasma technology is used in optical bonding to obtain an optimal adhesive bond. Atmospheric plasma safely removes any residual dust particles or dust particles arising from the production process completely.

At the same time, by activating the surface it binds free radicals to the surface which inhibits the “bubble effect”. Unlike traditional chemical processes, this method avoids exerting any stress on the material.



Crystal-clear display: Plasma pretreatment for a functional coating and flawless finish



Schematic illustration of an optical bonding

Plasma activation for quality-assured screen bonding

The display is cleaned and activated with Openair-Plasma® technology before bonding. The Liquid Optically Clear Adhesive (LOCA) is applied in a defined pattern using a special dosing system.

The increased surface tension generated by the plasma activation process ensures that the adhesive is optimally distributed on the surface of the plastic or glass in preparation for subsequent bonding.

The adhesive in the composite screen is then cured by heat-curing or with UV light to obtain the desired characteristics. The finished screen is then ready for further processing;

depending on the application, the screen may be glued into a frame using tape or adhesive, for example. Openair-Plasma® technology is also used here to achieve a media-tight adhesive bond.

Application of LOCA to a plasma-activated glass surface.

Benefits of the Openair-Plasma® process

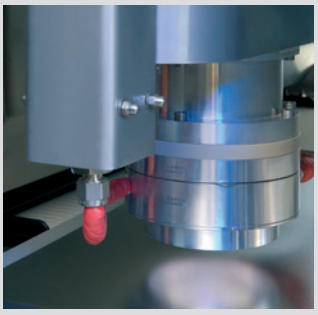
The use of Openair-Plasma® in the screen bonding process has the following advantages:

- removes dust particles
- bubble-free bonding
- reduces the build-up of stress within the material
- fully monitored industrial fine cleaning
- Suitable for ISO 7 cleanroom applications
- lean production processes
- significantly reduces costs

The potential of PlasmaPlus® coatings

PlasmaPlus® technology can be used to deposit functional coatings which may serve to prevent stress cracks occurring on materials such as PC or PMMA, for example. It is also possible to apply a diffusion barrier to plastics using a plasma coating in order to prevent possible long-term damage to the screen bonding.

The use of PlasmaPlus® coating technology to withstand harsh environmental conditions has proved particularly popular.



PlasmaPlus® jet RD2005C

Plasmatreat has extensive test facilities and equipment. Our experienced experts will gladly provide you with advice and assistance.

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