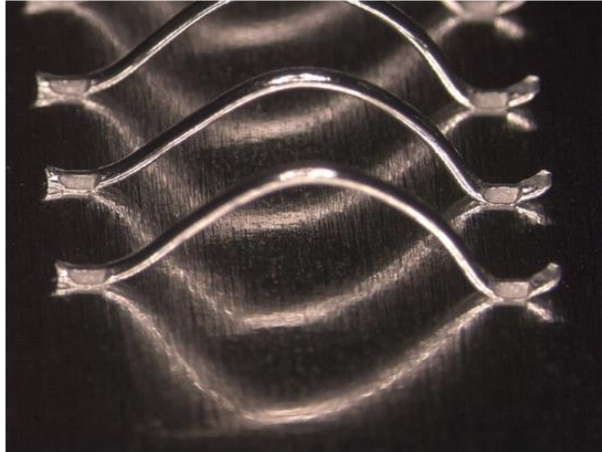
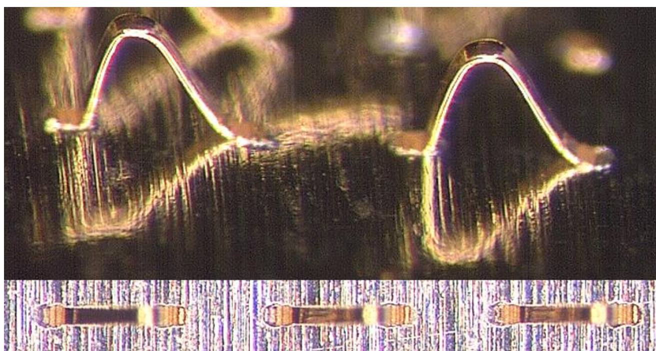
Hesse Mechatronics BJ653

thin/heavy wire and ribbon bonder

The Hesse Mechatronics BJ653 bonder covers a large range of bonding techniques. The HBK10 bonding head enables large wire bonding ranging from 125µm (5 mils) to 500µm (20 mils) diameter wire. Those heavy connections are needed for high power applications and are usually achieved through aluminum or copper wires. The back cut configuration of this head also provides a better flexibility to navigate through populated assemblies.

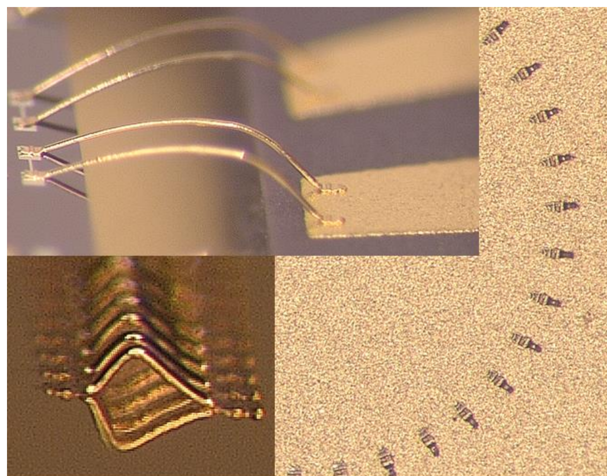


500µm (20 mils) Aluminum wire



75x25µm (3x1mils) Gold ribbon

The DA07 head enables both fine wire wedge bonding from 17.5µm to 50µm (0.7mil to 2 mils) and ribbon bonding, up to 250µm (10 mils) in width. Wedge bonding is an interesting choice for very fine pitch, ultra-low loop applications. Its bonds deform by only 20-25% of the wire diameter and the wire exits the first bond horizontally rather than vertically, which can naturally produce low loops. The looping algorithms of the machine give the precise wire heights and lengths that can be required for specific current capacity and high-frequency packages. To connect these, ribbon bonding will often be preferred. In fact, at higher frequencies, the skin effect dominates the conduction through the wire. This means that all conduction will travel in the outer 0.5µm of the conductor's surface. In this case, a ribbon 30% smaller will have the same current capacity as a round wire. Finally, just like the thin wires, the ribbon bonding will benefit from the deep access configuration of the DA07 head. This provides up to 25.4mm (1 inch) of bonding tool length unobstructed by any head hardware. The available slim clamps, down to 0.23mm thick, will also reach even more restricted areas.



25µm (1mil) Gold wire