TECHNISCHER LÖSUNGSVORSCHLAG **Aktenzeichen: A2013-036**

Titel: **„Condensed Water Prevention for Touch Control“**

Unternehmenseinheit: **Diehl AKO Stiftung & Co. KG**

Description:

The technical solution approach comprises an additional gasket between a touch foil and a ceramic glass. This additional component is placed in such a way that no air gaps occur during the assembly, so that no moisture can reach the sensible touch sensor area.

Until now single buttons are used to realize a touch-on-glass-function for hot applications, like hobs or stoves. There is no usage of touch foils in hobs so far, because of condensing water which occurs while heating the application. Nevertheless the trend shows a raising number of buttons in the segment of hobs. Consequently, for a bigger number of buttons, more space on the printed circuit board (PCB) is needed. The single buttons limit the quantity of buttons on the user surface, nowadays.

A solution to solve this problem is the application of touch foils. Those touch foils enable a higher number of touch buttons on a smaller place, compared to the first called touch buttons. The touch foils must be placed directly below the ceramic glass, so that no air gaps occur. When a hot application is in use, the glass surface is heated. As a result, water is condensing at the bottom side of the glass surface and also between the touch foil and the glass surface. The moisture finally leads to technical malfunction by a short circuit. For this purpose, touch foils aren’t an expedient alternative to touch buttons in hot applications. So they are applied in oven controls, but not in hobs.

To solve the problem, the touch foil could be laminated directly to the glass, but this would have negative influence on the production process. The most efficient solution includes the touch foil on the electronics, which is then placed under the ceramic glass.

This technical solution approach solves the problem of condensed water between the touch foil and ceramic glass by using an additional component between the touch foil and the ceramic glass. This additional component is a gasket that can be placed in such a way that no air gaps occur and no condensed water can enter the touch area. The touch foil is overlapping all around the display. A gasket placed all around the edge of the touch foil seals

the area between the touch foil and the ceramic glass and prevents condensed water to enter. So the possibility of a technical malfunction by entered water is reduced. Because the gasket is placed in the area where the foil is overlapping, the touch foil will bend accordingly and can be placed directly below the glass without any air gaps.

The figures 1, 2 and 3 show the assembly of the technical solution approach.

Figure 1 shows the complete section of the touch button. A touch foil is placed above the PCB and the display. A gasket is surrounding the touch foil.

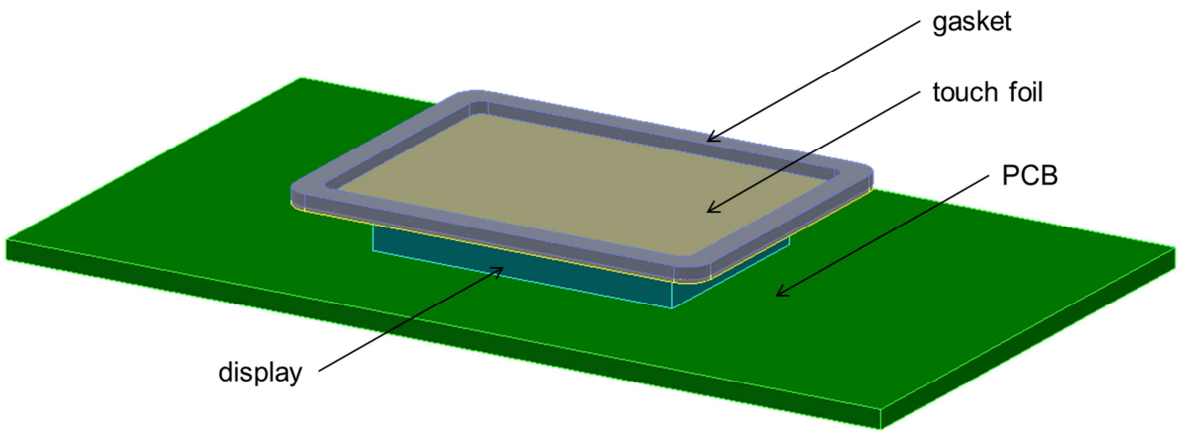

Figure 1

Figure 2 shows the ceramic glass plate and the way it is placed on top of the touch switch. As indicated in figure 3, the touch foil bends in the overlapped area and the gasket seals the touch foil to the glass, so that no condensed water can enter the touch area. A display behind the touch surface illuminates the touch sensitive area and shows the function of the associated button.

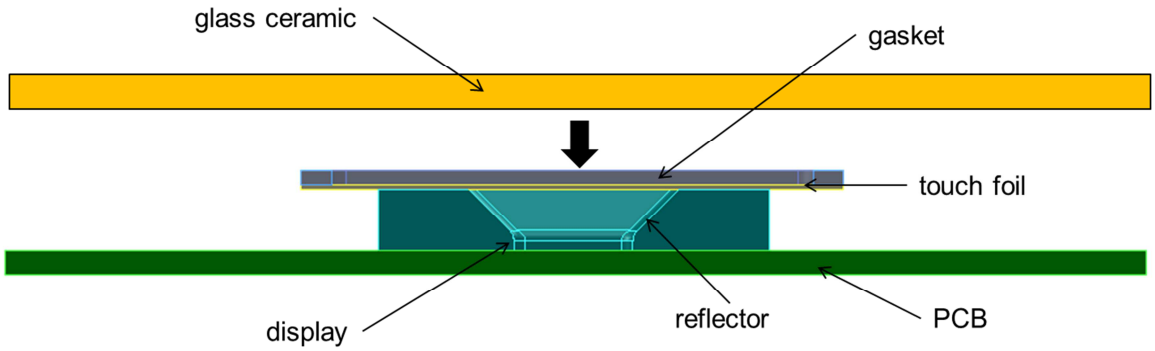

Figure 2

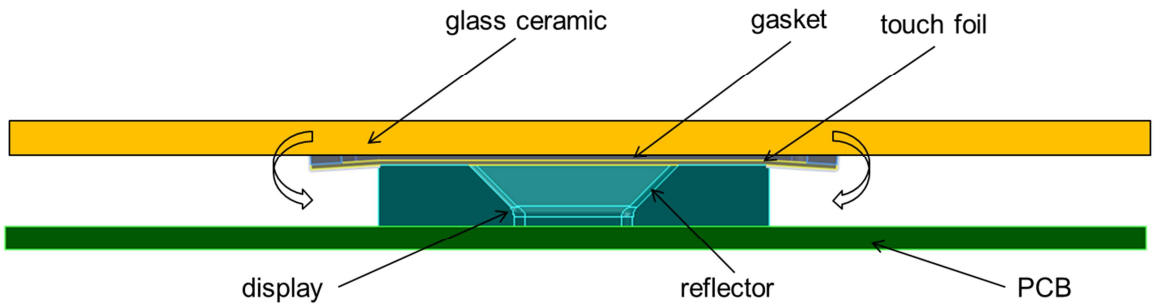

Figure 3

An advantageous embodiment of the technical solution approach is shown in Figure 4. The speciality of this embodiment is a one-way valve which is integrated between the ceramic glass and the PCB. Particularly, the one-way valve is integrated into the gasket, as shown in figure 4, so that moisture can release the touch switch surface.

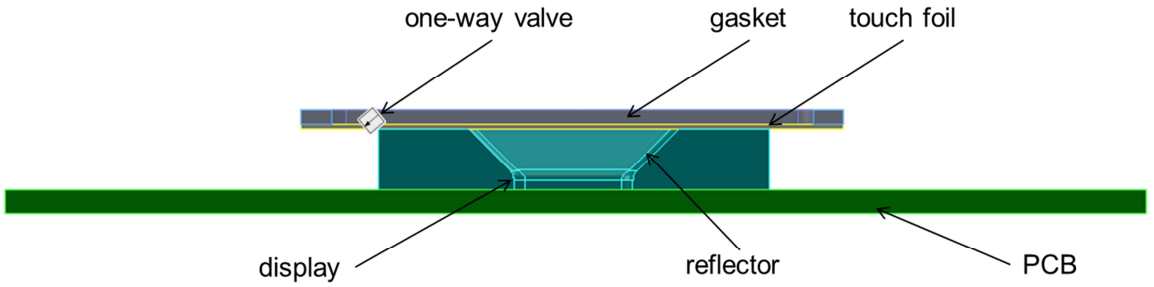

Figure 4