

## Flexible glass for flexible electronics

**With support from the German Federal Ministry of Education and Research, the industry consortium KONFEKT is developing new technologies for the use of glass on roll in organic electronics**

*Mainz, Hamburg and Dresden, May 7, 2015* – The three technology companies SCHOTT AG, tesa SE and VON ARDENNE GmbH have joined together in the consortial project KONFEKT to drive forward the development of ultra-thin glass on roll for use in such application fields as organic electronics, with initial emphasis on the production of future generations of OLED applications. The goal of the consortium is to refine windable glass through lamination with functional adhesive tapes and by applying special functional layers. This will hopefully result in a process-ready rolled substrate that offers unique properties for many applications. The Federal Ministry of Education and Research (BMBF) is supporting this development for a period of three years with a total of 5.6 million Euros.

The three partner companies in the research consortium KONFEKT (thin glass for glass-polymer laminates), SCHOTT, tesa and VON ARDENNE, are focusing on two features of thin glass: The first subproject features the development of a laminate made of ultra-thin glass with a barrier adhesive tape that will serve as a hermetic encapsulation of electronic components. The second subproject will center on ways that ultra-thin glass can serve as a functional substrate for demanding applications, such as components for organic electronics.

In subproject one, SCHOTT and tesa are working to protect sensitive electronic components such as OLEDs (organic light-emitting diodes) from humidity and oxygen by using ultra-thin glass. Reliable encapsulation will protect the sensitive components from aging. Flexible glass is well suited as a top ultra-barrier (z barrier) because it forms a chemically impermeable layer that is impenetrable to water vapor and oxygen, even at a thickness of 10 micrometers, and does not feature pinholes.

tesa's expertise as a developer of specialty adhesive tapes comes into play in lateral sealing. The ultra-thin glass will be delivered to the user laminated with a special adhesive layer. This adhesive layer ensures that the components are not only sealed hermetically by the glass on their surface, but also experience no lateral diffusion of liquids and gases (x/y barrier).

The combination of the two high-tech materials specialty glass and barrier tape provides complete protection, thanks to the functional x/y/z barrier. This roll application will provide processing companies with a high-quality and cost-effective sealing process.

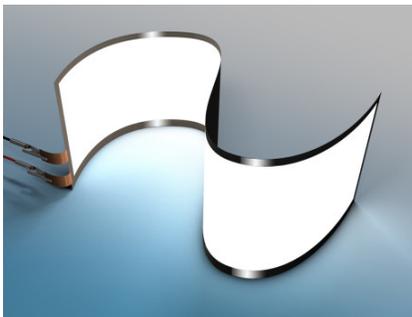
In the second subproject, the equipment manufacturer VON ARDENNE is developing a vacuum coating system specifically for roll-to-roll (R2R) coating of flexible glasses that will meet the special handling requirements of such glasses. Thin glass can thus be used as a functional substrate in sophisticated electronic applications. For example, a conductive TCO layer (transparent conductive oxide) such as ITO (indium tin oxide) is applied in a special vacuum-based PVD coating process (physical vapor deposition) in the same manner as in the manufacture of OLEDs or (organic) photovoltaic cells.

“We expect the consortium to play an important role in the next three years in the development of a new production platform based on glass on roll for innovative use in manufacturing electronic components,” says Dr. Ruediger Sprengard, Director of Business Development for Ultra-Thin Glass at SCHOTT.

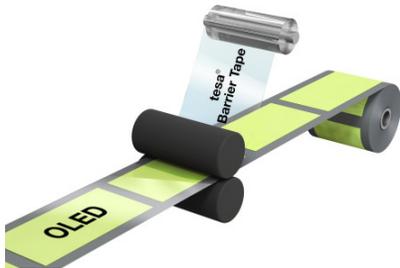
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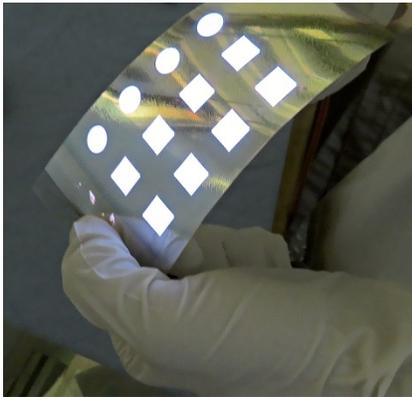
SCHOTT manufactures ultra-thin glass that is only 25 to 150 microns thick and ideally suited for roll-to-roll applications. (Photo: SCHOTT)



Flexibility will impact many areas of life in the future. Besides using OLED modules in different types of displays, flat “warm,” glare-free light will soon no longer be a utopia in foldable or rollable screens. (Photo: tesa)



Equipped with the patented tesa DrySeal® Liner Technology, the new transparent tesa barrier tapes can be processed safely and quickly by using roll-to-roll techniques. This process on full surface OLED encapsulation saves time and money – and is an important building block for the production concept of the future. (Photo: tesa)



By finishing with a transparent electrode layer, flexible glass will be made available in the future as a substrate for the roll-to-roll production of flexible OLEDs. This is already being done with plastic film (photo) and metal strip. (Photo: VON ARDENNE Corporate Archive)

**SCHOTT** is a leading international technology group in the areas of specialty glass and glass-ceramics. The company has more than 130 years of outstanding development, materials and technology expertise and offers a broad portfolio of high-quality products. SCHOTT is an innovative enabler for many industries, including the home appliance, pharmaceutical, electronics, optics, automotive and aviation industries. SCHOTT strives to play an important part of everyone's life and is committed to innovation and sustainable success. The group maintains a global presence with production sites and sales offices in 35 countries. With its workforce of approximately 15,400 employees, sales of 1.87 billion euros were generated in fiscal year 2013/2014. The parent company, SCHOTT AG, has its headquarters in Mainz (Germany) and is solely owned by the Carl Zeiss Foundation. As a foundation company, SCHOTT assumes special responsibility for its employees, society and the environment. [www.schott.com](http://www.schott.com)

**tesa SE** is one of the world's leading manufacturers of technical adhesive tapes and self-adhesive system solutions (more than 7,000 products) for industrial and professional customers as well as end consumers. Since 2001, tesa SE (4,100 employees) has been a wholly owned affiliate of Beiersdorf AG (whose products include NIVEA, Eucerin, and La Prairie). Applications for various industrial sectors, such as the automotive industry, the electronics sector (e.g. smartphones, tablets), printing and paper, building supply, and security concepts for effective brand and product protection, account for about three-quarters of the tesa Group's sales (2014: 1.0763 billion euros). tesa also recently began partnering with the pharmaceuticals industry to develop medicated patches. tesa earns just under one-quarter of its sales in the consumer segment, where 300 products for end consumers make working in the home and the office easier.

*VON ARDENNE develops and manufactures equipment for industrial coatings on materials such as glass, wafers, metal strip and polymer films. These coatings give the surfaces new functional properties and can be between one nanometer and a few micrometers thin, depending on the application. The coated materials are the basis for products such as architectural glass, solar modules or smartphone displays. VON ARDENNE is the market leader in manufacturing architectural glass coating equipment and a leading provider of coating systems for thin-film photovoltaics. The family-owned company employs about 670 people and is based in Dresden. Last year, the company earned a sales revenue of 201 million Euros with an export ratio of 96.4 percent. As a global corporation with subsidiaries in China, Japan, Malaysia, Taiwan and the USA, VON ARDENNE relies on customer proximity in order to offer ideal on-site service. VON ARDENNE equipment is in operation in more than 50 countries around the world.*

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