

Application Case: Smarttester



Innovation tested – bonding solutions for medical wearables.

Lohmann's Bonding Engineers collaborate with partners and customers from various industries. For some areas, e.g. within the construction or automotive industry, their bonding solutions have to meet specific requirements and certifications which are established by means of standardized tests. May it be the durability of a bond, its impermeability or mechanical strength.

Aside from such standards, there are also cases with a gap in the customer's request: for example, if only the expected loads are known – and now have to be simulated by Lohmann by means of carefully selected testing methods and devices. And finally, there are customer requests without any predetermined testing methods. Here, the Bonding Engineers' innovative skills are called upon.

The present (application) case is precisely such a project. A customer from the medical sector is producing a wearable, more specifically a wearable insulin pump. Lohmann is already providing the custom-fit bonding solution as a die-cut. However, the requirements to such bonds are on the rise. Apart from its skin compatibility, a specific adhesion has to be achieved in order to prevent the skin patch solution from falling off due to a careless movement. On the other hand, the adhesion mustn't be too strong to allow for a residue-free and painless removal.

Now, the customer wants to find out if Lohmann could offer another bonding solution for his application. In their Bonding Arena®, the Bonding Engineers search for the answer by means of the so-called Smarttester. Currently, this device is

able to perform about 50 different tests – and new ones keep on coming in. Because the customer is meant to get a product with equal or higher quality than the current one, the tests shall include a performance comparison. The second preliminary consideration relates to the daily application of the product: Which motions and loads does the patch have to withstand and how can both be usefully simulated?

The Bonding Engineers' choice: a torsion test. This mechanical testing method exposes fixed materials to repeated rotations and expansions. In this case: die-cuts, attached to a textile similar to skin. Because the wearable is designed for a wear time of ca. three days, the torsion test is performed in a defined number of cycles. Difficult conditions due to skin moistening (sweat) are part of the simulation, too.

The test phase is still running – the Bonding Engineers will expose their specimen to further, intensive loads until they are able to present a customized solution to their customer.

You also have a bonding challenge for us?
Please do not hesitate to get in touch via ae@lohmann-tapes.com

Product recommendations:

- DuploMED® 45130 / Skin-friendly nonwoven tape
- DuploMED® 45150 / High-quality nonwoven tape