

# OUR GLOBAL COMPETENCE CENTRES



 APOLLO DISPLAY  
TECHNOLOGIES



 DISTEC



 DISPLAY  
TECHNOLOGY



**FORTEC**  
ELEKTRONIK AG

# FREE AIR EXCLUSION BONDING / VOID EXCLUSION BONDING

**VACUBOND<sup>®</sup>**

FOR EXPLOSION PROTECTED AREAS



**FORTEC**  
ELEKTRONIK AG

# EXPLOSION PROTECTION

## EXPLOSION PROTECTION - GENERAL



In the chemical and petrochemical industry, oil and gas extraction, mining and many other industries during production, processing, transportation and storage of flammable substances there escape gases, vapors or mists.

In many processes, especially in the food industry combustible dusts occur. These flammable gases, vapors, mists and dusts mix with oxygen in the air to form an explosive atmosphere. If this atmosphere is ignited, explosions occur, which may cause serious injury and damage.

## PREVENT THE IGNITION OF EXPLOSIVE ATMOSPHERES



If explosion hazards cannot be completely eliminated by avoiding the formation of explosive atmospheres, measures must be taken to prevent the ignition of explosive atmospheres. The required safety level of these measures depend on the possible danger potential in the installation and is classified in different stages according to IEC60079 xx.

## LIMITATION OF EXPLOSION EFFECTS (CONSTRUCTIONAL EXPLOSION PROTECTION)



If the occurrence of a hazardous explosive atmosphere can not be safely avoided and also the ignition can not be prevented, measures must be taken to limit the effects of an explosion to a safe level, for example, by flameproof construction, including "free air exclusion" or "Void exclusion" bonding (to < 10cm<sup>3</sup> for highest ATEX certifications).

# FREE AIR EXCLUSION BONDING

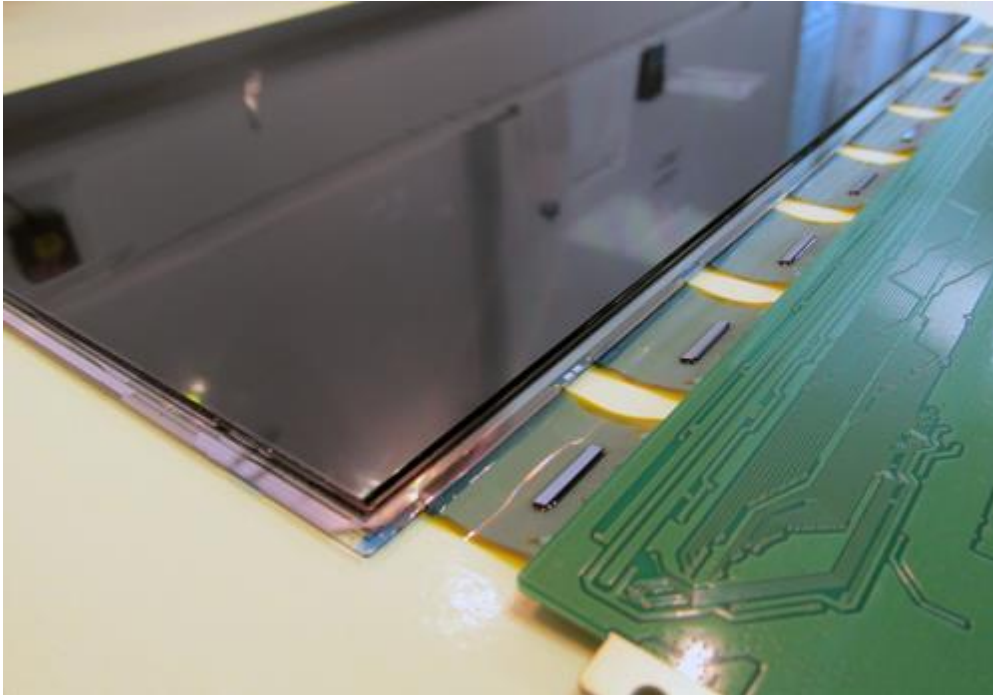
## VACUBOND® FREE AIR EXCLUSION PROCESS



With VacuBond® free air exclusion bonding air spaces within the display itself, which lead to restrictions in explosion protection certifications, are eliminated. The process is as follows:

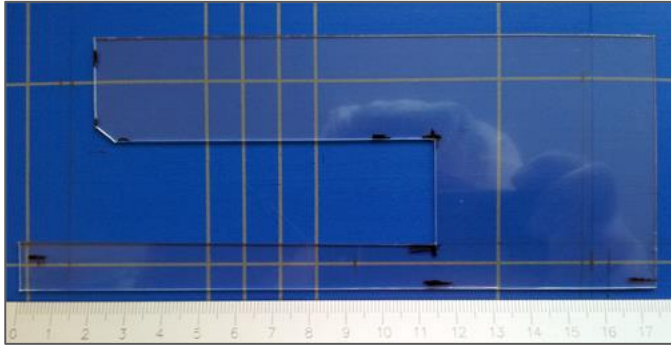
- We disassemble the TFT display completely up to the TFT cell

## FREE AIR EXCLUSION BONDING

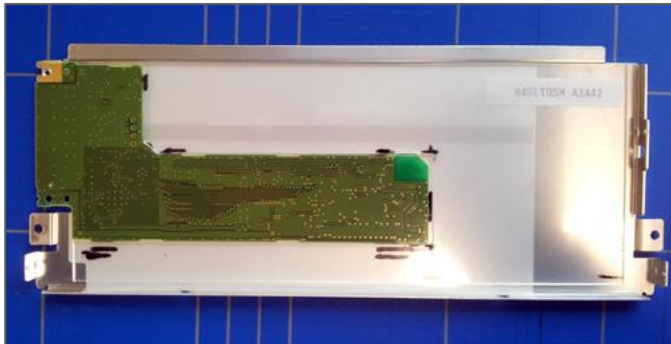


- We measure all free air spaces within the mechanical structure
- Depending on the possible depth we bond either 0.5mm, 1mm, 1.5mm or 1.8 mm OPTα-GEL® on the entire rear of the TFT-cell

# FREE AIR EXCLUSION BONDING



- We fill the recesses in the rear cover with exactly cut OPTα-GEL®



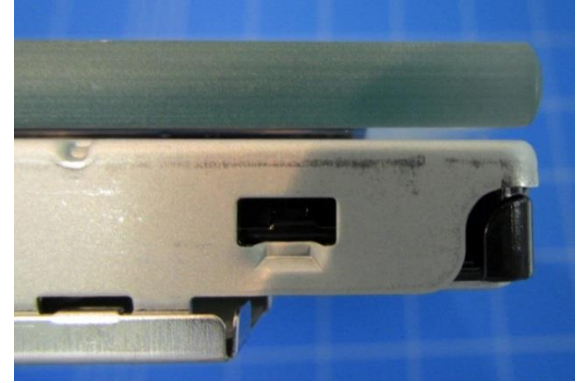
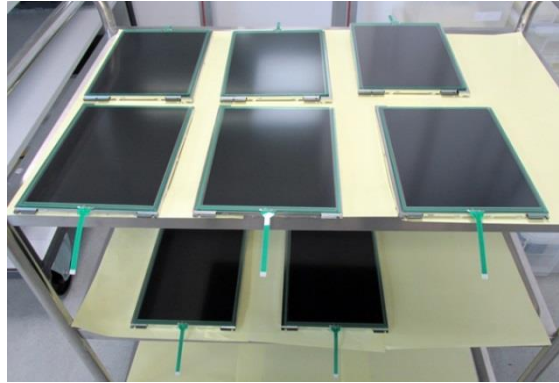
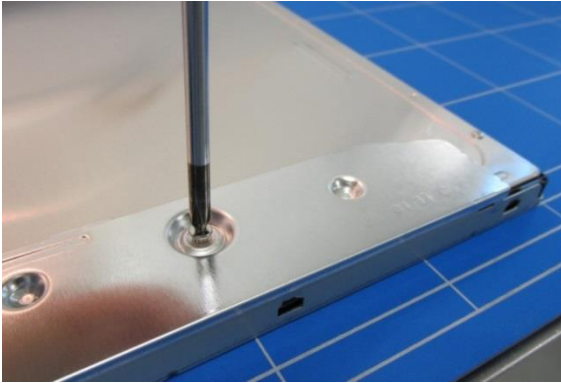
## FREE AIR EXCLUSION BONDING



- We complete all small recesses and the honeycomb structure of the bezel with silicone

## FREE AIR EXCLUSION BONDING

- We reassemble the TFT display completely and then optionally bond a touchscreen or a protective glass



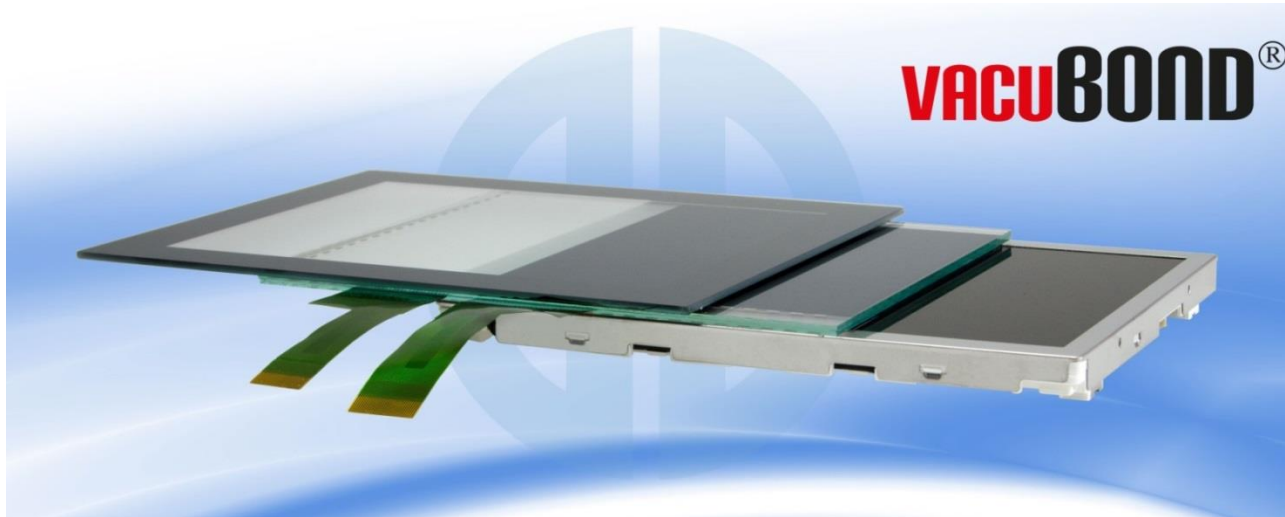


# FREE AIR EXCLUSION BONDING

## VACUBOND® : HIGH QUALITY OPTICAL BONDING

The VacuBond® Technology allows for a zero optical defect bonding. Moreover the bonding process is fully reversible. This means there is no wastage neither during the bonding process nor in case of later repairs (e.g. backlight exchange).

VacuBond® is the innovative way to prepare for the highest ATEX certifications.



Please contact us, we will gladly advise you.

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