



QPTECHNOLOGIES
MICROELECTRONIC PACKAGING & ASSEMBLY SOLUTIONS

January 2022 Newsletter

Welcome to our first issue of 2022. As you know the pandemic and its attendant challenges are still with us due to the omicron variant. Like the industry overall, we're seeing a temporary impact from the latest strain, but we're navigating through it as smoothly as possible, thanks to the stellar efforts of our entire team. Everyone, from engineering and sales to operations and customer service, is working to keep on top of our customers' needs. We're going above and beyond and working overtime in order to meet deadlines and minimize the impact to our customer as much as possible. We appreciate the close collaboration with our customers to work together to meet their schedules. Going the extra mile is in our DNA at QP Technologies, so the current landscape has only elevated our focus in this regard. We are encouraged, as I'm sure you are, by reports that the coronavirus is becoming less lethal, and we look forward to continued success for all in 2022.

News Highlight: QP Technologies' COO in Semiconductor Digest

The December issue of Semiconductor Digest featured its annual roundup of executive commentaries on their expectations for the year ahead. In his contribution, our COO Ken Molitor looks at the growing importance of bringing more chip manufacturing onto U.S. shores – a trend that has been escalated by the global pandemic, now in its third year. As he notes, “Concentrating more manufacturing in the U.S. enables better control over the supply flow, with fewer variables to navigate.” And it creates significant opportunities for companies like QP Technologies – with our own facility in Southern California, our stable supply chain, and our ITAR compliance and ISO certification, we’re well positioned to continue our strong growth path.

To read the full article, click [here](#).

Forecast

For much of its history, governments have realized that if they want to control their fates, they need to control their microelectronics technology. There are problems that will not be solved at the business level and will require steady and thoughtful attention from national leaders formulating government policy.

Growth had 1 brings challenges. Finding the right people in a tight labor market, finding materials and supplies in a disrupted supply chain, finding capital when the technology is leading in field. The cost of a new fab is at least \$10 billion or more, and the cost of back-end processes, assembly, and test are growing rapidly as advanced packaging technologies become more common.

For QP Technologies, as for many SEMI and semiconductor equipment companies, these challenges hold opportunity. The growing complexity of back-end processes, from advanced packaging through circuit board assembly, adds diversity in the sector and of our automated optical inspection technologies. Manufacturers use our Multi-Defect Detection Systems™ (MDDS™) systems to inspect everything from the microscopic scale bumps used in fine vertical connections between stacked dies and schematics, to several inch lighting arrays, while parts in SMT applications. Circular cross-sections, and much more. Our proprietary MDDS Technology inhibits not broken-based distortions from chip components and as such for highly accurate inspection and metrology, faster than alternative solutions. Our next generation is really our algorithm.

Our other 1 brings technology, designed for front-end process equipment optimization, reveals around a line of sensors configured in raster and interlaced formats. These sense vibrations, position, frequency, resistance and more, sending real time data wirelessly as they pass through a process tool. A 300mm wafer may be worth \$100,000 or more

by the time it is finished. Our Value-Stream-Map and Real-time-Map products help manufacturers avoid in-process losses and misprocessing, plus they increase end options.

Whether it is with our MDDS-enabled sensor technology solutions, or our Value-Stream-Map software tool, we'll continue to focus on enabling our customers to recognize higher yields, improved processes, and increased throughput.

Growth in 2023, Though Maintaining Signs Fluctuating.
Dr. JAMES SHERRILLINI,
Founder and CEO, Randus
The semiconductor industry remains poised for growth in 2023 as global demand for chips continues to increase unabated. Innovation, notably with new chip designs, and in particular in the areas of AI and ML, will be on the rise. However, warning signs are flashing as the industry will experience further capacity constraints.

Let's explore further what we should expect in the coming year. Ongoing business challenges and disruptions caused by the pandemic remain. Further industry consolidation. Smaller companies are in a weaker position, providing a further opportunity for large companies to continue under the banner of their smaller rivals.

Capacity constraints are here to stay, at least for a while. While foundries like TSMC are working hard to create more capacity, it will take time. The backlog of 2023 will spill into 2024, and we expect to see capacity constraints across the entire supply chain all the way through the end of 2023.

As the saying goes "Necessity is the mother of invention." The best innovations happen during times when the odds have been stacked against the industry. Capacity constraints and other issues in the semiconductor industry will, therefore, inevitably lead to new innovations across the entire discipline. AI and ML techniques will remain everyone's darling in the semiconductor industry. More innovations in these areas, both from a theoretical and an implementation side, should optimize, refine, and accelerate chip's architecture and its design and the design flow next scenarios.

Chips and electronic devices are an important part of modern life and will continue to be. Challenges and disruption are predicted in both design and manufacturing in 2023. Further into the future, the health and prosperity of the semiconductor industry remains strong.

The Semiconductor Workforce Shortage Requires an Investment in People: Employees, Partners and Future Generations
BRIAN L. MCNEIL,
President & CEO of VSTAR Global Services
As we head into 2023, we know that the semiconductor shortage will remain prevalent. After the "perfect storm" of events that led to the shortage including the pandemic, an increase in demand for consumer goods and automobiles, and even some of the worst weather we've seen there's no telling where 2023 will take us.

What we know for certain is that investment in the right people has never been more important, and finding and retaining employees will remain a key trend next year. While we are all aware of and recognizing the semiconductor shortage, a lesser-known reality is that we're facing an aging workforce. The shortage of talent we're seeing in this industry can impact every corner of your business—especially at a time when we are all feeling the most market demand for chips. According to the Semiconductor Industry Association's Chipping In report, published in May 2021, only 34% of the semiconductor industry is under age 40, while over 30% of the workforce is age 50 or older.

Compounded by the fact that we're already seeing the "Great Resignation" means that it's a job market, and as an industry, we have to make great strides to make ourselves for our field and make it a welcoming environment for people of all backgrounds. It's proven that diverse companies are more competitive and profitable. Tapping into underrepresented engineers—including women and minorities—should be a priority, as they currently make up only 10.5% of the semiconductor workforce, according to the Global Semiconductor Alliance. As an industry, we must come together as never in STEM education and provide all the semiconductor industry has to offer to younger generations.

Investment in people, partners that can provide comprehensive next life cycle services will also be in high demand next year. Using our networked talent that can serve as an extension of your internal team will become the norm for the foreseeable future, and companies that can provide specialized asset relocation, facility or equipment services will be well-positioned to meet industry needs. With these critical partners, organizations can be more resilient, nimble and ready to tackle unexpected challenges.

Forecasting: Will Rise Supply Challenges, Revitalize Chipmaking
KEN MOLITOR, Chief Operating Officer, QP Technologies
(San Jose, CA) Much of what we have read about the current environment in the chip industry is focused on the negative. Water beds are full and are struggling to absorb moderate increases in demand, particularly from the automotive sector, and chipmakers are struggling to buy every component in the face of the prolonged chip shortage.

But there are positives to this landscape. First, the industry trend is picking up steam. Over the past year and a half, we've seen heightened activity on the part of chip OEMs and foundries as they build or expand facilities here in the U.S. While these plants obviously didn't arise overnight, the COVID-19 pandemic accelerated challenges that significantly disrupted the global supply chain and the chip manufacturing industry, driving accelerated onshoring/reshoring activity. Although design are picking up, the industry is still running behind, and companies are working to maintain the risks in their supply chains by bringing more of their manufacturing capabilities to the U.S.

Second, continued semiconductor assembly and test (OSAT) firms are also full—many of these companies are located offshore, particularly in Asia. This creates expanded opportunities for the established domestic IC packaging and assembly providers, as such business, we've seen steps at QP Technologies to ensure the security of our own supply chain, and the strong surge in business that we've seen does no sign of letting up. Our capacity needs have increased as well, and our headcount has grown accordingly.

In general, the desire to increase dependency on onshore suppliers is becoming the norm. Concentrating more manufacturing in the U.S. enables better control over the supply flow, with fewer variables to navigate. This is a plus for companies that are fully diversified, as well as ITAR registered. ITAR (the International Traffic in Arms Regulations) is a set of government regulations related to defense exports, and federal regulations prohibit this work from being performed offshore. Thus, compliance is a key benefit for U.S.-based suppliers.

The year ahead is somewhat difficult to predict since we haven't fully put the pandemic behind us, but given these trends, I believe it will be a strong one for our business and for our industry overall.

Research: Appreciation for Differentiation Sweeping the Semiconductor Industry
MICHAEL LESTER,
President and CEO, WHITE Design Automation
A renewed appreciation for differentiation appears to be sweeping through the semiconductor industry through the utilization of sources—tech giants only recently stepping into the chip developer space with their own custom-made chips. Apple, Amazon, Facebook, Microsoft and Intel, for example, are building up portfolios of in-house developed IP systems and differentiated architectures to their competitors, producing higher-level, premium, flexible custom chips for autonomous driving, cloud, AI, networking and other applications.

There's also exploring new business models, partnerships and other forms of differentiation to retain their competitive edge. One example is partner-driven, premium, flexible custom chips for autonomous driving, cloud, AI, networking and other applications. These selling to work with these tech giants are rewarded with strategic agreements. In exchange, they are providing both customized at higher levels of abstraction and tailored to specific applications, allowing companies that compete will identify and replicate a design flow or implementation technique.

Typically, generic chip design point tools have features that more industry standards and are meant to apply



Dr. James Sherrillini
Founder and CEO, Randus



Brian L. McNeil
President & CEO of VSTAR Global Services



Ken Molitor
Chief Operating Officer, QP Technologies

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Employee Spotlight: Brian Riley, Sales Engineer



QP Technologies is fortunate to have a strong bench of team members whose industry knowledge and expertise is invaluable to building strong customer relationships. This month, we are spotlighting Brian Riley, one of our top sales engineers.

Brian joined our parent company, Promex Industries, in 2014. Five years later, he transferred to QP Technologies (called Quik-Pak at the time), and is primarily focused on our customers, although he still works with some Promex accounts. Brian has more

than 30 years of semiconductor industry experience, having worked with companies that provided leadframes and ceramic packages, as well as large Asia-based OSATs and onshore subcontract assembly providers.

Born and raised in Northern California, Brian has also lived in the Pacific Northwest and Spain. He is a veteran, having served in the U.S. Air Force, and he holds a Bachelor of Business Administration degree from Idaho State. His passion for two-wheeled vehicles includes racing motorcycles (see recent photo) and restoring vintage racing bikes, such as British BSAs and Swedish Husqvarnas.

Show Highlight: iMAPS Device Packaging Conference March 7-10



The new year brings new opportunities to network and share information with our colleagues and customers. The next big packaging-related event is the 18th iMAPS Device Packaging Conference (DPC), slated for March 7-10, 2022, at the WeKoPa Resort and Conference Center in Fountain Hills, Arizona. We are excited to connect everyone in person; while we recognize that things are fluid with respect to the current Covid variant, we're hopeful

QP Technologies is both an exhibitor and a silver-level sponsor of this year's event, which is always an exciting opportunity for packaging professionals to hear the latest developments in everything from 3D ICs, SiPs and MCMs to flip chips, FOWLP and chiplets – and the benefits of these approaches for a wide range of markets and applications.

For more information or to attend, please click [here](#).

About QP Technologies

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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