



Infrared emitters optimize Vacuum Brazing Machine

Diamond-tipped tools are used whenever very hard materials need to be machined, for example in the industrial machining of metals, ceramics and tough plastics. Tools made of polycrystalline diamond, known as standard PCD tools, are manufactured by connecting the PCD blades with a sintered hard metal underlayer to the actual tool (typically made of steel or carbide).

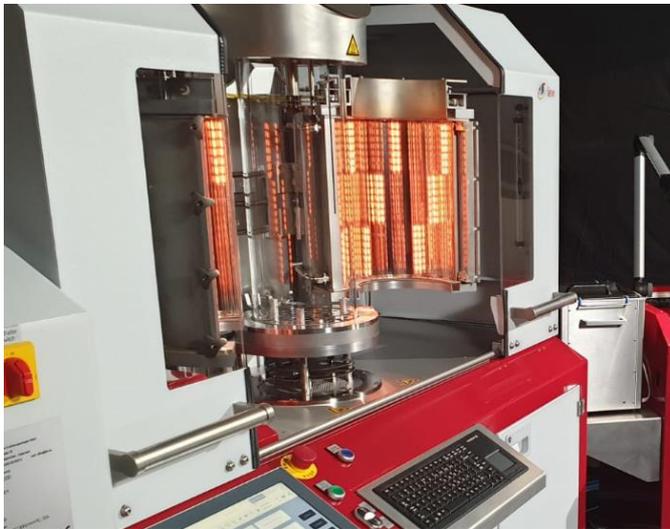
This can be done by means of induction heating or by flame heating. When using induction heating to atmosphere with the aid of a flux, only one cutting edge per soldering process can be connected. However, when connecting further cutting edges, the first ones are heated each time – as a result they can be damaged. This is known as graphitization of the PCD.

An alternative to this is to connect all the cutters with a tool simultaneously with an active solder, e.g. silver, copper, titanium (active metallic component) and indium under vacuum.

iew Induktive Erwärmungsanlagen GmbH in Gumpoldskirchen, Austria, examined the different possibilities of component heating under vacuum and found that conventional electric spiral heaters require much longer for the heating process than modern infrared emitters. These have response times within seconds and not only heat up significantly faster, they are also much easier to regulate.

However, during the test phase, it turned out that the use of one infrared emitter, which heats the entire heating zone, did not produce a homogeneous result. Consequently, it was decided to try heating in three zones (bottom, centre, top), which are individually PLC-controlled. This proved successful and the required homogeneity is achieved with a maximum of 5° C difference in the three zones.

Dipl.-Ing. Martin Schweikhart, Managing Director of ieuw is convinced of the new vacuum brazing system (VVBM200 Vertical Vacuum Brazing Machine) and the built-in Heraeus infrared emitters: "The longevity of Heraeus Noblelight's electric infrared emitters has brought the breakthrough. Other emitters had previously failed very quickly and had to be replaced." Short-wave infrared emitters from Heraeus Noblelight are very stable and durable thanks to the twin tubes, can be flexibly built and are very easy to control.



Features

- Production of PCD tools
- Vacuum brazing

Technical Data

- 3 different heating zones
- Individually controllable by PLC control
- Shortwave twin tube emitters
- Short reaction times, high longevity

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