

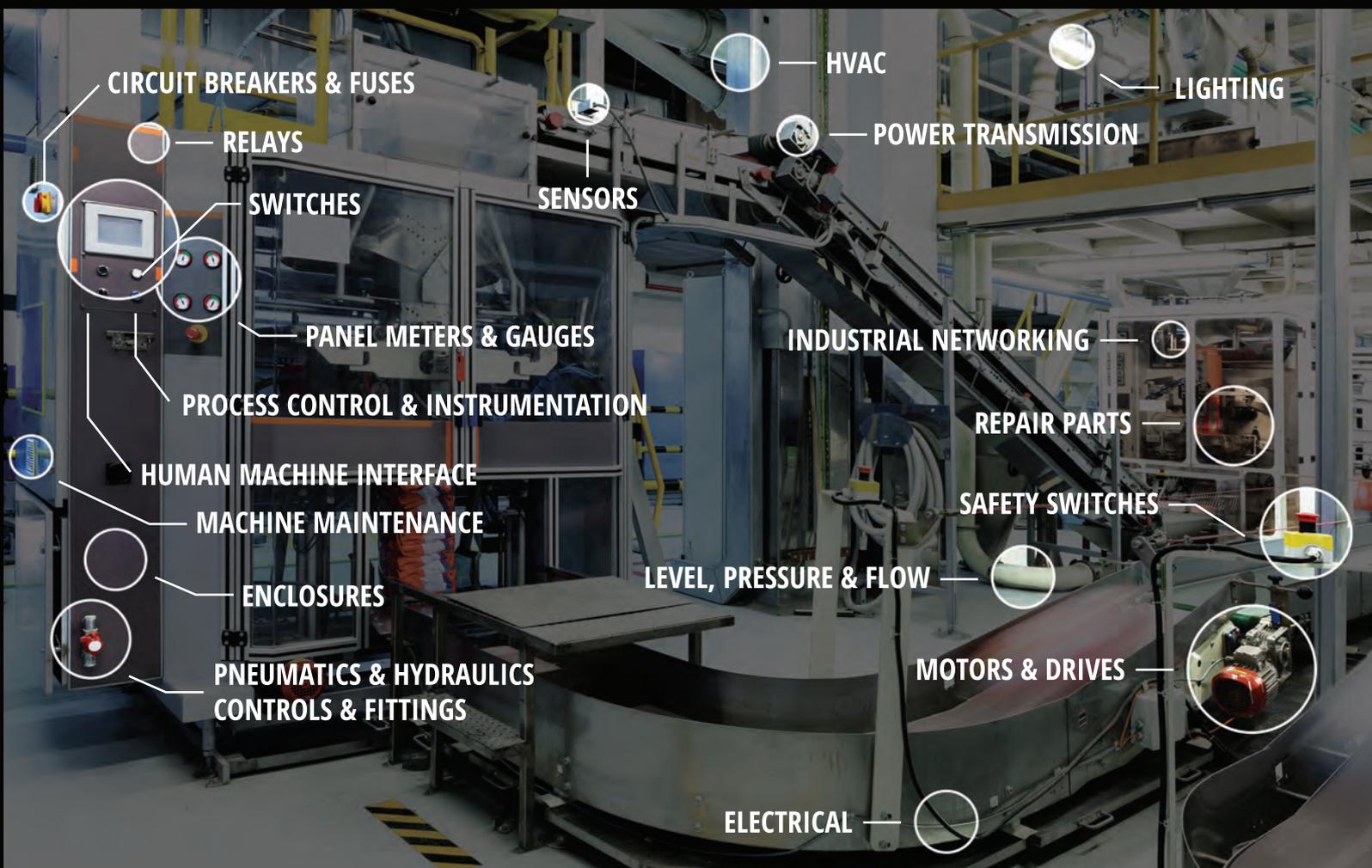
ELECTRONICS

JANUARY - ANNUAL EDITION 2022

# Sourcing

UK & IRELAND

ELECTRONICS SOURCING JANUARY - ANNUAL EDITION 2022



**MILLIONS OF PRODUCTS.  
THOUSANDS OF APPLICATIONS.  
YOUR GLOBAL ELECTRONIC  
& AUTOMATION RESOURCE.**

Finding the right part for the job has never been easier. Galco carries more than 3 million electrical products, with free technical support to help you find the part you need and get it quickly.

# **GALCO**<sup>®</sup>

[Galco.com](http://Galco.com)

# API SOLUTIONS

- Ordering
- Quoting
- Product Information
- Supply Chain
- Barcode Information



Download the free ebook  
at [www.digikey.co.uk/API](http://www.digikey.co.uk/API)



# Annual Edition 2022 – January

## Editor's Word



### 2022's magnet for care

I feel sorry for the humble bill-of-materials. What is it other than a table full of semi-unintelligible information? Nothing could be further from the truth; a manufacturing company's portfolio of bills-of-materials actually represents its beating heart. Just like a human heart, the health and welfare of every BoM needs to be front and centre.

It's easy to see why a BoM can get lost in the system. The problem is deciding who owns it: design, purchasing, manufacturing, accounts, QA? The answer is every BoM should be under joint ownership, all of the time.

If love, care and attention is lavished on a BoM throughout its life it can be allowed to evolve in a way that advances the role of every department. Naturally, there needs to be limits. I'm not encouraging mission creep or unnecessary change requests. In an ideal situation, regular care and attention hopefully results in no changes through a BoM's life provided it was well engineered in the first place.

However, if the past 2-years teaches us anything it's that the electronics industry is never in an ideal situation, it just swings from slightly to very unideal. Whether change comes in the form of the steady evolution of technology, moving customer expectations or the hammer blow of a global pandemic, every BoM is under pressure, all the time.

Make your BoMs your magnets of care for 2022. If you haven't already done so, build software applications that allow you to care for your BoMs without overburdening your existing processes. It's an upfront effort that fuels long term benefits for all.

*Jon Barrett*

### NEWS



Lead time cuts for automotive memory

04

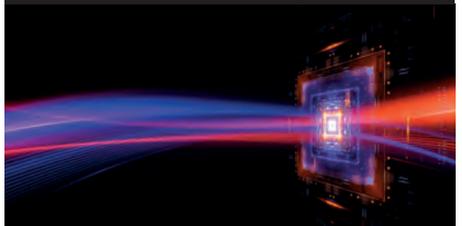
### DISTRIBUTOR AND SUPPLIER FOCUS



New year, new leadership

10

### COMPONENT COMPARISON



Manufacturers explore alternative components

28

### OBSOLESCENCE



Supply chain perfect storm

40

### BUYERS' GUIDE



All the facts and figures to help you buy

54

### Contact



**EDITORIAL**  
Managing Editor: Jon Barrett  
jorb@electronics-sourcing.co.uk  
Contributing Editor: Amy Barker  
amyb@electronics-sourcing.co.uk  
Editorial & Production: Thomas Smart  
thomas.smart@electronics-sourcing.co.uk

**ADVERTISING**  
Advertisement Manager: Emma Evernden  
emma.evernden@electronics-sourcing.co.uk  
Sales Executive: Daniel Moon  
daniel.moon@electronics-sourcing.co.uk

**DESIGN**  
Graphic Designer: Katie Williams  
katie.williams@electronics-sourcing.co.uk

**CIRCULATION**  
Circulation Manager: Vicky Leary  
vicky.leary@electronics-sourcing.co.uk  
Circulation Account Manager: Liz Poole  
liz.poole@electronics-sourcing.co.uk

**PUBLISHER**  
Mark Leary  
mark.leary@electronics-sourcing.co.uk  
Office Manager: Denise Pattenden  
denise.pattenden@mmgpublishing.co.uk

Issue 188, Vol.18 No.01  
Published 12 times per year  
by MMG Publishing Limited  
ANNUAL SUBSCRIPTION:  
EU Countries £60 Rest of World £90

MMG PUBLISHING LTD  
Suite 2, 1-3 Warren Court, Park Road,  
Crowborough, East Sussex TN6 2QX  
Tel: +44 (0)1892 613400  
Fax: +44 (0)1892 613402  
@Electrosourcing

Printed by: Pensord Press Ltd  
Electronics Sourcing is printed on  
sustainably sourced paper stock  
ISSN 2043-9504  
© 2022 MMG Publishing Ltd



ELECTRONICS SOURCING IS INDEPENDENTLY ABC AUDITED 2005/2021



Connect. Influence. Optimize.



Articles appearing in this magazine do not necessarily express the views of the Editor or the publishers. Every effort is made to ensure the accuracy of information published. No legal responsibility will be accepted by the publishers for loss arising from articles / information contained and published. All rights reserved. No part of this publication may be reproduced or stored in a retrieval system or transmitted in any form without the written consent of the publishers.

View current editions online

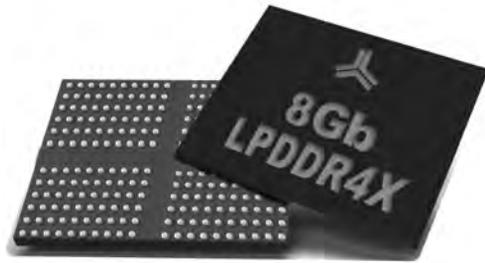
[www.electronics-sourcing.co.uk](http://www.electronics-sourcing.co.uk)



MILLIONS OF PRODUCTS.  
THOUSANDS OF APPLICATIONS.  
YOUR GLOBAL ELECTRONIC  
& AUTOMATION RESOURCE.

Find the right parts for the job. You'll save time. Get the best prices. Get the technical support you need for the part you need and get it.

**GALCO**  
galco.com



## Supplier cuts lead times for automotive memory

Alliance Memory has reduced lead times for its DRAM and Micron Technology NOR Flash memory devices with automotive temperature ratings. The company now holds 70 parts in finished goods stock, with lead times of just six weeks for its most popular automotive temperature range products.

A variety of CMOS SDRAMs are available, including DDR1, DDR2, DDR3/L, LPDDR4, and LPDDR4X devices, with automotive temperature ratings of -40 to 105°C.

Micron NOR Flash memory products include two, four, eight, and 16Mb 5V parallel NOR devices from the M29F series, and 32 and 64Mb serial NOR components from the N25Q series. Parts are offered with temperature ratings of -40 to 85°C and -40 to 125°C in a variety of package options.

Potential applications for these AEC-Q100-compliant products include advanced driving assistance systems; powertrain; automotive active safety and autonomous driving; in-vehicle-networking; customized in-car PCs; telematics; and infotainment systems.

[www.alliancememory.com](http://www.alliancememory.com)

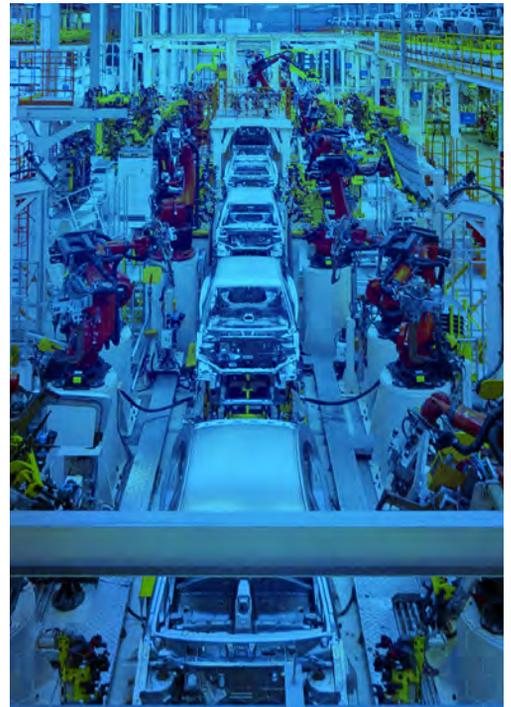
## Pent-up demand will fuel growth in 2022

Supply chain disruption has resulted in unfilled pent-up demand that should help carry growth into the first half of 2022, according to the IPC's December Economic Outlook. Although it has lowered its forecast, it continues to predict that 2022 should be 'historically strong'.

There is capacity to buy among both consumers and businesses, the IPC states, but supply chain constraints have limited potential growth in spending and investment. Manufacturers report strong order growth, however this is offset by higher costs and as a result profit margins are declining.

In a further industry report covering the Sentiment of the Global Electronics Manufacturing Supply Chain, the IPC records material and labour costs as the two largest issues facing the electronics supply chain. Inventory and transportation constraints also continue as a major impediment to growth.

[ipc.org](http://ipc.org)



## Find single pair Ethernet solutions online

Mouser Electronics has introduced a new solutions page dedicated to single pair Ethernet (SPE) technology. Developed in collaboration with Analog Devices, Würth Elektronik, and Harting, the site features valuable insights on how to deliver Ethernet connectivity to the edge.

Alongside content including a technical article, video, and webinar, the site also offers convenient product information for 10BASE-T1L SPE solutions from Analog Devices, Würth Elektronik, and Harting.

The new SPE solutions page has been developed in response to the growth of smart factories and the industrial internet of things, which has led to the need for robust connectivity on the factory floor. Ethernet is the leading architecture for large-scale industrial connectivity, with SPE technology delivering high-performance data and power transmission through a single-wire pair to field-level actuator devices and sensors.

To find out more about the technology and the solutions available from Mouser, visit the new SPE solutions page at <https://eng.info.mouser.com/adi-wurth-harting-single-pair-ethernet>.

[www.mouser.com](http://www.mouser.com)

# tioga

25 years of manufacturing excellence



Derby based Tioga Limited, founded in 1996, has developed into one of the UK's leading Contract Electronic Manufacturers.

Offering a broad spectrum of electronic assembly, the heart of Tioga's manufacturing facility is based in Derby right in the centre of the UK in a beautiful listed railway building. The site has been custom converted and fully refurbished into a modern, extensive and sophisticated plant housing state of the art equipment.

Our core competencies far exceed just manufacturing; this encompasses design, engineering support, global procurement and supply chain, manufacturing, test, configuration, warehousing and distribution. In short, we are able to take on board the management of customers' products in their entirety.

## Happy New Year!

As we move into 2022, everybody at Tioga would like to wish you a Healthy and Prosperous New Year.

The challenges we have encountered around supply chain and the continuation of covid-19 are still at an all time high so as we continue to adapt and work together we hope that these frustrations start to ease.

A massive 'Thank You' to all our customers and suppliers who have helped and supported Tioga through these very tough times and a special 'Thank You' to our people for their hard work, understanding and patience. As a partnership... not just a supplier, we are continuing to stay strong which under the circumstances is amazing!

Visit our Website to view our New Corporate Video.  
[www.tioga.co.uk](http://www.tioga.co.uk)

## ten reasons to team up with tioga

- State Of The Art Electronic Assembly
- 4 Fully Automated Mycronic SMD Production Lines
- BGA,  $\mu$ BGA and Complex Technologies
- EKRA X5 Screen Printers / Mycronic MY700JX Jet Printer
- Large Board Capability 560 x 600mm
- Nikon XTV 160 X-ray with Laminography
- ISO 9001 / ISO 13485 / ISO 14001
- Full Turn Key Solution / Boxbuild
- Wide Ranging Expertise
- Design Partnership



t +44 (0) 1332 360884  
email [sales@tioga.co.uk](mailto:sales@tioga.co.uk)



PART OF SYMPATICA GROUP LIMITED

## In Brief

### UK electronics manufacturing in recovery

UK electronics manufacturers increased their sales revenue by 30 per cent in 2021 versus 2020, outpacing average manufacturing, according to a report from software-provider, Unleashed. This is despite challenges including labour shortages, supply chain delays, rising costs, and a global semiconductor chip shortage. Those using eCommerce platforms had the greatest profit margin increases. [www.unleashedsoftware.com](http://www.unleashedsoftware.com)

### Fast enclosure customisation

Industrial enclosure manufacturer, Spelsberg, delivered a customised sample within one hour of request, subsequently providing 100 customised enclosures within two weeks of order. The units were manufactured using Spelsberg's on-site CNC facilities and delivered to Avanti Lighting, which had been contracted by a utility company to develop a weather-proof CCTV bracket and enclosure mounting system. [www.spelsberg.co.uk](http://www.spelsberg.co.uk)

### Flex circuits cut installation costs

Trackwise flexible printed circuit products have been utilised by a producer of gas and oil leak detection systems. Direct-C is using Trackwise's Improved Harness Technology to enhance the ruggedness and manufacturability of its WrapSense sensing strip. The technology enables production of longer strips and reduces installation costs. [www.trackwise.co.uk](http://www.trackwise.co.uk)

### Next generation thermal pads

Chomerics is introducing its next generation thermal gap filler pads called Therm-A-Gap Pad 30 and 60. Thanks to a special formulation, the pads are said to ensure complete conformability (with low clamping forces) and the lowest outgassing, thus providing an effective thermal interface wherever uneven surface irregularities, air gaps or rough textures are prevalent. [www.parker.com/chomerics](http://www.parker.com/chomerics)



## Hygienic enclosures in stock

Powell Electronics is now stocking the Hammond Manufacturing HYJ range of IP69/ IP69K stainless steel junction box enclosures for hygienic applications. Ideal for food processing and pharmaceutical manufacturing, HYJ enclosures have been designed to withstand regular high temperatures and high-pressure wash-downs. To further maintain hygiene standards, their design also eliminates areas like slotted screw heads where contaminants can gather. All sides slope to ensure water drains off quickly.

Available in five sizes, from 202 by 124 by 102mm up to 416 by 338 by 203mm, HYJ range enclosures benefit from a rectangular design enabling units to be surface mounted either vertically or horizontally.

To eliminate difficult to clean areas behind the enclosure, units are mounted on stand-offs, available in four different lengths, ensuring the device is fixed proud of the wall to facilitate wash down of all faces.

[www.powell.com](http://www.powell.com)



## Extensive battery choice

Rutronik is now offering Adam Tech's range of battery holders, battery snappers and mobile battery connectors. The series is manufactured in a range of connection variants, such as PCB leads with through-hole, SMT leads, wire leads and solder lugs.

The holders allow the attachment of various battery series and sizes including AAA, AA, C, D, 9V and lithium button cells from 12 to 24mm. Additional flexibility is provided by mounting at various heights.

Constructed from UL-94V0 or UL-94HB material with spring steel contacts, the holders are said to be efficient under both normal and demanding environmental conditions. Customised lead lengths and wire configurations are available.

[www.rutronik24.com](http://www.rutronik24.com)

## Demand for semiconductors increases

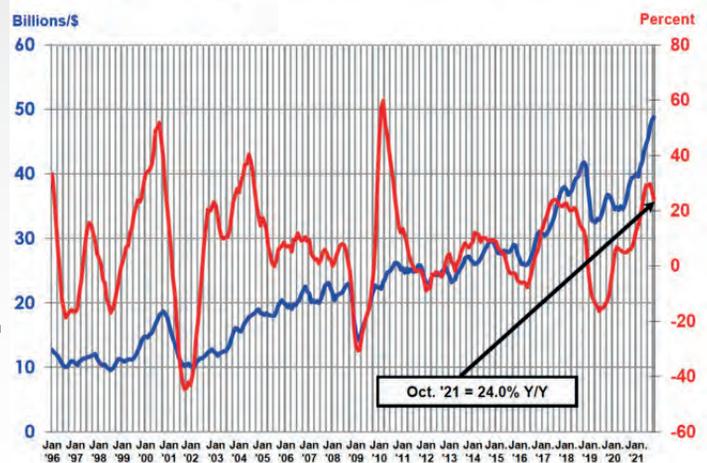
The Semiconductor Industry Association (SIA) has announced worldwide semiconductor sales of \$48.8 billion in October 2021. This is an increase of 24 per cent from the October 2020 total and 1.1 per cent more than the total for September 2021.

A newly released forecast from the World Semiconductor Trade Statistics organisation also projects annual global sales will increase 25.6 per cent in 2021 and 8.8 per cent in 2022.

SIA president and CEO, John Neuffer, commented: "Global semiconductor demand remained high in October, with year-to-year sales increasing substantially across all major regional markets. Annual chip sales and units shipped are projected to reach all-time highs in 2021, with moderate annual growth expected in 2022."

## Worldwide Semiconductor Revenues

Year-to-Year Percent Change



Source: WSTS

— Revenue — Y/Y % Change

Regionally, year-to-year and month-to-month sales increased across all major markets with the greatest increases in the Americas and Europe.

[www.semiconductors.org](http://www.semiconductors.org)

# design NEC BIRMINGHAM | 8-9 JUNE 2022 engineering expo

## The future of electronics design engineering.

From design services, electronic, embedded design through to testing and measuring, meet the suppliers who can deliver the latest tech and innovations to drive efficiencies and optimise future strategy.

- Inspiring Keynotes
- CPD accredited workshops
- Market leading showcase of Britain's best suppliers.

Supported by



Premier Partner



Media Partner



Part of  
**manufacturing engineering week**  
NEC BIRMINGHAM | 6-10 JUNE 2022

Incorporating  
**design engineering expo**

**engineering expo**

**manufacturing expo**

Register your interest now at [www.designengineeringexpo.co.uk](http://www.designengineeringexpo.co.uk)

@DesignEngExpo

# Sourcing genuine components in a turbulent market

*Mouser Electronics' technical marketing manager EMEA, Mark Patrick, discusses the value of authorised distribution*

In the current market, buyers frustrated by interruptions to their supply chain may resort to sourcing components from unfamiliar distribution sources. However, this decision is fraught with risk because some unauthorised distributors choose to source their components from the 'grey market'. The provenance of such parts is often unknown, meaning their authenticity cannot be determined. It can be difficult to distinguish a counterfeit component from the genuine part because they are deliberately packaged to appear identical—featuring the same manufacturer branding and part number. Determining if a part is fake or genuine can only be done by carefully examining the package's internals, a task requiring an x-ray machine and specific testing skills.

A major concern associated with counterfeit components is the high probability they have not undergone the same rigorous testing and quality control procedures as genuine parts. This means they are more likely to exhibit inferior performance or even fail in the field. Engineers who use counterfeit components could be exposed to legal actions relating to product faults.

With chip shortages projected to continue into 2022, individuals and OEMs are advised to only source components from authorised

distributors with systems for tracing components back to the point of manufacture. This is especially important for components intended for use in medical/aerospace applications, which must have relevant documents and certification.

Mouser Electronics was the industry's first authorised distributor with AS6496 accreditation, the aerospace industry's high standard for anti-counterfeit measures in authorised electronic component distribution.

The AS6496 standard sets requirements for the avoidance, detection, mitigation and disposition of counterfeit products in the authorised distribution supply chain. This international standard requires authorised distributors to have a counterfeit mitigation policy and a counterfeit electronics parts control plan. AS6496 is geared for all industries and individuals looking to reduce the risk of counterfeit electronic parts entering the supply chain.

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). Registration to these standards lets customers know Mouser is an authorised distributor of the highest quality components by providing traceability, risk management, process

control, customer support, product availability and document control.

Mouser has rigorous processes in place to prevent counterfeit products entering its supply chain, so customers can be confident that the components they purchase are genuine. In addition to product integrity, Mouser also assists its customers through real-time stock updates and obsolescence management, plus offers a variety of technical tools and resources to assist designers and buyers.

[www.mouser.co.uk/quality/](http://www.mouser.co.uk/quality/)

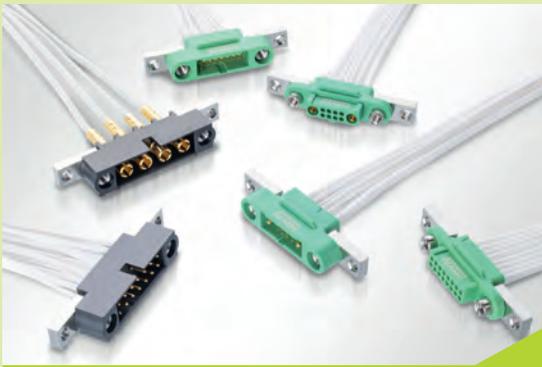


Mouser Electronics' technical marketing manager for EMEA, **Mark Patrick**



**Mouser Electronics was the industry's first authorised distributor with AS6496 accreditation, the aerospace industry's high standard for anti-counterfeit measures in authorised electronic component distribution**





## Rear panel mount connectors increase hi-rel choice

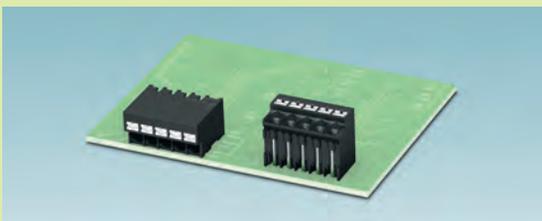
Harwin now offers rear panel mount cable connectors for both its 2mm-pitch Datamate and 1.25mm-pitch Gecko high-reliability products. They complement existing front panel mount solutions, providing purchasers with greater choice.

Designed to better protect connectors from the external environment, these new rear panel mount options reduce the risk of interconnect damage. Putting the connector on the inside of the enclosure also ensures sleeker, more streamlined equipment.

Versions of Harwin's Datamate J-Tek and Datamate Mix-Tek connector products will be available with rear panel mounting jackscrews. These will be fitted to male cable connector housings. The more compact Gecko-SL and Gecko-MT products with rear panel mounting are fitted to both male and female cable connector housings.

Contact counts of up to 50 per connector are supported for all products.

[www.harwin.com](http://www.harwin.com)



## PCB terminal range extended

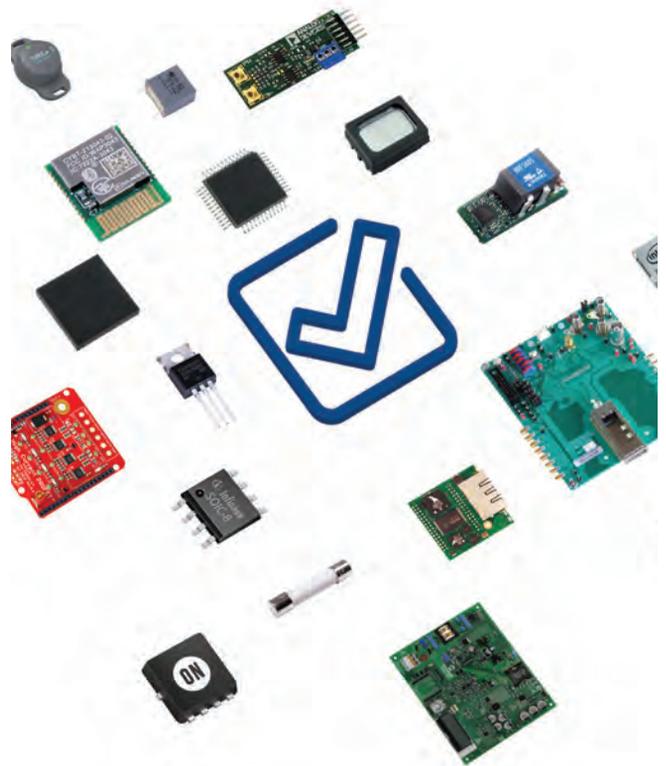
Phoenix Contact is extending its range of reflow-solder-capable PCB terminal blocks to include a 2.5mm<sup>2</sup> cross-section option. Constructed from heat-resistant plastic, the new PCB terminal blocks are designed for currents up to 32A and voltages up to 400V. They are suitable for connecting ferrules up to 2.5mm<sup>2</sup> and both rigid and flexible conductors up to 4mm<sup>2</sup>. Terminal blocks are available in two to 12-position versions for a pitch of 5.0mm.

Products in the new range feature push-in connection for quick and tool-free wiring. A colour-coded push button and defined contact force are said to ensure intuitive operation and permanently stable contacting. Because actuation and conductor connection are from one direction, the PCB terminals can be integrated into the device front.

[www.phoenixcontact.com](http://www.phoenixcontact.com)

## Ensure your products are 100% authentic

Mouser was the first SAE AS6496 accredited distributor



Widest selection of electronic components in stock  
[mouser.com/authentic-products](http://mouser.com/authentic-products)

# New year, new leadership

NOTE Windsor's new MD, Karen Heath, explains how the company's focus on skilled employees and technology investment underpins its high levels of customer service

As we start 2022, NOTE Windsor welcomes Karen Heath as the new managing director. Karen has over 20-years' experience in the electronics industry, joining NOTE Windsor—formerly Speedboard Assembly Services—in 2007. Karen has been responsible for customer service, sourcing, inventory and supply chain management, more recently working within the NOTE Group with strategic suppliers.

Her experience and skills have played a vital role within the Group in successfully navigating the electronics industry's current supply chain issues.

Karen said: "I am excited to take on the mantle of managing director at NOTE Windsor. The senior leadership team at NOTE Windsor have been part of the set up here for quite some time, so the strategy will continue as we move into this new chapter.

I intend to guide the site, moving at the right pace, in the right direction, working closely with our long-term partners and customers."



As we start 2022, NOTE Windsor welcomes Karen Heath as the new managing director

The company considers its employees are its greatest asset, many of whom have been with the business for over two decades. Their dedication and expertise ensure that customers receive the highest levels of customer service. NOTE Windsor takes great pride in supporting customers' needs by developing and improving processes and services continuously. The organisation is investing in capital equipment to improve productivity and efficiency and has received new machines

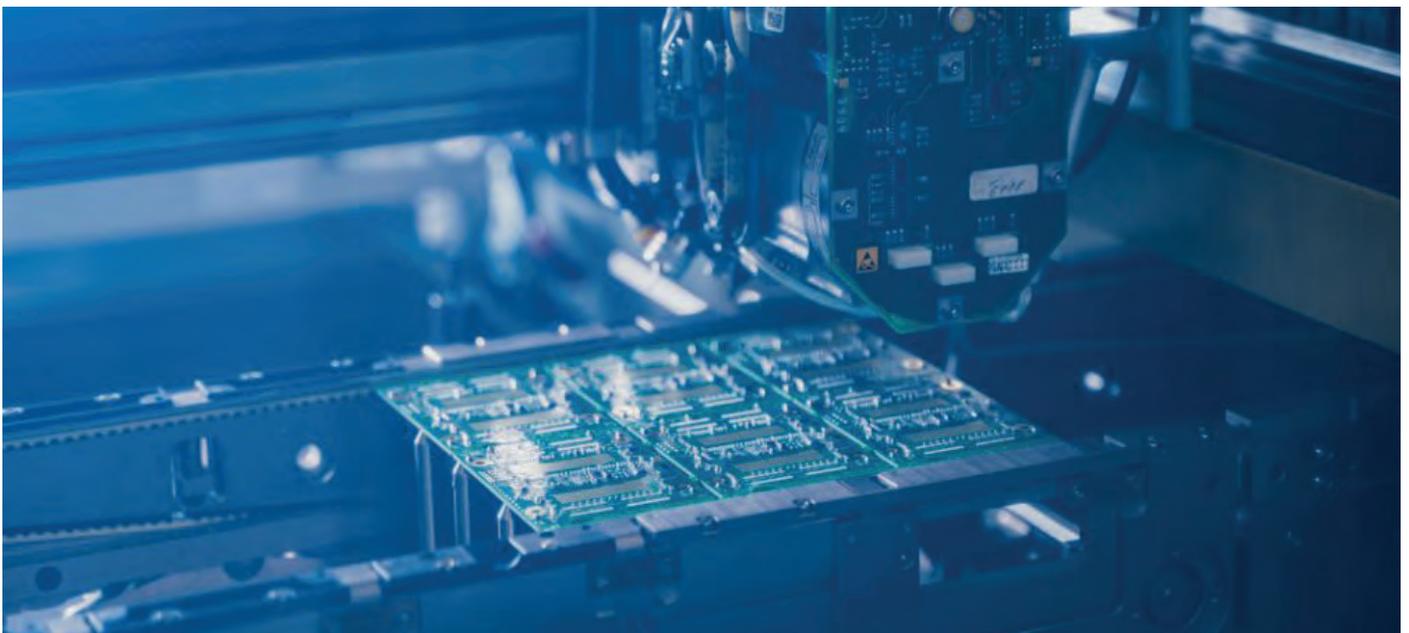
for delivery this year with further plans for new automated machines in 2022 and 2023.

Karen continued: "We are at the beginning of new and exciting times as we embark on this next phase at NOTE Windsor. Although the pandemic has made these last two years difficult and caused significant change, I am extremely proud of how we have worked within NOTE Windsor both internally in keeping our employees safe and externally balancing the needs of our customers and working closely alongside them whilst adapting to the everchanging Covid-19 restrictions. With the strong leadership team supporting me, I am looking forward to 2022 and meeting all our customers hopefully face-to-face once again."

[www.note-uk.co.uk](http://www.note-uk.co.uk)



NOTE Windsor's new MD, Karen Heath



# NOTE™

YOUR MANUFACTURING PARTNER

## NEED A FLEXIBLE UK MANUFACTURING PARTNER?

NOTE Group offer three flexible manufacturing locations in the UK, Windsor, Stonehouse and Haddenham.

- Flexible Product Fulfilment Solutions
- Global Network of Manufacturing Locations
- Product Lifecycle Management
- Development & Engineering Collaboration
- Flexible Supply Chain Solutions



MEDTECH



INDUSTRIAL



COMMUNICATION



GREENTECH

- Committed
- Proactive
- Quality Focused
- Flexible

To discuss your manufacturing requirements call Andy Thwaites on 07766 311419 or visit [www.note-uk.co.uk](http://www.note-uk.co.uk) for more information



# Generation change

Building on 67-years of success, Bürklin Elektronik reveals innovations in its digital procurement channels, including a new web shop

Since September 2020, the third generation has helmed Bürklin Elektronik with managing directors Veronika Tretter and Johannes Bürklin. With stronger customer orientation, a streamlined product range, expanded digital procurement channels and—soon to be—new web shop, they plan to continue the family business' success.

Veronika Tretter and Johannes Bürklin followed their father, uncle and grandfather's footsteps in the middle of a crisis. The first priority

was the strategic goal of 'stability', alongside greater customer orientation, a comprehensive streamlining of the product range and expansion of digital procurement channels in both directions.

**“”**  
The online presence means customers from all countries and regions rely on Bürklin Elektronik services

Bürklin Elektronik is on course for success and ready for new challenges including: introducing the new web shop; and mastering the consequences of raw material shortages. The web shop is designed to help customers quickly navigate their way around the Bürklin Elektronik world of some 500,000 electronic products thanks to a revised search function. The aim is to experience the wide world of electronics with just one click.

Digital procurement channels are also

a focus for Bürklin Elektronik. All common eProcurement solutions are offered. Customers and suppliers can be connected via API, EDI, OCI and eCatalogues. The online presence means customers from all countries and regions rely on Bürklin Elektronik services. No matter where customers need electronics, ordered goods are delivered next day or within a few days.

[www.buerklin.com](http://www.buerklin.com)

**BESTER**


**SAME DAY SHIPPING FOR ALL ORDERS RECEIVED BY 6PM**

**WWW.BUERKLIN.COM**

# Working with light since 1931

CML's commercial manager, Roger Neal, highlights the organisation's long history in light and looks forward to the company's involvement in emerging sectors including EV

Specialising in LED signal lamps, CML Innovative Technologies (CML) has been working with light since 1931. The company was one of the first to introduce LED lamps and now boasts one of the broadest ranges of miniature lighting products in the world including signalisation, panel mount indicators, LEDs, LED displays and medical/aviation lamps.

Commercial manager, Roger Neal, explained: "In 2004, the company became CML and continued to grow, establishing its international pedigree with two factories in Guangzhou, China and Sibiu, Romania. While CML remains in Bury St Edmunds, the group was

acquired by Spain's Grupo Antolin, which employs 28,000 people globally.

"CML in the UK focuses on specialist applications, mainly manufacturing lighting solutions for the automotive, aviation and general industries. We manufacture a standard range of products and customer-specific solutions from concept to production, including in-house design. Our portfolio runs to thousands of miniature lighting options in size, function, colour, finishes and voltages."

CML's products are evolving to meet customer demand for value. Unlike some competitors who only provide a face value

product, CML's manufacturing capability—such as adding cables and connectors to a product—carries greater value. By meeting bespoke requirements, CML can help customers reduce production time.

CML is looking to develop its products for EV charging applications as Roger explained: "We are preparing for a huge surge in the EV market. We're also developing more niche products for the UK food processing industry as we have seen buying behaviour in the UK has changed with a greater demand for locally sourced products."

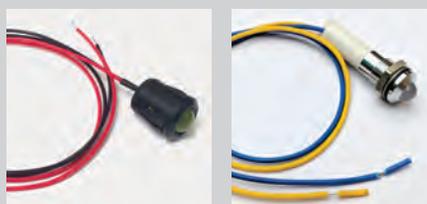
[www.cml-it.com/en](http://www.cml-it.com/en)



CML Innovative Technologies' commercial manager, Roger Neal

<p><b>AVIATION</b></p>	<p><b>BUS &amp; RAIL</b></p>	<p><b>MEDICAL</b></p>	<p><b>INDUSTRY</b></p>
------------------------	------------------------------	-----------------------	------------------------

Contact our Customer Services department to discuss your requirements today.



CML Innovative Technologies Ltd,  
69/70 Eastern Way, Bury St Edmunds,  
Suffolk, IP32 7AB, United Kingdom  
Tel: +44 (0)1284 714700  
email: [uksales@cml-it.com](mailto:uksales@cml-it.com)

Visit our website at:  
[www.cml-it.com](http://www.cml-it.com)





### Minimising BoM requirements

To simplify the installation of machinery, automation and transportation cabling and connectivity, Harting's Han 1A is designed to offer flexible power, signal or Ethernet connections in tight spaces.

The range features angled/straight bulkhead mounting, plus a panel surface mounted fixing frame for cable-to-cable mating. All achieved through snap-in latch/lever locking mated plastic IP20/IP65 housings.

Specifications include power (10 to 16A @ 400V), signal (0.5A/48V to 4A / 250V) and Ethernet data (M12 Cat 5 D-Code or Cat 6A X-Code insert), minimising BoM requirements and allowing lower piece stock costs. A standard panel cut-out simplifies interface panel design. Snap-on colour coding clips allow part differentiation.

The company states the Han 1A Ethernet data version offers significant advantages over recognised M12 cabling solutions, while allowing use of their industry recognised and proven inserts. The inline free or cable-to-cable mounting frame allows M12 Cat 5 D-Code or Cat 6A X-Code inserts to be mated without the optical alignment concerns of normal M12 housing connectors.

[www.harting.com](http://www.harting.com)



### 1MHz current sensor features five-year warranty

LEM has introduced a unique high bandwidth (1MHz) open loop sensor capable of current sensing in harsh environments. The HOB-P series was developed to meet high bandwidth sensing requirements when using fast-switching silicon carbide (SiC) Mosfets in high-voltage pulsed-power circuits where fast, flexible high-voltage pulses are essential.

With a response time of < 200ns—compared to average response times of around 3microseconds—the sensor is capable of measuring DC, AC or pulsed current up to 250A. Thanks to a pick-up coil on LEM's application specific integrated circuit (ASIC), the sensor is capable of reacting like a current transformer. It suits wide bandgap (WBG) power electronics use cases and applications that require enhanced immunity to the dv/dt (acceleration) issues that SiC power modules are prone to.

Applications include hand-held plasma cutters, welders, DC-DC converters, uninterruptible power supplies, switched mode power supplies, AC variable speed/servo motor drives and static converters for DC motor drives.

The series is CE marked and covered by LEM's five-year warranty.

[www.lem.com](http://www.lem.com)

### **How do you solve obsolescence issues and locate hard to find parts?**

The International Institute of Obsolescence Management (IIOM) has been helping companies to address the problem of obsolescence in long life cycle industries since 1997, chapters are now operating in Germany, India, UK and USA. Its corporate members include asset owners & operators, manufacturers and obsolescence solution providers.

The short life-cycle of electronic components, driven by consumer markets, makes sustaining of long life cycle systems increasingly difficult, but it is not just about electronic components – globalisation and consolidation of the supply chain, supplier bankruptcy, and new regulations such as REACH affect electrical and mechanical components and equipment as well.

By joining IIOM, you will be able to talk to experts from industry and academia about how to implement obsolescence management best practice, to find obsolescence solution providers, and to recognise and develop the competence of your obsolescence experts.



## International Institute of Obsolescence Management



### Date for your Diary

**IIOM International Conference Munich**  
Thursday 17th-19th May 2022

To find out more look at our website [www.theiiom.org](http://www.theiiom.org)

# Semiconductor lifecycle solution

When buyers face component end-of-life sourcing challenges, Rochester Electronics offers access to a 100 per cent authorised solution

Rochester Electronics is the world's largest continuous source of semiconductors, 100 per cent authorised by over 70 leading semiconductor manufacturers.

As an original manufacturer stocking distributor, Rochester has over 15 billion devices in stock encompassing more than 200,000-part numbers, providing the world's most extensive range of end-of-life (EOL) semiconductors and broadest range of active semiconductors.

During component shortages and long lead-times, when products may be harder to find and customers may be faced with line-down situations, it is important to know that buyers can quickly identify and obtain product risk-free from Rochester Electronics.

Over 10 billion of the company's in-stock devices are classed as EOL by the original component manufacturer.

Rochester is licensed to manufacture devices no longer produced by the original component manufacturer and has manufactured over 20,000 device types. With over 12 billion die in stock, Rochester has the capability to manufacture over 70,000 device types.

With the original manufacturers' approval, Rochester can replicate the original device. The end-product is a form, fit and functional replacement guaranteed to the original datasheet. Rochester also offers a full range of manufacturing services including design, wafer processing, assembly, test,

reliability and IP archiving providing single solutions through to full turnkey manufacturing, enabling faster time-to-market. Rochester's growing product

and service portfolio continues to provide an authorised source of supply to customers around the world directly, in partnership with its authorised

distribution network and through leading-edge e-commerce platforms.

[www.rocelec.com](http://www.rocelec.com)



© 2022 Rochester Electronics, LLC. All Rights Reserved.

## WE KEEP THINGS MOVING.

The world's largest continuous source of semiconductors.



Authorised Distribution | Licensed Manufacturing | Manufacturing Services

Unit 2 Fenice Court, Eaton Socon, St Neots • Cambridgeshire PE19 8EW • United Kingdom  
[+44.1480.408400](tel:+441480408400) / [emeasales@rocelec.com](mailto:emeasales@rocelec.com) / [www.rocelec.com](http://www.rocelec.com)

Exclusively sponsored by



# What's ahead for electronics distributors in 2022

Dave Doherty is president at Digi-Key Electronics. Digi-Key is both the leader and continuous innovator in the high service distribution of electronic components and automation products worldwide, providing more than 10.1 million components from over 2,000 quality name-brand manufacturers

**2**021 has been a whirlwind of a year, bringing both new challenges and opportunities to the high service distribution industry. Here's a look at what made this year one for the history books, how the industry addressed 2021's challenges, and what may be around the corner in 2022.

## Supply & Demand Upheaval

The past year brought many challenges to the electronic components industry. While there may still be some challenging times ahead, orders will likely begin to return to more realistic levels in late 2022 as customers find more breathing room.

Even throughout these unpredictable market conditions, distributors like Digi-Key have weathered the ups and downs by continuing to invest in strategic initiatives to expand warehouse capacity, localize the customer experience both digitally and from a support standpoint, scale digital offerings and web services and expand into new markets, in order to continue serving customers around the globe with the best possible purchasing experience.

## Rising to the Occasion

Suppliers in every niche of the market deserve recognition for their performance over the past year. In 2021, suppliers have gone above and beyond, identifying new, innovative ways to increase their supply and provide customers with the parts they need.

We are proud to work with suppliers who truly understand the importance of their products to the engineers and makers around the world who are creating innovative projects every day.

Digi-Key believes in a digital-first approach, and is always developing new ways to make it easier for our customers to engage digitally from anywhere around the globe, including localizing their experience in markets around the world with local language, currency and support hours, as well as fast shipping times.

Today, Digi-Key supports 26 local currencies and does business in 21 local languages – something that will continue to grow along with the business.

## Looking Ahead

In many ways, the industry is cyclical – the demand and challenges from this year will likely come back around again in new forms in the future, so the key is to be better prepared with the new building blocks that were put in place over the past year.

Digi-Key has increased its investments in infrastructure and other innovations to scale capacity to keep up with skyrocketing demand, including the new Product Distribution Centre expansion in Thief River Falls, Minnesota, more robust and predictive web search functionality, Digi-Key Marketplace, higher inventory levels and increased automation in the Digi-Key warehouse, which all benefit customers by providing an easy and efficient research, shopping and delivery experience.

These investments have helped Digi-Key, its suppliers and customers weather the storm of 2021, and leaves all parties well positioned for 2022. We are looking forward to the innovation of our customers that will come in 2022, and are excited to enable the world's ideas.



Digi-Key's new Product Distribution Center expansion in Thief River Falls, Minn.

# Investing in the future of manufacturing

Nemco explains how its pragmatic approach to recent supply chain challenges has positioned the company well to manage its expansion into new markets

Over the past two years, the electronics manufacturing industry has faced many challenges. Nemco remained pragmatic in its approach and by working directly with its customers and suppliers was able to maintain a robust supply chain. As one of the UK's largest (60,000ft<sup>2</sup>) privately owned contract electronics manufacturers, the company offers a range of services including PCBAs, conventional, test, engineering support, box build and general assembly (GA).

Covering some 20,000ft<sup>2</sup>, the GA area's flexible configuration caters for large and small assembly, from prototyping to production volumes. Nemco

also offers conformal coating, x-ray inspection and an ISO Class 7 cleanroom. For security projects, the company operates a designated access controlled 'secure room' where builds can be finalised or tested in a secure environment.



**Nemco remained pragmatic in its approach and by working directly with its customers and suppliers was able to maintain a robust supply chain**

With AS9100, ISO14001 and SC21 (silver) accreditations, Nemco operates in several sectors and plans to expand on these during 2022.

Having recently been accepted onto the Government funded 'Sharing in Growth' programme, Nemco is excited about the positive transformations that have already taken place and is looking to the future with passion for further advancements in its team and the services offered to its customers.

[www.nemco.co.uk](http://www.nemco.co.uk)



01438 346600  
[www.nemco.co.uk](http://www.nemco.co.uk)

## NEXT-GENERATION Contract Electronics Manufacturing

From **PCB assembly** to **Full product build**  
From **Concept** to **Market**  
From **Initial Contact** to **Full Partnership**  
From **Small Batch** to **Volume**  
From **Prototype** to **Production Ready**



# A small key that will open a very large door

Contract electronics manufacturer, **Key-Tech**, offers tailored service models to meet customers' technical and commercial business requirements

**K**ey-Tech have quickly become one of the UK's leading CEM's with a commitment to providing the highest quality Electronic Manufacturing Services. Customer service and satisfaction is at the forefront of what we do, and our aim is to tailor a service model to meet our customers technical and commercial business requirements.

We currently support a wide range of industries such as Oil & Gas, Rail, Aerospace, Military and Industrial. We are pleased to announce that we are now certified to ISO 13485 which allows us to offer our services to the medical industry. Our 25+ years of experience and investment in

state-of-the-art Technology enables us to support your PCB Assembly and electronic product build throughout the complete production life cycle, from prototypes to volume production, Box build and test.

Following our large investments in 2019 on the latest SMT technology from Yamaha, we've continued building for the future by investing in higher spec equipment such as AOI, X-ray and conformal coating machines. Whilst there is still a degree of uncertainty out there on the back of Covid-19 and now with the global material shortages terrorising our industry, we are determined to come out the other side stronger and be ready to



support our continuously growing client base.

We maintain a fully accredited quality management system that ensures we use approved processes and procedures in every area of the business. More specifically, we are BS EN ISO 9001:2015 certified.

If you're looking for an experienced and diverse Contract Electronic Manufacturer please get in touch with our sales team on [info@key-tech.co.uk](mailto:info@key-tech.co.uk) or call us on 01592 597711 for your no obligation quotation.

[key-tech.co.uk](http://key-tech.co.uk)



ELECTRONIC SYSTEMS

## SERVICES WE OFFER

**PCB ASSEMBLY**

**BOX BUILD**

**TEST / CONDITIONING**

**PROTOTYPES / VOLUME PRODUCTION**

**CONFORMAL COATING**

**CABLE & HARNESS ASSEMBLY**

## INDUSTRIES WE WORK WITH

**MILITARY**

**AEROSPACE**

**SECURITY**

**MEDICAL**

**OIL & GAS**

**INDUSTRIAL**

## KEY-TECH ELECTRONIC SYSTEMS

Midfield Road, Mitchelston Industrial Estate, Kirkcaldy, Fife KY1 3NL United Kingdom

Tel: +44 (0)1592 597711

Fax: +44 (0)1592 597719

Email: [info@key-tech.co.uk](mailto:info@key-tech.co.uk)

[www.key-tech.co.uk](http://www.key-tech.co.uk)



# Cable and wire: devil in the details

Aerco's Peter Stoner guides buyers through the often complex task of sourcing cable and wire products

Starting with hookup wires, they may be stranded for flexibility or a single solid conductor. The wire may feature shielding to reduce EMI, while the outer material will vary depending on temperature, chemical resistance and moisture requirements. Resistance to abrasion and flexing can also impact decisions.

Communications and control cables typically carry power and signal wires. For example, Alpha Wire's Xtra-Guard 1 suits internal and external wiring of OEM equipment, while Xtra-Guard 2 uses alternative materials providing increased resistance to oils, solvents and abrasion.

Responding to rising environment and safety awareness, Alpha Wire developed EcoGen wire and cable. These products are 100 per cent re-cyclable and meet RoHS and WEEE requirements. They are free of heavy metals and phthalates and produce zero halogen in combustion. They are also 47 per cent smaller and 65 per cent lighter than standard PVC cables.

UL approval confirms minimum quality and safety levels, with many manufacturers requiring UL approval for all equipment. Aerco maintains UL approval which allows cutting and re-spooling of cable and wire to customer specific lengths

without losing UL approval. Aerco's ISO 9001:2015 scope includes cut-to-length cables from approved sources with/without lot traceability.

International shortages of copper, PTFE and other materials in 2021 have caused significant increases in price and lead time for wire and cable products. Aerco stocks and ships as customers require giving both price and supply certainty for the duration of orders.

[www.aerco.co.uk](http://www.aerco.co.uk)



Responding to rising environment and safety awareness, Alpha Wire developed EcoGen wire and cable. These products are 100 per cent re-cyclable and meet RoHS and WEEE requirements

## AlphaWire at Short Lead-Times

Aerco now offers custom spooled lengths of AlphaWire products from stock - All with UL approval  
As the premier distributor for AlphaWire in the UK, Aerco are able to offer access to the complete range of AlphaWire products.

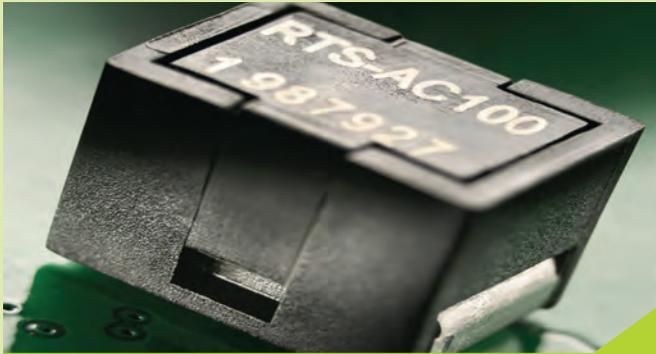
**SOUTHERN**  
 Manufacturing & Electronics

Visit us on  
**Stand D170**

Farnborough International Exhibition Centre **8th to 10th February 2022**



Tel +44 (0) 1403 260206 | Email: [sales@aerco.co.uk](mailto:sales@aerco.co.uk) | [www.aerco.co.uk](http://www.aerco.co.uk)



### Thermal fuse with low tripping temperature

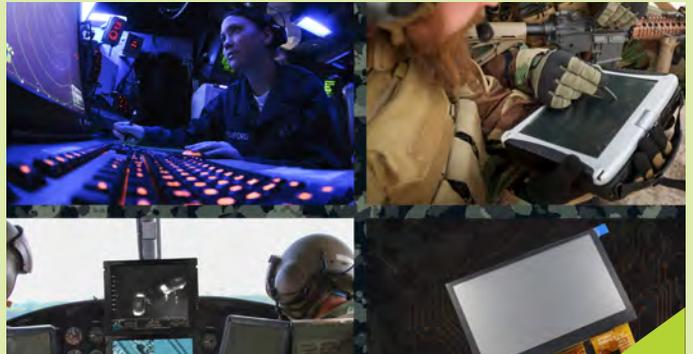
A new variant of Schurter's reflowable thermal switch (RTS) thermal fuse offers a >175°C tripping temperature. The device suits compact overtemperature protection devices for power semiconductors in SMD technology.

The RTS was developed to protect highly integrated power semiconductors from overheating. Prior to mechanical activation, the fuse can be soldered using conventional reflow soldering machines with profiles up to 260°C.

The new overtemperature protection device comes in the same dimensions and maximum breaking capacity despite its additional shunt functionality. On its small 6.6 by 8.8mm footprint the RTS can handle operating currents of up to 130A and rated voltages of up to 60VDC.

The shunt version has an integrated resistance with particularly low temperature dependence. This resistance, known as a shunt, enables precise current measurement and enables an additional—non-thermal—circuit protection such as via a controller.

[schurter.com](http://schurter.com)



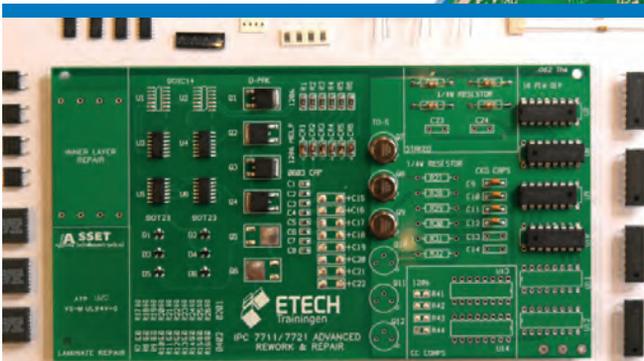
### TFT displays for demanding applications

Relec Electronics has added a specialist touch to TFT displays for defence applications with a range of technology and model options, plus a customisation service.

Relec's account manager (displays), Mathew Rehm, said: "TFT selection is key when designing a display for mission critical applications. Primary concern for the designer is that the display can be viewed and operated in harsh conditions that may incur extreme temperatures and be subjected to vibration or shock. They also have to be reliable and have a long operating life because in many conditions maintenance and repair can be challenging."

To address these criteria, Relec is offering a range of TFT display options. Models can operate across a temperature range from -40 to 80°C. Specifiers are assured the Taiwanese-grade quality LEDs used in the backlighting have a long operating life and, just as importantly, a longevity of supply to ensure continuity of quality and supply, without having to find drop-in replacements for obsolete parts.

[www.relec.co.uk](http://www.relec.co.uk)



### Supporting the electronics industry

**ETECH training is the leading training center for the electronics industry in Europe!**

Call us today! **0161 464 0777**  
 Training materials [etech-store.eu](http://etech-store.eu)



## Distributor and Supplier Focus

# Investing in training excellence

Etech Training has welcomed **John O'Neill** as its new training manager and MIT in the UK

**J**ohn has devoted his working life to the electronics industry, starting as a bench technician before moving through supervisory, quality, training manager and Master IPC Trainer roles. John sits on many IPC committees and is a regular attendee and contributor to IPC meetings across Europe.

John is happy to answer questions regarding IPC training including: initial certification; recertification; in-house training at customer's premises; training at John's Manchester base; or remote on-line training. John can be reached at [john.oneill@etech.training](mailto:john.oneill@etech.training) or 0161 464 0777.

From 1 March, John will be responsible for all UK training, offering a one-stop-contact for training consultation, quotations and training delivery in the UK, backed by the company's customer support and training team in Europe.

An Etech Training spokesperson said: "We are lucky that John has decided to join our team and we at Etech are all confident that John will take on his new role with the same passion, enthusiasm and professionalism that he has always shown."

[www.etech.training](http://www.etech.training)



### Delivering 1,100W in an eighth brick

Flex Power Modules has added two higher power variants to its through-hole, digital BMR492 range of regulated, isolated bus converters. The BMR4920100/001 is rated at 10.4V/67.4A output over a 40 to 60V input (80V/100ms) and can also deliver up to 950W peak for less than 1s. The BMR4920300/864 has the same input range and features an output of 12V at 66.7A, delivering 800W continuous and 1,100W peak.

Flex Power Modules' director product management and marketing, Olle Hellgren, said: "We are pleased to announce even higher power levels from our BMR492 series, in the same footprint as our original 500 and 600W parts. The new 700W and 800W variants provide even higher power density in space-constrained applications and the flexibility of the design means other variants can also be created on request."

Both models are industry standard eighth-brick (58.4 by 22.7 by 14mm with baseplate) and achieve better than 97 per cent efficiency at half load.

[flexpowermodules.com](http://flexpowermodules.com)



Want to introduce your products in new market?

Want to export but cannot find the right partner?

**We are here to be your key partner!**

More than 25 years of experience in the electronics industry, we will support you with the right strategy for the right market!

Call us today: **07867853812**  
 e-mail: [nesli@2bkpartner.com](mailto:nesli@2bkpartner.com)  
[www.2bkpartner.com](http://www.2bkpartner.com)

**ECS INC INTERNATIONAL**

**We Are Your Electronic Component Solution.**

- MHz Crystals
- 32.768 kHz Tuning Forks
- Thermistor Crystals
- Real Time Clocks
- Oscillators
- Resonators
- Filters
- Power Inductors

[Learn More](#)

**TATE**

49 years in PCB industry

**GLOBAL PCB SUPPLIER**

UK engineers working directly with low-cost, established manufacturing facilities in Shenzhen China

[TATECIRCUITS.COM](http://TATECIRCUITS.COM)

# Cables, contacts and connectors for performance and reliability

Carlisle Interconnect Technologies brings 5G processing capabilities to worldwide applications and markets

The future of access technology continues to evolve and working with a company focused on that future is critical to an enterprise's success.

Carlisle Interconnect Technologies specialises in 5G processing capabilities, offering high-bandwidth and low-latency connectivity to global applications and markets. The company states its interconnect solutions are engineered to offer scalability, interoperability, reliability and flexibility.

With a portfolio ranging from standard RF connectors, RF

adapters and RF cable assemblies to engineered custom interconnect solutions, CarlisleIT offers high-volume and low-cost solutions, plus custom products geared to solving unique connectivity issues seen in complex 5G applications.

CarlisleIT also offers high-performance Gen-Z assemblies, card edge board-side connectors, and card-edge cable assemblies. The company's coaxial cable assemblies boast high flexibility, excellent signal integrity performance and reliability, resulting in

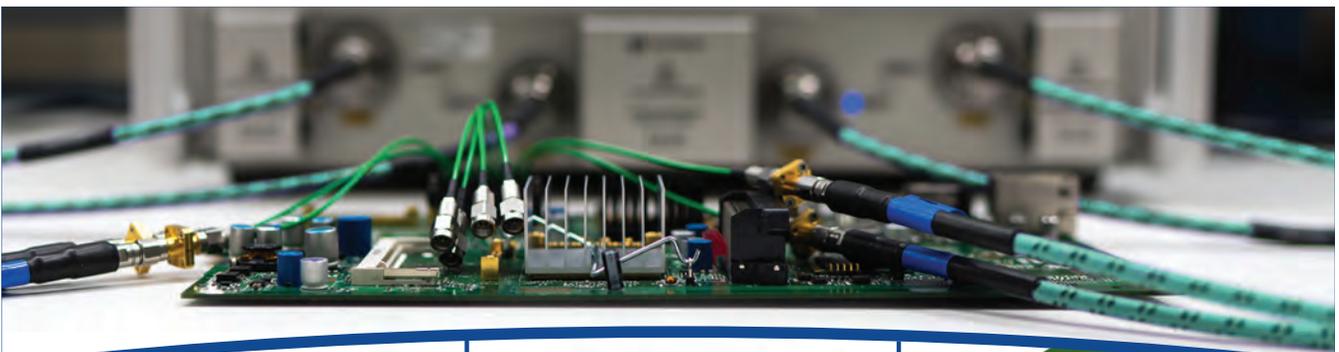
long lifecycles for indoor and outdoor operation of 5G cell equipment. Readily available RF adapters can be used to adapt and translate the RF interfaces required for seamless connectivity.

Lightweight phase-matched coaxial cable assemblies are also available. Lightweight assembly design keeps the operational costs low, while the phase-matching results in excellent signal integrity, providing high system reliability.

Over the last 82-years, CarlisleIT's growth has been fuelled by providing innovative solutions

that solve challenges in industries where high performance, reliability and technical innovation are essential to success.

[www.carlisleit.com](http://www.carlisleit.com)



DESIGN | BUILD | TEST | CERTIFY

Performance with Purpose

[CarlisleIT.com](http://CarlisleIT.com) |    

Higher density. Lower losses. Higher data rates.  
**It's precise performance, delivered.**

Our CoreHC product family, Card Edge Contact systems, and Gen-Z solutions offer high-density interconnects with lower insertion and return losses at densities as high as 2.5 mm. CarlisleIT leads the way with high-performance interconnect solutions by offering unmatched signal integrity for today's faster and more complex communication systems operating up to 70 GHz.

# Knowledge, great products and service count in uncertain times

ATC Semitec's MD, Rob Savin, highlights the value of specialist distributors who build strong relationships with both their customers and suppliers

As issues including continuity of supply and price increases persist, it's time to get help from distributors like ATC Semitec, a temperature sensor specialist supporting customers across a range of markets.

The company's technical team offers in-depth engineering advice. A call could save you hours of website research.

ATC Semitec's MD, Rob Savin, said: "We are proud of the established relationships we have with our customers. With our wide breadth of

high quality products and long established supplier relationships, we have been able to support them with unprecedented increases in demand or component shortage issues. It is all about building long-term partnerships."

In these uncertain times, distributors like ATC Semitec are best placed to ensure customers' forecast orders are delivered in time.

[www.atcsemitec.co.uk](http://www.atcsemitec.co.uk)



Together we can make it happen!

25 YEARS OF MAKING TECHNOLOGY SAFER

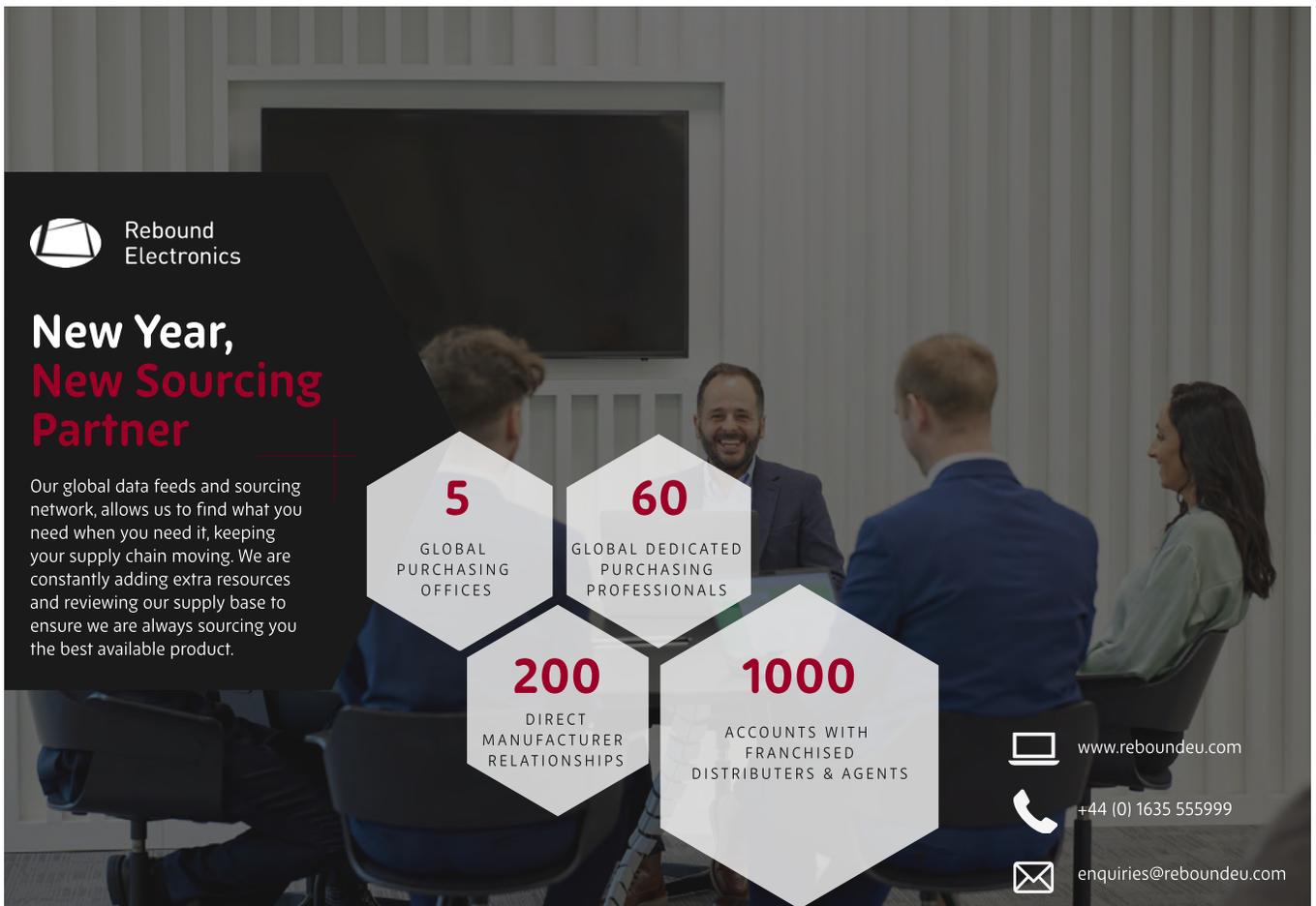
At ATC Semitec we have been supporting design engineers with thermal management applications across a huge range of industries for 25 years.

Using our expertise and innovative supplier support, we can work with you to find the optimum solutions for all of your NPD and product upgrade needs.

SEMITEC Heraeus Pepi. ASAHI SEKI CONTROLS  
TKS MATSUO SEFUSE FUZETEC

Call us now on **01606 871680**  
or email [smart@atcsemitec.co.uk](mailto:smart@atcsemitec.co.uk)

**ATC SEMITEC**  
SENSE | CONTROL | PROTECT  
[www.atcsemitec.co.uk](http://www.atcsemitec.co.uk)



Rebound Electronics

## New Year, New Sourcing Partner

Our global data feeds and sourcing network, allows us to find what you need when you need it, keeping your supply chain moving. We are constantly adding extra resources and reviewing our supply base to ensure we are always sourcing you the best available product.

- 5 GLOBAL PURCHASING OFFICES
- 60 GLOBAL DEDICATED PURCHASING PROFESSIONALS
- 200 DIRECT MANUFACTURER RELATIONSHIPS
- 1000 ACCOUNTS WITH FRANCHISED DISTRIBUTERS & AGENTS

[www.reboundeu.com](http://www.reboundeu.com)  
+44 (0) 1635 555999  
[enquiries@reboundeu.com](mailto:enquiries@reboundeu.com)



# Do you need Fast, Accurate & Efficient High Volume PCB assembly?

Our new I-Pulse S20 SMT machines  
bring High Speed, High Volume and  
High Quality to the UK.



- ULTRA FAST CYCLE TIMES ●
- LARGE PCB HANDLING ●
- HIGHER PLACEMENT RATES ●

To find out how our new  
lines can help you with your  
SMT requirements, speak  
with Mike Sprague.

**+44 (0)23 8045 5411**

[sales@espritelectronics.com](mailto:sales@espritelectronics.com)

[www.espritelectronics.com](http://www.espritelectronics.com)



# Trust, confidence and resilience

Fineline VAR's MD, Clive Wall, emphasises the importance of a can-do attitude and audited processes during this turbulent period

**I**n the last year, Fineline VAR has seen unprecedented growth, with an increase of 80 per cent on 2020 and a growth trajectory unmatched by any PCB supplier in the UK.

Fineline VAR's managing director, Clive Wall, explained: "As a value-add PCB supplier much of this is down to our service culture, backed by our extensive supply chain. Our team has a can-do attitude, supported by robust audit processes to ensure approved factories are capable of meeting the technical and service demands of today's PCB buyers. As part of Fineline Global, the company has the strength of a global business, without losing the benefits associated with supplying customers, locally.

"Whilst the PCB industry faced turbulent times in 2021—with escalating costs and extending lead-times—Fineline rose to those challenges, growing its market share while meeting and exceeding customers' needs. Customers trust the company to provide the best PCB supply chain solutions. We are responsive, communicate in an open and transparent way and, above all, we are resilient. Resilience has become one of our defining business characteristics this year—the resilience of our team, our financial resilience, the resilience in our ability to manage the challenges.

"Our open approach to customers, both existing and new, instils confidence. We know the challenging times are not over, but we are confident that Fineline will remain agile and adapt quickly to any changes to ensure we remain a market leader in PCB supply."

[www.fineline-global.com](http://www.fineline-global.com)

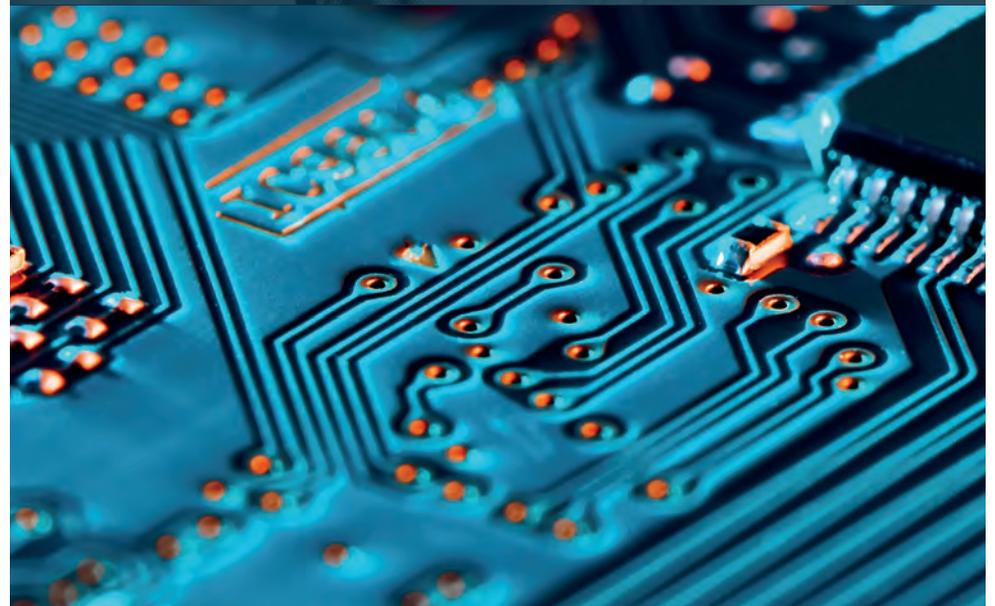


Fineline VAR's MD, Clive Wall

## FINELINE

THE GLOBAL  
PCB EXPERTS

# YOUR COMPLETE SUPPLY CHAIN PARTNER



We deliver the benefits of a global PCB company and local support that our customers value

WE'RE HERE  
TO HELP

Tel: +44 (0)1249 815815  
Email: [uk-sales@fineline-global.com](mailto:uk-sales@fineline-global.com)  
[www.fineline-global.com](http://www.fineline-global.com)



# Moving industry forward with standardisation

ART explains how manufacturers can be confident of using the best and latest documents and standards to meet their process and quality requirements

Standardisation is a dynamic function of the electronics industry and is constantly evolving. Advanced Rework Technology works with IPC to continually move forward with improvements and best practices to support manufacturing. ART is proud to announce the release of many standards during 2020, with team members working as active IPC committee chairs and/or committee members.

IPC-A-610H, *Acceptability of Electronic Assemblies*, is the most widely used electronics assembly acceptance standard and designed as a post-assembly acceptance standard used to ensure electronic assemblies meet acceptance requirements. It was released September 2020.

Revision H for 610 features significant changes including: general update throughout the standard; removal of the target conditions-following the steps in IPC/WHMA-A-620D; new criteria on wrapped terminals; ESD requirements and information moved to a separate appendix; and jumper wire criteria move from previous sections, into their own chapter.

IPC-A-610 is a must for inspectors, operators and those with an interest in acceptance criteria for electronic assemblies. As IPC-A-610 is developed in synergy with J-STD-001 and IPC/WHMA-A-620 users will see these documents updated and released in quick succession to each other.

J-STD-001, *Requirements for Soldered Electrical and Electronic Assemblies* is recognised globally for the criteria of soldering processes and materials. The new revision H has been updated to include the latest industry criteria with the introduction of guidance on the use of x-ray for through-hole solder connections. Released September 2020.

Revision H for the J-STD-001 includes significant changes including: introduction of appendix D-Using x-ray for Acceptance of soldered connection; new criteria for wrapped terminals; new section 8 Cleaning and Residue Requirements (IPC-WP-019B provides explanation and rationale for this new section); and removal of reference to the International Space Station. J-STD-001HS, *Space and Military Applications Electronic Hardware*

Addendum to J-STD-001H soon to be released.

In addition to the above standards, ART has worked with and supported the committees to release the following standards during 2020.

IPC J-STD-001GA/IPC-A-610GA, *Automotive Addendum to J-STD-001 and IPC-A-610*. Released February 2020. This addendum provides criteria to ensure the reliability of critical soldered automotive assemblies.

IPC-WHMA-A-620, *Requirements and Acceptance for Cable and Wire Harness Acceptance*. This standard describes materials, methods, tests and acceptance for producing crimped, mechanically secured and soldered connections and related activities relating to cable and wire harness assemblies. Released January 2020.

IPC/WHMA-A-620DS, *Space and Military Applications Electronic Hardware Addendum to IPC/WHMA-A-620D*. Released September 2020. This addendum provides additional criteria to IPC/WHMA-A-620D to ensure the reliability of assemblies that must

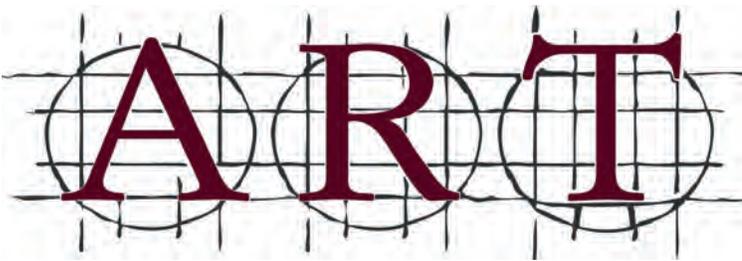
survive the vibration and thermal issues encountered in the military and space environments.

IPC-A-600K, *Acceptance of (Bare) Printed Boards*. Released July 2020. This document provides photographs and illustrations to address target, acceptable and nonconforming conditions that can be inspected either internally or externally on bared printed boards.

IPC-6012E, *Qualification and Performance Specification for Rigid Boards*. Released February 2020. IPC-6012ES, *Space and Military Addendum to 6012E*. Released April 2020. IPC-6012EM, *Medical Addendum to 6012E*. Released August 2020.

ART team members also sit on the technical training committees to these revisions to ensure the training courses offered by ART are accurate to provide the best possible training to the industry.

[www.rework.co.uk](http://www.rework.co.uk)



Advanced Rework Technology Ltd



**SITES NOW IN UK AND ITALY**



As an Authorized Training Center, A.R.T Ltd can offer Certified Training to the IPC Standards listed below. A.R.T Ltd are the only training center in the UK able to offer CID PCB Design and IPC-6012 training and Space Addendum training for J-STD-001 and IPC-A-620.



Acceptability of Electronic Assemblies



Requirements for Soldering Electrical and Electronic Assemblies



Repair Rework and Modification of Electronic Assemblies



Requirements and Acceptance for Cable and Wire Harnesses



Qualification and Performance Specification for Rigid PCB's



Acceptability of Printed Boards

[www.rework.co.uk](http://www.rework.co.uk)

[Info@rework.co.uk](mailto:Info@rework.co.uk)

+44 (0)1245 237083

# Manufacturers explore alternative components at unprecedented rate

*NewPower explains a critical skill in today's market is finding alternative parts, often last minute, when normal distribution channels fail*

The global component shortage has made it almost impossible for manufacturers to find the components they need on a timeline to meet their production demands. Sophisticated manufacturers have augmented many pre-pandemic policies and are now deploying more aggressive tactics to ensure success. One example is the turn to independent distribution for shortage mitigation and alternative component sourcing.

Pre-pandemic, sourcing components and scheduling production was typically a smooth process. With minimal supply chain disruptions, issues were few and far between and solved without panic or long-term effects. Manufacturers would look to independent distributors for alternative components when parts became scarce, but only when necessary. Pandemic induced halts to production and labor shortages have caused existing supply chain costs

to skyrocket. Shortages are commonplace as lead times extend, causing many to rely on alternative sources to find fairly priced components on acceptable lead times. Manufacturers must accept there are too many current supply chain issues to not be consistently searching for alternative parts. Engineers need deeper involvement as 'business as usual' no longer exists.

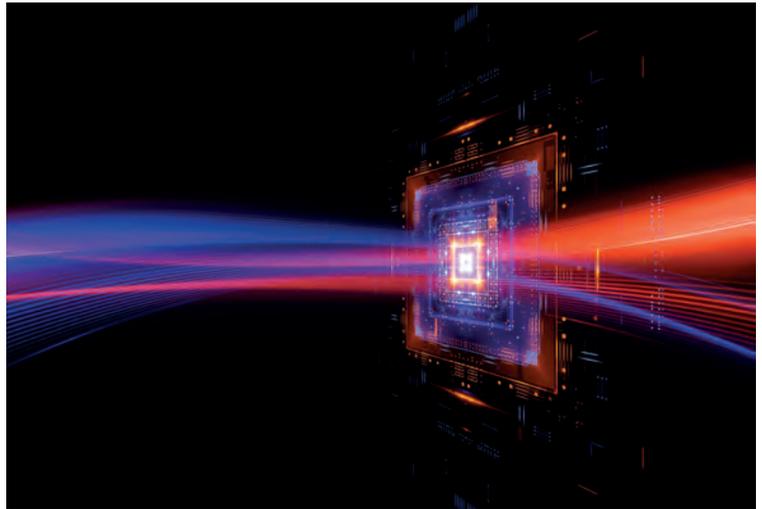
As an independent distributor, NewPower's business model focusses on finding parts quickly. Perhaps more importantly, we excel at finding alternative parts, often last minute, when normal distribution channels fail. With no supplier allegiance, loyalty is focused on the manufacturer. We help manufacturers find alternative components that function similarly—or even exactly the same—quickly and efficiently, so production lines don't stop.

NewPower's proprietary sourcing platform, Empower,

helps it globally locate quality parts in real-time, along with alternative solutions for unavailable parts, letting the company meet manufacturers' time-sensitive demands without sacrificing quality, form or function. In some cases, NewPower can reduce costs and decrease lead times simply by sourcing alternative part numbers.

[www.newpowerww.com](http://www.newpowerww.com)

**Pre-pandemic, sourcing components and scheduling production was typically a smooth process**



**EUROQUARTZ**

**ACCURATE • SECURE • TRACEABLE**

**INDUSTRY SECTORS:** DEFENCE | MEDICAL | AEROSPACE | COMMUNICATIONS | ELECTRONICS



**IN-HOUSE PRODUCTION | UK-MADE SMD MILITARY AND INDUSTRIAL CLOCKS  
5G OSCILLATORS | MICRO-MINIATURE | OCXOs | TCXOs | VCXOs | ITAR-FREE OSCILLATORS**



**t: +44(0) 1460 230000 | e: sales@euroquartz.co.uk | w: www.euroquartz.co.uk**



We're proud to be part of the UK's manufacturing industry, helping build better products



We offer a full range of CEM services, from Design for Manufacture guidance to full box build capability.

Our customers rely on our experience and expertise to deliver better products.

*Get in touch today to discuss your product*

Tel: +44 (0)1903 524 600  
Email: [sales@fermionx.com](mailto:sales@fermionx.com)  
[www.fermionx.com/ECS](http://www.fermionx.com/ECS)



# Helping you assemble the future

We offer all your electronic requirements from quick turnaround prototyping through to complete box build services.

**Sellelectronics Ltd**  
Church View Business Park  
Falmouth, Cornwall TR11 4FZ  
T: +44(0)1326 450393

[info@sellelectronics.co.uk](mailto:info@sellelectronics.co.uk)  
[www.sellelectronics.co.uk](http://www.sellelectronics.co.uk)



## USB charger in 117 components

Power Integrations has published a new reference design that describes a USB power delivery (PD) charger described as having exceptional performance and very low component count.

Based around Power Integrations' new InnoSwitch 3-PD PowiGaN flyback switcher and HiperPFS-4 PFC controller ICs, the DER-937 report contains the power supply specification, schematic, PCB layout, bill-of-materials, detailed magnetics specifications and performance data of a power factor corrected 100W USB PD 3.0 + programmable power supply (PPS) charger using only 117 components.

Senior product marketing engineer at Power Integrations, Aditya Kulkarni, said: "This USB PD charger design reaches efficiency levels in excess of 93 per cent, including input, PFC and flyback stages. Its no-load performance is also excellent—the circuit requires less than 40mW no-load input power at 230VAC.

"BoM count is approximately half that of conventional designs, saving space, reducing design time and simplifying component sourcing for high-volume manufacture of slim, ultra-compact OEM and aftermarket chargers."

[www.power.com](http://www.power.com)



## Always-on AI capabilities

Lattice Semiconductor has announced a roadmap of low power, AI/ML-enabled solutions that improve battery life and enable innovative user experiences in edge applications such as client compute devices. Built with the Lattice sensAI solution stack and running on low power Lattice Nexus FPGAs, these new solutions are designed to help OEMs develop smart, always-on devices with low power, hardware-accelerated AI capabilities that are field upgradeable to support future AI algorithms.

Lattice's vice president of segment marketing and business development, Matt Dobrodziej, said: "AI applications based on vision, sound and other sensors will revolutionise the client computing experience. Our sensAI solution stack supports a roadmap of edge AI applications that make client devices contextually aware of how, when and where they're being used, and our Nexus FPGAs deliver that functionality with class-leading low power consumption."

[www.latticesemi.com](http://www.latticesemi.com)

## Distributor and Supplier Focus

### Solving interconnect challenges

PEI-Genesis is working hard to be the supplier of choice when engineers and buyers are faced with interconnect design and sourcing challenges

PEI-Genesis states its mission is to solve customers' interconnect challenges through innovation, integrity and teamwork: with excellence to customers at its centre.

To achieve this, PEI-Genesis strives to: be the trusted advisor to global engineers, meeting and exceeding their design needs; provide the broadest selection of interconnect products for

procurement professionals; and cultivate a culture where employees can grow, reach their goals, and be inspired.

PEI-Genesis believes its More Than a Distributor campaign showcases its unique value, not only to customers but also manufacturer partners, employees and other key stakeholders globally.

[www.peigenesis.com](http://www.peigenesis.com)



SHOP MILLIONS OF CONNECTORS **ONLINE.**

[www.peigenesis.co.uk](http://www.peigenesis.co.uk)



## Instrument enclosures more customisable

Metcase's Unimet and Unimet-Plus desktop and portable instrument enclosures now feature improved bezels, enhancing their aesthetics and making them more customisable. The bezels comprise eight sections: four diecast corners, two horizontal and two vertical extrusions. This means the enclosures can now be offered in custom heights, plus bespoke widths and depths. They become two of Metcase's most customisable models.

The new corner castings are zinc which allows finer tolerances, better fit and paint finish. On both enclosures, the bezel is assembled to a fabricated aluminium main case with a removable U-shaped top. Both feature a removable rear panel, recessed to protect connectors and switches.

Applications include medical devices, test/measurement, industrial control, peripherals and interfaces, switchboxes, communications and laboratory equipment.

Other features include four non-slip rubber feet and optional tilt/swivel carry handle that doubles as a desk stand. This indexable handle can be adjusted to the perfect viewing angle.

[www.metcase.co.uk](http://www.metcase.co.uk)



## VCO suits satellite comms

Crystek's CVCO55CC-2950-2950 voltage controlled oscillator operates at 2950MHz with a control voltage range of 0.5V~4.5V. The device features a typical phase noise of -115dBc/Hz @ 10kHz offset and is said to have excellent linearity. Output power is typically 7.0dBm.

Engineered and manufactured in the USA, the part is packaged in the industry-standard 0.5in by 0.5in. SMD package. Input voltage is 8.0V, with a current consumption of 30mA (typ). Pulling and pushing are minimised to 3.0MHz pk-pk and 0.1MHz/V, respectively. Second harmonic suppression is -15dBc typical.

Applications include digital radio equipment, fixed wireless access, satellite communications systems and base stations.

[www.crystek.com](http://www.crystek.com)



[www.gelec.co.uk](http://www.gelec.co.uk)

# Design accelerating but supply chains remain stretched

Anglia's CEO, Steve Rawlins, looks at how Anglia can help OEMs navigate a difficult supply chain

Covid jammed the supply chain in 2021 but also sped up the design cycle. The imperative to control the virus pressed the fast forward button and accelerated many technologies by up to ten years. Climate change and pent-up demand amplified the effect.

Getting projects from CAD to market means overcoming these supply chain challenges. Designing in components without considering their source, is designing in failure. The supply chain has become a design issue and will remain throughout 2022, probably beyond.

2021 saw significant design activity, especially for front line Covid applications. This was compounded by growth in medical, welfare, communications, security, 5G and EV.

Current demand is difficult to fulfil because of unprecedented supply chain challenges. Lead times today are worse than a quarter ago and are unlikely to improve until summer 2022 at the earliest. "We're seeing a perfect storm."

Emerging from the pandemic, pent-up demand is making raw materials harder to obtain, causing significant increases in costs which manufacturers have to pass

on. At the same time, freight charges are increasing globally and delivery times are extending even when stock is warehoused. Some distributors are quoting 17-days delivery on ex-stock orders.

Inventory is available in the supply chain, but buyers need to be smart and forward thinking to access it. The right component is one that addresses the design's technical specification and is available in the right production time frame. Anglia Live recognises this, providing an environment where designers can assess the design parameters and supply chain situation of every device.

With careful planning enough inventory is available to get new products to market. Anglia Live is designed to help engineers and purchasing professionals do just that. The site offers full parametric search and details Anglia's current free stock, reserved stock, replenishment date and supplier lead time.

If a design is six months from release, the time to start placing production orders for the BoM is now. If companies stick their head in the sand and throw the BoM over the wall to purchasing when it is finished and qualified the product will be late to market. Accurate forecasting

of demand is also key. As an independently owned distributor, Anglia has invested in its customers and business by increasing forward ordering when stock was still relatively plentiful. This inventory is being used to support customers who partner with Anglia. Working together this way allows everyone to prosper. The commitment is two-way. Anglia commits to reserving inventory for its customers—but customers must commit to taking it. Anglia can't promise to protect every customer against every issue in 2022, but by working together transparently it can support as many customers as possible, with most of their requirements, most of the time.

In 2022, electronics will continue to play a growing part in making the world Covid safe, addressing climate change and keeping us generally healthy and happy. Demand is strong and there are plenty of exciting technical developments in the works. Anglia's customers can capture this demand and benefit from these developments if they think about supply early enough in the life of a project. We had a good 2021, and I'm looking forward to 2022, Anglia's 50th year, which I believe will be just as strong.

[www.anglia-live.com](http://www.anglia-live.com)



Anglia's CEO, Steve Rawlins



If a design is six months from release, the time to start placing production orders for the BoM is now

# Innovation for an all-electric society

The world is changing, introducing new challenges for future proof connectivity solutions for the all-electric society

**R**enewable energy is an increasingly common power source. With its growth the need to store energy has become increasingly important. Currently, considerable excess energy is generated, which is wasted if not stored. It's only in recent years that energy storage solutions have emerged. Such storage systems help ensure we have reliable renewable energy sources powering homes today, plus sustainable energy for future generations.



Currently, considerable excess energy is generated, which is wasted if not stored. It's only in recent years that energy storage solutions have emerged

As a trusted manufacturer of innovative products, Phoenix Contact is constantly developing new and future proof connectivity solutions to meet the demands of the all-electric society. The company is known for its products for the EV charging infrastructure and has now developed connectivity solutions for energy storage systems.

Initial energy storage product ranges can be found on Phoenix Contact's website and will be expanded as more products are released over this year and beyond.

[phoe.co/energy-storage-uk](https://phoe.co/energy-storage-uk)



## Connectors for Energy Storage

Install your energy storage systems quickly, safely, and cost-effectively for applications up to 1,500 V – with pluggable battery connections via busbar connector or via battery pole connector. Benefit from the advantages of both connection technologies for front or rear connection.

More information:  
<https://phoe.co/Energy-Storage-UK>



# Forecast and procurement's 2022 Bucket List



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

John Denslinger future gazes into 2022 and prepares a Bucket List for procurement professionals to help them handle the wave of demand about to reach shore

2022 Bucket List • By John Denslinger

From a business perspective, it all starts with a forecast and one key baseline is global GDP. According to its world economic outlook released October 2021, IMF projects global GDP at +4.9 per cent for 2022, down slightly from 2021's post-pandemic rebound of +5.9 per cent. Lingering supply chain and capacity issues are expected and will likely hamper growth throughout the first half. Not factored are the consequences of Covid variants which could derail recovery efforts. Nevertheless, 2022 should be a banner year for industry.

Demand is the second key baseline and 2022 will see tidal waves of new technology driving global markets. Most significant is the 5G roll-out, digitalization of commerce and the electrification of just about everything else, most notably EV. Beneath that layer is a booming sector expansion: 5G smart phones, smart homes, servers, computers, gaming, Industry 4.0 and a huge government infrastructure stimulant. The demand is very real and at times may overwhelm supply capability.

Drilling down to the component level, semiconductors tend to be the perennial bellwether. WSTS forecasts 10.1 per cent growth in 2022 on the heels of a sensational 25 per cent increase in 2021. Other forecasters seem to agree: IC Insight sees 13 per cent and Semi Intelligence reports 15 per cent growth in 2022. With respect to passives and electromechanical, the technology explosion mentioned above has a content multiplier effect further escalating total demand for these components. It would not surprise me to see passive growth exceeding 15 per cent in 2022.

Goals! We dutifully set them every new year. While 2022 is no different, setting achievable goals in procurement might be a challenge, especially when it comes to sourcing vital components. With so many out-of-the-ordinary influences hindering supply, procurement's bucket list might be oversized and overwhelming. In fairness, some factors are beyond their control: pandemic variants, trade wars, labor scarcity, regulatory interventions, etc, but the expectation remains: minimize the negative

impact. That still leaves purchasing owning plenty of actionable items. So here it is, procurement's Top 10 Bucket List for 2022:

- A manageable growth forecast
- No line downs in the factory/end of daily briefings/fewer emergency meetings with senior management
- Plentiful inventory in the channel/scheduling flexibility
- Price stability/price reductions/favorable PPVs
- Normalizing of lead times to pre-pandemic levels
- Confirmation that capacity investments are producing results up-and-down the supply chain
- Inclusion of distributor partnerships in all future supply plans
- Resumption of functioning JITs
- Clear pathways via supplier initiatives to achieve sustainability and green energy goals
- Return of face-to-face advanced technology sessions

If I were to add #11, it would be 'recognition'. You likely spent hours, day and night, on the phone expediting supply and coordinating delivery schedules with production. You kept lines running and factories open. Goods shipped to customers and demand was satisfied. Given the rosy forecast, let's hope procurement's bucket list is the reality for 2022.

## Inductors engineered for reliability

Bourns has announced the model SRP7020TA and SRP8540A high current shielded power inductor series. These automotive grade, AEC-Q200 compliant inductors feature shielded construction, metal alloy powder core, low magnetic field radiation, low buzz noise and -55 to 150°C operating temperature range. Both series are designed for electromagnetic interference filtering and power management in automotive, consumer, industrial and telecom electronics applications that often require higher inductor reliability.

The technology integrated into these inductors offers saturation current of 40/60A over the 0.1/0.22 - 10/22µH inductance range. Bourns engineered a unique metal alloy powder core, bonding agent and moulded construction manufacturing process that achieves magnetically shielded construction for low radiation, high saturation current, low buzz noise and low DC resistance.

[www.bourns.com](http://www.bourns.com)



## RJ45 patch cables engineered for industrial applications

Phoenix Contact's product portfolio now includes RJ45 patch cables for industrial applications. The RJ45 industrial patch cable series allows data speeds of up to 10Gbps in accordance with CAT5 and CAT6A. They particularly suit industrial Ethernet and Profinet environments.

The connectors are said to offer a standardised look/feel, quality overmoulding and protected locking clip which ensures robustness and—with increased vibration resistance—makes the patch cables ideal for industrial applications.

Up to five different cable outlet directions and a broad cable portfolio, including versions for drag chain and robot applications, open up versatile application opportunities. With comprehensive CE, cULus, and EAC approvals, the cables can be used anywhere in the world.

[www.phoenixcontact.com](http://www.phoenixcontact.com)



<p><b>EASYTEC</b></p>		
<p><b>SMART-CONTROL</b></p>		
<p><b>SMART-PANEL</b></p>		
<p><b>EVOTEC</b></p>		

## DESIGNER ENCLOSURES

Take a look at our all new SMART enclosures for sensors, IIoT electronics, medical equipment and instrumentation. Moulded in UV-stable plastic and IP 55/65 rated for indoor or outdoor use. They can be mounted almost anywhere.

**OKW ENCLOSURES LTD**  
01489 583858 | [www.okw.co.uk](http://www.okw.co.uk)

Request a free sample today!



# Are you looking for a reliable PCB partner?

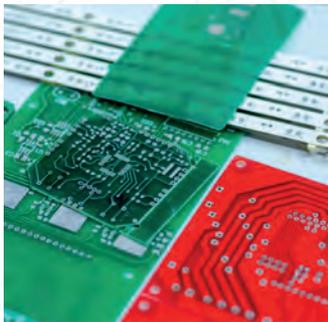
DK-DALEBA  
Printed Circuits

Our global offering enables us to manufacture and source a wide range of PCBs, providing our customers with greater flexibility in their supply chain. Talk to us today about your PCB requirements.

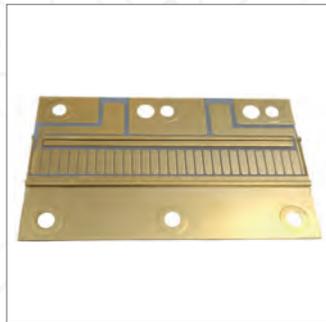


- ✓ UK Manufacturing
- ✓ Asia Manufacturing
- ✓ UK and Asia Engineering Teams
- ✓ Consignment options – 6 million customer PCBs stocked
- ✓ FR4 to 58 layers
- ✓ Heavy Copper for Power Electronics
- ✓ Flex and Rigid Flex
- ✓ Ceramics
- ✓ Metal Clad PCBs

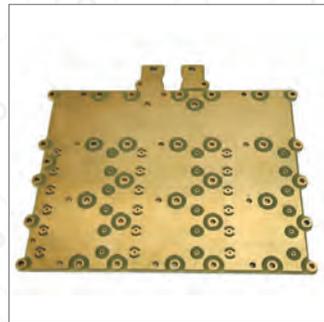
Talk to DK-Daleba about your PCB supply today on +44 (0) 1992 510000



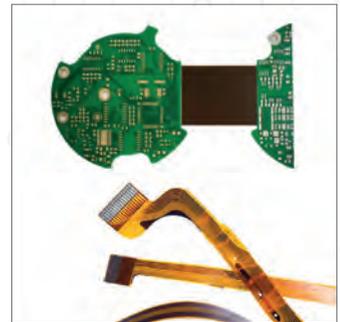
FR4 and Metal Clad IMS



Ceramics



Heavy Copper



Flex and Rigid-Flex

**A PCB partner and manufacturer since 1963**

+44 (0) 1992 510000 | sales@dk-daleba.co.uk | www.dk-daleba.co.uk | DK-Daleba, Orland House, Hertford, SG13 7AT



# Test drives productivity and quality

Cupio's inspection, measurement and test solutions are designed to give manufacturers fast access to improved productivity, quality and profitability

Cupio supplies innovative inspection, measurement and test solutions to electronics manufacturers throughout Europe; also supplying its own VuData Statistical Process Analyser software package worldwide. The company's specialist equipment suppliers are acknowledged leaders in their field. Onsite integration, training and support services help ensure systems rapidly become productive within customers' manufacturing facilities.

equipment offers PCB inspection with exceptional defect coverage. These systems inspect solder joints and verify correct part assembly, helping users improve quality and increase throughput. Programming is fast and intuitive, while latest available image processing technology ensures extremely low false failure rates. VuData Statistical Process Analyser software seamlessly integrates with the AOI and AXI systems to produce fault traceability and process analysis.

systems and Intepro, offering a comprehensive range for testing circuit boards for repair, telephone systems/handsets, and power supplies.

Tying all of this together on the factory floor is Cupio's Kwik Tic Quality, Productivity and Traceability Software. This management platform provides visibility and maintains control of inputs and outputs from the shop floor, increasing throughput, reducing cost and increasing productivity.

“””  
Automated optical (AOI) and x-ray inspection (AXI) equipment offers PCB inspection with exceptional defect coverage

Automated optical (AOI) and x-ray inspection (AXI)

Test systems include ABI Electronics, Microtronix Test

[www.cupio.co.uk](http://www.cupio.co.uk)



## THE PLACE FOR Failure Analysis and In-depth Non-Destructive Inspection

Cupio Services brings knowledge and expertise gained through many years of working with some of the world's best X-Ray, test and AOI systems to our new facility in Chineham Business Park, Basingstoke.

Whether you need to diagnose production or in field failures, validate complex manufacturing procedures or perfect new product introductions, we're here to help.

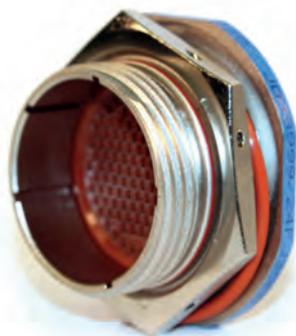
We have a variety of cutting-edge inspection and test equipment on hand, including functional testers and counterfeit part detection, high resolution x-ray with multiple CT imaging options, and acoustic microscopes for delamination detection within boards or complex devices.

We have the capability to find the smallest defects within your samples and image them with sub-micron resolution. Full failure analysis reports can be provided to help you understand where and how issues are occurring.



## A reliable supply of D38999 connectors

Mission critical electrical connector specialist, PEI-Genesis, provides an extensive range of D38999 connectors, ideal for use in aerospace and military applications where components must endure extreme conditions.



PEI-Genesis can supply D38999 connectors from Amphenol, ITT Cannon, TE Deutsch, Souriau Eaton and Conesys. It also stocks large volumes of component parts and can build millions of connector types with lead times of 48 hours from order.

Many customers in the aerospace and military industries require custom components. PEI-Genesis can deliver standard solutions or work with customers to create something bespoke for their application using its in-house team of design engineers. This is in addition to a wide range of accessories for D38999 connectors such as protective caps, backshells, contacts, nut plates for receptacles and tooling.

With life spans of between 500 and 1,500 mating cycles, D38999 connectors can last for up to 30 years, making them ideal for military applications that demand durability and longevity. Customisation options also make these rugged connectors popular in other industries including industrial, marine and automotive.

[www.peigenesis.com](http://www.peigenesis.com)

## ECS Show

# Explore today's electronics sector

*All roads lead to Oxford's Kassam Stadium this May as electronics design engineers and purchasing professionals head to the Electronic Component Show*

The *Electronic Component Show (ECS)* is a 1-day tabletop exhibition located at the Kassam Stadium, home to Oxford United Football Club. Taking place on 19 May 2022, the event offers purchasers and designers the opportunity to explore thousands of components and services available in today's electronics marketplace.

The seminar programme is being finalised and will be announced to readers in January 2022. The programme will comprise educational presentations prepared for design engineers and purchasing professionals.

Opening times are 10am to 3pm, providing ample time for visitors to travel to the show and meet their selection of nearly 100 suppliers of electronic components and associated services.

Other benefits include free car parking, complimentary tea/coffee and free entrance to the event itself.

At the time of writing, all the Silver Stands have been booked so the show is anticipated to be a sell-out event.

[www.electronic-component-show.co.uk](http://www.electronic-component-show.co.uk)

## Distributor and Supplier Focus

# Investing in professional manufacturing services

Texcel explains how early involvement in new product design helps improve manufacture, functionality and cost

Over the last 45-years, Texcel Technology has grown steadily in size and reputation as a quality CEM. From its UK manufacturing facility, the company supports OEMs worldwide across a range of vertical markets. Each year the company reinvests a sizeable proportion of its profits to improve productivity/efficiency and enhance employee skills.

Texcel's design and production engineers can advise customers



on component selection, PCB design and optimum production processes for their products. Communication at departmental level ensures knowledge and skills are exchanged as widely as possible. The company concentrates on developing strong working partnerships with customers and

encourages early involvement in new product designs so they can be optimised for DFM, functionality and cost.

Texcel prides itself on offering a professional but personal service to its customers.

[www.texceltechnology.com](http://www.texceltechnology.com)

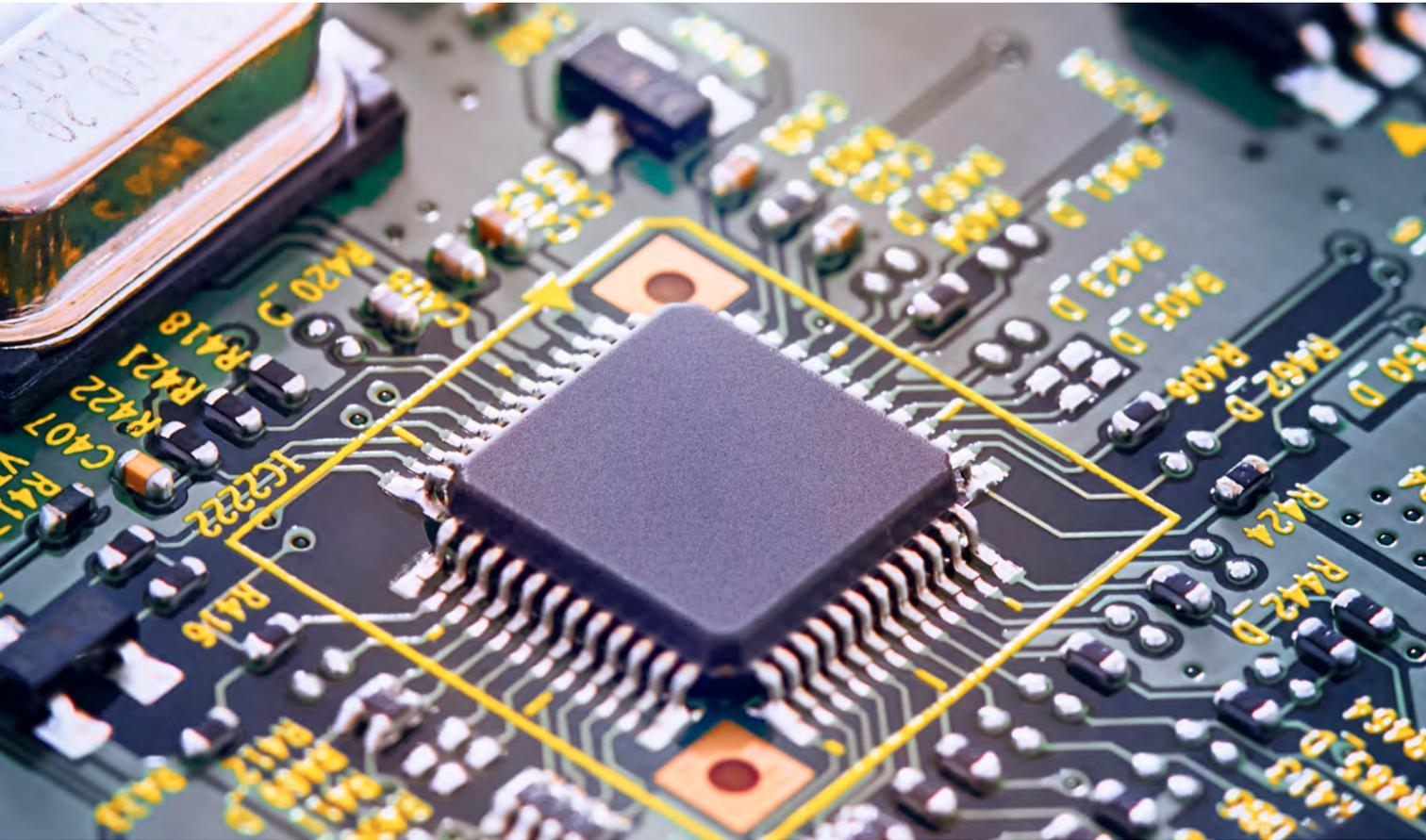
**Your Electronic Design & Build Partner**  
From PCBs to Full Box Build

Call us on **01322 621 700**

**Texcel Technology** Electronic Manufacturing Solutions

[www.texceltechnology.com](http://www.texceltechnology.com)

Over 42 years of UK manufacturing



## Working with Customers to create history

Jaltek Systems is a leading AS9100 and ISO 13485 accredited UK contract electronics manufacturer with over 30 years' experience. We offer a comprehensive range of integrated design and manufacturing services adapted to meet our customer's our customer's varied requirements.

Focusing on low to medium volume, high mix product profiles for a range of industries, Jaltek uses advanced systems to support products throughout their lifecycle, offering a single service or complete solution.

We have a diverse customer base, from global PLCs to start-up ventures, many have worked with us for over 15 years - testament to our customer focus and support in an ever changing marketplace.

- 3 SMT Lines
- Dedicated NPI Line
- PCB Layout
- Selective Solder & Manual Assembly
- IPC-A-610 Class 3 workmanship standard
- Cable Assembly
- Conformal Coating
- Pressfit
- Extensive test suite
- X-ray
- State-of-the-art 3D inspection
- Box-build & High Level Assembly
- System Integration

 **Jaltek Systems**  
Unit 13 Dencora Way  
Sundon Park  
Luton  
Bedfordshire  
LU3 3HP

☎ +44 (0)1582 578170

@ info@jaltek.com



FM 45145

MD 549277



# Supply chain perfect storm

*Lansdale Semiconductor's president, R Dale Lillard, reminds readers that in today's uncertain world, JIT manufacturing will need re-tooling to provide sufficient redundancy*

Since the 1980s manufacturers have enjoyed years of just-in-time manufacturing using outside suppliers. This led them to reduce inventories and shorten cycle times for improved quality. They also discontinued vertical integration of their supply chain leaving them vulnerable to different supplier priorities which can be driven by political upheavals, environmental disasters and pandemics.

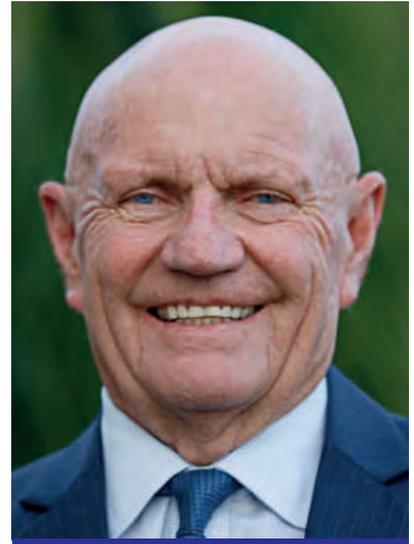
When the coronavirus emerged in March of 2020, it caused a perfect storm: shutting

businesses, causing labor shortages and slowing transportation of goods. This led to supply shortages and long lead times. Many manufacturers have faced significant delays in buying materials for production. The most dramatic is the auto industry, which is reported to lose \$210 billion in sales in 2021 because of the IC supply slowdown.

Even without the pandemic, commercial life cycles can be two to three-years where automotive life cycle can exceed

10-years for production and maintenance support. Although the automotive industry has experienced supply issues when their products' technology lagged the rapid changes of advanced commercial products, the extent of this problem is something new.

Semiconductor companies' shift in production from automotive ICs to home computer products were well publicised. When demand changes rapidly, as it did in 2020, suppliers review their wafer production line run



Lansdale Semiconductor's president, R Dale Lillard

safe&easy

- Circuit Protection
- Connectors
- EMC Products
- Switches
- Input Systems
- Solutions

01296 319 000  
sales.uk@schurter.com  
[www.schurter.com](http://www.schurter.com)

**SCHURTER**  
ELECTRONIC COMPONENTS

The advertisement features a collage of electronic components at the top, including a circuit board, a connector, a switch, and a coil. Below this is a close-up of a car's digital instrument cluster showing a temperature of 23°C and a red bar graph. The bottom section is a blue banner with white text.



# TrustedParts.com

Built by the companies you know and trust.



- ✓ Best defense against counterfeit components
- ✓ Proper packaging and handling
- ✓ Fully warrantied and supported by the manufacturer

Search authorized distributors at  [TrustedParts.com](https://www.TrustedParts.com)

rates and modify them to improve sales per square inch of wafers produced. This can force unpredicted obsolescence and long cycle time delays as they optimise production for current product demand. The pandemic has caused a shift in wafer fabrication processes that is not easily reversed, leading to the possibility of permanent changes in availability for some products.

IC life cycles are driven by the wafer fabrication foundry process. Foundry equipment is expensive (new fabs cost \$5 to \$10 B) and their processes become difficult to modify. When market driven semiconductor technology

advancements demand newer equipment and processes, the switch can make it difficult to produce older products. In many cases, the fab uses existing floor space and personnel for the newer equipment, forcing them to remove older equipment and shut down the older process. If older products are not compatible with new equipment, they become obsolete.

Pandemic induced supply chain problems have caused many semiconductor customers to spend time interrogating their suppliers about product life cycle, cycle

times and overall lead times. The belief is that manufacturers can warn them of potential problems. However, suppliers cannot always accurately predict potential problems due to uncertainties within their own supply channels.

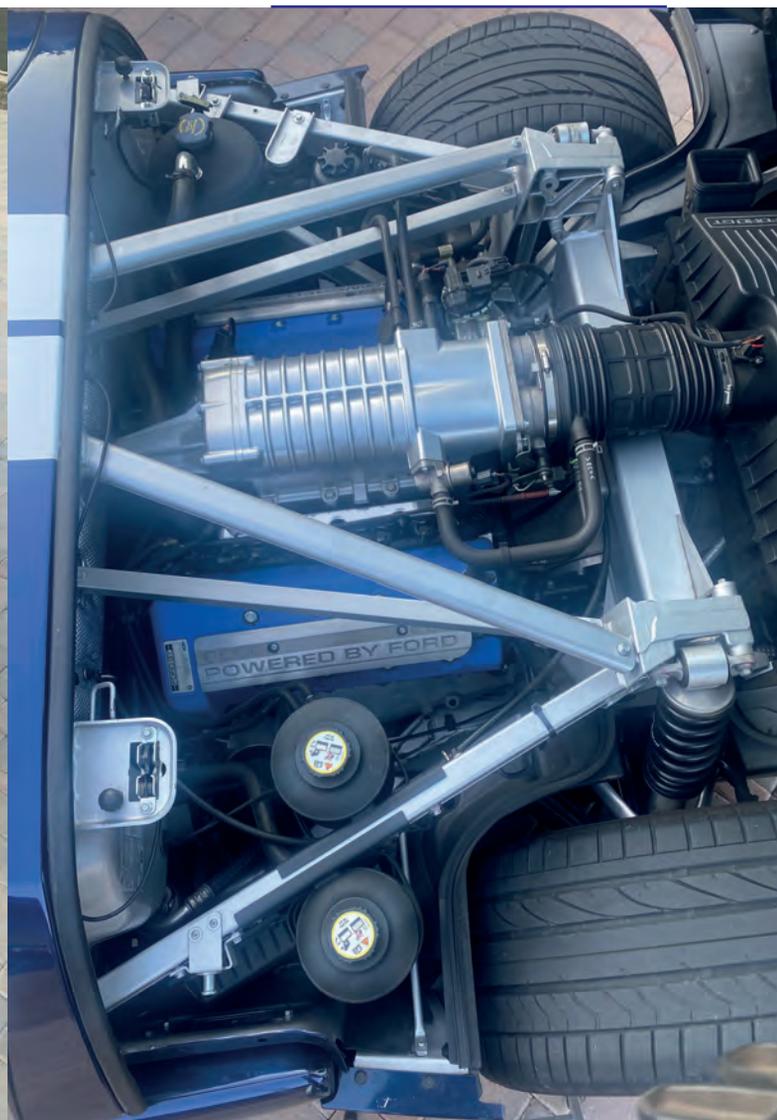
I'm sure most companies consider how to reduce supply shortfalls. It is a good time to increase inventories where possible, lengthen supply contracts and switch to suppliers who are closer and have good environments. The automotive industry used to have its own semiconductor manufacturing capability

and may need to restart some closed foundries to ensure supply.

Nothing lasts forever. In an uncertain world, just-in-time manufacturing needs to be re-tooled to provide enough redundancy to cope with events that stress the supply chain, such as new technologies and a worldwide pandemic.

[www.lansdale.com](http://www.lansdale.com)

Automotive life cycle can exceed 10-years for production and maintenance support

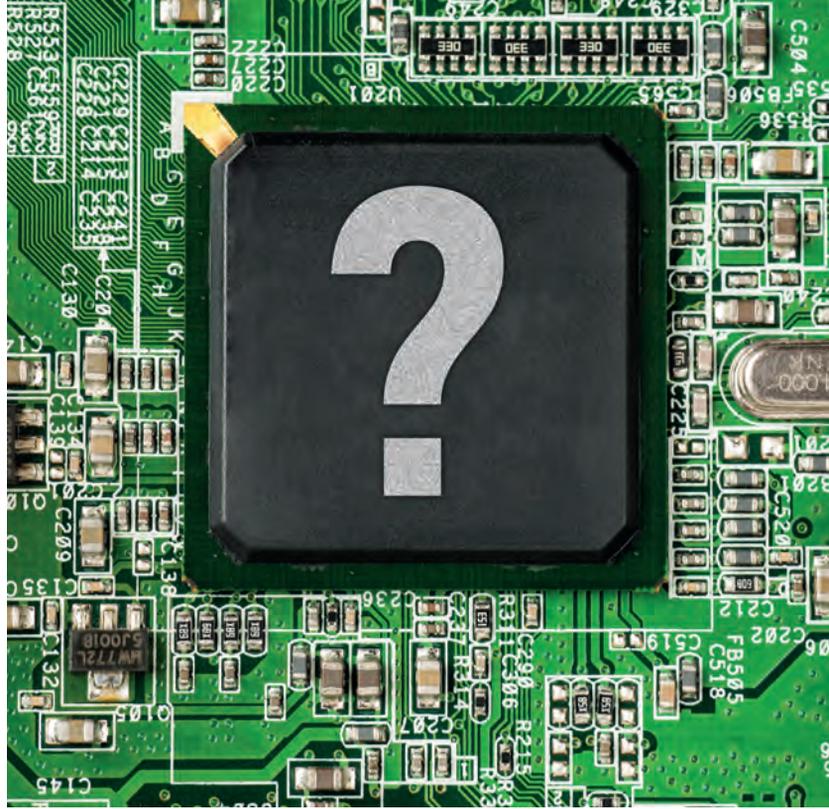


# Reduce the risk of counterfeits

During this period of supply chain upheaval, Corintech's management procedures shield customers against the danger of counterfeit components

When supply chains are under strain, the risk of encountering counterfeit components rises. Counterfeits are more common than many buyers think and pose a serious threat to product quality and safety. Unauthorised copies, substitutes or modified parts misrepresented as genuine OEM parts often fail to meet required performance demands, resulting in products performing intermittently, not to specification, or not at all. Corintech offers full supply chain management, with procedures designed to

ensure procurement is fully traceable, thus significantly minimising the risk of using counterfeit parts. The first line of defence is to purchase components from original equipment manufacturers or their authorised distributors. If this is not possible, components are purchased from audited and approved suppliers with a full chain of custody to the OEM. Where this is not possible, Corintech only uses components independently validated against the OEM's specifications and only with customers' full knowledge and acceptance.



After a two-year hiatus, Corintech is returning to Southern Manufacturing & Electronics, where its team will be on hand to discuss how the company's services can benefit upcoming electronics projects.

[www.corintech.com](http://www.corintech.com)

Corintech offers full supply chain management, with procedures designed to ensure procurement is fully traceable, thus significantly minimising the risk of using counterfeit parts



# ELECTRONICS DESIGN & MANUFACTURE

corintech [www.corintech.com](http://www.corintech.com) [info@corintech.com](mailto:info@corintech.com) +44 (0)1425 655655

**SOUTHERN**  
Manufacturing  
& Electronics  
Farnborough International Exhibition Centre  
8th to 10th February 2022

# Stand D165

## Experts in Electronics

Improved Quality • Lower Cost • On-Time In-Full Delivery

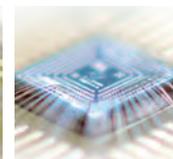
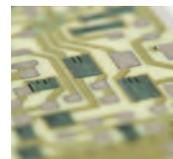
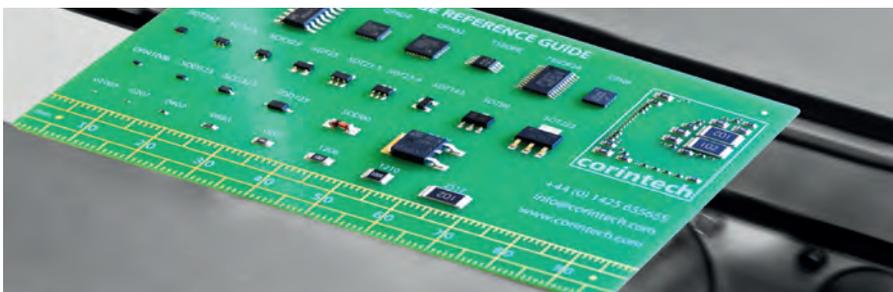
Three reasons to choose and stay with Corintech.

### ELECTRONICS MANUFACTURE

- Component sourcing
- PCB assembly
- Hybrid microcircuits
- Full product assembly
- Rapid UK and scalable offshore production
- Flexible stockholding and supply
- AS9100, ISO 9001, IPC, J-STD

### ELECTRONICS DESIGN

- Advanced electronics engineering
- PCB layout
- 3D CAD
- Design for manufacture
- Wireless and IoT integration
- Software and firmware development
- Cloud service and app development



# 30-years of electronics innovation

Retronix' director and founder, **Tony Boswell**, walks readers through 30-years of electronics innovations and highlights the company's growing global reach

2022 marks a special milestone for Retronix as the company celebrates its 30th anniversary. With Scottish origins, the Retronix story began in 1992 when director Tony Boswell spotted a niche market expanding within the electronics industry. What started as a local nine-person business has grown into a global organisation, delivering a unique set of technology solutions to the high reliability industries.

The last 30-years have given Retronix plenty of reasons to celebrate. The trip down memory lane commences in 1997, a breakthrough year for Retronix as it introduced its Component Reclaim service. As a solution to obsolescence, allocation and component shortage, the process—which safely recovers and refurbishes valuable and hard-to-find components from scrap, obsolete and redundant PCBs—remains at the forefront of the business. A key component of the company's Circular Economy Programme,

Component Reclaim, also reduces the effects of electronic waste on the environment by actively supporting customers' waste and scrap reduction.

In 1999 Retronix added another string to its bow with Laser Reballing. Unlike the traditional reflow method, solder ball attachment is performed by a laser system using an infrared wavelength—significantly exceeding IPC requirements—as the BGA is not exposed to heat stress during reballing. The service also fulfils manufacturer specifications for component rework up to three reflow cycles. Retronix remains the only company to offer laser reballing.

In the new Millennium, Retronix launched Counterfeit IC Testing in 2006 and Automated Retinning in 2012. The most recent innovation, Micro Device Hot Solder Dip, launched in 2021 and provides customers with an automated solution to

tinning micro devices and capacitors such as 0402s, 0603s, SOTs to GEIA STD.

Fast forward to today and Retronix is still the same family business it was 30-years ago, but now operating on a larger and more global scale. While Scotland is still home to Retronix' HQ, the company has expanded into the USA with a new facility in Pflugerville, Texas. Complete with a suite of Retronix services, the new facility is a direct response to increasing demand from the US market.

Director and founder Tony Boswell, who is as involved in the business now as he was on day one, shares his thoughts on Retronix celebrating 30-years: "The 30 years have flown by, working with great people who enable the company to constantly innovate to keep pace with a fast-moving industry has been key to our success. Here's to the next 30-years!"

[www.retronix.com](http://www.retronix.com)



The last 30-years have given Retronix plenty of reasons to celebrate. The trip down memory lane commences in 1997, a breakthrough year for Retronix as it introduced its Component Reclaim service





# RETRONIX

Celebrating 30 Years of Component Preparation  
Solutions for the High Reliability Industries



Industry Leaders in  
**Robotic Hot Solder Dip,  
Laser Reballing,  
Component Reclaim  
and IC Tests**

## Our Global Locations

### USA Facility

Retronix Global Inc.  
Pflugerville, Texas, USA  
**t:** +1 717 847 1540  
**e:** USA@retronix.com

### UK Facility

Retronix Ltd.  
Coatbridge, Scotland, UK  
**t:** +44 (0) 1236 433 345  
**e:** info@retronix.com

# Demand drives manufacturers to increase efficiency

**Vision engineering** explains how high definition imaging improves quality control processes and contributes to manufacturing efficiency

Pressure on electronics manufacturers is intense. Component supply issues and heightened demand is compounded by increasing material costs. Thus, it is critical that quality management teams improve production processes. To thrive in this environment companies must drive production routine efficiency, while maintaining quality control.

The cornerstone of efficiency involves reducing the number of operations, while speeding the operations that remain. The process begins with configuring pre-sets, reducing multiple key

processes to a single action. Using image comparisons to highlight differences between a current sample and a 'golden sample' is beneficial. Also, introducing overlays further improves efficiency by highlighting areas of interest.

Clearly, excellent image quality is key to accuracy: an ultra-sharp image ensures even the smallest detail is not overlooked.

There are tools that can further improve accuracy from lighting and software accessories to options such as a supervisor lock function, which ensures consistency by

preventing non-standard or non-compliant inspections. A 360deg viewer allows any area of a PCB to be viewed from any angle without operator manipulation.

These tools make it easier to recognise defects including defective conformal coatings, misplaced/misaligned parts, pad lifting and fillet tearing.

Evo Cam II is a trusted, powerful and versatile high definition digital microscope, designed to drive quality control efficiency, through ease of use, high image quality and accuracy.

[www.visioneng.com](http://www.visioneng.com)



Evo Cam II

## EVO CAM II High definition digital microscope



**EXCEPTIONAL IMAGE QUALITY**  
30:1 optical zoom range, delivering optical magnification up to 760x.



**360° VIEW OF SUBJECT**  
Quick visual inspection using the 360° viewer. Removes the need for operator manipulation.



**LONG WORKING DISTANCE**  
Examine a wide range of subjects, with enough space to work with tools.

**Vision**  
ENGINEERING  
[www.visioneng.com](http://www.visioneng.com)

To request a demo, contact our sales team on **01483 248300** or alternatively email [generalinfo@visioneng.co.uk](mailto:generalinfo@visioneng.co.uk)



# ECS

## The Electronic Component Show



**It's back for 2022!**  
The one day event for you to benefit from  
ECS - Kassam Stadium (Oxford United FC)  
Thursday 19th May, 2022

THE **1** DAY EVENT

# Respect the supply chain

*Glenn Richey, the Raymond J Harbert Eminent Scholar and chair of the Department of Supply Chain Management in Auburn University's Harbert College of Business, discusses the current supply chain crisis*

## Is the Covid-19 pandemic completely to blame for supply chain disruptions?

The pandemic created a cascading disruption that impacted supply chains at their most vulnerable points. Plants that normally operated 24/7 were closed. Suppliers were also closed. Many manufacturers and suppliers could not ramp quickly enough to meet the post-pandemic demand because a focus on cost above responsiveness provided no safety net. Raw materials and parts suppliers paused and held limited inventory. Being so lean caused inventory to dry up.

Shortfalls in human resources in manufacturing and trucking, poor labor relations and productivity at ports, aging US rail infrastructure, outdated just-in-time manufacturing focus, misplaced emphasis on lean inventory management, spiked growth of e-commerce and panic forward buying all had a major impact. You can blame management, unions, government, experts and customers. All of us are involved in supply chains, and we all have contributed to this problem.

## What caused overseas factories to close?

In China and the US an entire plant or port might be closed if one employee tested positive. Other countries closed plants depending on non-business specific

issues, but plants also shut down when parts and raw materials aren't available or when labor has the means to not return to their jobs.

## Why are cargo ships unable to dock and unload cargo?

There are many reasons as port operations are complex, but I think the current critical issues are pandemic recovery demand, e-commerce demand growth and an unwillingness to do the work required at choke points, including some western US ports.

When supply chain functions create bottlenecks, employees and management step up and do what it takes to avoid being the weakest link. That was not happening at US West Coast ports until recently. They finally started working nights and weekends in southern California and now say they're moving to 24-hours. The situation is more than an infrastructure issue. It is a labor relations and productivity issue that is adding pressure to other ports like Savannah, Georgia.

Some of this is customer panic buying—which is causing retail panic buying—which will cause manufacturers to overproduce. My suggestion to federal government is to encourage customers to not stockpile or rush to buy products. Stop saying things like 'buy your Christmas presents now'. That behavior is inflaming the situation. If

you hear politicians saying, 'buy now', don't trust their understanding of supply chain management or the economy.

## There was a shortage of truck drivers, who take the goods from ports to warehouses, before the pandemic. Why has the pandemic exasperated this labor shortage?

We have been trying to grow the truck driver ranks for 20-years. A recent report noted we will need an additional half million truckers by 2035, despite automation. Truck driving is a solid career. Over-the-road drivers can make a six-figure salary, receive superior health care and retire after 20-years. We need more outreach in high schools and trade schools about the benefits of joining this career path.

## Is supply chain automation a possible long-term solution to many of these problems?

Automation can help us toward a long-term solution, but there is no magic bullet. Automation assists supply chain processes. If the company focus is efficiency, it works to speed the process while also reducing human error. That's a big plus, but not something that fixes a major bottleneck like we are experiencing today. If the focus is adjusting to market issues, automation can become a massively costly investment that might even become irrelevant.



**Glenn Richey, Raymond J Harbert Eminent Scholar and chair of the Department of Supply Chain Management in Auburn University's Harbert College of Business**



**Our Supply Chain Management program at Auburn has seen massive interest and related growth, but many universities pay almost no attention to supply chain management education**



# TrustedParts.com

Genuine electronic components from  
only authorized sources.

Enter a component part number



**54B+**

PARTS  
IN STOCK

**25M+**

UNIQUE PART  
NUMBERS

**4K+**

LEADING  
MANUFACTURERS

**2.3M**

USERS  
PER YEAR

**120M**

SEARCHES  
PER YEAR

**ALWAYS REAL-TIME PRICING AND AVAILABILITY**

Search authorized distributors at  **TrustedParts.com**

Automation saves cost and human error but can limit a company's ability to respond to market and customer needs. Innovative management and employees remain our most important asset in the US. Combining those people with automated material-handling equipment and automated trucks should help us to return to normalcy in time.

**There is a shortage of computer chips, so auto manufacturers can't make new vehicles. Why?**

Raw materials are in high demand and low supply while manufacturers are ramping production. It is easier for chip manufacturers to send millions of devices to cell phone companies. They could send the same to GM, but why deal with interventionism when you can distribute at home in massive quantities? Why deal with the relationship and political risk in the US?

One silver lining may be that consumers now have a better

understanding, even respect, for all facets of the supply chain. What a teachable moment for the Auburn students studying supply chain. Agree?



## When supply chain functions create bottlenecks, employees and management step up and do what it takes to avoid being the weakest link

Community: Customers now know what a supply chain is, but they don't understand supply chains. They don't know the complexity, distance, cost and speed issues, and why should they? Consumers just want the

product now. Understanding that supply chains have limited capacity, maybe customers will come to realise that they don't need everything in two days.

Government: Politicians need to know there is no 'the' supply chain. Supply chains are many and beyond direct control of our government, outside of blocking/delaying distribution to our citizens. Supply chains make up massive networks of global companies connecting to support world commerce. Politicians should not criticise private industry when many supply chains involve public entities, including the Chinese and other governments. Maybe public servants will spend time learning about and understanding the importance of the supply chain?

Universities: Our Supply Chain Management program at Auburn has seen massive interest and related growth, but many universities pay almost no attention to supply chain management education. That needs to change if we want to respond effectively to

future disruptions. Perhaps all this attention to supply chain management will encourage the growth of new programs, helping us increase the much-needed talent pool. Until then, I encourage every interested undergraduate and graduate student to consider Auburn.



# Tailored to your needs.

## Custom & Standard Terminal Blocks



© eiCan

### WE are here for you!

Join our free webinars on  
[www.we-online.com/webinars](http://www.we-online.com/webinars)

#### Würth Elektronik Terminal Blocks

In addition to a portfolio of more than 2000 standard articles, Würth Elektronik offers various possibilities to tailor the products to your specific requirements. Personalized modifications of standard terminal blocks are available for small to medium quantities within a few days as a special service. Fully customized products in high quantities are possible within a few weeks. In house design, tooling and prototyping ensures all customer specific requirements are met.

For further information, please visit: [www.we-online.com/TBL](http://www.we-online.com/TBL)

- Highly customized products
- Over 2000 standard articles
- Available from stock without MOQ
- Personalized modifications of standard parts for small quantities
- Fast delivery
- Color & printing possibilities with MOQ for mass production

#TailoredTBL



Examples of highly customized products

# Buyers spoiled for choice

*Purchasing professionals attending Southern Manufacturing & Electronics 2022 are offered a productive way to meet many suppliers during these times of restricted travel*

*Southern Manufacturing & Electronics* returns to Farnborough from 8 to 10 February 2022. Production and automation hardware, components, software, business and subcontract services will all feature, pulling together vendors from across the UK, continental Europe and beyond.

The organiser anticipates the 20,000m<sup>2</sup> Farnborough International Exhibition Centre to be fully booked when the exhibition opens. The variety of participants makes it among the finest UK exhibitions for finding products and engineering know-how, both locally and internationally. During these times of restricted travel, the chance to deal with multiple supply chain issues in a single visit is not to be missed.

Roughly half the floor area is dedicated to electronics, within which visitors will encounter many familiar names. Production and inspection hardware exhibitors include Mycronic, exhibiting its adaptable PCB manufacturing solutions intended to help reduce operational running costs and increase yield. Alongside its usual exhibits, Blundell Production Equipment is launching the i-Pulse Yamaha M20 auto-placement machines, with specialists on hand to guide visitors through set-up and functionality.

Those looking to source components are spoiled for choice. Transfer Multisort Elektronik (TME)—one of Europe's largest distributors—carries over 500,000 product lines covering semiconductors, IoT components, optoelectronics,

passive/electromechanical components, connectors and more. UK-based firms include Sinclair & Rush and Easby Electronics, specialists in components such as custom batteries, power supplies, semiconductors, displays, electromechanical, passive components, optoelectronics, IoT devices and EV charging equipment.

OEM manufacturers include a selection of connector specialists such as Yamaichi, Coax Connectors and Selwyn Electronics. TDK-Lambda UK will display two of its latest power supply ranges: the UK-designed CUS400M; and the latest additions to its Genesys+ programmable power supplies. ESI Technology will showcase its GS4400 pressure transmitter with RS-485 interface. New releases from Midas Displays include smart TFT displays with CAN bus interface and RGB LCDs.

Subcontract expertise ranges from design and contract assembly to PCB production and inspection. Electronics design and software development consultancy Ignys will be offering specialist advice on designing-around the global chip shortage. Esprit Electronics will highlight its range of services, including PCB assembly, NPI, DFT/DFM, test and inspection, conformal coating and box build. PCB specialists returning for 2022 include European Circuits and Shenzhen X-Mulong.

The free seminar programme returns for 2022 in a socially-distanced setting. Content includes energy reduction, innovation, supply chain and business strategy, plus a

deeper examination of current industrial and post Brexit regulations.

Farnborough International Exhibition Centre is among Europe's most up-to-date exhibition sites, with extensive infection control measures. There's free onsite parking for 3,500 vehicles, plus a dedicated free bus service between Farnborough's train stations and the show. Services include free WiFi and on-site catering.

[www.industrysouth.co.uk](http://www.industrysouth.co.uk)



**Roughly half the floor area is dedicated to electronics, within which visitors will encounter many familiar names**



# SOUTHERN 22 Manufacturing & Electronics

FARNBOROUGH | Hants | GU14 6TQ

8th | 9th | 10th FEBRUARY 9.30am - 4.30pm  
(3.30pm close Thurs)

## Where Industry and Innovation converge

Over 600 national and international suppliers come together to exhibit at Farnborough International Exhibition and Conference Centre this February for Southern Manufacturing and Electronics (inc AutoAero) 2022. Meet the power behind UK manufacturing industry and see live demonstrations and new product launches of machine tools & tooling, electronics, factory & process automation, packaging & handling, labelling & marking, 3D print technology, test & measurement, materials, composites & adhesives, rapid prototyping, ICT, drives & controls and laboratory equipment.

Free industry seminar programme online @  
[www.industrysouth.co.uk](http://www.industrysouth.co.uk)

The exhibition is **free** to attend, **free** to park and easy to get to. Doors open at 9.30am on Tuesday 8th February.

Incorporating The Subcontract  
Engineering Exhibition  
**AUTOAERO**  
FARNBOROUGH • 8 - 10 FEBRUARY 2022



**FREE  
SEMINARS  
FREE  
PARKING**

AUTOMATION  
DEFENCE  
FOOD & DRINK  
AUTOSPORT  
MARINE  
AEROSPACE  
TRANSPORTATION  
PACKAGING  
ELECTRICAL & MECHANICAL  
ENGINEERING  
ADDITIVE MANUFACTURING  
LOGISTICS  
ELECTRONICS  
ENERGY  
SPACE ENGINEERING  
R&D  
MEDICAL  
COMPOSITES  
CONSTRUCTION

▶ **PRE-REGISTER TODAY**  
for your Fast Track Entry Badge, Preview Magazine and Event Catalogue at  
[www.industrysouth.co.uk](http://www.industrysouth.co.uk)

SOUTHERN MANUFACTURING & ELECTRONICS  
is an ETES event organised by European Trade & Exhibition Services Ltd  
Tel 01784 880890 • email [philv@etes.co.uk](mailto:philv@etes.co.uk)



# Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
<b>CABLE ASSEMBLY &amp; HARNESSING</b>											
Amphenol	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,000	N/A	0 €	N/A	50	2,500+	Y
FTDI	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	50	N/A	0 €	N/A	50	2,500+	Y
Harwin	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	600	N/A	0 €	N/A	50	2,500+	Y
Molex	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,550	N/A	0 €	N/A	50	2,500+	Y
Phoenix Contact	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
<b>CIRCUIT PROTECTION</b>											
Bourns	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,800	N/A	0 €	N/A	50	2,500+	Y
EPICOS/TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,950	N/A	0 €	N/A	50	2,500+	Y
Littelfuse	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	11,450	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,150	N/A	0 €	N/A	50	2,500+	Y
<b>ENCLOSURES</b>											
Bud Industries	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,600	N/A	0 €	N/A	50	2,500+	Y
Hammond	Switch Electronics	01482 862255	switchelectronics.co.uk	Y	500	N/A	£0	70%	2	6	Y
Hammond	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,350	N/A	0 €	N/A	50	2,500+	Y
Metcase Enclosures	OKW Enclosures	01489 583858	www.metcase.co.uk	N	288	£40,000	£0	N/A	5	22	Y
New Age Enclosures	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
OKW Enclosures Ltd	OKW Enclosures	01489 583858	www.okw.co.uk	N	1,955	£40,000	£0	N/A	5	22	Y
Rolec Enclosures	OKW Enclosures	01489 583858	www.rolec-enclosures.co.uk	Y	935	£40,000	£0	N/A	5	22	Y
Teko Enclosures	OKW Enclosures	01489 583858	www.teko.co.uk	Y	1,860	£40,000	£0	N/A	5	22	Y
<b>FREQUENCY MANAGEMENT</b>											
ABRACON	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,750	N/A	0 €	N/A	50	2,500+	Y
AEL Crystals Ltd	AEL Crystals Ltd	01293 789200	www.aelcrystals.co.uk	N	N/A	£200,000	£50	100%	3	15	Y
Analog Devices Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
ECS	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,050	N/A	0 €	N/A	50	2,500+	Y
Epson	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	900	N/A	0 €	N/A	50	2,500+	Y

## Services Sourcing

**CEM**



**Wilson**  
PROCESS SYSTEMS  
ELECTRONICS MANUFACTURING SERVICES

**In-house processes including:**  
 Oversized PCB Capability  
 Automated SMT/Through-Hole Assembly  
 Hand Assembly/Box Build  
 Design For Manufacture  
 Environmental Testing  
 Wide Range of Coatings/Encapsulation  
 Full Test Services  
 IPC Certified Staff

www.wps.co.uk  
01424 722222  
enquire@wps.co.uk

IPC Certified Staff  
BSI

**DEVICE PROGRAMMING**



**action circuits**  
(UK) LIMITED

device programming & reeling specialists



**I.C. PROGRAMMING & LASER MARKING SERVICES**

Tel: 00 44 (0)1582 412323  
Email: sales@actioncircuits.com  
www.actioncircuits.com

**TAPE REELING**



**action circuits**  
(UK) LIMITED

device programming & reeling specialists



**SMD TAPING & REELING SERVICES**

Tel: 00 44 (0)1582 412323  
Email: sales@actioncircuits.com  
www.actioncircuits.com

**CELL PACK SOLUTIONS**

Custom Battery Pack Design & Assembly  
Battery Distribution

**TRACER**  
High Performance Lithium Batteries  
12-24V - 4-170Ah

Tel: 0191 496 9999  
www.cellpacksolutions.co.uk

**INTERCONNECTION**



**Hirose**  
ELECTRIC EUROPE BV.

More than 50,000 connectors



www.hirose.com/eu  
eu.info.3d@hirose-gl.com

**Want to Advertise here?**

Contact Emma at  
emma.evernden@electronics-sourcing.com  
Or call us on 01892 613400

**Want to Advertise here?**

Contact Emma at  
emma.evernden@electronics-sourcing.com  
Or call us on 01892 613400

**Want to Advertise here?**

Contact Emma at  
emma.evernden@electronics-sourcing.com  
Or call us on 01892 613400

# Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
Golledge Electronics Ltd	Golledge Electronics Ltd	01460 256 100	www.golledge.com	N	N/A	£800,000	£0	100%	12	24	Y
IQD Frequency Products	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,500	N/A	0 €	N/A	50	2,500+	Y
Jauch Quartz	Digi-Key Electronics	0800 587 0991	www.digikey.co.uk	Y	500	£250,000	0	100%	15	130	Y
Kyocera	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	950	N/A	0 €	N/A	50	2,500+	Y
Microchip	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	550	N/A	0 €	N/A	50	2,500+	Y
Silicon Laboratories	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	500	N/A	0 €	N/A	50	2,500+	Y
TXC Corporation	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	500	N/A	0 €	N/A	50	2,500+	Y
<b>HEATSINKS</b>											
Aavid	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
<b>ICs &amp; SEMICONDUCTORS</b>											
Alliance Memory	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	500	N/A	0 €	N/A	50	2,500+	Y
Analog Devices Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	18,700	N/A	0 €	N/A	50	2,500+	Y
Broadcom Limited	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Central Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,250	N/A	0 €	N/A	50	2,500+	Y
Cirrus Logic	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Cree, Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Diodes Incorporated	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	8,200	N/A	0 €	N/A	50	2,500+	Y
FTDI	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	100	N/A	0 €	N/A	50	2,500+	Y
Infineon	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	8,300	N/A	0 €	N/A	50	2,500+	Y
Intel	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,750	N/A	0 €	N/A	50	2,500+	Y
Maxim Integrated	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	14,050	N/A	0 €	N/A	50	2,500+	Y
Microchip	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	24,200	N/A	0 €	N/A	50	2,500+	Y
Micron Technology	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	600	N/A	0 €	N/A	50	2,500+	Y
Monolithic Power Systems (MPS)	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	850	N/A	0 €	N/A	50	2,500+	Y
Nexperia	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	7,600	N/A	0 €	N/A	50	2,500+	Y
Nordic Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	60	N/A	0 €	N/A	50	2,500+	Y
NXP	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,700	N/A	0 €	N/A	50	2,500+	Y
ON Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	18,700	N/A	0 €	N/A	50	2,500+	Y
Power Integrations	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	750	N/A	0 €	N/A	50	2,500+	Y
Qorvo	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	700	N/A	0 €	N/A	50	2,500+	Y
Renesas Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,550	N/A	0 €	N/A	50	2,500+	Y
ROHM Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,900	N/A	0 €	N/A	50	2,500+	Y
Semtech	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	350	N/A	0 €	N/A	50	2,500+	Y
Silicon Laboratories	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
Skyworks	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	550	N/A	0 €	N/A	50	2,500+	Y
STMicroelectronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	10,050	N/A	0 €	N/A	50	2,500+	Y
Texas Instruments	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	39,050	N/A	0 €	N/A	50	2,500+	Y
Toshiba	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,050	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	10,850	N/A	0 €	N/A	50	2,500+	Y
Xilinx	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,900	N/A	0 €	N/A	50	2,500+	Y
<b>INTERCONNECTION</b>											
3M	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,750	N/A	0 €	N/A	50	2,500+	Y
Amphenol	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	33,200	N/A	0 €	N/A	50	2,500+	Y
Cinch Connectivity Solutions	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,250	N/A	0 €	N/A	50	2,500+	Y
FCI / Amphenol	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	7,850	N/A	0 €	N/A	50	2,500+	Y
HARTING	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,800	N/A	0 €	N/A	50	2,500+	Y
Harwin	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,950	N/A	0 €	N/A	50	2,500+	Y
Hellermann Tyton	Lane Electronics	01403 790661	www.fclane.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	Y
Hirose Electric	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	7,850	N/A	0 €	N/A	50	2,500+	Y
Huber+Suhner	Lane Electronics	01403 790661	www.fclane.com	Y	766	£116,000	£0	100%	6	38	Y
Intelliconnect (Europe) Ltd		01245 347145	www.intelliconnect.co.uk	N/A	N/A	N/A	N/A	100%	5	30	
ITW McMurdo	Lane Electronics	01403 790661	www.fclane.com	Y	866	£219,000	£0	100%	6	38	Y
JAE Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
Molex	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	23,600	N/A	0 €	N/A	50	2,500+	Y
Phoenix Contact	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	17,150	N/A	0 €	N/A	50	2,500+	Y
Polamco	Lane Electronics	01403 790661	www.fclane.com	Y	218	£146,000	£0	100%	6	38	Y
Positronic	Lane Electronics	01403 790661	www.fclane.com	Y	N/A	N/A	N/A	N/A	N/A	N/A	Y
Radiall	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,350	N/A	0 €	N/A	50	2,500+	Y
Samtec	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	16,300	N/A	0 €	N/A	50	2,500+	Y
Souriau	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,300	N/A	0 €	N/A	50	2,500+	Y
Souriau	Lane Electronics	01403 790661	www.fclane.com	Y	1,929	£806,000	£0	100%	6	38	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	41,850	N/A	0 €	N/A	50	2,500+	Y
Wurth Elektronik	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,650	N/A	0 €	N/A	50	2,500+	Y

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
<b>MEDICAL CERTIFIED</b>											
Review Display Systems		01959 563 345	www.review-displays.co.uk				£100				
<b>OBSOLESCENCE / HARD TO FIND</b>											
	Cyclops Electronics	01904 415 415	www.cyclops-electronics.com	N/A	177,232	£12m	£100	75%	3	78	Y
Rochester Electronics	Rochester Electronics	+44.1480.408400	www.rocelec.com	Y	299	N/A	\$250	N/A	10	400+	Y
<b>OPTO ELECTRONICS</b>											
Broadcom Limited	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,300	N/A	0 €	N/A	50	2,500+	Y
Cree, Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,800	N/A	0 €	N/A	50	2,500+	Y
Intel	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	20	N/A	0 €	N/A	50	2,500+	Y
Osram Opto Semiconductor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,300	N/A	0 €	N/A	50	2,500+	Y
Toshiba	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	450	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,350	N/A	0 €	N/A	50	2,500+	Y
<b>PASSIVES</b>											
AVX	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	17850	N/A	0 €	N/A	50	2,500+	Y
Bourns	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	15,100	N/A	0 €	N/A	50	2,500+	Y
Coilcraft	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,750	N/A	0 €	N/A	50	2,500+	Y
EPCOS / TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,450	N/A	0 €	N/A	50	2,500+	Y
KEMET	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	23,650	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	18700	N/A	0 €	N/A	50	2,500+	Y
Ohmite	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,550	N/A	0 €	N/A	50	2,500+	Y
Panasonic	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	25,450	N/A	0 €	N/A	50	2,500+	Y
Taiyo Yuden	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,100	N/A	0 €	N/A	50	2,500+	Y
TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	13,050	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	11,500	N/A	0 €	N/A	50	2,500+	Y
TT Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,050	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	43850	N/A	0 €	N/A	50	2,500+	Y
Würth Elektronik	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,750	N/A	0 €	N/A	50	2,500+	Y
Yageo	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	21,450	N/A	0 €	N/A	50	2,500+	Y
<b>PASSIVES ALTERNATIVES</b>											
BEC Distribution Ltd		01844 275824	www.bec.co.uk		5,000	N/A	£0	100%	3	5	Y
<b>POWER &amp; BATTERIES</b>											
FRIWO Gerätebau GmbH	Haredata Electronics	01423 796240	www.haredata.co.uk	Y	250 - 500	€1M	£250	100%	7	14	Y
Jauch Quartz		01276 605900	www.jauch.com			£500,000	0	95	15	130	Y
Mean Well	Ecopac (UK) Power Ltd	01844 204420	www.ecopacpower.co.uk	Y	6,000	£2M	£0	100%	8	30	Y
Bel Power Solutions	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	600	N/A	0 €	N/A	50	2,500+	Y
CUI Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
MEAN WELL	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,400	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1500	N/A	0 €	N/A	50	2,500+	Y
RECOM	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,150	N/A	0 €	N/A	50	2,500+	Y
TDK-Lambda	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,900	N/A	0 €	N/A	50	2,500+	Y
TRACO Power	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,000	N/A	0 €	N/A	50	2,500+	Y
Vicor	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,300	N/A	0 €	N/A	50	2,500+	Y
XP Power	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
<b>SENSORS</b>											
ams	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
Analog Devices Inc.	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	300	N/A	0 €	N/A	50	2,500+	Y
Bosch	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	25	N/A	0 €	N/A	50	2,500+	Y
Honeywell	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,200	N/A	0 €	N/A	50	2,500+	Y
Maxim Integrated	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	350	N/A	0 €	N/A	50	2,500+	Y
NXP	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	300	N/A	0 €	N/A	50	2,500+	Y
Sensirion	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	80	N/A	0 €	N/A	50	2,500+	Y
STMicroelectronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	75	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	650	N/A	0 €	N/A	50	2,500+	Y
Texas Instruments	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	850	N/A	0 €	N/A	50	2,500+	Y
<b>SWITCHES &amp; KEYBOARDS</b>											
Apem	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,850	N/A	0 €	N/A	50	2,500+	Y
C&K Switches	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,550	N/A	0 €	N/A	50	2,500+	Y
E-Switch	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	2,350	N/A	0 €	N/A	50	2,500+	Y

## Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Franchised Distributor	No. of Lines for Principal	Stock Value for Principal	Minimum Order Value	% Lead Free for Principal Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
EAO	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,800	N/A	0 €	N/A	50	2,500+	Y
EAO Ltd	EAO Ltd	01444 236000	www.eao.co.uk	N	5,000	£500,000	£150	100%	6	22	Y
Honeywell	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,700	N/A	0 €	N/A	50	2,500+	Y
NKK Switches	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,000	N/A	0 €	N/A	50	2,500+	Y
Omron	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,700	N/A	0 €	N/A	50	2,500+	Y
Panasonic	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	550	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,350	N/A	0 €	N/A	50	2,500+	Y
<b>TERMINAL BLOCKS</b>											
Marathon Special Products	Global Supply Services	01904 436 488	www.global-supply-services.com	Y	8,000	£800,000	£100	100%	3	11	Y
Molex	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,850	N/A	0 €	N/A	50	2,500+	Y
Phoenix Contact	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	13,550	N/A	0 €	N/A	50	2,500+	Y
TE Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,750	N/A	0 €	N/A	50	2,500+	Y
<b>THERMAL MANAGEMENT</b>											
Bergquist Company	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	250	N/A	0 €	N/A	50	2,500+	Y
Delta Electronics	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	700	N/A	0 €	N/A	50	2,500+	Y
ebm-papst	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
EMI Thermal	EMI Thermal	01992 510000	www.emithermal.com	N	800	N/A	£20	100%	12	200	Y
Sanyo Denki	EAO Ltd	01444 236000	www.eao.co.uk	Y	4,300	£150,000	£150	99%	6	22	Y
Sanyo Denki	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,450	N/A	0 €	N/A	50	2,500+	Y
Sunon	G.English Electronics Ltd	0208 855 0991	www.gelec.co.uk	Y	3,500	£1,000,000+	£0	100%	10	28	Y
Sunon	Thermaco Ltd	01684 566163	www.thermaco.co.uk	Y	3,500	£450,000	£100	100%	7	15	Y
<b>TRANSFORMERS &amp; INDUCTORS</b>											
Best Windings	Best Windings	0044 (0)1394 448424	www.bestwindings.co.uk	N	300	N/A	£100	N/A	2	24	Y
Bourns	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,900	N/A	0 €	N/A	50	2,500+	Y
Coilcraft	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	5,500	N/A	0 €	N/A	50	2,500+	Y
EPCOS / TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,300	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	6,900	N/A	0 €	N/A	50	2,500+	Y
TDK	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	4,050	N/A	0 €	N/A	50	2,500+	Y
Vishay	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	1,200	N/A	0 €	N/A	50	2,500+	Y
Würth Elektronik	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	3,400	N/A	0 €	N/A	50	2,500+	Y
<b>WIRELESS SOLUTIONS</b>											
DIGI	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	200	N/A	0 €	N/A	50	2,500+	Y
Espressif	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	30	N/A	0 €	N/A	50	2,500+	Y
Laird Connectivity	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	100	N/A	0 €	N/A	50	2,500+	Y
Lantronix	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	25	N/A	0 €	N/A	50	2,500+	Y
Microchip	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
Murata	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	30	N/A	0 €	N/A	50	2,500+	Y
Silicon Laboratories	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	150	N/A	0 €	N/A	50	2,500+	Y
Texas Instruments	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	20	N/A	0 €	N/A	50	2,500+	Y
u-blox	Mouser Electronics	01494-427500	www.mouser.co.uk	Y	10	N/A	0 €	N/A	50	2,500+	Y

**Best**  
Windings Ltd

## For the Best in Windings

ISO 9001 Design, Manufacture and Supply



- Transformers, inductors, coils, modules
- Custom and standard
- Through hole, surface mount, low profile, encapsulated
- Signal, power, high voltage, safety critical
- Low, medium and high volume
- UK and offshore manufacture
- Security, military, avionics, medical, industrial, telecoms, datacoms, consumer, audio, video . . .



**Why settle for less? Talk to Best Windings**

Tel: +44 (0)1394 448424 sales@bestwindings.co.uk www.bestwindings.co.uk  
Best Windings Ltd, Viking Works, Bucklesham Road, Ipswich, IP10 0NX, UK

## Contract Manufacturers Buyers' Guide

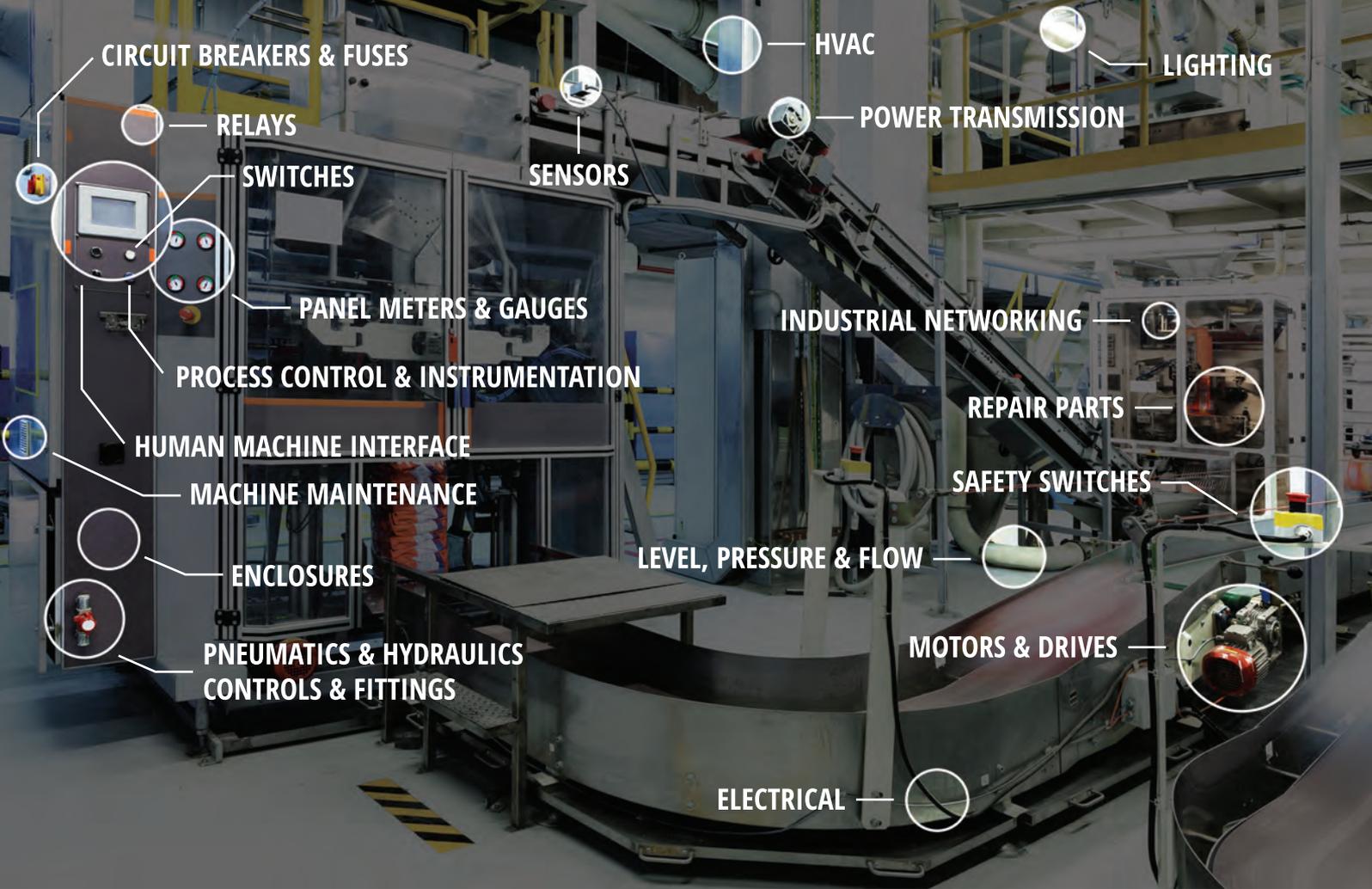
Manufacturer	Telephone	Website	Turnover	Location	Employees	Number of Surface Mount Lines	Approvals	BCA Capacity	Lead Free Manufacturer	Prototyping	Design Capability	Full Turnkey	Cables and Harnessing
Challenger Solutions Ltd	01245 325252	www.challengersolutions.com	£10m	Essex/SE	70	9	AS9100 Rev D, ISO9001:2015, ISO 140001:2015, UL, CCC, IPC-610-G Class 3, TUV	Y	Y	Y	Y	Y	Y
CML Innovative Technologies (uk) Ltd	01284 714700	www.cml-it.com	£12M	UK/EU/China	65		ISO9001, TS16949, UL ISO9001 2015, IATF 16949 2016	N	Y	Y	Y	Y	Y
Corintech Ltd	+44 (0)1425 655655	www.corintech.com	£12.5m	UK & Far East	72	10	AS9100, ISO9001, IPC-A-610 Class 3, J-STD-001	Y	Y	Y	Y	Y	Y
Custom Interconnect Ltd	01264 321321	www.cil-uk.co.uk	£18.6m	Andover (Hampshire)	130	6	AS9100 ISO13485 ISO9001 IPC-A-610 Class 3	Y	Y	Y	Y	Y	Y
Electronic Technicians Ltd	01202 897722	www.etluk.co.uk	£3.7m	SE	50	2	AS9100, ISO9001, ISO14001, IPC610/620 Class 3	Y	Y	Y	Y	Y	Y
Esprit Electronics Ltd	02380 455411	www.espritelectronics.com	£11m	Hampshire	80	4	ISO9001:2008, IPC610 to Class 3	Y	Y	Y	Y	Y	Y
FermionX Ltd	+44(0)1903 524600	www.fermionx.com	£5m	Worthing, W. Sussex	40	4	ISO9001:2015, ISO14001:2015, IPC 610 A Class 2 & 3	Y	Y	Y	Y	Y	Y
G&B Electronic Designs Ltd	01420 474188	www.gandbelectronics.co.uk	£4.6m	Hampshire	60	2	ISO9001 ISO13485, IPC-A-610, IPC J-STD-001, IPC 7711/7721	Y	Y	Y	N	Y	N
Hallmark Electronics Ltd	01782 562255	www.hallmarkelectronics.com	£2.4m	Staffordshire	26	2	ISO9000/UL, IPC610/D	Y	Y	Y	Y	Y	Y
Icon Electronics Limited	01423 449080	www.iconelectronics.co.uk	£6.5m	Hampshire & Yorkshire	70	5	AS9100, ISO9001, BS EN ISO/IEC 80079-34:2018 ATEX, IPC-A-610 Class 3	Y	Y	Y	Y	Y	Y
Incap Electronics UK Limited	01782 753200	www.incapcorp.com	€113m+	UK, Slovakia, Estonia & India	2,000	20	ISO9100, ISO14001, ISO13485, AS9100D, ISO45001 & IATF16949	Y	Y	Y	Y	Y	Y
Industrial Electronic Wiring Ltd.	+44(0)1793 694033	www.iw.co.uk	£5.5m	Swindon, UK	60	N/A	ISO9001:2015, IPC610, IPC620	N	Y	Y	N	Y	Y
Jaltek	01582578170	jaltek.com	£10m	UK	90	3	AS9100, ISO9001, ISO13485, IPC-A-610 Class 3, Certified IPC Trainer (IPC-A-610, J-STD-001 & J-STD-001 Space Addendum)	Y	Y	Y	Y	Y	Y
KEY-TECH ELECTRONIC SYSTEMS	01592 597711	www.key-tech.co.uk	£5m	UK	65	2	ISO9001:2015, J-STD-001, IPC-610/620 CLASS 3, IPC-7711, BS EN ISO13485:2016, ISO 13485	Y	Y	Y	N	Y	Y
Nemco Limited	01438 346600	www.nemco.co.uk	£15.9m	SE	120	6	AS9100, ISO9001:2008, IPC610/620 to Class 3, ISO14001-2004, SC21	Y	Y	Y	Y	Y	Y
NOTE Group	01753 746700	www.note-uk.co.uk	£151m	UK/EU/China	1,100	18	IPC610 to Class 3, ISO9001:2015, 13485, 14001, 18001	Y	Y	Y	Y	Y	Y
M-TEK (Assembly) Ltd	01189 455377	www.mtek.co.uk	£2.4m	SE	30	4	ISO9001, ISO14001, IPC-A-610 Class 3, IPC-7711/7721, WHMA-3620, Certified IPC Trainer	Y	Y	Y	Y	Y	Y
Pektron	01332 832424	www.pektron.com	£50m	E-Midlands	350	8	ISO9001, ISO14001, TS16949, BEAB, VCA, TUV, UL	Y	Y	Y	Y	Y	Y
Simtek EMS Ltd	01843 233120	www.simtekems.co.uk	£8.2m	SE	77	3	ISO9001:2008, ISO13485, IPC-A-610 Class 3 & IPC-7711	Y	Y	Y	Y	Y	Y
TEXCEL TECHNOLOGY PLC	+44(0)1322621700	www.texceltechnology.com	£15.5m	SE	131	7	ISO9001, ISO14001, IPC610 Class 3,	Y	Y	Y	Y	Y	Y
Tioga Limited	01332 360884	www.tioga.co.uk	£16m	Derby	130	6	ISO 9001, ISO 13485, ISO14001, IPC 610, 620, 7711/7721	Y	Y	Y	Y	Y	Y
Wilson Process Systems	01424 722222	www.wps.co.uk	£12m	SE	100	5	ISO9001:2015, IPC-A-610 Class 3	Y	Y	Y	Y	Y	Y

## PCB Buyers' Guide

Manufacturer	Telephone	Website	Service Provided (ie. Broker, Manufacture &/or Repair)	Location	Approvals	Volume - Small, Medium, Large	Double-sided	Multi-layer 4-10/10-20-30	Metal PCBs	Ceramic PCBs	Heavy Copper PCBs	Flexi / Flexi-Rigid	Obsolescence Solutions Modifications	Prototyping
ABL Circuits Ltd	01462 894312	www.ablcircuits.co.uk	M	SE	ISO9000: 2015	SML	Y	4-10	Y	N/A	N/A	Y	Y	Y
Cambridge Circuit Company Ltd	01223 423100	www.cambridge-circuit.co.uk	M	SE	ISO9001:2015, UL, ISO 14001:2015	SML	Y	4-16	Y	N/A	N/A	Y	Y	Y
DK-Daleba Printed Circuit Boards	01992 510000	www.dk-daleba.co.uk	M	UK, Europe, Asia	ISO 9001:2015, UL, TS16949, IOSCAR	SML	Y	4-58	Y	Y	Y	Y	Y	Y
GSPK Circuits Ltd	+44 (0)1423 798 740	www.gspkcircuits.ltd.uk	M/R	UK, Europe, Asia	ISO 9001:2015, IATF 16949:2016, EN (AS) 9100, Ioscar	SML	Y	4-34	Y	Y	Y	Y	Y	Y
Tate Circuit Industries Ltd	01543 622 435	www.tatecircuits.com	M/B	UK/China	ISO 9001:2015, UL	SML	Y	4-20	Y	N/A	N/A	Y	Y	Y

## Advert Index

Advert	Page	Advert	Page
2BK	21	Galco	FC & IBC
Aerco	19	GELEC	31
Anglia Components Ltd	BC	IIOM (International Institute of Obsolescence Management)	14
ART (Advanced Rework Technology)	27	Jaltek	39
ATC Semitec	23	Key-Tech Electronic Systems	18
Best Windings Limited	57	Mouser Electronics	9
Bürklin	12	Nemco	17
Carlisle IC	22	NOTE Group	11
CML Innovative Technologies LTD	13	OKW Enclosures Ltd	35
Corintech	43	PEI-Genesis	30
Cupio	37	Phoenix Contact	33
Design Engineering Expo	7	Rebound Electronics UK	23
Digi-Key Electronics	IFC	Retronix	45
DK-DALEBA	36	Rochester Electronics	15
ECIA (Trusted Parts)	41 & 49	Schurter Electronic Components	40
ECS Inc	21	Sellelectronics	29
Electronic Component Show (ECS)	47	Southern Manufacturing Show Ltd	53
Esprit Electronics Limited	24	Tate Circuits	21
ETECH Training	20	Texcel Technology	38
Euroquartz	28	Tioga	5
Fermionx	29	Vision Engineering	46
FineLine	25	Würth Elektronik	51



# MILLIONS OF PRODUCTS. THOUSANDS OF APPLICATIONS. YOUR GLOBAL RESOURCE.

## Your Source for Industrial Electronics & Automation

Finding the right part for the job has never been easier. Galco carries more than 3 million electrical products, with free technical support to help you find the part you need and get it quickly.



## WORLDWIDE SHIPPING

**GALCO**

Galco.com • +1 888-851-0301

# A fully costed BOM in less than 2 minutes?

BOM+ is the fastest online Bill of Material rapid-quote tool in the industry. We invite you to try it for yourself.

The new BOM+ rapid-quote tool is available FREE exclusively to Anglia-Live customers.

- + Simple to use, just upload your BOM file
- + Fully costed BOM in under 2 minutes
- + Access to high volume and contract pricing
- + Integrated cross reference from manufacturer and industry recognised part numbers, does the hard work for you
- + Typically matches 90%+ of BOM

Simply log into your Anglia-Live account to access BOM+ today.

2  
min.

change the way you work  
for the better.

Visit [www.anglia-live.com/bomplus](http://www.anglia-live.com/bomplus)

**BOM+**  
EFFICIENT BOM MANAGEMENT  
Powered by **anglia**live