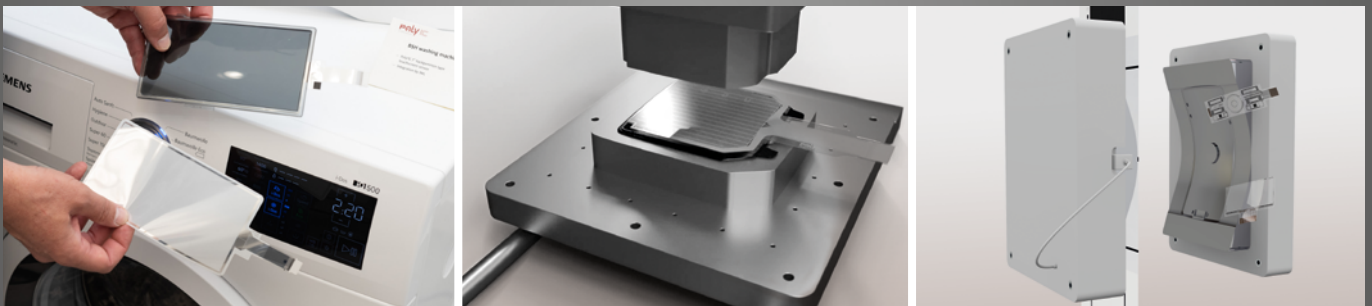


# Freedom of function and design

## Methods for processing and integrating PolyTC® touch sensors



# Ready for the future

Fully integrated touch functions for innovative operating interfaces

Homogeneous surfaces, organically shaped. Magical dead fronts. Light contact makes functions visible. Operating elements illuminate. User interfaces are in transition in the automotive sector, in electronic devices in industry, for consumer electronics, and in home appliances. Touch screens and capacitive keys are replacing simple displays and electromechanical keys. The user experience, combined with exceptional design, is gaining significance with increasing digitization.

## Get in touch

For you as a manufacturer this is the right time to align yourself with the market and consider efficient methods of integration for touch sensors. Get a head start and select increased flexibility, more individual freedom of design, and more efficiency for your processes. Think ahead, into the future, with PolyTC, the high-tech partner under the umbrella of finishing specialist LEONHARD KURZ, who provides everything from a single source: very flexible sensor technology and comprehensive decoration know-how, optimally aligned with the integration process that is most efficient for you.

## The sensors: PolyTC® technology for maximum flexibility

*PolyTC® sensor for integration of touch operation*



Transparent, highly conductive and maximum mechanical flexibility: this describes the sturdy PolyTC® touch sensors, a visually appealing metal-mesh coating applied to a transparent polyester substrate (PET). The lattice-like silver microstructures provide you with maximum leeway when realizing your capacitive keys and touchscreens on backlit or fully transparent, flat or domed surfaces. They can be processed in various ways and are suited to a wide variety of uses in coating and injection-molding applications.

### Customer-specific and ready to use

Accomplish your touch applications with PolyTC® touch sensors. We deliver our sensor foils as a single, ready-made sensor label including supply line and connector, the appropriate adhesive or process-specific primer, and foils to protect against scratches, if needed. The sensor foils are adapted to your specific integration process and to the material consistency of your product, and can be directly processed. With us, you also enjoy flexibility when choosing your process. As a subsidiary of the finishing specialist LEONHARD KURZ, we cover all common methods of integration.

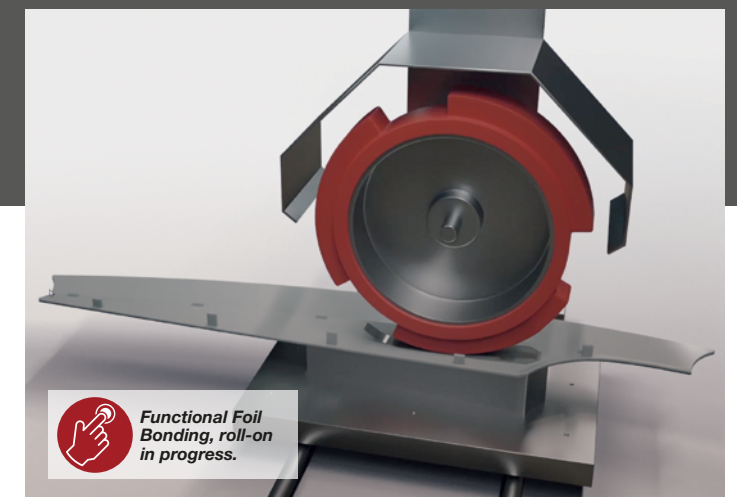
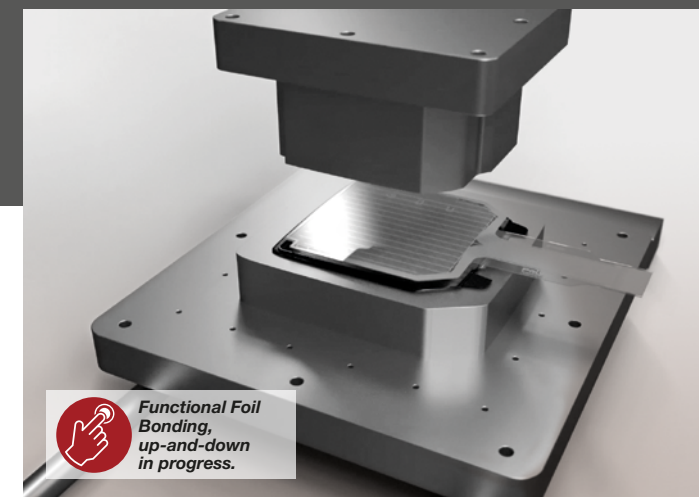
- ✓ Functional Foil Bonding (FFB)
- ✓ Inmold Labeling (IML)
- ✓ Lamination

# Fully automatic linking of function

Highly efficient sensor integration with Functional Foil Bonding

Touch is trending. Renowned manufacturers have recognized this and use our highly flexible PolyTC® touch sensors to realize their touch functionality. The reason is evident: PolyTC® sensors give you the opportunity to set the process-related and quality standards of tomorrow.

Working closely with LEONHARD KURZ, and as part of our state-of-the-art sensors with Functional Foil Bonding (FFB), we offer our specifically developed and highly efficient integration and processing method to make your production fit for the touch demands of the future.



## Functional Foil Bonding (FFB)

Our innovative and patent-registered process will have you integrating, with remarkable efficiency, highly conductive, transparent PolyTC® touch sensors into medium print runs and larger, including into 3D-shaped surfaces. The integration into your plastic parts is aligned to the geometry and size of the part and sensor. It is performed by stamping or rolling with pressure and heat, is fully automatic, highly precise and durable. What's more, Functional Foil Bonding can be linked directly to the injection molding process. Our KURZ subsidiary BAIER supplies the appropriate equipment. You keep costs down, yet achieve high quality functional surfaces. Especially in comparison to conventional processes, the advantages in stability are particularly impressive when specification requirements are high.

### Advantages:

- ✓ High visual quality for semi-transparent surfaces
- ✓ Fully automatic hot-stamping process
- ✓ Specification advantages over conventional processes like OCA

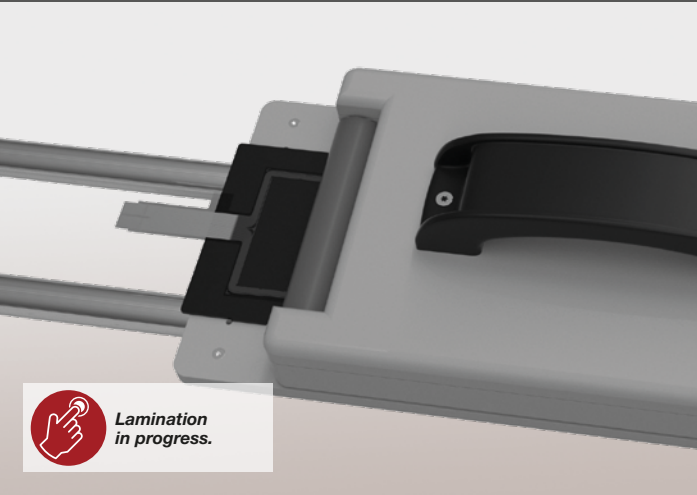
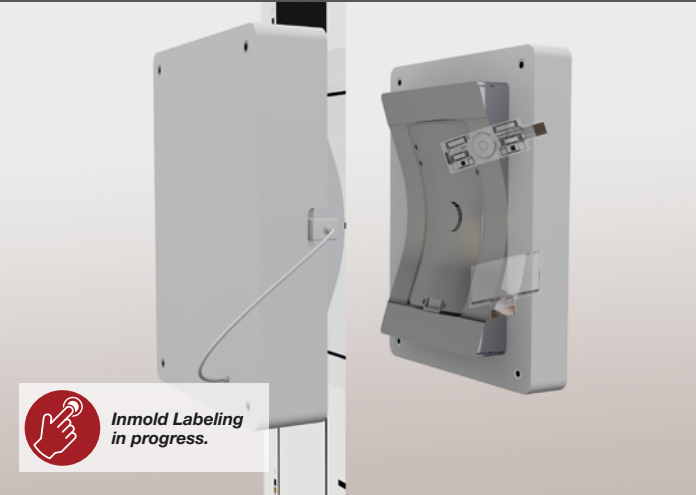
# Integrate with ease

# Combine processes

# Set new standards

Proven and innovative sensor applications

Laminating is one of the most common integration processes in the world. It covers a wide spectrum of application scenarios on glass and plastic surfaces – even in small runs. Our PolyTC® touch sensors can also be applied with lamination. But with an eye to the future of touch-sensitive surfaces, however, this popular and proven standard method has its limits, such as when used on outgassing plastics or curved surfaces. In contrast, the injection of labels in Inmold Labeling (IML) processes is fully automatic, and brilliantly combines simultaneous decoration using IMD or insert foils.



## Inmold Labeling (IML)

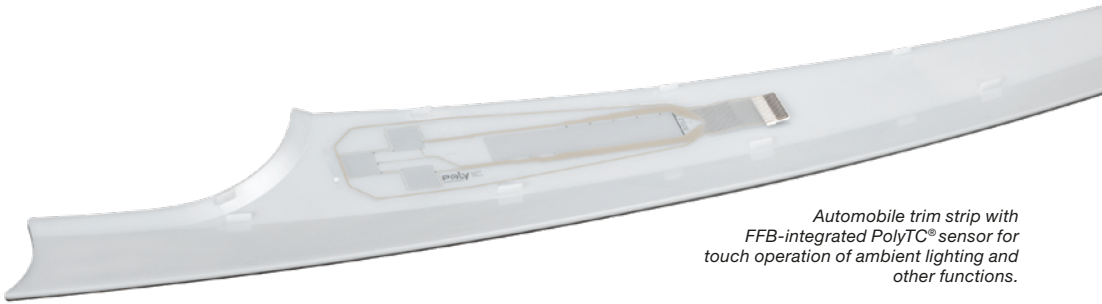
Significantly boost the efficiency and quality of your processes in the production of unique 3D touch surfaces, by allowing us to combine Inmold Labeling (IML) with Inmold Decoration (IMD). Simultaneously apply our transparent, conductive PolyTC® sensors to your parts during the injection-molding process. In the first mold half, the PolyTC® foil bonds during back injection with the backside of the plastic part, using a primer we have specifically developed. At the same time, a carrier foil with decoration is directed at the second mold half, whereby the decorative layer bonds to the front side of the part during the injection molding process. Of course, a combination with insert decoration foils is possible, as well as sensor integration without decoration.

- Advantages:**
- ✓ High visual quality for injectable plastics
  - ✓ Linking of decoration and function in one step

## Lamination

To achieve high transparency, the display industry in particular employs laminating with cost-intensive OCA (Optical Clear Adhesives) around the world as a sophisticated standard integration process for touchscreen sensors. If only transparent or visually noncritical surfaces are requested, PSA (Pressure Sensitive Adhesive) is usually used. We offer PolyTC® sensors with both OCA and PSA coatings.

- Advantages:**
- ✓ Applicable to smooth 2D surfaces
  - ✓ Worldwide standard



Counting on the future – a comparison of methods of integration

|                                       | Functional Foil Bonding (FFB)                  | Inmold Labeling (IML)                                                              | Lamination (PSA, OCA)                                                                  |
|---------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Technical aspects                     |                                                |                                                                                    |                                                                                        |
| Substrate                             | Plastic                                        | Injection-molded plastic                                                           | Smooth materials (e.g. glass, plastic)                                                 |
| 3D capability                         | 2D to 3D                                       | 2D to slight 3D                                                                    | 2D or slightly curved                                                                  |
| Necessary additional coatings         | FFB primer, as part of sensor design           | IML primer, as part of sensor design                                               | PSA (low visual requirement) or OCA (high visual requirement)                          |
| Integration, decoration               | Downstream, on (decorated) finished part       | Single-stage, combination with Inmold Decoration (IMD) possible                    | Downstream, on (decorated) finished part; subsequent autoclave treatment may be needed |
| Integration requirements              | Heat and pressure from die (stroke or unwind)  | Heat and high pressure in the injection-molding process                            | Room temperature, low pressure                                                         |
| Achievable visual quality             | Transparent to high                            | Transparent to very high                                                           | PSA: transparent<br>OCA: very high                                                     |
| Use with outgassing plastics          | Non-Critical                                   | Non-Critical                                                                       | Critical                                                                               |
| Economic aspects                      |                                                |                                                                                    |                                                                                        |
| Additional investment for integration | Absorption and die, if needed, FFB equipment   | Adaptation of injection mold                                                       | If needed autoclave, laminating equipment                                              |
| Automation                            | Low to very high                               | High to very high                                                                  | Low to medium                                                                          |
| Costs from additional coatings        | Very low                                       | Very low                                                                           | PSA: medium<br>OCA: high                                                               |
| Scalability                           | Low to very high piece numbers                 | Medium to very high piece numbers                                                  | Low to very high piece numbers                                                         |
| Cycle time for integration            | Short                                          | No additional time                                                                 | Short to medium                                                                        |
| Optimally suited                      |                                                |                                                                                    |                                                                                        |
|                                       | Fully automatic replacement of bonding systems | Single-stage, fully integrated process in combination with Inmold decoration (IMD) | For established laminating processes on smooth 2D substrate                            |

Follow us on:



We are looking forward  
to hearing from you!

Contact:

**PolyIC GmbH & Co. KG**  
Tucherstrasse 2  
90763 Fuerth/Germany

Phone: +49 911 / 20249-0  
E-Mail: [info@polyic.com](mailto:info@polyic.com)  
Internet: [www.polyic.com](http://www.polyic.com)

The information provided herein is given with utmost care and according to our best knowledge and experience as of the date of this document, but NO REPRESENTATION, GUARANTEE OR WARRANTY, EXPRESSED OR IMPLIED IS MADE AS TO THE ACCURACY, RELIABILITY OR COMPLETENESS OF THE INFORMATION OR TO ANY SPECIAL QUALITY OR FITNESS OF THE PRODUCT FOR A SPECIAL APPLICATION. This information does not release the customer from his own liability for care examination, in particular with regard to the incoming goods inspection and any fitness of the respective product for his intended use. All patterns and designs owned by KURZ. Reproduction strictly forbidden. Infringements will be prosecuted. All rights reserved. Issue 11/2020 – This document supersedes all previous issues.