Innovations I: Wearables as tech trend
New adhesive tapes for “lifelogging”

They are little marvels worn on or right next to the body. These mini-computers perform smart services like measuring calorie consumption, the number of steps taken, and how long the wearer sleeps. Wearables are among the latest technical advances. For tesa, this booming market offers outstanding prospects – for a redesigned line of double-sided adhesive tapes.

Double-digit growth rates

Experts view the wearables market as the next big thing in the tech sector. According to analyses performed by international accounting and auditing firm PricewaterhouseCoopers (PwC), the worldwide market for wearables was valued at 6.3 billion euros in 2015 and is expected to grow by 21 percent a year between now and 2018. German industry association Bitkom expects the European market to see 24 percent annual growth, climbing to as much as 8.8 billion euros in 2018, and the PwC forecast is even more optimistic, predicting an average annual growth of 25.2 percent between now and 2018. Similar growth is assumed for Germany. If current trends hold, smartwatches and fitness trackers should remain the most popular items.

Close cooperation with global players

“We also focused on these two categories when tesa joined with global players from the electronics industry to tackle the development of innovative adhesive tapes, about three years ago,” says Dr. Robert Gereke, CEO of tesa. “This early and close cooperation has meant that we are now able to offer OEMs and suppliers special tapes that meet the specific requirements that apply to adhesive bonding of components in wearables,” he explains. The product range currently includes four double-sided tapes ranging in thickness from 50 to 250 micrometers. Various specification processes for the products, which are manufactured in the cleanroom unit at the tesa plant in Hamburg, were held on-site at the locations of potential customers in early 2017.

Resistance to sweat and sunscreen

Since wearables are constantly in motion, the tapes have to offer high adhesive strength and shock resistance. On top of that, these devices are exposed to various biological and chemical substances, since they are in such close contact with the body. That includes not only sweat, but also perfume, sunscreen, soap, and other substances, as both fluids and gases. Although the tape does not have direct skin contact, particles of these substances, some of which are corrosive, can penetrate inside the wearable through tiny gaps and, in the worst case, dissolve the adhesive bond. For that reason, the four new tesa® 612xx High Performance Tapes have “antibodies” to help them fight exposure to chemicals and other substances.

When it comes to areas of application, the company’s main focus in the smartwatch segment is on mounting the front cover (the lens) and housing (back cover mounting).
Another important factor, especially in fitness trackers, is securely affixing the sensitive sensors that are used to track various bodily functions. But smart glasses and clothing with built-in electronics also offer a wealth of possibilities for adhesives in the future market for individualized tracking and “lifelogging” functions.

**Background: Wearables – What's What**

**Smartwatch**

A smartwatch can do much more than just perform conventional watch functions. Equipped with a touch display and its own operating system, this kind of “personal assistant” is able to run apps. It also serves as an extended display for the user’s smartphone. Wearers can receive e-mails or calls right on the watch, or even take a quick look at WhatsApp or Facebook without having to fish their cell phone out of their pocket. The communication takes place via Bluetooth. Some recently launched models even have their own SIM cards, so they function as standalone devices, independent of a smartphone.

**Fitness tracker**

Originally developed for elite athletes, fitness trackers are now a hit in the mass market as well. These devices feature highly sensitive sensors that measure things like heart rate, running speed, the distance the wearer has traveled, and calorie consumption. All of the data are subsequently managed and processed on the user’s smartphone or laptop – or, in some cases, right in the tracker itself – and then analyzed using software that comes with the tracker and compiled into easy-to-read graphics.

**Smart glasses**

Among the developments generating a lot of buzz are “smart glasses.” Equipped with a camera, these kinds of glasses are supposed to analyze the world around them and supply the wearer with additional information about people, products, places, and objects, along with things like news and directions. The content is displayed right in the eyeglass lens. Some manufacturers are already working with holographic images to deliver augmented reality.

**What does “quantified self” mean?**

The “quantified self” movement, originally from the United States, is now catching on in Europe. The basic idea is to make a person’s own life “readable” by collecting and logging data. The goal is to bring comparability and objectivity to an area that is otherwise clouded by personal feelings and impressions. The assumption is that people who follow this approach are less dependent on external diagnoses and are more tuned in to their bodies. Experts believe the next step in the evolution of technology will come in the form of affective computing. Gesture and voice recognition and the ability to measure electrical currents in the brain will soon allow these devices to analyze fluctuations in emotions. In combination with parameters such as skin tension and body temperature, it would even be possible to determine from this whether the user is at risk of problems like illness or burnout.
This press release, along with image and photo materials, is available online at www.tesa.com/press.

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