Editor's Word

What a waste

Back in the 1990s I was the editor of a magazine focused on surface mount and through hole assembly lines. At the time, discussion began around the subject of recycling component reels and trays. A raft of ideas was put forward from biodegradable and recyclable materials to building a specific supply chain for their reuse.

Over 20 years on and here I am staring at a pile of injection moulded 3D filament reels and wondering what to do with them. It looks like little has been learned.

However, it doesn't stop there. For the design projects I work on, I buy materials and components from a range of sources and my universal complaint is that they are all over packaged. I appreciate that electronic components need special care and attention due to their electrical and mechanical fragility.

The problem lies not in the way the individual components are packaged but the way they are repackaged for aggregation and delivery. I sometimes look at the pile of plastic bags and boxes on the floor and wonder what process was used to generate that amount of waste.

Given that every item of unnecessary packaging is a brake on the world's environmental objectives, this has to be an area of potential competitive advantage and an easy win where distributors that address waste at a new scale are raised to the top of the distribution hierarchy for their efforts.

I guess these days such moves are essentially voluntary but for how long? Best be ahead of any future legislation.
Greater access to power semiconductors and discretes

Newark has strengthened its global partnership with Toshiba Electronics Europe, resulting in a significant product line expansion and increased stock holding. The product range available from Newark will grow to 800 devices, increasing to more than 1,000 items by 2023. New products will be introduced throughout 2022 and beyond.

The enhanced portfolio will focus on Toshiba’s optic couplers, opto (MOSFET) relays, low- and high-voltage power MOSFETs, discrete IGBTs, small signal diodes and transistors, voltage regulators, logic and motor control solutions.

Newark’s VP of product and supplier management, Simon Mawthorpe, said: “Our customers can now enjoy enhanced availability of Toshiba products coupled with fast access to new-to-market technologies. We are committed to regularly launching new devices to enhance our existing portfolio from Toshiba.”

Toshiba’s senior manager, distribution sales, Ian Wilson, added: “In these times of global shortage, it is important to remember that we need to strengthen our support to meet the needs of the engineering community who continue to design, qualify, upgrade and repair with the latest components.”

www.newark.com

Expanding power system offering

Sager Electronics and Sanyo Denki have announced the addition of Sanups power systems to the Sager portfolio. The products include uninterruptible power supply systems, plus renewable energy inverters.

Sanyo Denki America’s national distribution manager, Kathleen Whitaker, said: “Sager Electronics’ specialized group, Sager Power Systems, has been a leading distributor of Sanyo Denki’s thermal management products, and we are excited to work with them and their customers to deliver power systems solutions with our Sanups offering.”

Sager Electronics’ supplier marketing and product manager, Andy Goldring, added: “Sanyo Denki is a world-class manufacturer and a great partner to Sager. With this addition, Sager now offers the complete line-up of Sanyo Denki products, including the cooling systems products San Ace as well as their servo systems and motor products Sanmotion. We are excited to offer Sanyo Denki’s high-quality, next-generation UPS products to our customers.”

www.sager.com

Growing portfolio of sensor products

Mouser Electronics is growing its portfolio of sensor solutions in response to demand from an increasingly diverse range of applications. As examples, the distributor is stocking the most recent environmental sensors from manufacturers like Sensirion, plus automotive-qualified sensors from ams OSRAM and a new self-learning AI smart sensor from Bosch for use in wearables and hearables.

Bosch’s BH1426GA self-learning AI smart sensor integrates a six-axis inertial measurement unit, 32-bit customer-programmable microcontroller and software functionality in a system-in-package (SiP) solution.

Sensirion’s SEN5x environmental sensor nodes are optimised with multiple sensing parameters, helping manufacturers save R&D, BoM and assembly costs by providing an all-in-one sensor solution that replaces multiple environmental sensors.

Ams Oraso’s AS5172E high-resolution magnetic position sensor has an AEC-Q100 Grade 1-qualified construction and offers durable performance for automotive applications such as brake and gas pedals, fuel level measurement systems, steering angle sensors and contactless potentiometers.

www.mouser.com

1887

Emile Berliner receives the patent for the gramophone.

James Blyth builds the first electricity generating wind turbine.

Herman Hollerith receives a U.S. patent for his punch-card calculator.

Sager opens its first location in Boston, Massachusetts.

All great things begin with a single step — or in Sager’s case a single storefront.

Recognized as the first distributor in the industry, Sager opened for business one hundred thirty-five years ago in downtown Boston, Massachusetts, servicing the growing interest in radio technology.

Under the vision and leadership of Joe Sager, the company established a thriving business that put the needs of its customers first. Since then Sager has grown into a North American distributor of interconnect, power, thermal and electromechanical products and a provider of custom design and manufacturing solutions.

And after 135 years, Sager still operates just as Joe envisioned — based on a commitment to exceeding expectations and keeping the customer at the center of its business philosophy.

Sager Electronics, a TTI Inc., Berkshire Hathaway Company

www.sager.com | 1.800.724.8370
Supporting aerospace supply chain demands

Ametek Engineered Interconnect and Packaging has announced plans to support growing supply chain demands in the commercial and aerospace sectors by expanding the presence of its Hermetic Seal and Sealtron brands.

Division VP and business unit manager, Liam Sharahan, said: “While the aerospace and defense sector experienced an unprecedented disruption due to the pandemic, we see it being one of the most high-profile markets globally and within the context of the US economy. Together, our brands supply the sector with a full suite of hermetic connectors capable of withstanding the most extreme conditions.”

Ametek EIP expanded its capabilities in anticipation of rapid increases in production of commercial and military aircraft, including all electronic and avionics prototypical.

www.ametekinterconnect.com

Online store ships customized timing in 48-hours

STime has opened STimeDirect, said to be industry’s first online store to ship fully-customized precision timing solutions, with most shipping in 48-hours. The system’s speed and flexibility are designed to eliminate delays and accelerate revenue for electronics companies. Thanks to STime’s programmability, customers can get exactly what they want.

STime executive vice president of marketing, Piyush Sevalia, said: “In a supply constrained market, hardware engineers often wait up to 20-weeks or longer to get the exact timing specifications required. With our unique programmable architecture and STimeDirect, engineers can configure their exact specification online, get the part shipped in 48 hours, and deliver the best system performance, on-time and reliably.”

“STimeDirect provides an end-to-end e-commerce experience, where engineers can configure, compare, purchase and get immediate online or in-person support. STimeDirect is a key step to significantly grow STime’s customer base by 2025.”

A part number generator tool allows configuration of up to 10 timing specifications.

www.sitime.com

Manufacturing quality automotive products

Bel Power Solutions’ Slovakia factory has received IATF 16949 certification, the International Standard for Automotive Quality Management Systems.

Bel Fuse’s chief financial officer, Farouq Tuweiq, said: “The certification ensures that power companies will provide customers with consistent, good quality products and services, with a goal to meet customer requirements efficiently and effectively while increasing customer loyalty. This is also an opportunity for Bel to expand into new markets, as some sectors and clients require IATF 16949 before doing business.”

With this certification, Bel can increase its presence and commitment to the automotive and e-mobility industries and gain global recognition as a reputable supplier while continually improving products and customer satisfaction, as many automotive customers now require IATF 16949.

The certification emphasizes product expansion, improving power systems, risk management, and supplier management. Example benefits of certification include prevention detection, waste reduction, product safety, risk management, contingency planning and management of sub-tier suppliers.

www.belfuse.com

It’s The Human Component That Sets TTI Apart

Sure, we warehouse more than 850,000 part numbers, but it’s the Human Component that gives TTI an advantage others can’t touch.

TTI Specialists add product knowledge, purchasing assistance, industry trends, design expertise, supply chain updates, the newest technology and more.

See what you’d look like as a human component at ttipartsportrait.com

Natalie Jozefiak
Business Development Manager

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A Berkshire Hathaway Company

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The Electronic Components Specialists
A Berkshire Hathaway Company
Considerations for component sourcing in robotic applications

Digi-Key Electronics’ partnership marketing manager—strategic programs, Eric Halvorson explores key components buyers will need to consider in robot applications

Incorporating robots and sourcing the necessary components requires planning, preparation and research. Robots are available in many shapes and sizes with each one providing different strengths depending on the application. Plus, there are components and equipment to consider.

End-of-Arm-Tooling (EOAT)

End-of-arm-tooling (EOAT) is a robot’s most important part. This is where the work is performed. Selecting the right components here determines the robot’s effectiveness in its application. EOAT can mean grippers, welding guns, spray guns, grinders, waterjet cutting and more. Basic EOAT products can be purchased off-the-shelf, while highly customized products can be designed by the manufacturer to customers’ specifications.

Vision Inspection Systems

In the past, robots were programmed to move from coordinate-to-coordinate without the ability to move from a programmed path and unable to adapt to products not where the robot expected them to be. Today, robots are equipped with one or more computer connected cameras, letting the robot react to products that vary in shape/size and located outside the pre-programmed location. Vision systems can detect color, form, shape, dimensions, temperature and more. They are widely used for sorting and quality inspection with much greater accuracy than human counterparts. Robot vision systems are versatile and flexible, so choosing the appropriate vision system for an application can be difficult. Exploring a few basic considerations can narrow down the search:

- 2D vs 3D: If the application needs to simply pick up a part and move it to another location with high repeatability, then 2D is most likely the best option. However, if the robot needs to distinguish orientation and even select from an assortment of parts, then 3D is probably the best bet. Another consideration is processing speed. While some cameras can process images internally, if the robot requires fast part identification and operates quickly to move product from one place to another, an external processor is likely required.

- Camera: Different types of cameras are required based on the machine vision’s role, which might include inspections such as quantity, foreign matter, defects, dimensions or position. There are many safety considerations when installing a robot. The following is a sample of products available to protect workers and equipment.

Safety Considerations

In collaborative environments, workers will be walking into and around the arc of the robot’s swing. In these instances, zones are required to determine the robot’s speed. These are frequently configured with a safety scanner, which uses a laser to detect objects within a 360° span. Light curtains detect if an obstruction, such as a person’s arm or leg, has entered a field that may cause injury. Presence sensing devices, such as mats and operator presence triggers, determine if a person is in an area that may be dangerous and will shut down the robot to prevent injury. There are many considerations when sourcing robotic components. Digi-Key carries leading automation brands, robot kits and robotic components. The company is looking forward to seeing what products leading automation suppliers bring to market, as well as implementing many of these innovations in its own operations to enable future scalability and success.

digikey.com
Electronic component distributors will be among the biggest winners in the high-tech world during this reporting season with sales and profits expected to barrel through estimates on a spike in demand for their services over the last year. A review of analysts' forecasts confirms publicly traded distributors will individually report double-digit revenue increases for the second quarter and even the entire year.

Distributors typically perform well during times of high growth and supply shortages as carriers OEMs desperately try to manufacture products by humming up available inventories or commit to premium-priced supply agreements. Inventories acquired by distributors ahead of explosive growth are often sold at high prices, buoying sales as well as margins. That has been the case thus far for all component distributors with supply chains benefiting even more as OEMs scrambled around for components headed into key economic sectors like automotive, IoT, data and networking requirements, according to industry executives.

“Our experience and expertise allowed us to identify supply chain issues early on, and as a result, the investments we made in inventory during the course of the year,” said David Egan, CFO at RS Group, while presenting the company’s fiscal 2022 results. “Working closely with our suppliers to secure and invest appropriately in greater levels of inventory provided strength in availability and drove performance of the top line.”

In May the specialty distributor reported revenue surged 19 per cent in the fiscal year ended March and noted in an update earlier in July that sales remained strong in the June quarter although they were trending down amid changes in the macroeconomic environment and increasing inflationary pressures, according to CEO Lisondra Ruth, in a statement. “Given our strength in the first quarter, we now expect our full year revenue and profit to be slightly ahead of current consensus estimates. Like-for-like revenue (2018) per cent, though seasonality is currently stronger than in recent years.”

The market is reportedly weakening but distribution growth is still expected to be strong by industry standards. “The type of news is the last to experience the benefits of rapid expansion when the market conditions recover,” said Egan.

News from WPG Holdings, the largest electronic components distributor in Asia, reflects this trend. The Taiwanese distributor reported second-quarter sales of $6.7 billion, NT$199.06 billion (rising to the high side of forecast) and sales were about the same for the comparable 2021 quarter - NT$202.23 billion - pointing to a slowdown in the company’s growth pace that has not been reported by the broader market. In the 2022 second quarter, WPG Holdings’ sales grew 13.7 per cent from the second quarter of 2020, the company said. The monthly sales figures from WPG Holdings give the impression of a weakening market (see chart) that is not fully supported by the performance of its peer in North America. The company’s year-over-year performance has swung from strong positive to mild and negative growth since the beginning of the year. The company’s year-over-year financial results for 2022 so far have a different underlying cause related to actions taken by China to curb the spread of COVID-19. Unlike North America-based Arrow and Avnet, its biggest competitor, WPG Holdings has a greater exposure to China, which earlier this year locked down Shanghai, a major center of electronics production. The result of the two-months long restriction on movement was a sharp slowdown in electronic output and this may have hurt WPG Holdings’ results.

As at the time of reporting Arrow and Avnet had not announced second quarter financials and both companies second quarter results would not comment on their results. However, analysts have maintained positive forecasts for the two companies, although they are more bullish on Avnet. The Taiwan-based components distributor was projected to increase revenue by more than 20 per cent in the June quarter. The consensus analyst’s second quarter revenue estimate for the company was $6.3 billion, up 20 per cent from $5.23 billion, in the 2021 comparable period. For Arrow, the analysts on average were expecting the company to post sales of $9.19 billion, up about 10 per cent from, $8.56 billion, in the year-ago quarter.

For the fiscal 2022 year ending July 2, analysts forecast Avnet’s sales would increase 24 per cent to $24.2 billion, from $19.3 billion, in fiscal 2021. The company has been reaping the benefits of a multiyear program begun under former CEO William (Bill) Amelio and continued under current leader Phil Gallagher who took Avnet late in 2020. After sinking in fiscal 2020, to $17.6 billion, from $19.3 billion in fiscal 2019, Avnet’s revenue has been on an upward trajectory since. It climbed back to $19.3 billion in fiscal 2021 and is projected to reach $23.5 billion by fiscal 2023.

Arrow runs a calendar year and reported strong sales performance in 2021, with sales rising to $34.5 billion, up 20 per cent from $28.7 billion, in 2020. The double-digit sales increase followed a tepid performance in the prior two years when Arrow’s sales declined at around 24 per cent in fiscal 2019. Up 20 per cent, from $29 billion, in the 2020 comparable period. For Arrow, the analysts on average were expecting the company to report sales of $37.6 billion for 2022.

“"OEMs learned the important lesson that distributors should be a critical part of their extended supply chain and they will not abandon processes put in place to assure they can continue to benefit from this realization”

Distributors will be relying on longer-term relationships with suppliers and OEMs to help resolve such knotty issues. They will also bet on the ongoing realization by OEMs that they need distributors to help navigate through the increasing complexity supply chain channels, according to industry executives, who said they expect engagements forged during the period of extreme shortages to remain intact and valuable afterwards.

"One lesson that our OEM customers have learned is that extended periods of shortages is that they must place order commitments, according to Mark Bollinger, chief globalization officer at distributor N.F. Smith & Associates. "This is a high priority for everyone."
West Coast ports—the supply chain migraine

Just as global supply problems seem to be easing, maybe not. Negotiations seeking a new multiyear agreement between the International Longshore and Warehouse Union (ILWU) and the Pacific Maritime Association (PMA) opened in early May. On 1 July, the current West Coast Port contract expired with no agreement in place. Undoubtedly, wages, job security and automation will be the most contentious issues at the center of any deal. Talks are expected to linger. Fortunately, sanity reigns for now with both sides agreeing to forego sanctioned work stoppages (union authorized strikes and management induced lockouts). While this pledge seems honorable at first glance, it does not rule out the tactical use of slowdowns and shutdowns.

From the historical perspective, every negotiation since 2000 has resulted in some level of interruption. In 2002, a dispute over manual to electronic shipping records led to a worker slowdown and eventually a 11-day shutdown of West Coast Ports. In 2008, terminal operators secured the right to automate and develop port automation projects at the expense of a three-week work stoppage that began in LA and Long Beach but ultimately spread to ports in the Pacific Northwest. In 2014, both sides mutually agreed to extend the contract agreement for six additional months. Lacking progress during that interval, workers then orchestrated a month-long slowdown nearly shutting down normal commerce. The issue in this case was not so much about automation, but wages, health benefits and a re-structure of the arbitration process. According to a US News report dated February 2016, the disruptive impact was still being felt a year later. Since West Coast gateways process 60 per cent of goods shipped from Asia, even modest slowdowns deeply affect downstream continuity in years, not months.

That brings us to 2022. At issue, this year is another push for automation which post-pandemic America desperately needs. Sadly, our US ports rank as some of the least productive in the world. The World Bank Group and IHS Markit recently acknowledged the US failed to place any domestic port in the global top 50. In an age of high-volume global trading, that performance gap severely constrains commerce and is incredibly counter-productive to national interests.

Automation is vital to America’s economic health. US ports need peak-load flexibility, as well as additional handling capacity to accommodate a growing international trade: robotic cranes and self-driving vehicles such as straddle carriers is mentioned most often. Without such automation, PMA projects Southern California ports will reach a cargo handling limit by 2028. As alarming as that sounds, a troubling execution record may be of greater concern. Previous Union concessions to automate as far back as 2008, have been slow walked for years resulting in fractional implementation. At the current adoption pace, automation cannot alleviate port congestion. Barring a complete collapse in demand, logjams will persist for the foreseeable future. That makes negotiations especially perilous this year as the economy exits a pandemic amid surging demand. Consumers already face skyrocketing transport costs and near double-digit inflation. Should talks stall, Federal intervention and possible Presidential action is not out of the question. Will Fed mediation press for timely automation over jobs? It’s doubtful at best, as outcomes commonly favor the International Longshore and Warehouse Union. Unless there is resolute effort to automate, our supply chain migraine will be with us for quite some time.
Component comparisons

Sourcing alternative components during supply chain disruptions

Newark’s global head of technical marketing, Cliff Ortmeyer, shows how comparing components with expertise can solve product shortages

Shortages in electronic components continue to be a critical concern for purchasing professionals. Even as the pandemic is winding down, disruptions to the global supply chain linger, creating crises for many electronic product manufacturers.

At the same time, growth in new applications like artificial intelligence, automotive, 5G and IoT are intensifying competition for these commodities. No one can accurately predict when component inventories will recover to meet demand.

To become more resilient, manufacturers need to move away from single-sourced manufacturers. To become more resilient, component inventories will need to be a critical concern for purchasing professionals. Even as the pandemic is winding down, disruptions to the global supply chain linger, creating crises for many electronic product manufacturers.

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Digi-Key is Listening to Customer and Supplier Realities to Deliver High Service Distribution
by Dave Doherty, president, Digi-Key Electronics

At Digi-Key, we’re listening to the realities and numerous challenges our customers and suppliers are facing, and we continue to stretch ourselves as we redefine what high service means to deliver on their needs. By improving and expanding upon our core capabilities, we are consistently adding value to both sides of the equation – our customers and our suppliers.

The supply chain is still chaotic and disruptions seem to be the new norm, leading to customers waiting for that one or a few critical components with long lead times to complete their final builds and generate revenue. We’re working closely with our customers and supplier partners to provide materials and technical support and generate revenue. We’re working closely with our customers and supplier partners to provide materials and technical support and generate revenue.

Our customers are looking for more and more tools. They want to self-serve, self-quote and easily check availability – as quickly as possible. They also want to manage their bill of materials (BOM) and share it with others. Customers can now do all this and more with Digi-Key’s myLists tool. We also provide digital solutions including API, EDI and punchout to provide efficiency and ease of doing business. Services like this make Digikey.com not just a URL, but a tool customers use to make their lives and jobs easier.

Investing in the Components Customers Need
We continue to invest in inventory from critical components to the latest and greatest new technologies. We have more manufacturer lines than ever before – 2,300 suppliers – and continue to add new lines and components – now at 13.4 million and growing – enabling customers to access the latest technologies from our supplier base and making us a strong partner to support the full BOM.

Distribution Center Expansion
This year, Digi-Key is opening the doors to its brand-new, 2.2 million square foot Product Distribution Center expansion (PDCe). This expansion will dramatically increase the amount of space available for storing existing and new products. In addition, expanded automation within the PDCe will decrease turnaround time and boost same-day order fulfillment to customers.

Another way we’re redefining high-level service in the distribution center is with our cut tape. This extra layer of traceability, called Part Tracing, prints information directly on the back of cut tape products, enabling engineers to better organize their components, giving them access to the Digi-Key Traceability portal and the ability to look up additional information in real-time.

Strong Digital Enhancements
It’s not just the physical hardware we are enhancing. Our customers are looking for more and more tools. They want to self-serve, self-quote and easily check availability – as quickly as possible. They also want to manage their bill of materials (BOM) and share it with others. Customers can now do all this and more with Digi-Key’s myLists tool. We also provide digital solutions including API, EDI and punchout to provide efficiency and ease of doing business. Services like this make Digikey.com not just a URL, but a tool customers use to make their lives and jobs easier.

What’s next?
The good news is we’re already planning for the next growth cycle, because in our industry it’s never a matter of if, it’s a matter of when. Just like you, we are watching the market closely. As the market fluctuates, one thing will always remain: We will continue to support our customers and suppliers to ensure we’re delivering on our promise to be your trusted high service distributor.

Repurposing EV batteries for energy storage
Exro Technologies states it has developed a new class of power electronics for electric motors and batteries. The company has announced a development partnership with Exro Technologies, ev Transportation Services, to repurpose batteries from evTS’ FireFly ESV commercial utility vehicle for second-life battery energy storage applications. Exro’s Energy Storage System is equipped with its Battery Control System technology, designed to extend the retired EV batteries into a second life. Exro Technologies’ lithium iron phosphate battery technology offers up to 10-year useful life. At the end of its first life, the battery may still have remaining capacity but not the efficiency required for EV applications. Exro’s 90kW Energy Storage System allows retired EV battery cells to be reused for stationary second-life energy storage applications.

Exro’s CEO, Sue Ozdemir, added: “The electric vehicle batteries reach end of first life, we know there is a growing market for LFP batteries that can be repurposed for second-life energy storage applications. EV manufacturers can experience significant cost savings by reusing and actually repurposing second-life batteries and we’re excited to partner with evTS on a pilot project to extend the life of our FireFly ESV batteries.”
Exro’s CEO, Sue Ozdemir, explained how EV manufacturers can experience significant cost savings by repurposing and utilizing second-life batteries.
Partnership underpins EV innovations

NXP Semiconductors has signed a memorandum of understanding with Foxconn to jointly develop platforms for a new generation of smart connected vehicles. Foxconn will leverage NXP’s portfolio of automotive technologies and expertise in safety and security to enable architectural innovation and platforms for electrification, connectivity and safe automated driving. The collaboration builds on the company’s initial digital cockpit partnership, based on the NXP i.MX applications processors and NXP Software Defined Radio platform. The primary focus of the expanded collaboration is aimed at Foxconn’s efforts in electrical vehicle platforms, leveraging NXP’s system expertise and electrification portfolio, from SiP processors to analog front-end, drivers, networking and power products. Another innovation priority is connectivity solutions using the latest NXP S32 domain controller family for gateways and vehicle networking control, while also advancing secure car access with ultra-wideband and Bluetooth Low Energy. A third pillar is safe automated driving augmented by NXP’s radar solutions. NXP will also offer hardware and software support and will leverage the expertise of its 3rd-party ecosystem in the areas of electrification, connectivity and automation. NXP Semiconductors’ president and CEO, Kurt Sievers, added: “We are proud to join forces with Foxconn today to support its ambitious leap into automotive and to jointly address the challenges and opportunities of a new generation of smart connected vehicles, especially Foxconn’s new electric vehicle platform. The auto industry must become faster and more efficient, and NXP is pleased to extend its technology portfolio to enable electrification, next generation automotive architectures, smart and secure car access systems and more.”

www.nxp.com

Enclosure products

Hammond Manufacturing has introduced the 1551W IP68 sealed versions of its 1551 miniature enclosure family. Launched in an initial five sizes, all available with a plain or flanged lid, the UL94-V0 polycarbonate enclosures are suitable for use inside or outside. They are available in black/grey with a soft textured finish, all fitted with PCB stand-offs and a preformed silicone sealing gasket provides protection against dust or water. Flanged lid versions make mounting to any surface simple and provide tamper resistance by preventing access to the lid and base screws. The 1551W versions are designed to house sensors and small sub-systems installed in the manufacturing environment. The snap-fit closure allows repeated opening and closing without tools and also maximizes the internal space for PCBs by eliminating screw fixings. They feature ventilation slots, wall mounting slots and a 15mm cable knockout. www.hammondmfg.com

Matching stations for data transfer and charging

More OKW wearable, handheld and modular plastic enclosures can now be specified with optional docking stations for charging and data transfer. Applications include medical and therapy devices, diagnostics, biometrics, test and measurement, communications, data collection, sensors, automation, IIoT and Industry 4.0. Three examples are Body-Case, Carrytec and Datec-Compact. Body-Case is a wristwatch-style case that can also be worn on a lanyard or clipped to a belt. Power options include inductive charging. There are stations for the two larger sizes. Mountable stations are also available, enabling multiple units to be charged on a single base device. Carrytec is a large and tough handheld enclosure with integrated handle. The optional charging stations can be used on a tabletop or wall mounted. The enclosures are designed to enable easily secure data transfer. Datec-Compact is a compact handheld enclosure with integrated handle. The optional charging stations can be used on a tabletop or wall mounted. The enclosures are designed to enable easily secure data transfer.

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Automotive

How automakers and OEMs are navigating the chip shortage

TTI Americas director, transportation market, Gabe Osorio, explores the origins of chip shortages in the automotive sector and introduces examples of remedies.

It’s no secret that challenges to the automotive supply chain are impacting manufacturers and consumers alike. Spurred by the pandemic-induced drop in vehicle demand and exacerbated by closed factories, adjusted budgets and demand for other consumer electronics, a lack of semiconductor chips continues to affect automakers. During the May 2022 World Economic Forum, industry leaders shared that automotive supply chain problems would likely continue into 2024.

Most vehicles rely on at least 25 microprocessors, controlling everything from fuel management to infotainment screens. Vehicles with advanced driver assistance or safety systems may require upwards of 100 chips. The effect of the chip shortage is evident in the market—automakers built 1.7 million fewer vehicles in 2021 than in 2019, according to Consumer Reports. The average car payment in the United States is approaching $700 a month for new vehicles, but demand has not dropped. With a reduction in the number of vehicles projected to be built in the second half of this year, there remains high and growing demand for chips. This will be exacerbated by the war in Ukraine, which has disrupted the global supply chain of semiconductor components, including neon gas.

These challenges are also affecting the growth of the electric vehicle market. Although demand for hybrid or electric cars is growing alongside increased government funding and public charging infrastructure, specialized components are in short supply. While manufacturers of internal combustion engine vehicles have adapted to the chip shortage by suspending optional features such as heated seats, a variety of semiconductor chips are essential to the function of electric vehicles. As new and expanded electric vehicle platforms continue to be announced, more pressure is placed on the chip market.

The automotive industry is making long-term changes to the shortages in a number of ways. Ford and other automotive original equipment manufacturers are also moving toward a custom ordering system. This encourages consumers to preorder their vehicle with an automotive factory and receive the car within a few months. This approach will help stabilize the supply chain and allows manufacturers to produce what is needed instead of having to supply a month’s worth of inventory on a dealer lot.

Component manufacturers and distributors are also working to ease supply chain pressure and reduce the chip shortage. Manufacturers are rolling out products that meet the need for higher power requirements in EVs. The components that TTI sells, including interconnects, passives and discretes, have seen continued lead time lengthening, although this appears to be leveling off and, in some cases, retreating, signaling a positive sign for overall supply chain health. Partnering with a distributor that understands the challenges of the current market and ways to adapt can help automakers navigate this challenging environment.

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As a global organization, Avnet has a privileged insight into how the EV charging infrastructure is developing across the world. Governments and private companies are generating growing momentum behind the move to fully battery-electric vehicles (BEVs). However, not all regions are developing infrastructure at the same rate.

The dynamics of refueling internal combustion engine vehicles are fundamentally different from supplying electricity for BEVs. At minimum, public charge points will be installed alongside fuel pumps. However, the obvious difference is the refuel v recharge timeframe. This creates demand for more charge points at more than just service stations.

Avnet Silica’s director of vertical engineering Asia, Sambit Sengupta, some momentum exists behind the concept of a battery-as-a-service model for this class of last-mile vehicle. In North America the picture is, slightly different. Avnet’s sales director for China, Tom Wang, has seen rapid growth in the number of charge points, with around 50 per cent annual increase over the last three years. He said: “The charging infrastructure has been extended to all corners of the country, even in the remote countryside. The vehicle-to-charge point ratio in China is around 3:1.”

Although the typical electric vehicle is a family car, bus or delivery truck, in India the vehicles of choice are more for personal mobility, with two or three wheels. This is where the move toward electrification can most be felt today. Consequently, the charging market is focused on AC/DC chargers for smaller personal vehicles. According to Avnet’s associate director of supplier product marketing and field application engineering Asia, Sambit Sengupta, some momentum exists behind the concept of a battery-as-a-service model for this class of last-mile vehicle.

Avnet Abacus’ sales director for central Europe, Tobias Naka, reports activity in the market coming from several angles, saying: “We do see that the Big Tier 1 automotive electronics manufacturers are heavily engaged in this field, as well as multinational industrial companies.” He also reports fragmentation, with a lot of mid-sized companies bringing new and innovative designs to market.

While the number of charge points must increase, variety must also be addressed. Fast DC chargers are nice for car drivers but could be essential for freight and mass transport vehicles.

Fast DC chargers require DC/DC converters which can operate continuously at higher voltages.
Semiconductor vendors, chip equipment makers and their OEMs are providing customers who were still trying to make sense of a critical supply chain crisis when an old nemesis suddenly showed up at the tail end of the second quarter. Inventories are rising again and quicker than expected. The specter of another one of the semiconductor market’s erratic boom and bust cycles.

Veterans who went through previous cycles, especially the horrid excess inventory-driven downturn of 2001, are trying to raise the alarms but the signs are not definitive yet. Memory manufacturers are pointing to weakening demand from the PC and consumer electronics segments, rising inflation and supply chain pressures from the Russia-Ukraine war have compounded concerns about the direction of the global economy. In addition, continuing shortages of some critical semiconductor components have forced design changes at many OEMs, some of which have similarly altered their production schedules.

“Across the industry, there are cost challenges stemming from supply chain and inflationary pressures. We are seeing some enterprise OEM customers wanting to pare back their memory and storage inventory due to non-memory component shortages and macroeconomic concerns,” said Sanjay Mehrotra, CEO of Micron Technology.

During a presentation to financial analysts, a number of factors have impacted consumer PC demand in various geographies. As a consequence, our forecast for calendar 2023 PC unit sales is now expected to decline by nearly 10 per cent year-over-year from the very strong unit sales calendar in 2021. This compares to an industry and customer forecast of roughly flat calendar 2022 PC unit sales at the start of this calendar year.

A storm is brewing in the economy with ominous implications for technology manufacturers and especially chip vendors who have noted explosive growth in the last couple of years. Data from developing and developed economies are not positive, pointing to a steady erosion of consumer confidence as high energy costs and rising interest rates crimp personal and corporate purchasing power. As a result, forecasters are parring back their economic projections.

The World Bank has shaved several percentage points off its earlier projection and now sees the world economy expanding only 2.9 per cent in 2022 versus its earlier estimate of 5.7 per cent. Many countries may find it difficult to avoid a recession, which could hurt demand for semiconductors.

“Amid the war in Ukraine, surging inflation, and rising interest rates, global economic growth is expected to slump in 2022,” said David Malpass, president of the World Bank Group, in a report. “Several years of above-average growth are now likely, with potentially destabilizing consequences for low- and middle-income economies.”

Could the semiconductor market be different? Despite signs of a looming weakness in some segments, overall semiconductor demand remains strong, according to analysts. In fact, it is still stubbornly difficult to get chips for certain OEM products, including components for automotive, data and connectivity, devices, communication, and networking equipment. Extended lead-times are still the norm for automakers, many of which still get supplier delivery schedules extending out six months or more for critical components. The cost of the shortages to manufacturers and the extended food chain is enormous, according to analysts at research and consulting firm Deloitte.

“Chips will be even more important across all industries, driven by increasing semiconductor content, everything from cars to appliances to factories to the usual suspects—computers, data centers, and phones,” said Deloitte analysts in a report. “There are limitations in the supply chain, with longer delivery times and a lack of consistency in pricing.”

The market will get better visibility by the end of the third quarter. By then, end-of-year orders would have been fully processed, providing insight towards near-term consumption patterns as well as first quarter demand across the global economy. In addition, the ongoing liquidation of inventories built up since the beginning of the year as a hedge against supply shortages would be in full throttle, adding to end-demand visibility.

What should the industry do to return the supply chain as close as possible to a semblance of equilibrium? First, the extension of agreements and exchange of demand-supply information between semiconductor vendors and customers should be maintained and reinforced. The greater the amount of information exchanged by the parties involved the better the visibility into market conditions, which would enhance forecast accuracy.

Semiconductor suppliers will ramp down on production to eliminate any swollen inventory pockets and reduce the added impact on average selling prices and the price volatility they have accumulated through the shortages. Micron hinted at this strategy in its recent analysts’ presentation, noting that the memory supplier expects to reduce DRAM bit supply growth in 2022, rising to $646 billion.

Forecasts are predicting slower growth in the region of 10 per cent, however. The shortages that drove the 2021 and first-half 2022 market expansion are easing steadily, they said, adding that inflationary pressures will further stifle consumer demand. Chip capacity utilization rates have also been pushed up and additional manufacturing fabs will come online in the next several years, further easing the choking supply chain shortages.

“The market is very strong overall,” Sanjay Mehrotra, CEO, Micron Technology Inc.
Logistics and materials challenges over the last two years are driving a need to closely evaluate electronics manufacturing outsourcing strategy. Record inflation, plus continued materials supply and demand imbalance are likely to continue near-term. Sourcing teams are starting to ask how they can help balance out rising costs outside the contract manufacturer’s control?

The short answer is finding ways to eliminate costs that an inefficient outsourcing strategy may be creating. One often underexploited outsourcing strategy is manufacturing closer to end markets by regionalizing manufacturing. This is most efficiently done by utilizing an electronics contract manufacturer with a multinational facility network, rather than multiple contract manufacturers, because a single entity can leverage economies of scale.

Questions to ask in determining whether this type of strategy may be beneficial include:

- Does the project require regionally-specific customization?
- Are there tariff abatement or local content requirements that would be better served with a regionalized manufacturing strategy?
- Is there a requirement for short lead-time between order placement and fulfillment that would be better served with a regionalized manufacturing strategy?
- Will a regionalized manufacturing strategy reduce logistics costs?

One business case for regionalized manufacturing is the restaurant equipment industry. Corporate headquarters dictate menu items and the equipment needed to support those items by region. Franchisees have choices regarding equipment configuration and purchasing timeline. However, quantities are typically small. SigmaTron International is providing a restaurant kitchen equipment manufacturer a regionalized manufacturing strategy by producing customized products in its Elk Grove Village, IL; Suzhou, PRC; and Acuna, Mexico facilities. Common components are sourced centrally via the contract manufacturer’s purchasing organization and shipped to each facility. If demand increases in a specific region, shipments can be redirected. Regionally-specific components related to power and language-specific control overlays are sourced local to each manufacturing facility.

The contract manufacturer’s test engineering team has developed a standard test set capable of testing all product configurations shipped test sets to all facilities. The customer now has the standardization benefits and purchasing power of working with a global manufacturer, yet a localized, configure-to-order (CTO) solution to support end markets where their customers are ordering small quantities on short lead-times. The localized solution eliminates the logistics pipeline necessary if all product was built in a single location. Local sourcing of regionally-specific parts reduces logistics lead-time and transportation cost.

While this example does not include a depot repair element, an additional benefit of having manufacturing close to the end market can be optimized depot repair activities. Having a contract manufacturer provide regionalized depot repair support in conjunction with manufacturing can minimize spare inventory requirements, shipping costs, test equipment cost and reduce repair and return lead-times.

Logistics

Leveraging manufacturing resources to support global end markets

SigmaTron International’s president, Jim Barnes, explains how a restaurant equipment manufacturer is benefitting from a regionalized manufacturing strategy.

If all product was built in a single location, local sourcing of regionally-specific parts reduces logistics lead-time and transportation cost.

SigmaTron International’s president, Jim Barnes

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3 STEPS TO TAKE WHEN ELECTRONIC SUPPLY RUNS DRY

The current global supply chain is not known for being a flexible system. Therefore, adaptability is a challenge that often falls on the customer.

In the semiconductor industry, having a plan A, B and sometimes even C, in your back pocket can help businesses better navigate and pivot in an ever-changing market. The best way to devise a back-up plan is to identify alternative electronic components and partner with suppliers prepared to offer options.

Matching supply with demand is no easy task. In a market roiled by end-of-life notices, extended lead times, price increases and obsolescence, it can be tricky to plan ahead. However, one of the ways to bolster your success is to be prepared with alternative options when preferred components suffer shortages.

**Step One – Create Detailed Specifications**

The first step in sourcing alternative electronic supply is having a fully developed specification for all product builds. Specifications dictate what is in the product, how the products are made, and essentially, whether the product will meet the needs of target consumers. Having transparency around specification data affords manufacturers and suppliers the ability to quickly pivot and not suffer delays in time to market schedules.

**Step Two – Identify Viable Alternatives**

On top of having comparable components in mind, it is also beneficial to have access to multiple resources, including independent distributors. These distributors can assist during a crunch by cross-checking data sheets to review specifications and determine which parts work best as alternatives. Independent distributors can also help shorten lead times because of their strategic connections or find an electronic component at a more reasonable price outside of market price hikes.

**Step Three – Locate Sourcing Partners**

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**Flexibility Is Key**

There are no guarantees when it comes to timelines within the supply chain. One of the few things that can be counted on is the possibility of disruptions, which is why flexibility is paramount for success. Be prepared for shortages with detailed specifications, viable alternative components and suppliers that are ready to support those changes. It’s the best way to ensure you stay ahead of the curve – and ahead of the competition.

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<td>12,390</td>
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<td>10,590</td>
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<td>6,179</td>
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<td>Y</td>
<td>N/A</td>
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<td>Lumileds</td>
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<td>Omron Opto Semiconductors</td>
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American Sun Components 18
CML Innovative Technologies 23
CML Innovative Technologies 23
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Coilcraft 21
Digi-Key Electronics FC & IFC 23
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Fusion Worldwide 9 & 28
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<th>Manufacturer</th>
<th>Distributor</th>
<th>Telephone</th>
<th>Website</th>
<th>No. of Lines for Stock</th>
<th>Value for Principle</th>
<th>% Lead Free for Principle</th>
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DIVERSITY DRIVES OUR BUSINESS FORWARD

Diversity is key to our culture. Rutronik’s unmatched product breadth ensures that our customers’ needs are optimally covered. Our individually unique employees come together to form a team of dynamic solution providers. We are rapidly expanding in North America.

Diverse product portfolio. Diverse people.

#RUTRONIKfamily.

WE ARE HIRING!

Product Management: E-mech & Embedded
Coral Springs, FL

Technical Field Sales
Minneapolis, MN | Boston, MA | Phoenix, AR

Marketing Director
Coral Springs, FL or Remote

#YourGlobalBroadliner