

Press release

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New Innovation Center in Shanghai

Heraeus Electronics has opened a new Innovation Center in Shanghai to develop and test material systems. The facility assembles chips as well as solder and test components for customers.

The new Heraeus Electronics Innovation Center in Shanghai can assemble chips of up to 250 µm directly from the wafer, preapply solder paste to metal ceramic substrates, and reflow surface-mounted devices (SMDs) in a soldering furnace. Ten developers apply various methods for simulation, design and prototype construction, testing and qualifying materials systems. The 400 square meter facility has 18 sophisticated machines on hand for customers from the power electronics and semiconductor industry – and it will further expand.

“We aim to advise our customers more at a very early stage of development. This is the only way to work together to achieve successful forward integration,” says Dongyi “Larry” Wang, Head of Innovation at Heraeus Electronics in China. “Our broad-based material expertise allows us to offer a clear added value. After all, a complete material system must be consistent and from a set of internally matched materials in order to be powerful and reliable.”

Vacuum soldering furnaces, wire bonders, and endurance tests

In addition to different up-to-date machines for today’s electronics, such as the dual-chamber vacuum soldering furnace with nitrogen capability and a wire bonder for thin or thick aluminum copper wires to various ribbons, the Innovation Center in Shanghai also features test stations for endurance tests. These tests expose material systems to the highest demands for weeks or even months at a time, including high-temperature storage as well as temperature cycling and power cycling.

In a precision die bonder, chips are attached to substrates by solder paste and further processed in the vacuum furnace up to 400°C. To create a strong and reliable bond, Heraeus mAgic sinter paste can be used, and processed in the sintering furnace with nitrogen environment with minimal residual oxygen. This ensures that the copper surface of a metal ceramic substrate does not oxidize. Thus, with the help of Heraeus Electronics solder and sinter pastes, chips are attached on copper surface for use in different electronic devices.

No limits to the complexity of the test processes

Optical microscopy, X-ray inspection and acoustic scanning is able to detect the tiniest scratches and bits of fuzz or slightest discoloration on surfaces, as well as invisible voids or delamination in layers. All these defects are critical to the long term reliability of a device. The shear or pull test for chips and bonding wires measures how much force can be applied before the component separates. This allows the quality and durability of a connection to be quantified clearly.

“There are no limits on the complexity of our test processes. This is crucial in such areas as Advanced Packaging where the available space is getting smaller and smaller, or for power electronic devices where the power

density and heat dissipation demands for high reliability,” explains Dongyi “Larry” Wang. “Our testing procedures and capabilities help us to understand what makes a difference for our customers, thereby helping them to optimize their processes individually.”

A globally leading technology group, Heraeus is headquartered in Hanau, Germany. Founded in 1851, it is a family-owned portfolio company which traces its roots back to a pharmacy opened by the family in 1660. Today, Heraeus combines businesses in the environmental, energy, electronics, health, mobility and industrial applications sectors.

In the 2017 financial year, Heraeus generated revenues of €21.8 billion. With approximately 13.000 employees in 40 countries, the FORTUNE Global 500-listed company holds a leading position in its global markets. Heraeus is one of the top 10 family-owned companies in Germany. With technical expertise, a commitment to excellence, a focus on innovation and entrepreneurial leadership, we are constantly striving to improve our performance. We create high-quality solutions for our clients and strengthen their long-term competitiveness by combining unique material expertise with leadership in technology.

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