

Press release

09/18/2019

Heraeus offers new solutions for improved performance of 5G devices

HANAU, Germany – 5G is currently on everyone's lips. However, many advantages of the new standard can only be exploited with improved devices. Heraeus offers solutions for the top four technical challenges.

Taipei – As 5G devices are entering the market, the industry is looking for further improvements for future device generations. Heraeus' new 5G solution portfolio will enable our customers to not only reduce costs, but also to improve performance and quality of 5G. Heraeus has identified four top challenges which require innovative solutions:

Challenge #1: Electromagnetic interference (EMI)

Higher performances of 5G technology is only possible by increased frequencies. This can cause disruptive interference between individual components such as chips and antennas within the devices. In addition, electromagnetically active devices must not affect the safety of other systems in their environment. Especially the internal shielding of components against each other reaches its technical limits.

The Solution: Heraeus has developed a [one-stop-shop solution](#) based on a specially formulated, particle-free silver ink, an ink-jet printer and curing equipment. This new technology offers significant cost savings and highest material efficiency in comparison to traditional shielding technologies, like metal housings or sputtering. Investment into equipment is 15 times lower for the Heraeus solution in comparison to PVD Sputtering, given the need for the same production capacity (in parts per year).

“With increasing frequencies and further miniaturization, EMI shielding is key to 5G technology. It will guarantee safe and reliable operation, which is extremely important for many consumers and IoT applications,” says Dr. Frank Stietz. “

Challenge #2: Miniaturization

Miniaturization leads to a fierce contest for space inside the housing of devices. Given that the increased data traffic of 5G technologies requires more energy and thus bigger batteries – this problem is even amplified.

The Solution: Smaller components that are placed even closer to each other drive the need for fine pitch solder pastes. Heraeus' [Welco Solder Paste](#) offers superior fine pitch printing performance due to its excellent rheological properties and thus enables smaller consumer devices – including 5G mobile phones. Also, Heraeus' EMI Shielding Solution is more space efficient than traditional metal housing shielding.

Challenge #3: Cost pressure

Electronic devices are constantly evolving and need more storage capacity, thus the need for cost-effective production is growing. To gain a competitive edge, cost efficiency is key for manufacturers.

The Solution: To ensure high performance, memory devices in the semiconductor industry currently rely heavily on gold for wire bonding. Heraeus' product [AqCoat Prime](#) – a gold coated silver wire – offers a real alternative to gold wire for the memory device packaging in 5G technology.

Challenge #4: High temperatures

For deploying 5G and supporting faster bandwidth, telecommunication companies as well as governments worldwide must invest in communication infrastructure. Given the increased potency of 5G technology, devices and power amplifiers tend to heat up more.

The Solution: Classical soldering processes reach their limits with these requirements. An alternative is sintering. Heraeus' [mAgic silver sinter pastes](#) increase the lifetime of devices up to ten times.

Please find further information at www.heraeus-printed-electronics.com and www.heraeus-electronics.com.

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 2018 financial year, Heraeus generated revenues of €20.3 billion. With approximately 15.000 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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