CLAIMS:

1. An apparatus for delivering shielding gas during wire bonding of an electronic device, comprising:

a main body;

a through-hole in the main body which is sized for allowing a capillary tip of a bonding tool to be insertable through the main body when performing wire bonding;

at least one gas outlet on a bottom surface of the main body and located adjacent to the through-hole, the gas outlet being operative to direct an inert gas in a direction towards the electronic device; and

at least one gas inlet in the main body operative to supply the inert gas to the through-hole and the gas outlet.

2. The apparatus as claimed in claim 1, wherein the gas inlet comprises a gas channel connected to the through-hole, and gas paths that at least partially surround the through-hole.

3. The apparatus as claimed in claim 2, wherein the gas paths are in the form of a shower ring that encircles the through-hole.

4. The apparatus as claimed in claim 3, further comprising shower holes located on the bottom surface of the main body which are connected to the shower ring for ejecting the inert gas from the shower ring.

5. The apparatus as claimed in claim 2, further comprising gas nozzles located at an end of the main body located at an opposite side of the through-hole to where the gas inlet is located.

6. The apparatus as claimed in claim 1, wherein the gas outlet comprises an elongated slot formed on the bottom surface of the main body.

7. The apparatus as claimed in claim 1, wherein the at least one gas outlet comprises at least one nozzle formed on the bottom surface of the main body.

8. The apparatus as claimed in claim 1, further comprising an electrode rod that is arranged inside the gas inlet and parallel to the gas inlet, wherein the electrode rod terminates close to the through-hole.

9. The apparatus as claimed in claim 1, wherein the capillary tip has a sparking position inside the through-hole where it primarily receives inert gas supplied into the through-hole, and a bonding position outside the through-hole where it primarily receives inert gas supplied from the at least one gas outlet.

10. The apparatus as claimed in claim 1, wherein the gas inlet further comprises a first internal gas channel which supplies inert gas to the through-hole and a second internal gas channel unconnected to the first internal gas channel which supplies inert gas to the gas outlet.

11. The apparatus as claimed in claim 10, wherein a supply of inert gas to the first internal gas channel is controlled independently from a supply of inert gas to the second internal gas channel.

12. The apparatus as claimed in claim 1, further comprising a secondary gas conduit formed separately in the main body on top of the gas inlet and connected to the through-hole for increasing a supply of inert gas towards the through-hole.

13. The apparatus as claimed in claim 12, including a gas well connected to the secondary gas conduit which is located on top of the through-hole and which has a larger cross-sectional area than the through-hole.

14. The apparatus as claimed in claim 1, further comprising an outer ring substantially surrounding the through-hole and gas outlet, which is operative to generate a curtain of inert gas that substantially surrounds the capillary tip.

15. The apparatus as claimed in claim 14, wherein the outer ring includes a single uninterrupted slot on the bottom surface of the main body through which inert gas is expelled to generate the curtain of inert gas outside the main body.

16. The apparatus as claimed in claim 14, wherein the outer ring includes a plurality of nozzles or slots on the bottom surface of the main body through which inert gas is expelled to generate the curtain of inert gas outside the main body.

17. The apparatus as claimed in claim 14, wherein the outer ring is formed in the main body.

18. The apparatus as claimed in claim 14, wherein the outer ring is formed in a gas attachment that is detachably affixed to the main body.

Claims:

1. An apparatus for delivering shielding gas during wire bonding of an electronic device, the apparatus comprising:

a main body;

a through-hole in the main body which is sized for allowing a capillary tip of a bonding tool to be insertable through the main body when performing wire bonding;

at least one gas inlet for receiving an inert gas into the main body, and at least one gas outlet for discharging the inert gas from the main body, the at least one gas inlet and the at least one gas outlet defining a plurality of gas paths along which the inert gas flows, the plurality of gas paths comprising an inner gas path within the main body extending along the through-hole and an outer gas path external to the main body extending towards the electronic device on which the capillary tip performs wire bonding; and

a secondary gas conduit formed separately in the main body from the gas inlet and formed on top of the gas inlet for increasing a supply of inert gas towards the top of the through-hole.

2. The apparatus as claimed in claim 1, wherein the inner gas path at least partially surrounds the through-hole.

3. The apparatus as claimed in claim 2, wherein the inner gas path is in the form of a shower ring that encircles the through-hole.

4. The apparatus as claimed in claim 3, further comprising shower holes located on the bottom surface of the main body which are connected to the shower ring for ejecting the inert gas from the shower ring.

5. The apparatus as claimed in any one of claims 2 to 4, further comprising gas nozzles located at an end of the main body, the gas nozzles directing the inert gas along the other gas path.

6. The apparatus as claimed in any one of the preceding claims, wherein the gas outlet comprises an elongated slot formed on the bottom surface of the main body.

7. The apparatus as claimed in any one of the preceding claims, wherein the at least one gas outlet comprises at least one nozzle formed on the bottom surface of the main body.

8. The apparatus as claimed in any one of the preceding claims, further comprising an electrode rod for melting a bonding wire at the capillary tip when the capillary tip is positioned at the through-hole in the main body.

9. The apparatus as claimed in any one of the preceding claims, wherein the capillary tip has a sparking position inside the through-hole where it primarily receives inert gas supplied into the through-hole, and a bonding position outside the through-hole where it primarily receives inert gas supplied from the at least one gas outlet.

10. The apparatus as claimed in any one of the preceding claims, wherein the gas inlet further comprises a first internal gas channel which supplies inert gas to the through-hole and a second internal gas channel unconnected to the first internal gas channel which supplies inert gas to the gas outlet.

11. The apparatus as claimed in claim 10, wherein a supply of inert gas to the first internal gas channel is controlled independently from a supply of inert gas to the second internal gas channel.

12. The apparatus as claimed in any one of the preceding claims, including a gas well connected to the secondary gas conduit which is located on top of the through-hole and which has a larger cross-sectional area than the through-hole.

13. The apparatus as claimed in any one of the preceding claims, further comprising an outer ring substantially surrounding the through-hole and gas outlet, which is operative to generate a curtain of inert gas that substantially surrounds the capillary tip.

14. The apparatus as claimed in claim 13, wherein the outer ring includes a single uninterrupted slot on the bottom surface of the main body through which inert gas is expelled to generate the curtain of inert gas outside the main body.

15. The apparatus as claimed in claim 13 or claim 14, wherein the outer ring includes a plurality of nozzles or slots on the bottom surface of the main body through which inert gas is expelled to generate the curtain of inert gas outside the main body.

16. The apparatus as claimed in any one of claims 13 to 15, wherein the outer ring is formed in the main body.

17. The apparatus as claimed in any one of claims 13 to 16, wherein the outer ring is formed in a gas attachment that is detachably affixed to the main body.