

Cemedine, Introducing Simple Circuit Formation Techniques for All Kinds of IoT Devices

Exhibition of Samples at 3RD WEARABLE EXPO [Jan. 18 to 20]

—A presentation of thermal fusion bonding, 3D shaping and other low-temperature mounting techniques to replace soldering—

At the 3RD WEARABLE EXPO (46TH NEPCON JAPAN 2017) on January 18 to 20, 2017, Cemedine Co. Ltd. (head office: Shinagawa-ku, Tokyo, President: Hiroshi Iwakiri) is presenting its simple electric circuit formation techniques and adhesive-based component mounting techniques, featuring its SX-ECA Series conductive adhesive (hereinafter “SX-ECA”).

Heater circuit on textile

▼ 3RD WEARABLE EXPO (46TH NEPCON JAPAN 2017)

<http://www.wearable-expo.jp/>

▼ SX-ECA

<http://cemed.in/sxeca/>

SX-ECA is an electrically conductive adhesive that offers excellent adhesiveness with a wide variety of materials at low temperatures, as well as physical flexibility. It is therefore ideally suited to circuit formation and component mounting for the fast-growing field of IoT (Internet of Things) devices.

At the expo, Cemedine is unveiling a parker manufactured by pre-printing a heater circuit onto a TPU (thermoplastic polyurethane) sheet and then bonding the sheet to textile. It is also showing samples of 3D objects created using resin sheets printed with circuits.

[1. Development History]

As the Internet of Things (IoT) era approaches, the range and scale of IoT applications is growing day by day. At the same time, rapid advances are being made in the technology of “printed electronics” for forming circuits and mounting electronic components on various kinds of objects, as need and demand shifts away from circuit boards made of glass epoxy resin towards flexible circuits on

substrates such as inexpensive PET film. The development of SX-ECA was also informed by the recognition of a growing need for technologies that enable the electronic components used in IoT devices to be mounted simply.

<About Cemedine Wearable>

“Cemedine Wearable” (<http://cemed.in/sxeca/>), announced in 2016, was created by mounting large numbers of LED chips onto circuits “printed” directly on textiles. Although this release effectively demonstrated the potential for forming circuits on a wide variety of objects, there were some outstanding issues to be resolved, relating to the handmade production of the product.

<About the Exhibition>

To address these challenges, Cemedine pre-printed heater circuits onto TPU sheets and then ironed these onto textile (by thermal fusion bonding) to create a parker with a built-in heater—the “HEATER PARKER,” manufactured by the fashion-tech designer Olga. (See Photos 1 to 3.) Since SX-ECA hardens at low temperature, it is easy to print circuits directly onto TPU, despite the material’s sensitivity to heat. Thanks to thermal fusion bonding, which is a feature of TPU, advances in practicality were made since the release of “Cemedine Wearable,” such as the ability to print circuits easily onto textiles. And this technique can also be applied to materials other than textiles.

(Photo 1: Heater circuit printed on textile)

https://www.atpress.ne.jp/releases/119647/img_119647_1.jpeg

(Photo 2: “HEATER PARKER”)

https://www.atpress.ne.jp/releases/119647/img_119647_2.jpeg

(Photo 3: Clothing with built-in heater)

https://www.atpress.ne.jp/releases/119647/img_119647_3.jpeg

In the IoT era, the need to form circuits directly on 3D objects, or to create 3D objects from flexible circuit-printed materials will grow. Cemedine is currently developing adhesives capable of printing circuits onto resin sheets that can then be formed into 3D objects. At the expo, the company is exhibiting samples of 3D objects made by pre-printing circuits onto ABS resin sheets. (See Photo 4.)

This is an effective technique for forming circuits on a wide variety of 3D objects with curved surfaces.

(Photo 4: Sample of circuit formed on a 3D object)

https://www.atpress.ne.jp/releases/119647/img_119647_4.jpg

Cemedine is also presenting a low-temperature circuit mounting technique to replace soldering. In the field of IoT devices, there is a growing need to mount electronic components onto substrates that are heat-sensitive and materials that cannot be soldered. Simultaneously, there is a growing shift from conventional mass production to high-mix, low-volume production. Cemedine is also unveiling a technique that leverages the properties of SX-ECA to allow components to be mounted simply using a dispenser method with a conventional chip mounter.

[2. Features of SX-ECA]

- 1) Hardens and enables good conductivity even at low temperatures (room temperature to 120°C)
- 2) Excellent flexibility after hardening, since it adapts to the deformation of all kinds of materials (Photo 5)
- 3) Excellent adhesion to a broad range of materials, due to Cemedine's unique adhesion technology
- 4) Liquid form enables easy circuit formation and component connection by dispenser or printer methods

<https://www.cemedine.co.jp/product/industry/sx-eca.html>

(Photo 5: LED light turns on when circuit is elongated)

https://www.atpress.ne.jp/releases/119647/img_119647_5.jpg

[3. Further Development]

To further improve SX-ECA and accumulate greater expertise in techniques for circuit formation and connection for various materials, Cemedine is considering options for partnering with specialists in different fields.

Additionally, the company will continue its development of technology for circuit formation and component connection for devices in medicine and nursing,

sports, healthcare, automobiles, household appliances, homes, and other fields in which IoT penetration is likely to grow in the coming years.

■ Outline of 3RD WEARABLE EXPO (46TH NEPCON JAPAN 2017)

Event name: 3RD WEARABLE EXPO (46TH NEPCON JAPAN 2017)

(<http://www.wearable-expo.jp/>)

Date/time: January 18 (Wed.) to 20 (Fri.), 2017

10:00 a.m. to 6:00 p.m. (to 5:00 p.m. on final day)

Venue: West Hall 3, Tokyo Big Sight

Booth: W21-14

■ Manufacturing Partners

<Collaboration in manufacture of “HEATER PARKER”>

Clothing production/art direction: Olga (Etw.Vonneguet)

Heater circuit design: AgIC Inc.

<Collaboration in manufacture of samples of 3D circuits>

Tatsuta Chemical Co., Ltd.

■ Company Outline

Trading name: Cemedine Co., Ltd.

Head office: Gate City Ohsaki East Tower,
1-11-2, Osaki, Shinagawa-ku, Tokyo 141-8620

Representative: Hiroshi Iwakiri (President)

Established: April 22, 1948 (founded Nov. 1923)

Securities code: Tokyo Stock Exchange (Second Section): 4999

Capital: 3,050,375,000 yen

Main activities: Manufacture and sale of adhesive agents, sealing materials, adhesive materials, special paints and coating agents, and associated processed goods; construction and contracts relating to adhesion and waterproofing

Web: <http://www.cemedine.co.jp/>

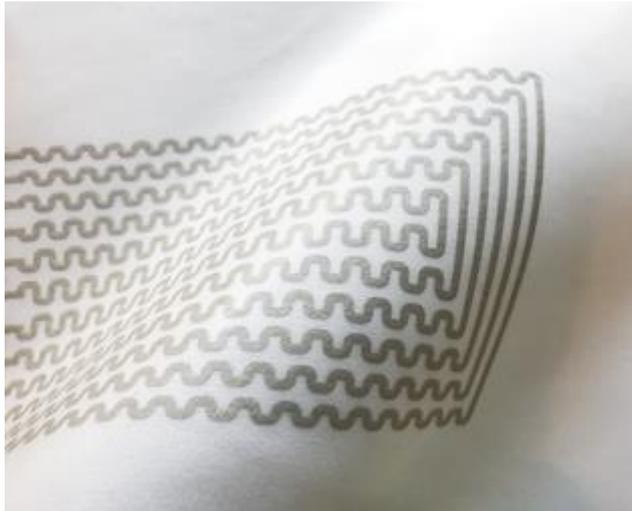
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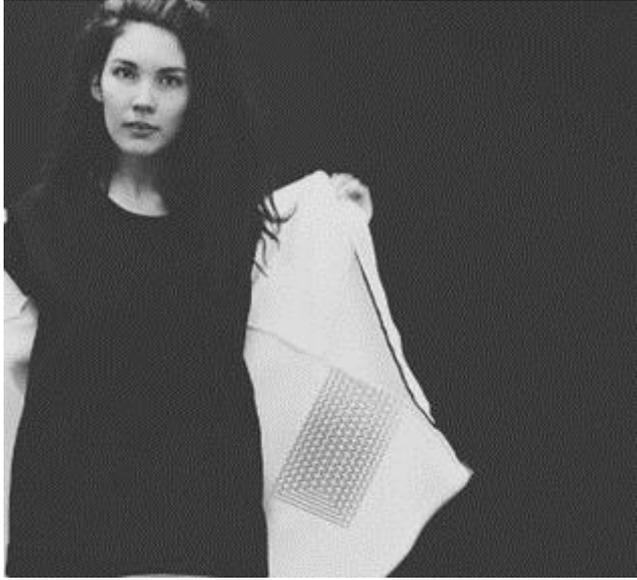
Images



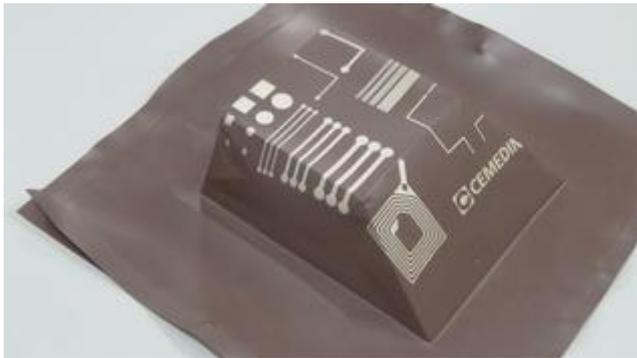
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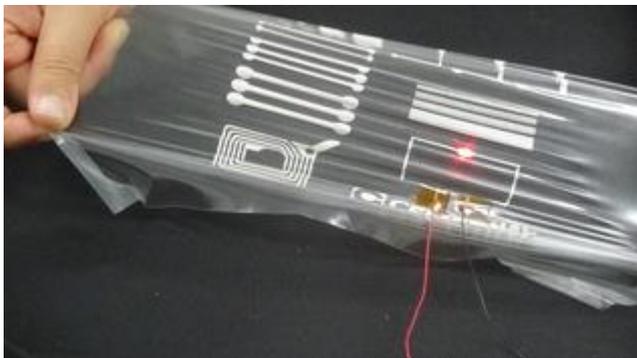
“HEATER PARKER”



Clothing with built-in heater



Sample of circuit formed on 3D object



LED light turns on when circuit is elongated