

PacTech and DEK Join Forces for High-Volume Wafer Bumping Solution

For high-volume, high-speed wafer processing and bumping solutions, DEK and PacTech USA have formed a technology partnership that leverages the strengths of the two companies. By combining PacTech's electroless under bump metallization (UBM) processing with DEK's advanced mass imaging systems to create the solder bumps, users can implement a wafer-level, SMT-compatible flip chip assembly process.

PacTech USA is a sales and service subsidiary of PacTech GmbH, the world's leading wafer bumping and packaging subcontractor using electroless nickel/gold under bump metallization (UBM) and a variety of solder bumping techniques. Founded in 1995 as a spin-off of the Fraunhofer Institute and the Technical University of Berlin, PacTech provides full turnkey bumping process solutions: equipment, process technology transfer, bumping chemistry and wafer-level bumping services.

The fully automated, wet-chemical electroless production process assisted by PacTech's PacLine 2000 concept, a mass production equipment with a throughput of 150 wafers/hour, creates a thin (2-30m, typ. 5m) Ni/Au UBM layer on top of the wafer pad metallization at a significantly lower cost than electroplating. Wafer sizes range from four to twelve inches and pad metallization may be aluminum or copper. The electroless Ni/Au UBM process once combined with solder bumping techniques such as stencil printing, ball placement or as a tall UBM only meets the aggressive cost targets of smart card and smart label applications as well as the high reliability requirements of automotive microelectronic products and flip-chip-in-a-package applications such as CSP or wafer-level CSP.

DEK, the world's leading provider of advanced pre-placement manufacturing solutions, provides ultra-fine-pitch mass imaging technologies that work in conjunction with PacTech's wafer processing systems to create a low-cost, high-volume production process for wafer-level flip chip assembly. DEK's stencil printing platforms may be used to print solder paste patterns with a variety of solder alloys or, using DirEKt Ball Placement™, to place solder balls on PacTech-processed wafers.

DirEKt Ball Placement™ uses DEK's patented ProFlow® DirEKt Imaging technology to place solder balls as small as 0.3 mm in diameter onto wafers with fine-pitch accuracy and first-pass yields consistently better than 99%. The integrated process begins with flux deposited at each interconnect site using DEK's sophisticated flux imaging technology.

The fully enclosed ProFlow® ball transfer head, which can hold up to 50 million solder balls, guides each solder ball directly to the surface of the stencil with minimum friction. A controlled placement force seats each ball gently but firmly in the flux, enhancing assembly integrity during downstream handling and reflow. Cycle time is fast, consistent and independent of I/O count. The excellent coplanarity that is achieved optimizes electrical and mechanical performance.

PacTech USA is now offering the electroless Ni/Au UBM and mass solder bumping processes at its new facility in Santa Clara, California, where the company provides

bumping and technology services in a 2000-square-foot Class 10,000 clean room. In addition, PacTech USA offers equipment sales, process technology transfer, training and support.

For more information, contact DEK at www.dek.com or PacTech USA at www.pactech-usa.com