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EUROPE
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On the cover – electronica 2022

electronica 2022 Special Edition

Editor's Word

Serendipity is the key

If the last two years have taught us anything it's that the world can, to a degree, communicate virtually. The question is, just because we can, should we? In the world of product design, distribution and manufacturing, my opinion is no.

The key is serendipity. Over three decades in this industry I don't think I've ever had a face-to-face meeting where I haven't discovered something that would have been difficult to uncover in a virtual environment. Why is this? I'm not 100 per cent sure, I'd have to ask a psychologist. My best guess is that face-to-face discussions inject added trust and allow conversations to wander more freely and widely. Conversely, virtual conversations are typically more sterile, time constrained and focussed.

The apex environment for face-to-face discussions has to remain the trade show. That's why the Electronics Sourcing team would like to invite readers to meet them in Hall A5, Booth 108 at this year's electronica.

Everyone is invited to stop by, whether you represent an original component manufacturer, distributor, original equipment manufacturer or contract manufacturer, I'd be fascinated to discover how you are navigating the current supply chain turbulence and what your thoughts are for the near and medium term future.

Due to the pandemic's duration, there may be newcomers who have worked in this industry for three-years yet have never experienced the benefits of a trade show. I encourage you to make the break. Those who do attend will undoubtedly return home with a haul of new ideas unique to this occasion.

Jon Barrett

Contact

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ES News

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www.electronics-sourcing.com

New model for connector distribution

Connector specialist Nicomatic has acquired its Swedish distributor, Accurate, after a 20-year partnership. The company states this external growth marks the beginning of a new model, using the Scandinavian company's existing consultancy expertise and accelerating the development of integrated electronic systems in partnership with a powerful local ecosystem.

The merger is designed to provide Nicomatic's clients with solutions and help them with their integration through a more global approach involving data exploration, jobs transformation, change management and Industry 4.0. This approach, encourages reindustrialisation, incorporating local manufacturing and research with neighbouring players, as part of an open innovation philosophy. If the strategy is successful in Sweden, it will be reproduced in France and Nicomatic's ecosystem worldwide.

Nicomatic and Accurate teams met in Stockholm to celebrate the merger and embark on the first business meetings as a single united company.

www.nicomatic.com

Silicon carbide production on the up

Onsemi is expanding its silicon carbide fab in Roznov, Czech Republic. The facility will increase wafer production capacity by 16 times over the next two-years to address sharply increasing demand for microchips.

Reconstruction of a new building began last year to further expand wafer and SiC EPI manufacturing. So far the company has invested more than $150 million in the Roznov site and plans to spend an additional $300 million through 2023.

Onsemi's executive vice president and general manager Power Solutions Group, Simon Keeton, said: "Together with our SiC boule production expansion in Hudson, NH, these increased SiC manufacturing capabilities enable the company to provide customers the critical supply assurance to meet the rapidly growing demand for SiC-based solutions. Full control over our SiC manufacturing supply chain and the market-leading efficiency of our products underscore progress toward SiC leadership."

SiC enables efficiency in electric vehicles, EV charging and energy infrastructure.

www.onsemi.com

Intelligent connectors for smart buildings

Mouser Electronics is offering a selection of Phoenix Contact connectors and assemblies for building intelligence applications. Designed to integrate with Phoenix Contact's Emalytics framework for smart building digital infrastructures, the connectors and assemblies support cross-trade and cross-sector data integration for IoT systems. The products are update and upgrade-capable, offering a futureproof solution for ambitious intelligent building projects.

The connectors and assemblies feature bus and network protocols standardized into a uniform data object, including KNX, BACnet, Modbus and M-bus. Networking and communications capabilities simplify the building design process, supporting rapid, seamless development of building automation strategies.

The components are designed to offer simple integration in new and existing buildings, allowing any building to benefit from automation and IoT technology. By enabling all technical systems to exchange information, the connectors and cable assemblies support cost optimization and sustainable reduction of CO_2 emissions.

Phoenix Contact's Emalytics platform provides a comprehensive framework for building automation, management and data analysis.

www.mouser.com

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N ES News

In Brief

Performance and expansion
Kontron's K3851-R motherboard is designed for applications requiring performance and expandability. By combining the Intel R680E chipset and Alder Lake CPU, the board suits industrial markets including embedded computing. Expansion options include: six PCIe slots, three LAN interfaces, two M.2 Key-M SSD slots, four DDR5-4800 UDIMM sockets and thirteen USB interfaces.
www.rutronik24.com

Calibration accreditation
Danisense has announced accreditation to ISO/IEC 17025:2017, the quality management system and main standard for testing and calibration laboratories. The company can now offer ISO17025 accredited DC calibration of DCCTs up to 21kA. The lab has supported development of DCCTs for particle accelerators, MRI scanners and green energy applications like windmills and electric vehicles..
www.danisense.com

New connector capacity
Rosenberger's new plant in Changzhou, China has started production. The plant will focus on the automotive industry, manufacturing connectors for new energy vehicles, automotive wiring harness products and automotive high-speed solutions. The company states the facility is an essential step to meet the increasing needs of the local automotive market.
rosenberger.com

Cost effective PLCs
Distrelec is now supplying Industrial Shields industrial automation products based on Arduino, Raspberry Pi and ESP32. Industrial Shields provides cost-efficient PLCs. Also, whilst most automation suppliers charge a software fee on top of their hardware, Industrial Shields offers open source software free of charge. The products suit multiple applications and markets.
www.distrelec.com

Growing Berlin-based SiP production

Swissbit is adding a new semiconductor packaging line to its Berlin electronics production. The line is designed to offer a significant performance boost and is up to 50 per cent more efficient than existing lines. It is used for automated production of integrated memory solutions, including ultra-compact eMMCs.

The new equipment positions Swissbit as one of the only European businesses able to produce solderable components such as BGAs from small batches to high volumes, with a capacity of up to three million pieces per month. Such components are used in automation, automotive and network technology.

Swissbit's general manager APATS and Berlin site manager, Lars Lust, said: "The new line is a further building block in our strategic plan to ensure the highest quality for our products by fully controlling the production process. We are able to perfectly optimize the design from chip to package to module, firmware and manufacturing technology, allowing us to offer a range of services that are unmatched in Europe."

www.swissbit.com

Distributed manufacturing for novel, trustworthy electronics

A consortium of Fraunhofer institutes and German industrial companies is developing a split-manufacturing approach for semiconductor production in a project called Distributed Manufacturing for Novel and Trustworthy Electronics T4T. This is designed to enable the secure assembly of subsystems in Germany and safeguard supply chains.

Secure supply of electronic components is of growing strategic importance for Germany. Increasing relocation of integrated circuit manufacturing to non-European regions increases vulnerability to malware and espionage functions into components supplied by contract manufacturers. Likewise, the risk of IP theft by third parties is increasing.

The new project aims to provide domestic industry with tools to access secure supply chains and trusted electronics. Subcomponents adapted to these requirements can still be accessed via existing supply chains (split manufacturing) but the assembly and encoding of the systems will take place in a trusted environment at the German site.

www.izm.fraunhofer.de

Expanding connector manufacturing capacity

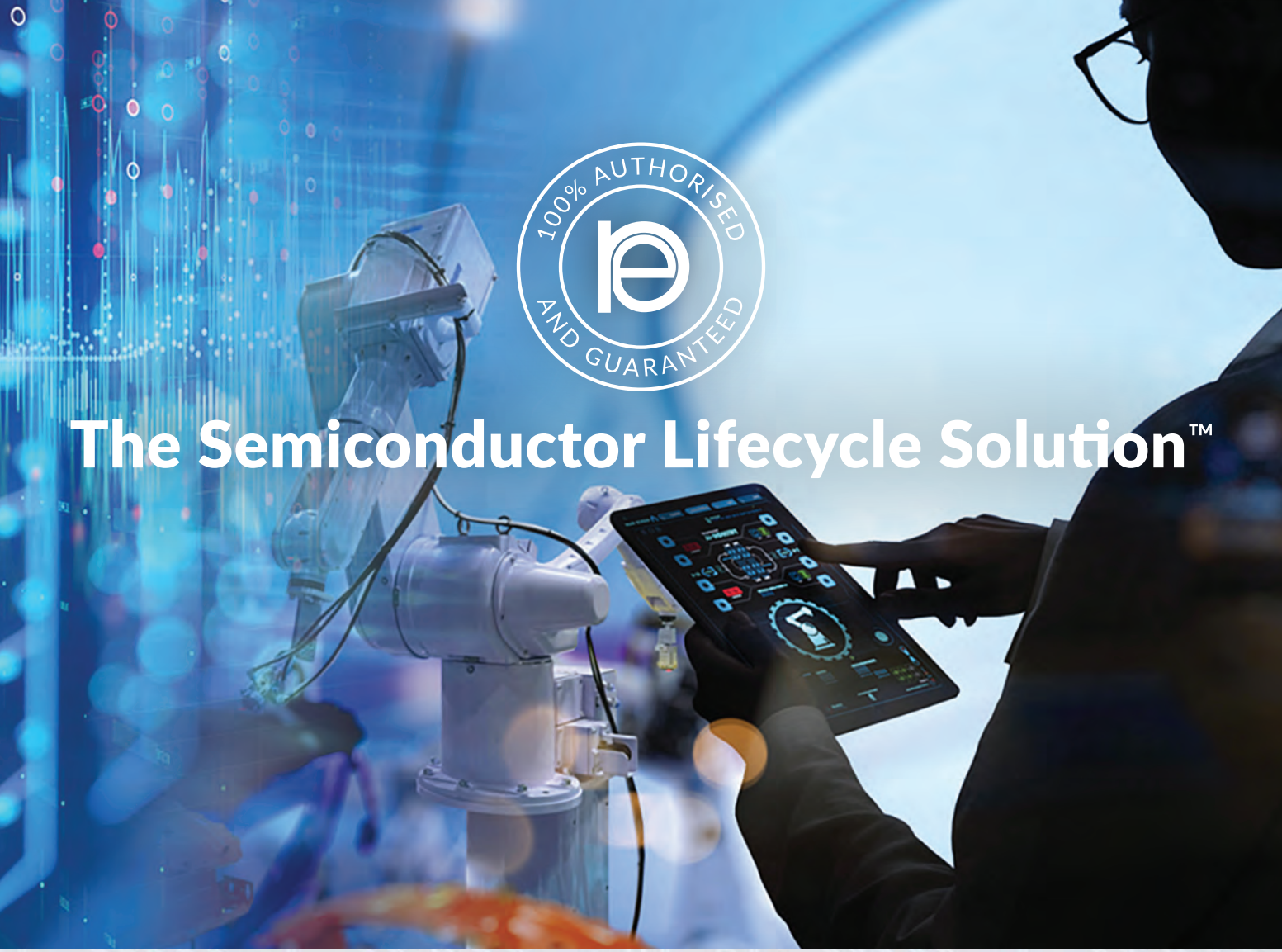
Molex is expanding its existing manufacturing operations in Hanoi to include a new 16,000m² facility. Molex opened its first facility in the country in 2007. The expansion will help support growing demand for its products that are used in applications including smartphones, TVs, home appliances, test equipment and medical devices.

Molex' CEO, Joe Nelligan, said: "Molex has operated in Vietnam for 15-years and this expansion represents our long-term commitment to the country and the community. Expanding our manufacturing footprint in Hanoi gives us added capability and capacity in the Asia Pacific region as we plan to grow with our customers and create more opportunities for our skilled workforce."

The integrated connector manufacturing facility will feature robotics, high-speed injection moulding, stamping, plating and automated assembly processes along with tooling fabrication and reliability testing capabilities.

As part of Molex's environmental stewardship initiatives, the expanded facility will feature an on-site solar installation that supports the site's energy needs and reduces greenhouse gas emissions.

www.molex.com



Offering the world's largest continuous source of semiconductors with over 15 billion finished devices in stock, combined with extensive manufacturing capabilities from the world's largest die bank at over 12 billion. The Rochester Electronics' Semiconductor Lifecycle Solution™ keeps business moving!

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Cross-technology case and systems solutions

The Polyrack Tech-Group is using Electronica to present itself as a cross-technology partner for individual case and systems solutions. Examples of product development using various approaches and materials demonstrate the company's competence in mechanics, plastics, surface treatment, electronics, mounting and assembly. Solutions range from small to large components for a variety of industries, such as: mechanical, plant, energy, medical, measurement, control, safety, transportation and telecommunications.

Product and service highlights include ready-to-use panel PC and Compact PCI system solutions. Regarding electromechanics and system peripherals, there are 19in racks and housings, plus subracks and accessories.

Other focus products are EmbedTEC series modular, customizable cases, also available in SDD and eNUC variants. The new FrameTEC case series will be presented for the first time.

www.polyrack.com

Power efficient solutions for smart industry and mobility

Highlights of Toshiba Electronics Europe's Electronica stand will include motor controls and power conversion. Power conversion designs include a high-efficiency 5kW bidirectional DC/DC converter with dual active bridge (DAB) architecture leveraging SiC MOSFET efficiency and ruggedness. The display will also feature a smart SMOS powered LED matrix for vehicle lighting and a motor driver based automotive door mirror.

Factory automation demonstrations will include Ethernet time-sensitive networking (TSN). The company's control and communications ICs support the convergence of operational and information technology networks with the trend towards increased intelligence at the edge.

In addition, the booth will present the motor-control boards gallery that contains more than 30 development boards based on Toshiba motor-control ICs, created through collaboration with the embedded specialist, MIKROE. The gallery contains easy-to-use solutions that help jump-start projects with popular motor types including stepping, DC and brushless motors of various ratings.

www.toshiba.semicon-storage.com

Extended lead times persist

Fusion Worldwide's CRO, Luke LeSaffre, explains how lead times continue to be impacted by strong demand from the automotive, industrial and enterprise segments

Over the last 16-months, lead times have been expanding rapidly at unprecedented rates, creating lead times of 52-weeks or more and making missed delivery dates the norm. In the last two months, we have started to see data that suggests contraction in certain segments. The question remains how long it will take for lead times to return to normal levels?

Given the protracted period over which lead times were extending—we started to see them take off in February 2021—recent data and feedback from customers indicates the decline will be more gradual. For each instance of a customer reporting an improvement of deliveries or order cancellation (thereby providing some relief to overall demand), we hear just as many instances of extended lead times into late 2023 and beyond.

Weakened demand may bring a quicker decline in lead times, as well as concerns about the global macroeconomic state. Assuming less pronounced changes in demand, we anticipate that lead times will remain extended for at least the first half of 2023, and possibly beyond for certain product categories such as older technologies. While demand for consumer-oriented end products is slowing down, markets for more automotive, industrial and enterprise segments are showing more resilience, and we expect that dynamic to provide some headwinds in the effort to bring down lead times in the quarters ahead.

www.fusionww.com

Perfect Parts CORPORATION

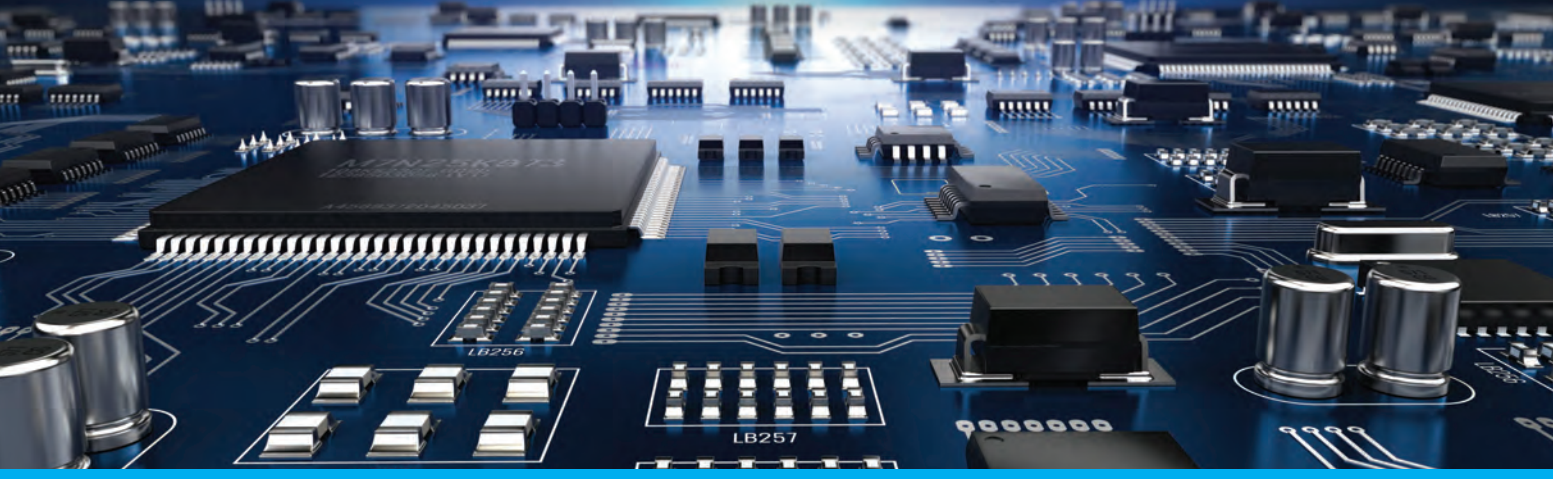
THE PERFECT SOURCE

Today's market shortages and lead-times of over 52 weeks make it clear that no one's supply chain is safe. Given major constraints that are being experienced by both design and supply chain departments, many OEMs are realizing that partnering with the right distributor is the missing link in their supply chain. Partnering with a distributor that knows reverse logistics, has global reach, a good reputation, and third-party testing capabilities to ensure that your products meet your end user requirements is needed in order to be successful.

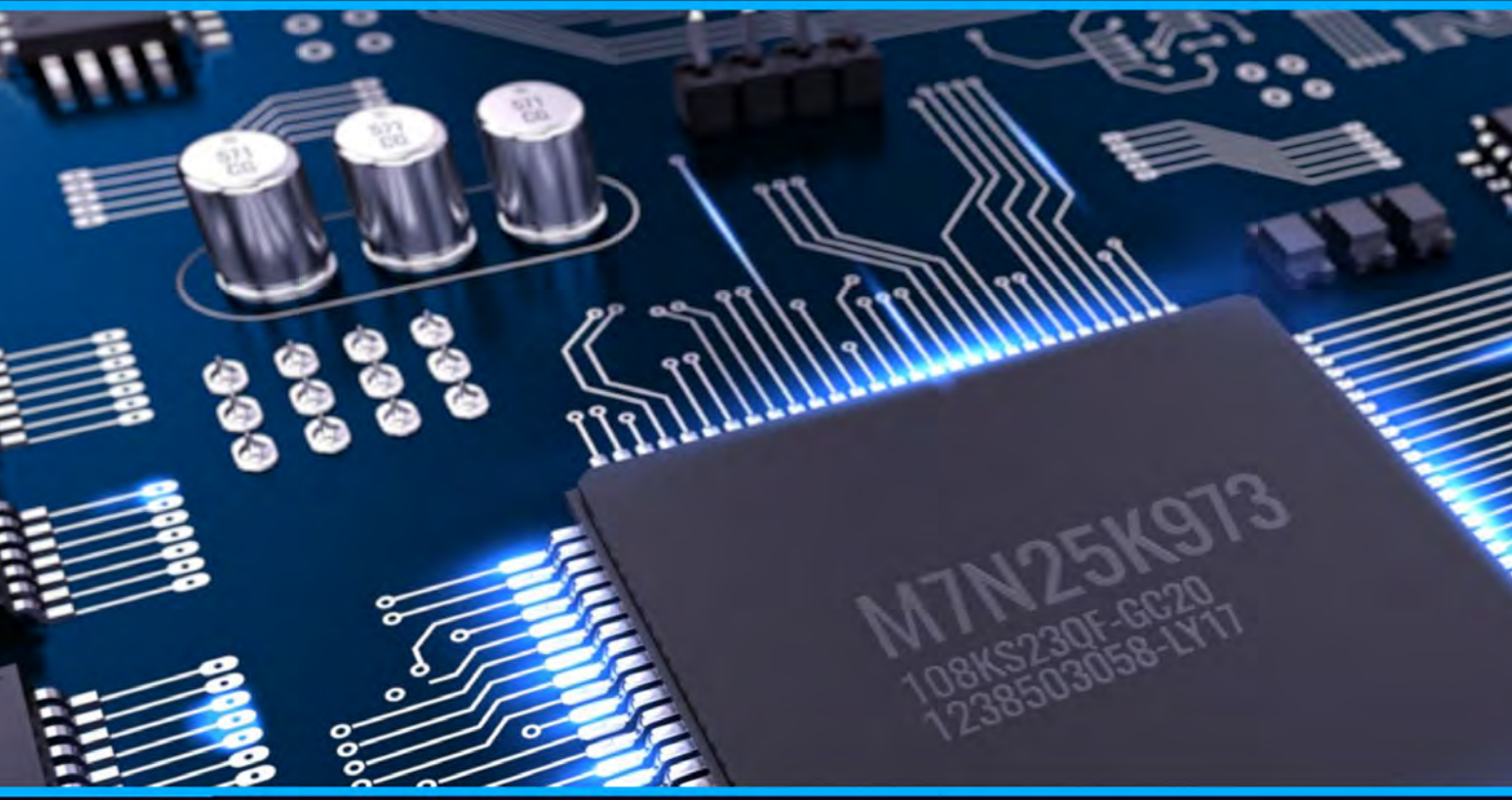
Sourcing from the open market can be daunting with counterfeit parts and sub-standard materials posing as a constant threat to your supply chain. Material procured from the open market that is improperly tested can cause loss of relationships, increased liability, major delays, and line down situations. Many distributors test material in house or not fully leaving your supply chain exposed. Perfect Parts works with 3rd party fully accredited test labs which are specialized in performing comprehensive testing including those which are for high reliability applications. By utilizing third party laboratories you can rest assured that there is no conflict of interest when testing material for your supply chain.

With an eight-year streak of zero RMAs due to sub-standard materials, Perfect Parts is the only USA distributor that can boast zero RMAs due to a counterfeit or substandard part deliveries. When you work with Perfect Parts you can expect a level of quality that is unrivaled in the electronic component industry. Perfect Parts is a global online distributor of electronic components that specializes in testing requirements, sourcing, and distribution. With access to over 30 million unique inventory lots from our global network of manufacturers, OEMs, contract manufacturers, authorized channels, and other vetted suppliers you will find everything you need for your builds. With a focus on providing value-added services and advanced web tools, Perfect Parts will change the way you design and procure components for your organization.

www.perfectelectronicparts.com



Perfect Parts
CORPORATION



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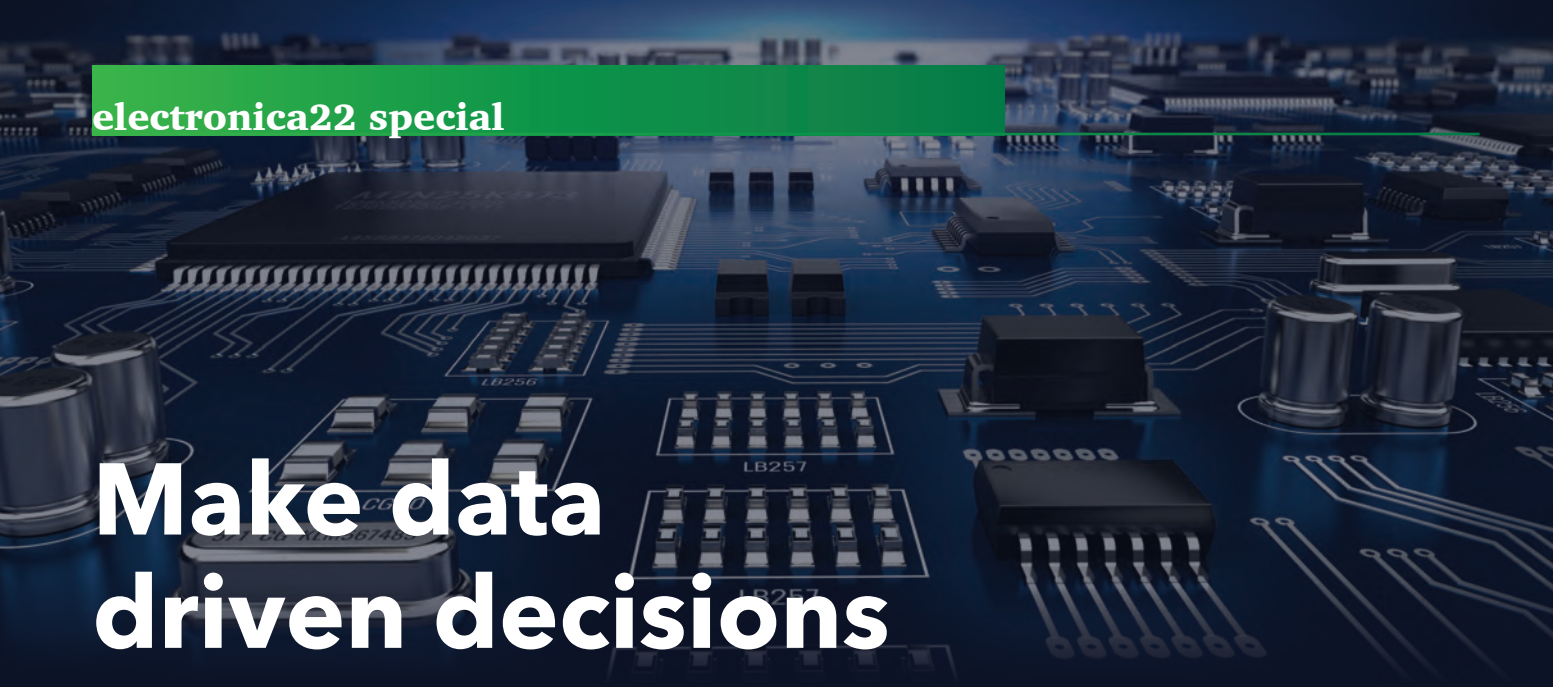

Make data driven decisions

Perfect Parts explains how making data driven decisions during a new product's design phase ensures the supply chain matches the lifetime of the product build

Demand and political turmoil are straining supply chains. Selecting the right components during a product's design is the only way to secure production and manage the end product's life cycle. With a design focused approach to distribution, Perfect Parts aims to bridge the gap between design and production.

In 2023, Perfect Parts is launching design tools complete with supply chain solutions. Engineering, design and purchasing professionals will be able to access information including datasheets, product descriptions, RoHS, environmental compliance data, drawings, application information, parametric, alternate parts, crosses and product availability. Data will be available for hundreds of millions of electronic parts.

The company's global network of trusted OEM and EMS partners includes exclusive sources of excess electronic components, plus factory direct material. All material is guaranteed for fit, form and function. If required, full traceability or third-party test reports are available. Perfect Parts has access to hundreds of millions of unique components including active, obsolete and end-of-life lines. Product categories include integrated circuits, semiconductors, relays, transformers, connectors, capacitors, memory and more.

Planning during the design stage has never been more important and partnering with the right distributor helps ensure a higher level of success by ensuring projects get ahead of soaring costs, allocations and raw material shortages.

OEM and contract manufacturers are finding that time constraints and soaring costs mean designs are overbudget and redesign is the answer. Perfect Parts has experience finding alternative parts and crosses in industries including automotive and industrial. With millions of datasheets and knowledgeable staff, overcoming supply chain challenges can be straightforward.

In addition to selling components, Perfect Parts also helps clients select the best products with reliable life cycles. As a semiconductor distributor it's an important task to ensure customers select products that complement the lifetime of the product build.

Buying electronic components can be stressful when monitoring hundreds or thousands of parts. Wholesale electronic component distributors with limited line cards can't service customers' full bills-of-materials, forcing customers to try and locate all the remaining components. Likewise, engineers must have access to each component's full product details. Knowing whether a semiconductor has a cross reference to another manufacturer's part is smart when designing a product. Perfect Parts invites manufacturers to reach out for help locating the products and information they need for their next design and build.

www.perfectelectronicparts.com

In addition to selling components, Perfect Parts also helps clients select the best products with reliable life cycles

New purchasing strategies

A2 Global Electronics + Solutions describes how independent distributors are helping buyers develop and implement new purchasing strategies to mitigate the problems of demand spikes

Mounting demand has increased the need for suppliers to deliver a reliable and secure stream of semiconductors. One challenge is identifying ways to help customers plan when the market is unclear. Managing new and legacy component inventory requires planning, re-design or strategically sourcing parts. Working with an independent distributor, customers can identify larger sourcing channels, design long-term custom solutions and take quality measures to mitigate risk when the market gets cloudy.

While certain customer segments and product classes still struggle with supply, we expect a gradual softening in demand. We see longer lead times for various in-demand parts. For example, currently MOSFETs are in particular demand, with two-year wait times. Identifying a strong independent distributor can assist with a long-term custom solution to plan for the next 12-months and beyond.

Successful sourcing is more important than ever. An independent distributor can evaluate customers' specific supply chain pain-points, provide available custom solutions and develop proactive strategies for managing long lead times while maintaining quality-ensured components.

Alternatives can offer solutions for sourcing hard-to-find components when they are suitable. A quality independent distributor provides custom services that offer inventory solutions that help mitigate costs, production delays and other challenges associated with a component becoming unavailable. The right partner can assist in monitoring EoL notifications, provide immediate alerts and arrange for LTBs appropriate to demand. Buyers must create a strategy to get the parts they need—especially if they make long-lifecycle equipment for the military, aerospace, automotive and medical industries.

www.a2globalelectronics.com

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 S32 processors to analog-front-end, drivers, networking and power products.

Another innovation priority is connectivity solutions using the latest NXP S32 domain and zonal 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.

Foxconn's chairman, Young Liu, said: "Foxconn sees the disruptive challenges and the potential for innovation in today's automotive industry. This is a prime opportunity for our particular electronics expertise. NXP's longstanding expertise and leadership in automotive, its innovative products and its laser focus on safety, security and quality provide the foundation for the collaboration we are activating today."

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 architectures, smart and secure car access systems and more."

www.nxp.com


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SCAN ME

Productivity • By John Denslinger

Workplace upper hand

John Denslinger is a former executive VP Murata, president SyChip Wireless, and president/CEO ECIA, the industry's trade association. His career spans 40 years in electronics

In the face of a changing economy, John Denslinger encourages employers to value the people they have; employees to maximise their productive; and new hires to be flexible

Office productivity in the American workplace is second to none. For years, tech companies invested heavily in computational power, interactive systems, decision tools and global communication links allowing worker productivity to soar. That trend continues today as companies accelerate investments in cloud services and massive data storage to capture billions of vital data points from digital mining, IoT inputs and AI applications. One might say it's the perfect blend of man and machine with data-driven decision making, enhanced response to market and customer changes, integrated feedback loops, unlimited diagnostic tools and easy accessibility for the mobile user.

Tethered to the office was understandably the daily norm for generations. All that changed when Covid shutdowns shuttered offices. Employers were forced to rely on home-based workers for survival. In a way, the shutdown gifted an unexpected entrepreneurial opportunity to remote workers. In that time, workers (particularly younger generations) developed a different view of work. Empowered with more control over daily schedules employees settled into a comfortable blending of home and family care with work. It's no wonder career decisions value this benefit so highly.

In the quest for talent, who has the upper hand. Is it the employer or employee and why does it matter? Competing for talent remains a challenge. If published figures are right, hiring remains hot. Over the past 12-months, the professional and business services sector (most pertinent to our electronics industry) added 1.1 million jobs according to US BLS records and there remains more than 10 million job openings as overall demand continues to out-pace supply. It would seem employees have the upper hand and potential leverage over salaries, benefits and working location.

A survey of 1,500 managers by Robert Half, State of US Hiring, revealed 31 per cent of employers will allow new hires to live anywhere. So, on the issue of workplace, where do employers and employees stand? Employers talk hybrid but seem to favor all workers returning to the office. Loyal employees seem to prefer a mix of office time and some remote. Potential candidates seek work balance, quality of life and favorable locations before considering new jobs. Dave Fisch, CEO of Ladders Inc, a professional search firm, remarked that 68 per cent of job seekers search for remote only opportunities. Growing companies need to acquire talent, but companies also need to build trust, satisfaction and loyalty among existing employees keeping them competitive to market conditions. Again, the upper hand seems to line up with employees. Hybrid and remote working models will prevail.

However, change is in the wind. Wages are increasing but trailing inflation. Two consecutive quarters of negative GDP, confirms we are in a recession. The Federal Reserve's inflation reduction rate hikes are effectively dampening demand. Some tech companies are signaling cutbacks and layoffs. Others are simply resorting to 'quiet firing' selectively moving individuals out. The job market is about to shift.

The Fed may actually hold the biggest hand in the workplace debate. It judges its counter-inflationary progress on several metrics with unemployment being a key. The current rate sits at a low 3.7 per cent. As predicted, the Fed prefers to talk 'soft landing' and not a target unemployment rate that sufficiently thwarts inflation, but some studies suggest it may take a 6 per cent rate to break the current inflation cycle. High unemployment doesn't bode well for anyone.

Employers: value the people you have. It's costly to replace talent lost. Employees: be productive. New hires: be flexible.

ABOUT IBS ELECTRONICS

SINCE 1980

Improving Supply Chain Resieliency

The world of electronics manufacturing and the global supply chain has faced unprecedented times and record growth, producing challenges with it.

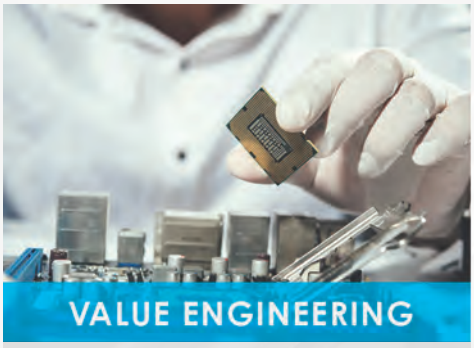
IBS Electronics Group understands there is no one-size-fits-all solution for every manufacturer and develops unique solutions that adapt dynamically to market conditions to solve customer challenges.

Founded in 1980 in Southern California, IBS Electronics Group is ISO 9001:2015, AS9120B & AS6081 certified global franchise distributor with over 40 years of experience delivering innovative electronics manufacturing services and supply chain solutions to a wide range of customer industries including automotive, industrial, telecom, medical, aerospace and more.

With customer experience in mind, IBS Electronics supports 360 degrees of its operation with the distribution of not only active, passive, and electromechanical components but also indirect materials and chemical products.

IBS Electronics creates an integrated supply chain with their customers and suppliers by becoming a seamless extension of their operations worldwide to only deliver "Best in Class" processes, information, technology tools, and people.

As a customer and people-centric organization, IBS Electronics customers experience dedicated support and endless possibilities. From vendor consolidation to value engineering, the results provide improved supply chain visibility and multi-source strategies building resilience to market disruptions regardless of geography, cost point, technology, or market demand.



VALUE ENGINEERING

IBS Electronics provides engineering support to deliver a bespoke solution. Whether it be a customized product or **pin-to-pin cross-references for alternative components saving cost, reducing lead times, and optimizing the assembly of your product, we will be there to guide you throughout the entire process.**

VENDOR CONSOLIDATION

Doing business with multiple vendors can be time-consuming. With an extensive line card, IBS Electronics offers the benefits of vendor consolidation. **Increase purchasing power, reduce freight costs, and reduce supply chain complexity.**

DEDICATED SUPPORT

IBS Electronics team of experts is dedicated to monitoring market trends, including stock availability and shifts in price, to provide an optimal customer experience by **anticipating manufacturers' unmet and emerging needs.**

HELLO FROM

CAMDENBOSS

ABOUT US

We are the UK's leading manufacturer of off-the-shelf enclosures, bespoke plastic fabrication, and electronic components with 50+ years of experience!

OUR LOCATION

In June 2021, we invested into a significant expansion and moved into our new 10,700m² headquarters in Suffolk, UK. This allowed us to unite all our processes under one roof and increase our range of services.

OUR IN-HOUSE PROCESSES

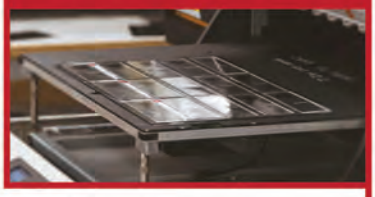
Our team of 100+ employees come together to design and create off-the-shelf and bespoke enclosures by using a streamlined series of processes...

Design & Prototype

Injection Moulding

CNC Machining

Digital Printing



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EA shapes the future with technological excellence and global customer support

The EA Elektro-Automatik Group is Europe's leading supplier in the area of power electronics for R & D and industrial application. At the headquarter in Germany in the industrial centre of North Rhine Westphalia more than 300 qualified associates, in a facility of 19000 m², research, develop and manufacture high-tech equipment for laboratory power supply, high power mains adaptors and electronic loads with or without power feedback.

Regenerative products

EA is setting new standards with electronic loads with regenerative power feedback in load operation, the introduction of a flexible output stage with laboratory mains adaptors and the development of an intuitive control concept with colour TFT touch displays. Results and experience of decades of R & D flow continually into new solutions. Automatic test systems with specially developed soft- and hardware assure a consistently high product quality. Flexible production processes enable quick reaction to changing customer requirements.

Development partner in forward looking sectors

With convincing performance criteria and a broad application spectrum, EA has established itself as the development partner in forward looking sectors. Thus, EA equipment is being used in battery and fuel cell technology. It is used in wind and solar energy, electrochemicals, process technology, telecommunications, automobile industry and many more future orientated sectors.

Electrification of the world

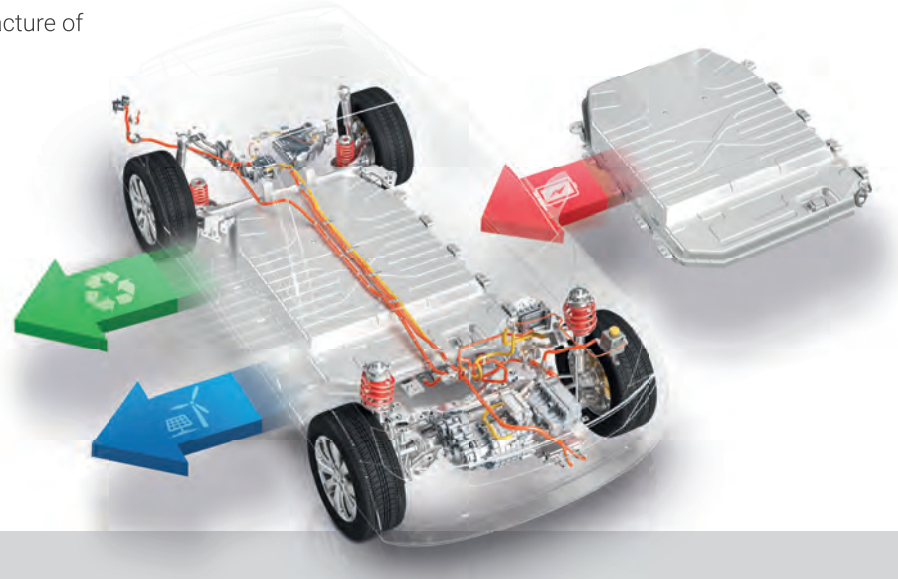
With its equipment, EA is helping to electrify the world. For example, EA equipment supports the design and manufacture of quality fuel cells and enables testing of fuel cells of any size. The reliable operation of electrolysis plants for the production of green hydrogen is ensured by modular EA-Power Racks. EA also actively contributes to the sustainable use of dismantled lithium-ion batteries from electric vehicles: With the bidirectional power supplies and regenerative loads, the residual capacities are checked before second-life use or the batteries are fully discharged before final recycling.

Global customer contact, value sharing

As a globally active company EA maintains close contact with national and international customers and partners. The sales network includes branches in China and USA, a sales office in Spain and an extensive partner network. EA continues to expand and, as a mid-size employer, takes full responsibility for development and production in Germany. Value based joint working is characterised by mutual respect and open communication.

Technological excellence is the demand of tomorrow

The foundation of the company in 1974 was based on innovation, a tradition which is maintained today. What started with the development of simple mains adaptors is continued today in the overall concept of technology leadership. With highly specialised power supply systems for a multitude of applications, EA is driving the future of power electronics – technologically excellent, designed for resource protection and energy saving and conceived for a multitude of applications.



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Crisp IPS displays in all sizes

Display Visions introduces small, coloured displays which impress thanks to rich colours, strong contrasts and angle stability

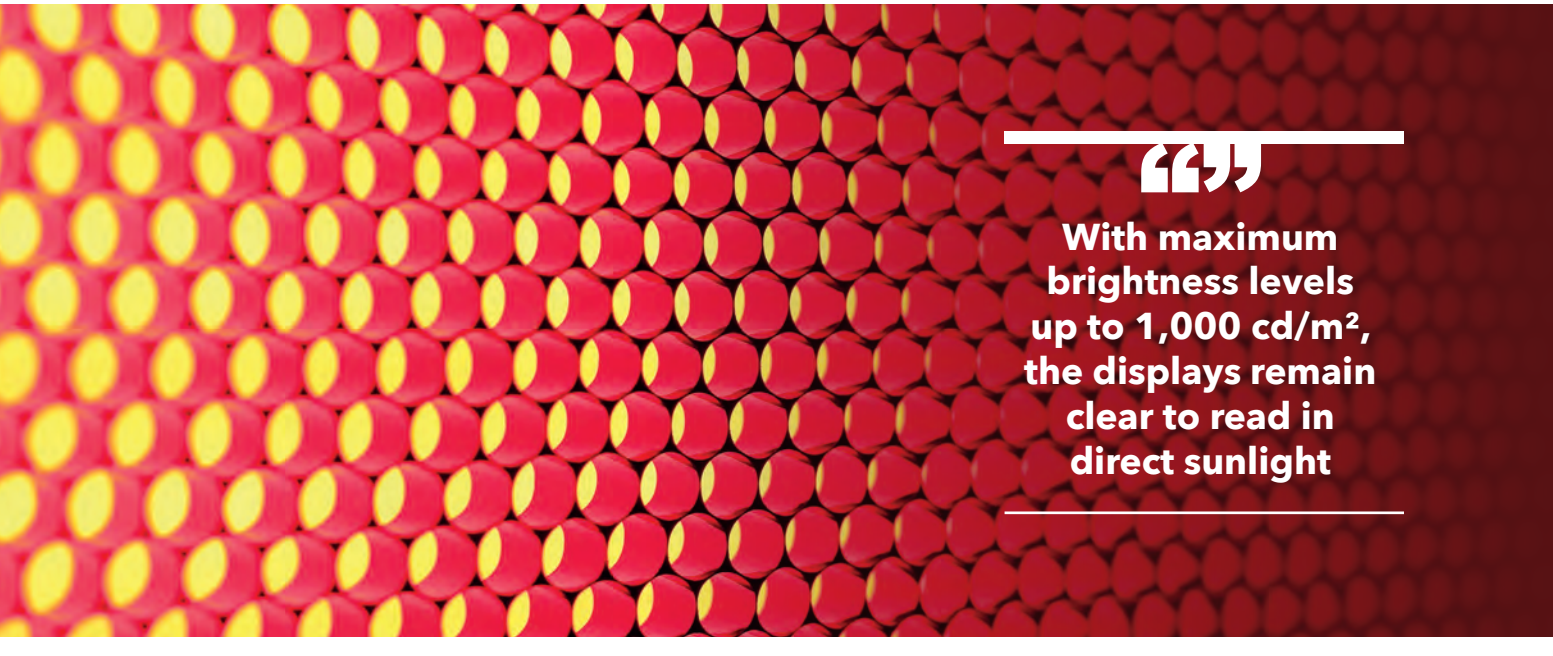
With its EA TFT series, Display Visions is offering buyers a series of small IPS colour displays which are described as an excellent replacement for monochrome graphics displays.

Regarding IPS technology, the light-conducting liquid crystals are aligned parallel to the image plane. This arrangement means colours and contrasts remain brilliant and stable, even if the viewing angle changes. Thus, the graphics displays can be installed in portrait and landscape format without any loss of readability. With maximum brightness levels up to 1,000 cd/m², the displays remain clear to read in direct sunlight.

Sizes range from 0.96 to 10.1in. In spite of its compact dimensions, even the smallest display has a resolution of 80 by 160px. As well as the standard RGB connection, the smaller displays have a four-wire SPI, which saves pins. The µC data bus allows 8 or 16-bit parallel access. For SMD assembly, the right connectors are included as accessories. Even the smallest displays are available combined with a resistive or capacitive touch panel.

Designed for industrial applications, service life is 50,000 hours at an operating temperature range of -20 to 70°C. The displays are available now, with Display Visions offering long-term availability and comprehensive support.

www.displayvisions.us



With maximum brightness levels up to 1,000 cd/m², the displays remain clear to read in direct sunlight

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Just Ask

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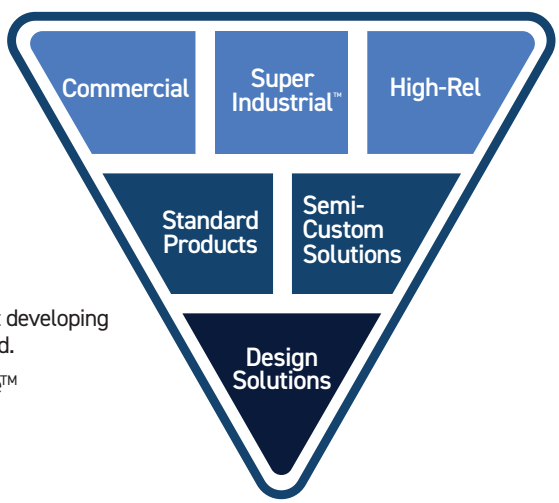

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When standard devices do not meet your design requirements, Central excels at developing semi-custom solutions. These may be devices new to Central or new to the world.

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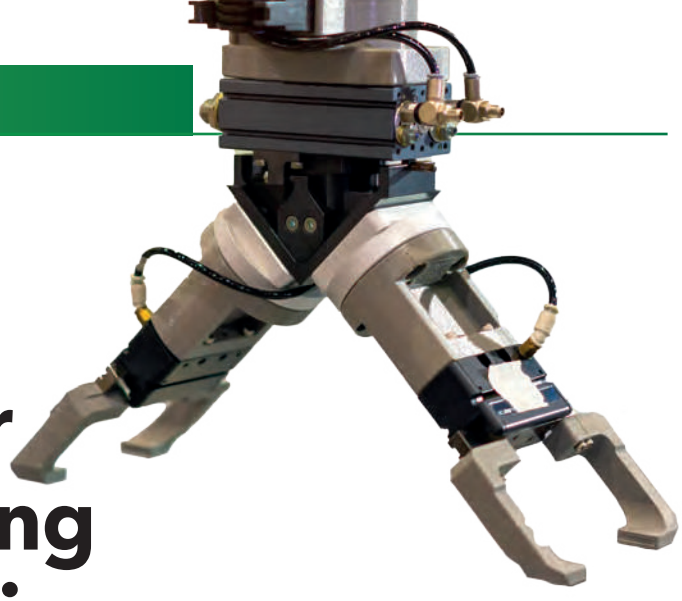


Considerations for component sourcing in robotic applications

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

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, sprayers, 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 v 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

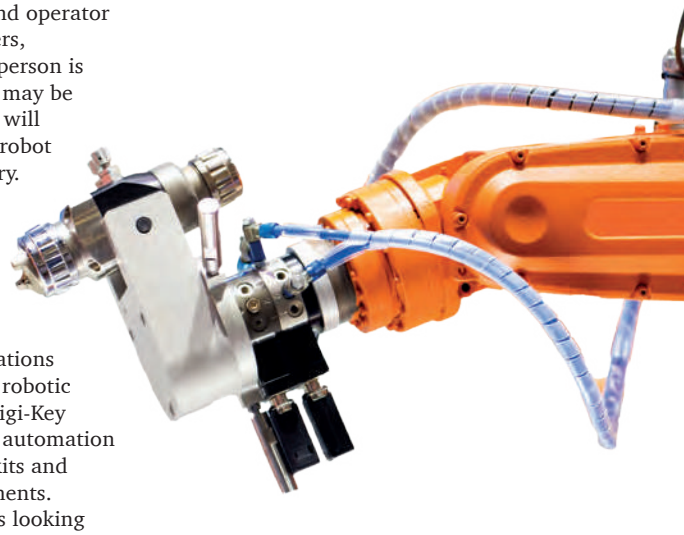
In collaborative environments, workers will be walking into and around the arc of the robot's swing. In these instances, zones are required to determine the robot's speed. These are frequently configured with a safety scanner, which uses a laser to detect objects within a 360deg span. Light curtains 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

> **Robot vision systems are versatile and flexible, so choosing the appropriate vision system for an application can be difficult**



Mitigating the impact of component obsolescence

Rochester Electronics' EMEA product and technology solutions manager, Ken Greenwood, encourages buyers to build reliable long-term supply chains

As technology evolves and advanced semiconductors dominate demand, older products are phased out as fab investment follows demand. This is the obsolescence phase of the semiconductor lifecycle. Companies who don't prepare well for this phase, risk premature product re-designs, shorter production/service lives and become vulnerable to possible counterfeits and quality/reliability issues.

There is a common misconception that once the original manufacturer stops producing a component, that unauthorised or grey market sources are the only solution. Nothing could be further from the truth. The risk-free option of an authorised after-market supplier, such as Rochester Electronics, should always be the first choice.

There are many ways to minimize the impacts of obsolescence:

- Obsolescence management begins at the design phase: Incorrect component selection during development can lead to premature product redesign and re-qualification. The lowest cost product may not be the best choice for long-term supply
- Understand the total cost of obsolescence: Planning for obsolescence is not a purchasing problem to be addressed as an afterthought
- Prepare for obsolescence and component scarcity: Preventative planning by purchasing, component engineering, design and program management can reduce or eliminate the cost and risk of obsolescence
- Proactively monitor component lifecycles: Practice regular component lifecycle monitoring to anticipate problems before they occur. Support tools are available from Z2Data, IHS Parts Intelligence and others. Authorised after-market suppliers can also provide insight over and above the algorithm generated lifecycle predictions standard tools provide
- Be aware of product discontinuation notices: Utilize component management databases to provide PDN notifications to highlight any PDN which affects your products.
- Last-time-buy: LTB orders are inevitable, but a supplier with an established EoL transition partner offers the supply of risk-free ongoing authorised stock and production if demand unexpectedly rises in the future

Authorised sources such as Rochester Electronics, receive their stock exclusively from the OCMs. Rochester is 100 per cent authorised by over 70 leading semiconductor manufacturers. Rochester's factory direct, AS6496-compliant, offering negates the need for expensive redesign, re-qualification and re-certification. Components are 100 per cent authorised, traceable and guaranteed direct from the OCMs. As a result, Rochester can offer original component warranties and guarantees.

Partnering with a licensed semiconductor manufacturer, such as Rochester Electronics, can also mitigate the risks of component obsolescence. A licensed manufacturer can produce devices no longer supplied by the OCM. When a component is discontinued, the remaining tested wafer and die, assembly processes and original test IP, are transferred to the licensed manufacturer by the OCM. Rochester manufactured parts are current date code with no solderability risk and sold with full approval under the original manufacturer's part number. They are 100 per cent compliant with the original datasheet specification. In some cases, Rochester has continued to build components first made EoL by the OCM 25-years ago.

www.rocelec.com

An authorised after-market supplier, such as Rochester Electronics, should always be the first choice

Outsmarting supply uncertainty

Given current supply interruptions, TCL Elektronika asks purchasing professionals to consider their plan for obtaining a better, future-proof PCB supply

Increasing demand for electronic equipment and telecommunication devices is anticipated to drive the growth of the global PCB market which was valued at $53.21B in 2020 and is expected to reach $69.32B by 2027 with a CAGR of 3.85 per cent over the forecast period.

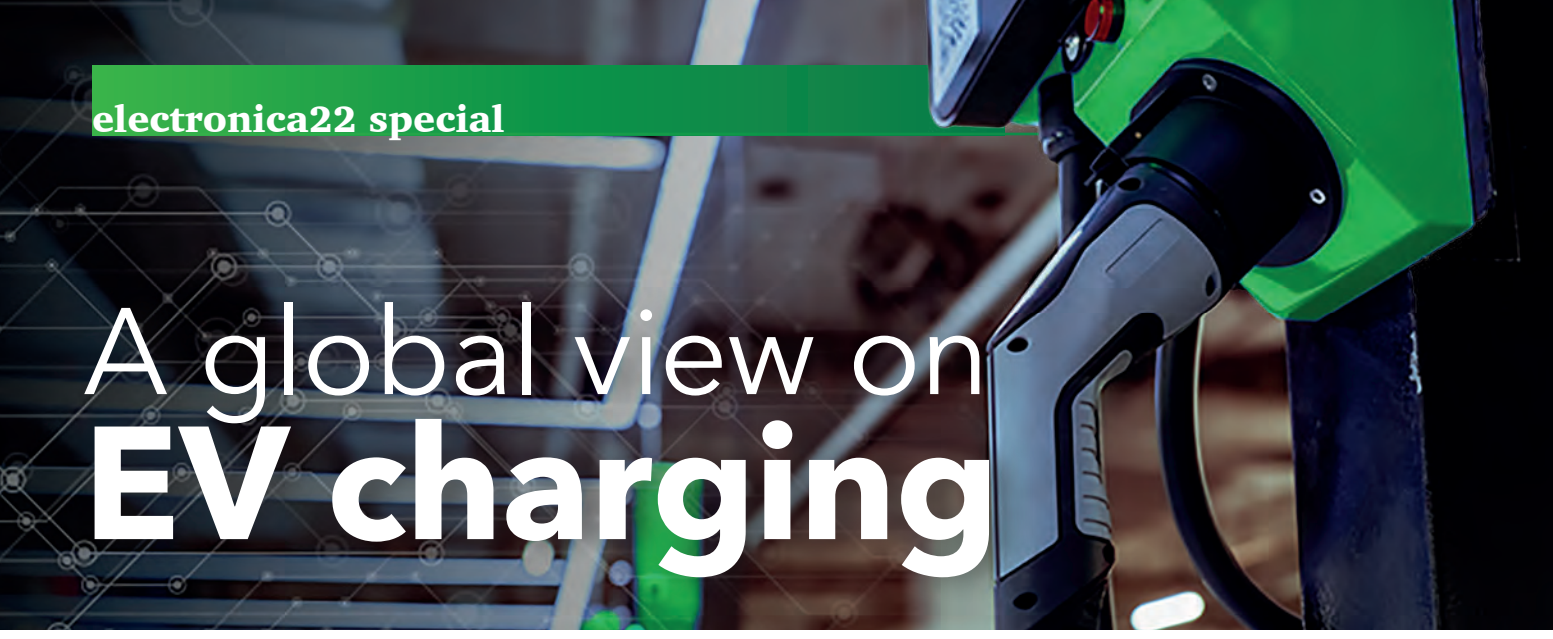
During the Covid-19 pandemic, demand for electronic devices increased due to social distancing. Online classes and work from home led to increased demand for smartphones, laptops, tablets, medical equipment etc.

Commodity prices continue to rise, with JP Morgan speculating the start of a new cycle, driven by the post-pandemic recovery, combined with massive fiscal stimulus, the reboot of many global economies and a weaker dollar. Copper, iron ore and precious metals recorded increases of 20 to 30 per cent, with copper increasing by approximately 20 per cent due to increased demand and reduced supply.

Increased demand for PCBs and shortages of foils are negatively affecting material delivery times and the continuing shortage of supplies. Both prepregs and copper-coated laminates are scarce.

www.tclelektronika.com

> **During the Covid-19 pandemic, demand for electronic devices increased due to social distancing**



A global view on EV charging

Avnet's sales director of lighting and transportation, Jason Skoczen, explores the infrastructure required to charge millions of vehicles at home and in public

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 systems engineer working across EMEA, Harvey Wilson, said: "The UK government recently announced an extra £1.6 billion to extend the EV charging infrastructure. This will see the number of charge points reach 300,000 by 2030, which will be five times more than the number of fuel pumps in the UK."

According to Statista data, China currently has a higher number of fast and slow charge points than any other region. 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 ACDC 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.

In North America the picture is, slightly different. Avnet's sales director of lighting and transportation, Jason Skoczen, reported demand increase for charging stations that support a wider range of e-vehicles including fleet vehicles, motorcycles and even commercial, construction and agricultural vehicles (CAV).

The European Union's Fit for 55 target will need at least 60 per cent of all road vehicles to be either fully or partially electric by 2030. Avnet Silica's director of vertical markets, Thomas Foj, predicts this will require at least six million new charge points by that time. Germany aims to have one million charge points by 2030, compared to just 50,000 today.

Avnet Abacus' sales director for central Europe, Tobias Nakel, 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 DCDC converters which can operate continuously at higher voltages. Partial discharge immunity will also be important when switching high voltages. This relates to the gate drivers but the isolation barrier is a known weak point in high-voltage circuits. Similarly, DCDC converters should have a low isolation capacitance, lower than engineers might otherwise specify.

The physical distance between the SiC or IGBT, gate driver and converter will also be an important design consideration.

Security is another requirement, addressed by specifications such as ISO15118:20. They need to be studied closely and implemented correctly. The latest edition supports multiple contracts and improves the overall levels of security imposed.

Other considerations include choosing the right output power level for each market. For example, not all EVs can plug directly into a DC supply. Charge point operators must understand the demand at any given public site and work with electric vehicle supply equipment manufacturers to install the right solutions.

Most installations will feature multiple charge points so load balancing is required, involving controlling and, if necessary, limiting the power delivered to specific charge points connected locally. If this isn't implemented, grid surges would quickly become unsustainable.

Momentum behind EV charging growth is creating new opportunities. Avnet Embedded, which works with OEMs to deliver turnkey solutions, has seen a massive increase in the number of electric vehicle supply equipment manufacturers in the last two years and expects this growth to continue for several more years.

www.avnet.com

The obvious difference is the refuel v recharge timeframe. This creates demand for more charge points at more than just service stations

E-commerce, BoM management, market intelligence and more

With technology in its DNA, Sourceability® explains its mission to bring the electronics components purchasing industry into the digital age

When the next major supply chain disruption hits, will buyers be prepared? Global electronic components distributor, Sourceability, is working to make sure they are. Founded in 2015, Sourceability has been building best-in-class digital tools, services and data to meet customers' evolving demands and address supply chain challenges.

With technology at its core, Sourceability offers a suite of digital tools and services, including Sourcengine™, Quotengine™ and Datalynq™ to expedite the procurement process. The company's flagship product, Sourcengine, is an e-commerce marketplace allowing the world's largest OEMs and suppliers to source, negotiate and purchase electronic components from over 3,500 suppliers on one platform.

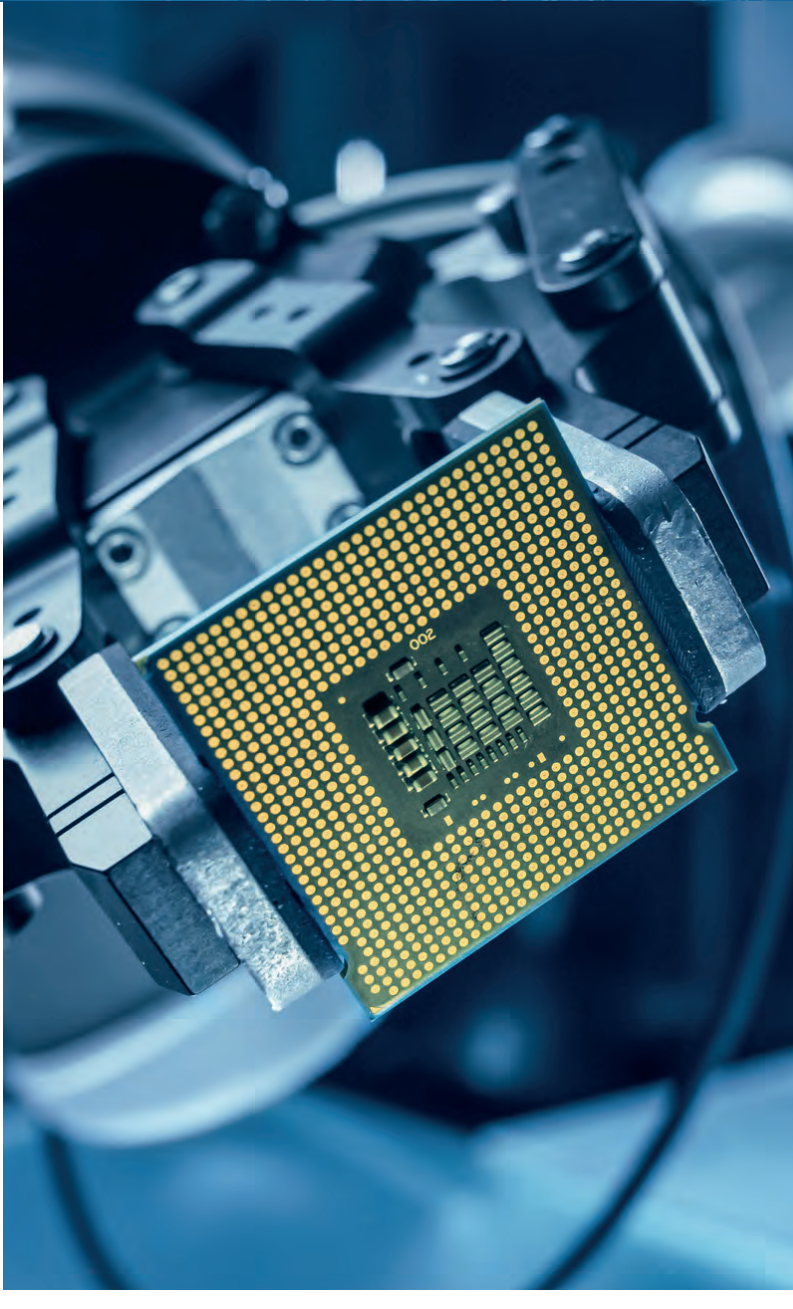
Quotengine is Sourceability's enterprise quoting and BoM management tool designed to provide instant access to price/availability and allows parts to be purchased instantly or procured through Sourceability's global sourcing team.

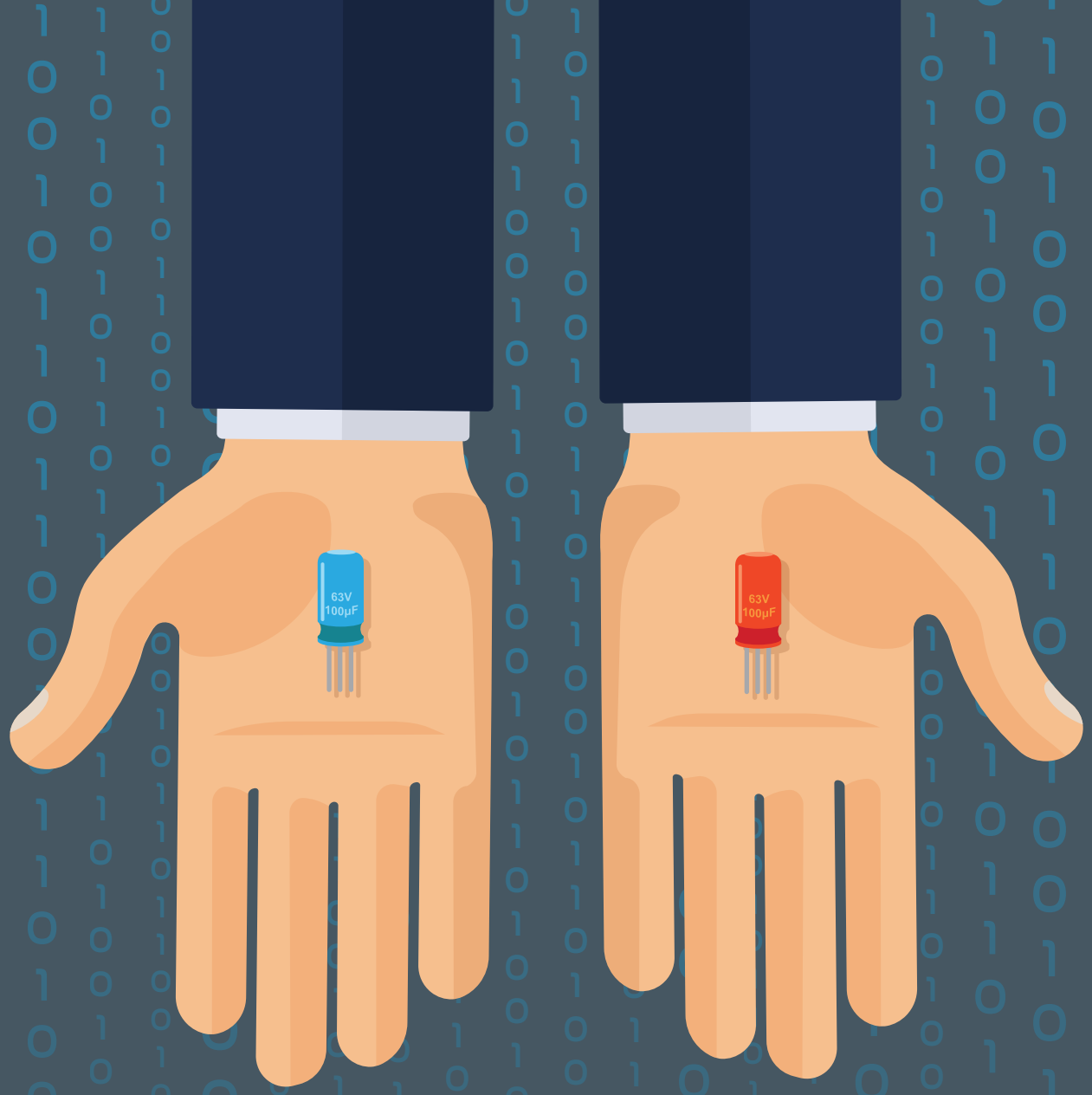
Datalynq provides market intelligence and analytics for over one billion parts to future-proof manufacturing lines. It offers real transactional data and insights for unparalleled accuracy.

Beyond these capabilities, Sourceability offers multiple ERP integrations, MOQ management among EMS partners, EOL/LTB program, excess inventory trade, price benchmarking and data-driven vendor reduction.

sourceability.com

Sourceability offers a comprehensive suite of innovative digital tools and services to expedite the procurement process





Leading the way in tough anti-counterfeiting measures

Mouser explains the processes and procedures it has in place to prevent counterfeit or gray market products entering its inventory

Threats of counterfeit components entering the supply chain is a growing concern as demand increases and fake parts are harder to detect. This, combined with the current product shortages, means it's more important than ever to buy from an authorized distributor.

Mouser Electronics' customers can order with confidence, knowing that the global authorized distributor has rigorous processes in place to prevent counterfeit products entering its inventory. Customers can expect 100 per cent certified, genuine products, fully traceable to each manufacturer.

Mouser is the electronic component industry's first authorized distributor to receive accreditation to AS6496, the aerospace industry's high standard for anti-counterfeit measures in authorized electronic component distribution. The standard sets requirements for the avoidance, detection, mitigation and disposition of counterfeit products in the authorized distribution supply chain. This international standard requires authorized distributors to have a counterfeit mitigation policy and a counterfeit electronics parts control plan. Industries and individuals looking to reduce the risk of counterfeit electronic parts entering the supply chain can accomplish this by using authorized distributors accredited to AS6496.

Mouser received the AS6496 accreditation in Fall 2018 from the Performance Review Institute (PRI), as part of the Counterfeit Avoidance Accreditation Program (CAAP). The CAAP audit was based on audit criteria (AC7403) created jointly by PRI, the Electronic Components Industry Association (ECIA) and aerospace OEM representatives.

CAAP is a cooperative industry effort to mitigate the risk of introducing counterfeit parts into the supply chain and the cost for compliance throughout the aviation, space and defense industries. The program was established to enable organizations like Mouser that purchase components and assemblies to demonstrate they have systems in place to identify counterfeit products and to minimize the risks associated with them. CAAP accreditation reassures customers of the organizations' vigilance and ability to act appropriately.

Mouser is also registered to AS9100D/ISO 9001:2015 and ANSI/ESD S20.20-2014, the industry's gold standards for quality, control and electrostatic discharge (ESD) protection. Mouser's AS9100D/ISO 9001:2015 quality management system adds additional aviation, space and defense industry requirements, including procedures and processes for the prevention of counterfeit parts. Registration to these standards provides customers with the confidence that Mouser is an authorized distributor of the highest quality components by providing traceability, risk management, process control, customer support, product availability and document/record control.

Whether customers are buying online or through one of the company's trained customer service representatives, Mouser has the professionals and procedures in place to ensure an effective and efficient supply chain, free of counterfeit or gray market products.

www.mouser.com/quality

> **The international standard requires authorized distributors to have a counterfeit mitigation policy and a counterfeit electronics parts control plan**

Selecting reliable passives for automotive applications

Knowles Precision Devices' global capacitor R&D and senior applications manager, Steve Hopwood, explains how higher voltages are impacting automotive passives

Electronic control units inside combustion vehicles and batteries required for EVs need reliable, high-quality components such as capacitors and filters. However, selecting components that can function reliably long-term in harsh environments is challenging.

The AEC-Q200 standard helps automotive companies identify high-reliability components. This standard defines the minimum stress test qualification requirements for passive electrical devices including ceramic capacitors. Components meeting AEC-Q200 are deemed suitable for automotive environments without additional component-level qualification testing. Thus, AEC-Q200-qualified parts save manufacturers time and money.

However, just because a part is AEC-Q200 qualified does not automatically mean it suits every automotive application. There are additional considerations, especially regarding high operational voltages.

A big factor for multilayer ceramic capacitors (MLCCs) is voltage rating. However, selecting an MLCC based on maximum operating voltage is actually not the limit to think about. To ensure reliability and human safety, the MLCC needs to be subjected to extremely high-voltage insulation tests, up to five times the part's operating voltage. The voltage rating to consider when selecting an MLCC is the maximum test voltage, otherwise you can compromise the component during testing, reducing reliability and resulting in early failure of the MLCC (Fig 1).

Using safety-certified capacitors for high-voltage operations, even where they are not required, can help alleviate this issue as these capacitors are tested externally to various international standards. Knowles Precision Devices offers auto-grade safety-rated MLCCs that have 100 percent dielectric withstand voltage (DWV) at up to 4,000Vdc.

Typically, MLCCs are not large components. But successful operation at high voltages requires larger MLCCs. In Fig 2 the MLCCs on the right used to be considered the largest size MLCC used in automotive applications but today's high-voltage requirements demand much larger components like those shown on the left.

One reason MLCCs have become larger is because higher voltage requires a higher minimum creepage distance. If a component is too small it impacts the dielectric's ability to withstand the voltage without a flashover. If a larger component can't be used, another option is conformal coating, although it must cover all the MLCC's surfaces, including underneath.

To avoid creepage and flashover, it may be tempting to use the largest applicable MLCC, however larger components are more susceptible to cracking due to board stresses (Fig 3).

One way to mitigate mechanical failures caused by cracking is open mode design, which moves the electrode overlap area into the chip to allow the MLCC to crack without going through the active area and causing an electrical failure. Another way is to build a tandem capacitor, where each capacitor is rated to take the full operating voltage if one shorts.

Knowles Precision Devices engineers prefer to address potential cracking failures by using a flexible termination. Invented by Knowles Precision Devices, flexible terminations absorb stress and increase the ability of the MLCC to withstand mistreatment. The company's FlexiCap™ flexible termination material can withstand a board bend of at least 5mm in a 100mm span directly under the chip.

www.knowlescapacitors.com

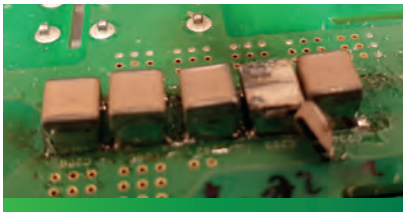
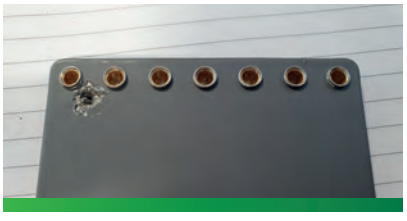


Fig 1: MLCCs failed due to overvoltage



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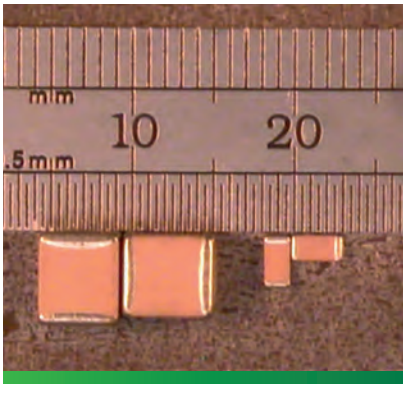

Fig 2: the MLCCs on the right used to be considered the largest size MLCC used in automotive applications but today's high-voltage requirements demand much larger components like those shown on the left

Fig 3: An MLCC that cracked and failed

Keeping the lines running

LCL's recently appointed purchasing manager, Richard Langham, explains how the purchasing department keeps the manufacturing lines running during these challenging times

Richard Langham started his electronics industry career in April 2022 as a component buyer for LCL Electronics Assembly. It quickly became clear Richard had joined the industry during a period of unprecedented supply issues with normal lead-times around 52-weeks and exceptional lead-times exceeding two-years.

Richard said: "At LCL the majority of our customers don't have the luxury of placing two year schedules as their business is dynamic which often means delivering product within eight to twelve-weeks. This means I have to work fast and smart to secure components to ensure I help keep production running.

"The way we achieve this is by following three main steps. Firstly, every new order is re-sourced and components double checked for availability and current pricing before we accept the order. Secondly, we review all hard-to-find components with our engineering team to identify drop-in alternatives or alternatives that only require minor redesigns to achieve required deliveries. All of which we do in partnership with our customers. Thirdly, we constantly manage our order book. It is too easy to sit back and assume the orders I place will turn up on time and everything will be fine."

However, unforeseen problems can occur. To help manage this, LCL's management team holds a meeting each morning to discuss the current status of all orders. These meetings cover hard-to-find components and shortages on upcoming jobs and the team works to find solutions.

Richard continued: "I was introduced to a number of search engines which take a lot of the legwork out of sourcing and find netComponents by far the best. It doesn't have all the answers but helps to identify potential stock or which markets and distribution channels may have inventory.

"The majority of my spend is currently with the catalogue companies, without who my job would have almost been impossible. Obviously they don't have stock of everything, but between them I can generally get hold of around 80 per cent of each customer's BOMs and whilst pricing can move almost daily in this market, I have found them to be very consistent.

"Larger franchise distributors have little free stock and what product is available on more sensible lead times has large MOQs and NCNR agreements attached to them. However, I have found the smaller independent distributors have been much more flexible and proactive in offering alternative solutions and overall, a lot more customer focused. I have also found it to be invaluable to have a strong relationship with a broker that can provide both quality product and a reliable service."

During the last six months LCL has designed several new products. A key consideration is part availability, which has made purchasing much easier. This lets Richard go to manufacturers and distributors with advanced orders to secure stock and ensure the new products are delivered on time.

Richard concluded: "Do not be scared to ask questions, knowledge is invaluable to help understand the vast spectrum of component purchasing."

lclelectronics.co.uk

LCL's purchasing manager, **Richard Langham**

LCL's management team holds a meeting each morning to discuss the current status of all orders

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Keys to sourcing parts in a tight market

Flip Electronics' president, Bill Bradford, offers practical advice for the times purchasing professionals find it necessary to turn to new sources of supply

The past few years have been unprecedented, plagued by a perfect storm of global pandemic, political turmoil, environmental shifts and semiconductor supply chain disruptions. Purchasing professionals must be more strategic than ever to get their jobs done.

Lead times, fed by capacity, materials and logistics constraints, have stretched to months—a trend likely to continue for at least a couple more years. These constraints extend across most component types.

For many buyers, the challenge to fill critical requirements means bringing on new sources of supply, including specialty and independent distributors, or brokers. Buyers will have to think differently about working with these new partners safely and effectively. Then, if purchasing from the open market becomes unavoidable, organizations will need to focus on counterfeit avoidance.

Before turning to the open market, procurement's first line of defense should include a strong relationship with a reputable authorized specialist distributor who focuses on hard-to-find products. These partners will communicate clearly about parts they have and how many, plus pricing and delivery. These strategies help purchasers avoid counterfeits.

Disreputable sources will push buyers to make quick decisions and wire funds without providing product specifics, such as date or lot codes, that verify what is being purchased. If a deal seems too good to be true, it probably is. Consider leveraging existing distribution partners to verify new sources. If nobody has heard of them, there's a real risk they are not legitimate.

Sometimes it's necessary to turn to new partners. When buying in the open market, good practices around parts verification should become top priority. Define what a counterfeit part is and take steps to identify and eliminate them.

Bad actors are getting more sophisticated. For example, counterfeiters may put a dozen or more genuine parts on a reel, followed by counterfeit parts, hoping the real parts will be tested and the counterfeits will be passed into manufacturing. Others try slipping through working parts that fail to meet specifications.

As counterfeiters get more sophisticated, buyers must become savvier. If forced to the open market for parts, multiple testing levels should be employed, particularly for applications where a parts failure could be devastating.

In this challenging market, the adage of 'trust but verify' holds true. Find trusted partners and work closely with them to verify that only genuine product is put into the manufacturing stream.

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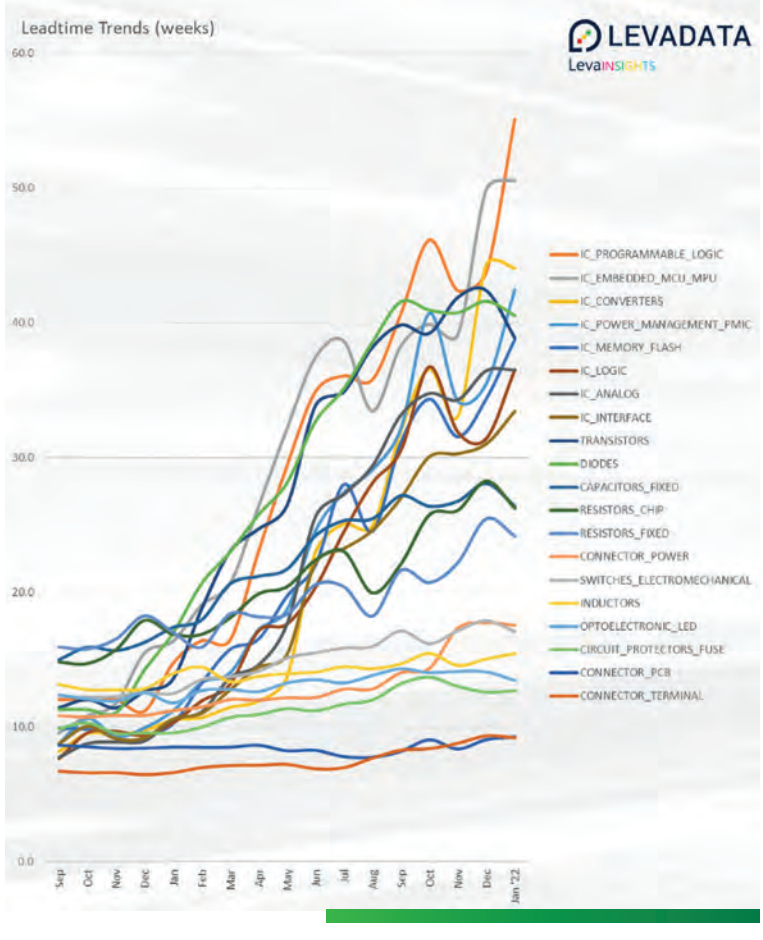

Source: **LevaData**
levadata.com/semiconductor-lead-time-updates-the-forecast-for-2022

Obsolete passives: no bid or no problem?

To find alternatives to obsolete or allocated capacitors or resistors, a distributor must commit knowledge, resource and time says Charcroft's Roger Tall

When a distributor receives an enquiry for an obsolete capacitor or resistor, the fastest and easiest response is a no-bid. For the distributor, this is a simple way of avoiding the work of finding an alternative. For the customer, it represents a dead-end and means extra work to find the part from another supplier or try to find a viable alternative.

The customer may be able to source the obsolete passive from an unfranchised source or the grey market. The customer then faces the added risk of losing full component traceability. The part could have been compromised by unsuitable storage or recovery from existing hardware nearing its end-of-life.

Instead of no-bidding, the distributor should accept responsibility for identifying an alternative. Providing this service is an essential part of developing and maintaining a long-term customer partnership.

Obsolescence is not the only reason buyers may find passives hard to source. As lead-times have extended, some passives are on long lead-times or allocation. Sourcing these passives is similar to sourcing an obsolete part. So, the distributor should automatically deliver the same level of skill and commitment to identify an alternative solution.

The process of identifying an alternative begins with knowing the part's full specification. Some bills-of-materials will only show a part number or even the internal part number used by some defence OEMs. The first step is finding the datasheet and checking the detailed parameters.

The challenge is that most distributors focus on fast-moving, high-volume markets. How many have kept copies of original datasheets for parts specified years or decades ago? Unlike non-specialist distributors, Charcroft has always focused on supporting customers in the military, aerospace and other demanding markets, where the end products have exceptionally long lifetimes.

This is why Charcroft has a digitised archive of every datasheet it has received over the past 50-years. Finding a full specification is just a matter of checking a datasheet possibly printed in the 1970s.

Defence OEMs' internal part numbers are also archived, so when a legacy internal part number appears on an enquiry, it can be cross-referenced to the component manufacturer's original part number.

This archive is a vital resource for finding replacement passives. Once the product description is known, it can be matched to an available part number from a different manufacturer or to its mil-spec part number.

An alternative can often be found by checking each parameter of the original against the required performance. Critical systems in defence, military, space or high-end industry need to be failure-free but that does not mean every component, in every system, needs the maximum possible screening offered by the mil-spec.

Every aspect of the passive component must be examined, from capacitance or resistance, to temperature, voltage, stability and packaging.

Must the replacement match the one per cent tolerance specified or was this a standard practice to specify passives to a tight tolerance? If the tolerance can be relaxed to five per cent, without compromising performance or reliability, the number of possible alternatives becomes larger.

Roger Tall, director and product specialist

Legacy datasheet archive dates back to the 1970s

> **Critical systems in defence, military, space or high-end industry need to be failure-free**

If the obsolete passive was specified in a metal case, the replacement could be in a plastic case with an epoxy end-fill to maintain reliability.

Where no available alternative can be identified, another solution may be to manufacture a custom passive assembly. One custom assembly, manufactured by Charcroft in the UK, combines one capacitor and two resistors from different manufacturers to provide a solution. These components were assembled in a series/parallel combination and encapsulated in a plastic case.

Custom assemblies can replace an obsolete passive by combining a deep knowledge of the demands of harsh applications, with an understanding of legacy and modern passive component technologies. Lateral thinking is often needed.

No-bidding on obsolete passives can be overcome if the distributor is prepared to dedicate the required time, skill and resources. It is not easy but is essential for a strong customer/distributor relationship. This is particularly important for customers buying passives for critical systems expected to perform reliably over many years.

The distributor must be prepared to dedicate specialist knowledge and resource, and work in partnership with customers and component manufacturers, to source alternative solutions. No bid should be replaced with no problem.

www.charcroft.com

Why component obsolescence need not mean product obsolescence

Rochester Electronics' technical sales manager EMEA, Ken Greenwood, steps readers through a thorough checklist designed to help OEMs plan for and manage obsolescence

When long term product availability is vital, companies need to ensure a reliable source of components—even after the component is made obsolete—and plan to manage obsolescence strategically. Failing to do so could lead to: line-stops; unnecessarily large financial commitments tied up in last-time-buy stocks; long-term storage costs; forced product redesigns; and premature product EOL and reduced service lives.

How can customers minimise the impact of component discontinuations?

1. Obsolescence management starts at the design phase. Poor component selection in development can lead to premature product redesign and re-qualification. Lowest cost may not be best choice for long-term supply.

Questions to ask suppliers include:

- What are the OCM commitments to long-term availability?
- Can the supplier demonstrate a controlled transition process through the EOL and into long-term authorised supply?
- Are the design's heart-beat components—the software packed microcontrollers, FPGAs or ASICs—comprehensively documented?
- Can the true design files (VHDL, Spice-models, test-vectors) be retained and archived at the design phase to offer a chance to rebuild if the unexpected happens?

2. Understand the total cost of obsolescence. Component obsolescence is not just a purchasing problem to be addressed as an afterthought. Does the project plan need to include anticipated product redesigns during its life? How are the costs of component storage accounted for? How will obsolescence impact on after-sales service commitments?

3. Plan for obsolescence and resource the management of it. If equipment has a long qualification, production or in-service life you will face component obsolescence. Preventative planning by purchasing, component engineering, design and program management can reduce or eliminate the cost and risk.

4. Proactive monitoring of component lifecycles. Regular component monitoring allows a user to anticipate problems before they occur. There are some excellent tools such as IHS Parts Intelligence and Bill of Materials (BOM) Intelligence, which track a component's lifecycle, lead-time and specification changes.

5. Be aware of product discontinuation notices (PDNs). There are many component management databases which can provide a PDN notification to highlight any PDN which affects your products.

6. Last-time-buy; what to forecast? LTB orders are inevitable, but a supplier with an established EOL transition partner offers the chance of risk-free ongoing authorised stock and production if demand rises, redesigns are delayed, or in-service commitments are extended.

7. Purchase from authorised sources. There is a common misconception that once the original manufacturer stops making a component, the grey market sources are the only option for supply. This is far from the truth. The risk of counterfeit and inferior products from unauthorised sources represents a significant risk to production yield and failure rates (MTBR). Inferior or substandard 'testing' by unauthorised third parties gives a veneer of confidence that this can be accurately tested. In truth, the testing is a poor imitation of the original manufacturer's test processes.

Authorised sources, such as Rochester Electronics, receive their stock exclusively from the original manufacturers, therefore Rochester can offer the original warranties and guarantees. Increasingly, Rochester is also able to offer ongoing licensed manufacturing solutions from known-good-die and test products according to the original test procedures. Rochester produced parts are current date coded with no solderability risk and are marked with the original manufacturer's part numbers, 100 per cent compliant with the original specification.

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Equipment protection in hazardous environments

Hammond Electronics' European account manager, Russell Irvine, offers buyers an overview of the enclosure selection process for hazardous environments

Hazardous environments are not specifically defined by any standard but are normally understood to be environments where: dust and/or water are to be found in the atmosphere; corrosive gases or liquids could be present; temperature extremes are expected; or shock and vibration can be encountered.

Hazardous environments do not have the same requirements as 'hazardous areas', defined by numerous international specifications as atmospheres where explosive gas or dust will be present. Equipment installed in such areas will need to be either explosion proof—in which case the enclosure will be required to contain an internal explosion—or else intrinsically safe—where the input energy is sufficiently restricted to prevent an explosion, but again the enclosure will normally be sealed to prevent any escape of flammable materials.

For use in hazardous environments, enclosures are typically manufactured from plastic, aluminium, GRP or stainless steel. The most widely used plastic materials are ABS and polycarbonate. Fire resistance is a consideration. The relevant standard is UL94 which specifies a vertical or horizontal burn. The more stringent test is the vertical burn test. Material will be classified as V0, V1 or V2 where V0 is the highest performance. Polycarbonate or GRP would normally be specified for outdoor use because of its good impact resistance and better resistance to UV embrittlement and colour fading than ABS.

Aluminium housings are strong and robust. They do not corrode, are electrically conductive, have an intrinsically high level of electro-magnetic attenuation and are easily machined. For applications where protection against shock damage is important, EMC is likely to be an issue or high temperatures, dust or water are expected to be present, an aluminium enclosure is the ideal low-cost choice.

Protection classes for solid object protection

First figure	Scope of protection
0	No protection.
1	Protection from solid objects greater than 50mm in diameter.
2	Protection against solid objects greater in diameter than 12.5mm.
3	Protection against solid objects greater in diameter than 2.5mm.
4	Protection against solid objects larger than 1.0mm.
5	Protection against the ingress of dust in harmful quantities.
6	Dust tight.

Protection classes for solid object protection

Second figure	Scope of protection
0	No protection.
1	Protected against vertically falling drops of water.
2	Protection against falling water droplets up to 15° from the vertical.
3	Protected against direct water sprays from up to 60 degrees from the vertical.
4	Protected against splashing water from any direction.
5	Protection against low pressure 6.3mm jets of water sprayed from any angle.
6	Protection against powerful 12.5mm water jets from any angle.
7	Protection against temporary immersion in water up to 1 metre deep.
8	Protection against continuous immersion in water greater than 1 metre in depth.
9	Protection against high-pressure, high-temperature jet sprays, wash-downs or steam-cleaning procedures.

IK number

00	No impact protection
01	Protection against an impact of 0.14 joule, equivalent to a 0.25kg mass dropped from 56mm.
02	Protection against an impact of 0.2 joule, equivalent to a 0.25kg mass dropped from 80mm.
03	Protection against an impact of 0.35 joule, equivalent to a 0.25kg mass dropped from 140mm.
04	Protection against an impact of 0.5 joule, equivalent to a 0.25kg mass dropped from 200mm.
05	Protection against an impact of 0.7 joule, equivalent to a 0.25kg mass dropped from 280mm.
06	Protection against an impact of 1 joule, equivalent to a 0.25kg mass dropped from 400mm.
07	Protection against an impact of 2 joule, equivalent to a 0.5kg mass dropped from 400mm.
08	Protection against an impact of 5 joule, equivalent to a 1.7kg mass dropped from 300mm.
09	Protection against an impact of 10 joule, equivalent to a 5kg mass dropped from 200mm.
10	Protection against an impact of 20 joule, equivalent to a 5kg mass dropped from 400mm.

Hammond Electronics' European account manager, **Russell Irvine**

Stainless steel and GRP both have good corrosion resistance when installed in environments where chemicals are likely to be present.

The enclosure will provide a secure environment for the housed electronics or systems. When it comes to the protection level required, it will be a balancing act. Over-specify and the enclosure cost will be unnecessarily high. Under-specify and there is the risk of equipment failure or malfunction resulting from contaminant ingress or impact damage.

The relevant international standard is IEC 60529. For installation in environments where dust and water are likely to be present, IP65 would normally be the minimum requirement. In North America, enclosures' environmental sealing is normally defined as a NEMA (National Electrical Manufacturers Association) number. NEMA ratings also require additional product features and tests (such as functionality under icing conditions, enclosures for hazardous areas, knock-outs for cable connections and others) not addressed by IP ratings.

EN 60529 defines ratings as IPxx, where the first digit defines the protection against solid objects and the second the protection against water ingress.

As an example, IP68: the first digit '6' means totally dust tight and the second digit '8' means protection against continuous immersion in water greater than 1m in depth.

Impact Protection

The relevant standard is IEC 622262, which defines an IK rating, a measure of the impact resistance of the enclosure.

Standard enclosures are widely available direct from the manufacturer, from international catalogue distributors and specialist enclosure distributors. Typically, enclosures enjoy extended availability and high levels of technical support throughout their lifetime. The majority of manufacturers offer in-house modification capability to configure the enclosure to the requirements of a specific project.

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ESE Editorial features list for 2023

	Features*	Special Focus	Show Previews	Deadlines (DD/MM/YY)
Jan/Feb	2023 Annual Special Edition – Distributor & Supplier Focus			Editorial: 02/12/22 Advert: 07/12/22 On Desk: 05/01/23
March/Apr	Connectors, Obsolescence, Kitting, IoT, PCBs	Aerospace & Defence	Embedded World	Editorial: 07/02/23 Advert: 09/02/23 On Desk: 03/03/23
May/Jun	Cable & Wiring, Power, Frequency, CEM Sourcing	Medical	Paris Air Show	Editorial: 07/04/23 Advert: 11/04/23 On Desk: 03/05/23
Jul/Aug	Displays & LEDs, Enclosures, Component Comparisons			Editorial: 06/06/23 Advert: 08/06/23 On Desk: 04/07/23
Sep/Oct	Connectors, PCBs, Thermal Management	Aerospace & Defence		Editorial: 04/08/23 Advert: 08/08/23 On Desk: 04/09/23
Nov/Dec	Displays & LEDs, Enclosures, Passives, Packaging, CEM	Automation & Robotics, Frequency	productronica	Editorial: 05/10/23 Advert: 10/10/23 On Desk: 03/11/23

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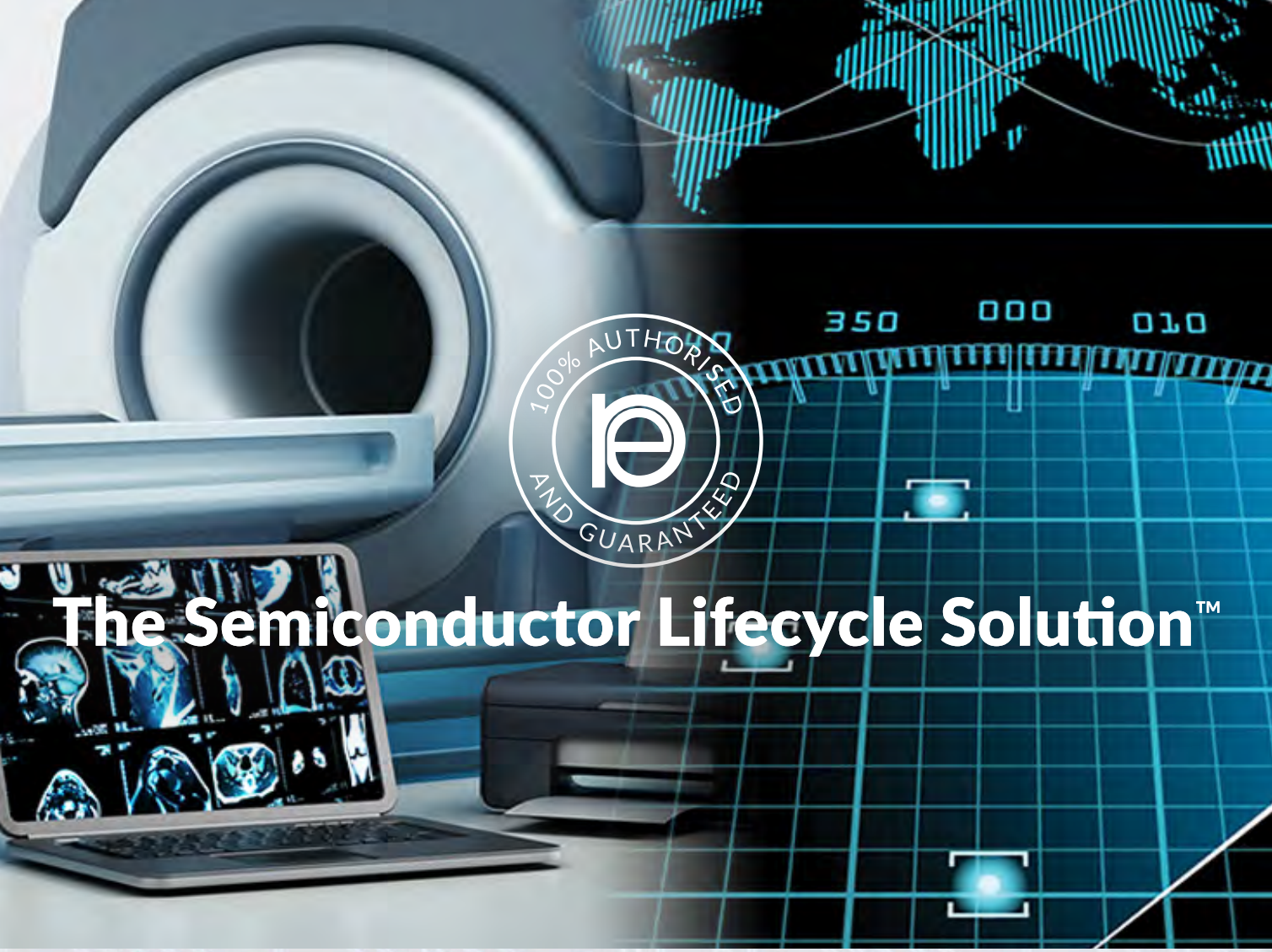

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