# Press release

Hennigsdorf, 26.10.2022

## Perfect connection

**The die-to-die bonding process Thermosonic Bonding (TSB) combines the novel thermocompression bonding with ultrasonic welding (UW).**

Ultrasonic welding can reduce bonding pressure and temperature. This improves the bonding process, which is particularly advantageous in semiconductor production. For example, in flip-chip bonding. Here, solderless die-to-die bonding technology enables area array connections. With this process, an array of gold bumps located on the underside of an IC can be connected to gold-plated pads on a substrate. In particular, thermocompression bonding is used in this simple, clean and dry assembly process.

The TSB process starts with a substrate placed on a heated support and held in position by vacuum. The chip is held by a pick & place tool with a die collet designed for thermosonic bonding applications. Once the Tresky pattern recognition system has aligned the chip with the substrate, the Gold-Stud bumps are contacted to the substrate. Once the required bonding force is achieved, the current of the ultrasonic welding is applied for a defined period of time.

The vertical technology offered by Tresky guarantees stable and precise coplanarity and parallelism over the entire Z-axis stroke. "In combination with force control, an excellent joining result can be achieved at any height, whereby decisive parameters such as force, temperature, power of ultrasonic welding and process time can be individually programmed," assures Daniel Schultze, Managing Director of Tresky GmbH.
In addition to an IP collet (inverted pyramid (IP)), the use of an additional channel type collet (CH)) is advisable as soon as access to the tool is restricted or it has to be aligned through two sides of the chip. Whether a collet is suitable for the TSB can be determined by factors such as the cyclic movement of the collet during the US process, the sensitive surface of the chip and heat transfer.
Tresky's next generation thermosonic bonding allows US power and collets to be used to create an excellent bond between a chip and a substrate. Because Tresky's Pick & Place system offers excellent coplanarity and parallelism along the Z-axis, it can ensure accurately bonded chips.

**About Tresky**
Since 1980 the name TRESKY stands for the highest quality, unmatched flexibility with maximum reliability.
Tresky GmbH is one of the world's leading machine manufacturers for placement systems in the high-precision sector offering more than 40 years of experience in the semiconductor industry. The company is headquartered in Hennigsdorf near Berlin, in the middle of a technology park that is home to numerous highly specialized companies from the automation, electrical engineering, communications technology and life science sectors. Quality "Made in Germany" - Tresky develops, produces and sells Die Bonders from its headquarters in Hennigsdorf. More information: https://www.tresky.de/en/

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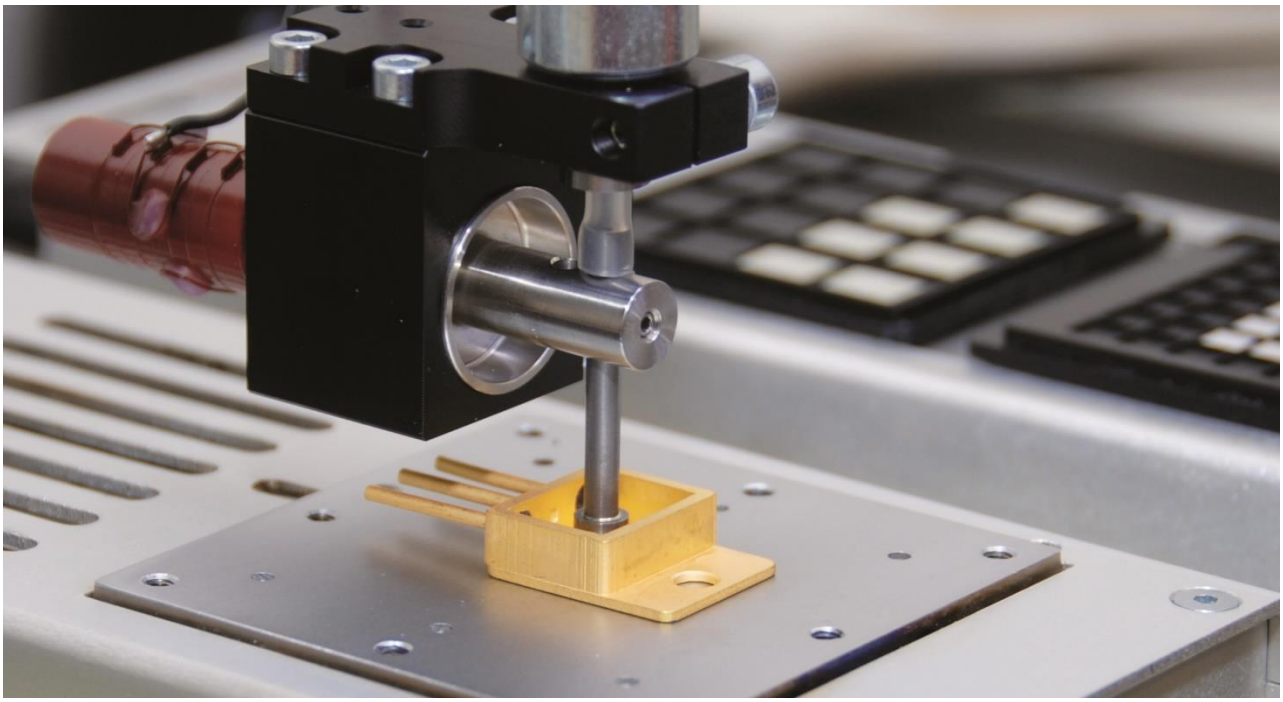
**Pictures:**



**Picture captions:**

With specific vertical technology, stable and accurate coplanarity and parallelism is guaranteed throughout the Z-axis stroke.

**Deeplinks:**

https://www.tresky.de/en/applications/

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