



QP TECHNOLOGIES

# February 2023

## QP Technologies Spring Open House Event:

March 22, 2023  
5:30PM - 7:30PM



### **Join us for our Open House Event!**

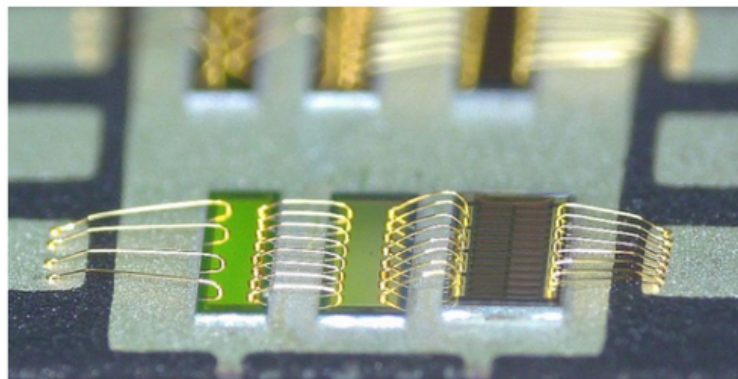
Tour the facility, meet with our engineering and sales teams and explore the full range of our product and service offerings while enjoying FREE appetizers and drinks!

[RSVP HERE](#)

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## Technology Focus:

### **Solving Power Semiconductor Packaging Solutions**



Power semiconductor devices are vital to automotive, consumer electronics, renewable energy, and other industrial applications due to their ability to handle high voltages and high power. Traditional power semiconductor devices include metal-oxide-semiconductor field-effect transistors (MOSFETs), insulated-gate bipolar transistors (IGBTs), and power bipolar junction transistors (BJTs).

Today, compound semiconductor (CS) technology is essential to support new circuit designs for a variety of semiconductor devices, including RF Devices and power electronics. Key materials for these markets are silicon carbide (SiC) and gallium nitride (GaN), whose wide-bandgap structure minimizes power loss and enables higher power efficiency than silicon alone. GaN-on-silicon transistors, being much smaller than their silicon counterparts, deliver cost benefits both for device makers and for end-product developers.

Typically operated in harsh, high-temperature, high-frequency environments, power devices require equally robust packaging and assembly solutions that can accommodate compound semiconductors' unique properties. If you have a power device design and need to develop a packaging option, QP Technologies can collaborate with you – first, to develop and fabricate custom packages or substrates to meet your specifications, and then to complete the assembly process using your wafers or die. This includes carefully thinning and polishing your SiC or GaN-on-silicon wafers and then precisely dicing them utilizing our state-of-the-art DISCO saws, which ensure the delicate CS materials aren't damaged during the process.

We work with customers developing a variety of power semi devices, including unique technologies like double-sided bidirectional power switch technology, called B-TRAN™, designed and developed by Ideal Power. We collaborated with them to develop the robust packaging approach they needed to bring B-TRAN devices to commercial fruition. To download our white paper, please click below.

[Download our Whitepaper](#)



### **Employee Spotlight**

#### **Marthus Victoria, Sales Engineer**

When you're ready to work with QP Technologies on your project, you engage with one of our stellar sales engineers. In this issue, we spotlight Marthus Victoria, who recently returned to the QP Tech fold after a brief stint back to his environmental screening and test roots, to provide his sales expertise and support for QP Tech, as well as for our parent company Promex Industries. In his role, Marthus is the first line of contact for his customers.

He reviews the content they provide regarding what they need, and looks at documentation to ensure we can support it, and then gathers team members to discuss how to make it happen. Supply chain issues easing up and lead times shortening, depending on the materials needed, are contributing to this process.

Marthus says his favorite part of the job is helping customers bring their ideas to fruition. Customers looking to do a first engineering run or prototype often will have an out-of-the-box idea about the packaging technique, and Marthus enjoys collaborating with them to make the idea a reality. He frequently works with universities, tapping into their think tanks for future products, and he enjoys finding ways to leverage the unique packaging ideas that QPT creates, adding them to the repertoire of solutions he can offer other customers.

While the regions Marthus serves are primarily Southern California, Arizona and Southeast Asia, the sales team supports one another and will share territories if it best serves the customer. He notes that this approach strengthens the team and prevents competitiveness internally. As Marthus notes, the amount of repeat business QP Tech receives is a testament to the quality of our sales and service teams.

Marthus is not just enthusiastic about building and sustaining customer relationships. He's also an avid outdoorsman with a special passion for bass fishing – his biggest catch to date weighed nearly 11 pounds! He has also recently taken up surf fishing and would like to learn to fly fish. Perhaps he'll get to do some fishing on his honeymoon when he and his fiancée tie the knot later this year – we wish them all the best!

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## **Wirebonding Capabilities**

### **Aluminum Wirebonding Essential for Power Electronics**

Power electronics play an important role in a range of military-aerospace, automotive, consumer and industrial devices, as well as in the field of renewable energy. Key to power electronics is wirebonding technology.



We have leading-edge bonders installed on our manufacturing line from Kulicke & Soffa (K&S) and from Hesse Mechatronics. The newest are the Hesse systems – a Bondjet BJ855 fine wire wedge bonder and a Bondjet BJ939 heavy wire wedge bonder. With our portfolio, we can perform gold, aluminum, copper and silver wirebonding, as well as heavy-wire, wedge and ball bonding, and ribbon bonding.

Typical applications include RF and high-frequency components, chip-on-board (COB), multichip modules (MCM), hybrids, optical and automotive electronics. Our heavy-wire aluminum wedge bonding capabilities include 127 $\mu$ m (5 mil), 254 $\mu$ m (10 mil), 381 $\mu$ m (15 mil) and 508 $\mu$ m (20 mil) diameter wire. The advanced aluminum wire wedge-bonding capability provides an important advantage, particularly when working with customers in the mil-aero market.

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## QP Tech News/Events

### Recent Articles\_

In January, QP Technologies published two articles in industry publications that highlight our business and technology expertise.

- *Semiconductor Packaging News*: Our COO Ken Molitor authored an industry viewpoint piece recapping our successes in 2022 and anticipating what 2023 holds in store. Heightened demand for our expertise with advanced laminates and compound semiconductors bodes well for the year ahead. To read the full viewpoint, click [here](#).
- *MilAero007*: The publication's January issue features an article from Sam Sadri, senior packaging engineer, on the benefits of our Open Cavity Plastic Packaging (OCP) technology for mil-aero applications. To read the full article, click [here](#).

### Upcoming Events:

#### iMAPS Device Packaging Conference

March 13-16, Fountain Hills, AZ – Booth 43

- Paper presentation: "Optimizing New Power Switch Technology Using Flip-Chip Assembly," Wed., March 15, 5:30 p.m.



#### GOMACTech

March 20-23, San Diego, CA – Booth 302

- Poster Presentation: "Optimizing New Switch Technology for Mil-Aero Applications" Thurs., March 23, time TBD
- During GOMACTech, QP Technologies will be hosting an open house at our Escondido facility on March 22. For more details and to register, click [here](#) or on the banner above.





## Compound Semiconductor Know-How for Custom Power, RF and IC Packaging and Assembly

From renewable energy sources, RF antennas, and electric vehicles, the power semiconductor market is on the rise. Click to learn more on how QP Technologies was able to provide custom DBC packaging solutions to Ideal power's exclusive double sided BTRAN power switches in our whitepaper below.

[Download our Whitepaper](#)

### 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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