



QP TECHNOLOGIES

July 2023

### **Manufacturing Process and Capabilities**



### **Our Manufacturing Area**

You know QP Technologies as a full-service microelectronics packaging and assembly provider, but you may not know about the full range of capabilities we offer our customers and partners. Our expertise spans a wide selection of off-the-shelf and custom packages – including our open cavity and open-molded plastic packages – and all types of assembly technologies, from wirebonding, flip-chip, and chip-on-board to chiplets, stacked die, and SIPs, to name a few.

In addition, we offer an array of wafer-preparation services, such as wafer and die thinning, dicing, die sort, and pick-and-place. One of our fastest-growing offerings is our substrate design and fabrication business. We can design substrates for a host of packaging solutions, working with such advanced materials as graphene, FR-5 and ABF, and develop turnkey solutions for substrate-based assemblies.

We recently created a video tour of our manufacturing line, illustrating all the processes we support. Click the button below to watch it on our website!

[Click Here](#)

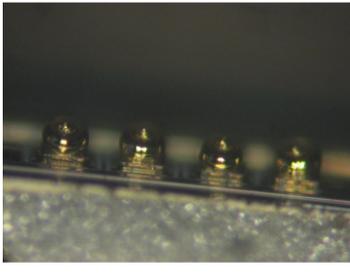
### **Technology Focus**

#### **Stud Bumping Broadens Flip-Chip Applications**

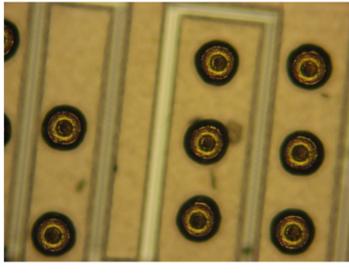
Flip-chip assembly is a key technique for microelectronic device applications that require a small footprint and short interconnects, e.g., microBGA, 3D packaging, optoelectronic bonding and assembly, sensors, and chip on glass. Face-down (flipped) electronic die are electrically connected to organic or ceramic circuit boards using conductive bumps on the chip bond pads. It offers improved performance, reliability, cost, and use of board space compared to face-up wire bonding.

Another approach that expands flip-chip’s applications is stud bump bonding. Stud bumping uses gold bumps with gold-to-gold interconnect. As with wire bonding, the ball is bonded to the die pad, but there is no second wire bond to a lead. Because the wire is terminated after the first bond, there is only a bump on the die pad. This bump can be left as is with a small tail, or coined to flatten the top of the ball. The die is then flip-chipped onto a substrate using a thermocompression, or thermosonic, bonding process to complete the interconnect.

Stud bumping at QP Technologies is done at on a single die, or in an array of die that can be singulated after bumping. The wafer/die does not require pre-treatment such as under bump metallization (UBM) or redistribution layers (RDL), which are needed for other wafer bumping techniques. Since the perimeter of the die pads can be bumped, you can avoid rerouting the circuitry and redistribution, which enables significant cost savings. The images below illustrate results from just a couple of many stud bumping projects we’ve developed.



AU Stud Bumped Die (Side View)



AU Stud Bumped Die (Top View)

QP Technologies can meet your needs for stud bumping using our leading-edge automated wire bonding equipment. Click the button below to connect with us for your next assembly project.

[Contact us](#)



#### **Employee Spotlight**

##### **Kristina Ner, Material Handler**

Last September, we profiled Crystal Ramirez, who joined QP Technologies in early 2022, highlighting her role as Material Handler focused on logistics and shipping. Our rapid growth and her stellar performance combined to secure Crystal’s recent promotion to the role of Material Supervisor – congratulations to Crystal on this well-deserved advancement!

Crystal’s moving to her new position created an opening for a new material handler. In this issue, we’re excited to introduce you to Kristina Ner, who has taken on this role. While new to the position of Material Handler, Kristina is a 13-year veteran of QP Technologies – first, as a part-time employee, then becoming a full-time team member in 2015, when we were acquired by our parent company, Promex Industries. She began as a QA inspector for our open-molded plastic packages (OmPP), then spent several years in the shipping department, followed by working in material receiving/releasing.

In her current role, Kristina is one of the key members of our materials team. She is instrumental to ensuring job materials are received and available for production and that all customer material is handled with care while at our facility. Kristina takes care of inventory, maintaining the list of the customer’s materials to ensure we have everything needed for their project. When we’re building parts for customers, she logs the wafers and die for the job into the inventory system, keeping them bagged and tagged in a nitrogen box.

Throughout her day, Kristina stays in close contact with purchasing, production planning, and other teams vital to our manufacturing operations. She enjoys her job and the family feel to the environment that we create – as Kristina notes, we all work closely to help each other succeed. Because we are growing at a rapid pace, she’s training other team members in her various tasks so that she has backup for taking time off.

As a single mom of a college-aged son, Kristina enjoys spending time with him on weekends. She notes they enjoy going out to dinner and just hanging out – Netflix and chill is popular in their house. She loves living in the San Diego area, as seen in the background of her photo, and plans to remain here and at QP Technologies for many more years to come!

### **News and Announcements**

#### **ECTC:**



At ECTC 2023 in Orlando, Florida, Dick Otte, CEO of QP Technologies and our parent Promex Industries, gave a presentation during a special panel session on the CHIPS Act. The first half of the session was taken up by the panel presentations, with the second half devoted to audience and moderator Q&A. Many in the industry are evaluating the impact of the CHIPS Act, how it will affect them and their institutions, and how they may benefit from CHIPS Act funding. To view Dick’s presentation, click the button below.

[Read Dick’s Presentation](#)

The CHIPS Act also took center stage in a podcast interview with 3D InCites during ECTC. Dick and Joshua Dillon of Marvell talked about the key panel session on the special session in which they had participated. Francoise von Trapp of 3D InCites attended the special session and had some great questions for Dick and Joshua. You can listen to the full podcast [here](#); Dick’s portion begins at 13:55.

#### **Blog Post:**

Dick recently authored a blog post for Promex looking at technology challenges associated with manufacturing and assembly of medical and biotech devices. This informative blog provides insight into heterogeneous assembly – what it is, how it works, and its advantages over standard assembly to market quickly, with the terms “converged devices.” We reposted it on the QP Technologies site, and you can read by clicking the button below.

[Read our Blog Post](#)

### **Upcoming Events**

- iMAPS CHIPcon (formerly Advanced SIP Conference) - July 24 -27, San Jose, CA
  - Tabletop exhibitor and break sponsor
- iMAPS International Symposium on Microelectronics 2023 - October 3-5, San Diego, CA
  - Exhibitor and premier sponsor

#### **About Us**

QP Technologies is a leading provider of microelectronic packaging and assembly, wafer preparation, and substrate design and development services. We leverage proven technologies developed by our skilled staff, and we work closely with you to get your products to market quickly, with the highest quality prototype and production volumes.



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