

Press Release

May 16, 2014

Innovations in Printed Electronics

Printable Heating Systems and Transparent Inks

Within the electronics field, more and more applications are coming to the fore that require a uniform, self-regulating heating system – from heated mirrors and underfloor heating systems to batteries. Conventional wire-based solutions are not only cumbersome but also particularly time-consuming and costly to manufacture. Now, with its Loctite ECI 8000 E&C series, Henkel is able to provide an innovative and efficient alternative. Offering a versatile range of conductive carbon paints applied using the screen printing technique, this Henkel development for heating systems brings huge benefits with respect to design flexibility and fast and uniform heating performance, plus an ability to self-regulate system temperature. As world market leader in the provision of tailored solutions based on adhesives, sealants and functional coatings, Henkel will be presenting this and other product innovations at LOPEC (Large-area, Organic & Printed Electronics Convention), the leading international trade fair for printed electronics, in Munich on May 27 and 28, 2014.

Cables and wires have the disadvantage that their incorporation in heating systems requires substantial manufacturing effort. Moreover, the heat they supply is not especially uniform, with hot spots and cold spots a common feature. “We know that fast and uniform heating is important, particularly for applications such as medical equipment and motor vehicle batteries, but also for things like underfloor and mirror heating systems,” says Lothar Reimann, Regional Sales Manager for the Electronics business at Henkel, alluding to the key customer requirements. Thermally conductive printing inks are an ideal alternative here to traditional wire-based systems. “With Loctite ECI 8000 E&C, we offer a series of conductive carbon paints that can be applied using the screen printing technique to a variety of materials, and which are characterized in particular by their flexibility – enabling efficient deposition and allowing greater creative scope on the design side,” Reimann adds. The inks are applied in thin layers, making them both very light and space-efficient.



LOCTITE BONDERITE TECHNOMELT TEROSON AQUENCE Ceresit

The material is formulated to ensure that it heats up very quickly to a certain temperature and is then held constant at that temperature. Thanks to PTC functionality (Positive Temperature Coefficient), the printing inks regulate the temperature themselves up to a certain threshold. This autocontrol function significantly reduces the danger of overheating, thus increasing the intrinsic safety of the system. And the material also offers clear advantages in the sustainability stakes: As ecologically stable compounds, the printing inks give long service life; and because no external temperature control is necessary, they also consume less energy. In addition, printing as an additive technology produces considerably less waste than, say, etching.

Transparent conductive inks from Loctite for a wide spectrum of applications

A further focal point of Henkel's presence at the trade fair is the Loctite ECI 5000 series of transparent conductive printing inks offering exceptional flexibility in combination with outstanding printability and conductivity. With these attributes, they can be used for a broad spectrum of applications including industrial touch screens, solar cells, electroluminescent (EL) systems and micro-LED lights. Indium tin oxide (ITO) is usually applied as the transparent semiconductor for such systems, but the processes involved can be both costly and time-consuming. Aware of these disadvantages, Henkel developed its Loctite ECI 5000 range of transparent, conductive inks suitable for use in standardized printing processes. This innovative technology not only enables precise control of the material application processes and film thickness but also high throughput rates and thus reduced process costs compared to ITO. The wide portfolio available under the Loctite ECI 5000 series includes various products offering specific benefits with respect to conductivity, transparency and cost control.

Henkel presentations at the "Exhibitor Forum"

Among the speakers at the "Exhibitor Forum" will be a number of Henkel experts providing detailed presentations of the company's product innovations to a wide audience. At 2.30 p.m. on Tuesday, May 27, Hans van Oosten will be giving a paper entitled "New Inks for Printed Electronic Applications," introducing the new range of thermally conductive inks with their various and specific characteristics. And at 2.30 p.m. on Wednesday, May 28, Tony Winster will be talking about a "New Transparent Conductor Ink System Based on Silver Nanowire Technology," with example applications including in particular the manufacture of touch screens.

During LOPEC on May 27 and 28, 2014, Henkel experts will be on hand in Hall B0, Stand 418, to provide information on the company's portfolio of printed electronic technologies.

Loctite is a registered trademark of Henkel and/or its affiliates in Germany and elsewhere.

Henkel operates worldwide with leading brands and technologies in three business areas: Laundry & Home Care, Beauty Care and Adhesive Technologies. Founded in 1876, Henkel holds globally leading market positions both in the consumer and industrial businesses with well-known brands such as Persil, Schwarzkopf and Loctite. Henkel employs about 47,000 people and reported sales of 16.4 billion euros and adjusted operating profit of 2.5 billion euros in fiscal 2013. Henkel's preferred shares are listed in the German stock index DAX.

Photo material is available at <http://www.henkel.com/press>

Contact	Lisa Kretzberg	Holger Elfes
Phone	+49 211 797-56 72	+49 211 797-99 33
E-mail	lisa.kretzberg@henkel.com	holger.elfes@henkel.com

Henkel AG & Co. KGaA

The following material is available:



Henkel will be presenting product innovations in printed electronics at LOPEC.