

With this year's show being delayed we bring ECS to you

ECS rescheduled to 2021

Welcome to the *Electronic Component Show* 2020 newspaper. After postponing the show, MMG Publishing, organiser of the *Electronic Component Show*, decided to create a newspaper to help exhibitors share their news with pre-registered visitors and *Electronics Sourcing* readers. Inside you will find information from all the exhibitors you would have met at the show. A seven-page section reproduces the educational and interesting seminars that were due to take place. In the absence of virtually all industry exhibitions over coming months, I hope this newspaper provides some worthy content. Don't forget, all the companies you would have spoken with, are still ready and waiting to share their ideas and support your projects.

2021 plans

So, what can you expect from the 2021 event?

Firstly, all 2020 exhibitors have transferred to the 2021 event, which means any exhibitor you wanted to see will still be available. Secondly, we will be working hard to deliver relevant, interesting and educational seminars. In such a fast-moving industry, many seminars are time sensitive, so details will be released in due course.

Lastly, we are announcing the launch of the *Electronics Assembly Show*. This co-located event has been created for manufacturing and test engineers to source equipment and services for their manufacturing facilities. Product areas include pick and place equipment, reflow ovens, hand assembly, work benches, ESD, training, box build, test and inspection, reworking and packaging. Together, the two shows offer the ultimate electronics exhibition.

Seminars inside

- Engineering challenges of part selection in product design - Nikola Kontic - Zuken
- Costs of thermal design failures - Tom Gregory - 6Sigmaet
- Stay safe - Michael Barrett - Nexus
- Collaborative robots offer big value in a small size - Paul Garner - ABB Robotics
- Obsolescence: not the end of the world - Ken Greenwood - Rochester
- Safe haven in dangerous waters - Astute
- Avoiding counterfeit components with quality-led distribution - Debbie Rowland - Charcroft

ECS

The Electronic Component Show

2021

EXHIBITORS SO FAR



Creative Technology



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SEMINAR PRESENTED
BY NIKOLA KONTIC

Engineering challenges of part selection in product design

Engineers face many hurdles during the electronic design process, including innovation, technology and physical product appearance. Surveys have highlighted engineers can spend up to 70 per cent of their time researching parts for a design. These include specification and technical details in the datasheet for the use case. Additional important factors these days are power consumption and form factor, as designers look to minimise power and drive for miniaturisation.

Other considerations include costs, availability and weight etc. The part approval process can be managed by a team or an individual, depending on the project's scale.

Part research is a major engineering task, understanding and checking part compliance to the markets the final product will be sold in. REACH, RoHS and other rules must all be considered. Engineers must review all Product Change Notifications (PCN) from the component manufacturer.

Continuing with engineering aspects, firstly an architect and/or hardware engineer considers a new product through a high-level block diagram capture. There are some ideas regarding parts needed within some functional elements. Questions include: how will the product be divided; one or more PCB; is there a module re-use opportunity? Using marketing and MCAD information, how will the product look and where will critical components be placed for the enclosure.

All this is considered, allowing weight, cost and even power consumptions to be estimated. Sometimes engineers use products like Visio to capture the functional design idea, while Excel is used to estimate weight and costs.

Further considerations include board technology, interconnects, reliability, space and signal integrity. It may be a case to use a memory module already available, or a power supply board.

Other design factors include creepage and

the ECAD model is not available, including circuit diagram, schematic symbol, PCB footprint and sometimes a 3D model.

As more EDA/ECAD system can display and design in 3D, communicating via a 3D model helps with reviews and approvals.

Sharing a BoM externally has been a concern. Companies working in the defence sector or designing an innovative product, risk others knowing the parts being used. Also, security must be considered. External people knowing which parts a new product is using can be considered as exposing too much. A survey showed 63 per cent were concerned about sending data to third parties for innovative products or aerospace/defence projects.

The push from distributors to grow their market share and revenues is facilitated by connecting with engineers, accessing their BoMs, and making part selection and adoption easier.

To this end, recent years have witnessed acquisitions and market changes, such as Avnet acquiring Premier Farnell, which promoted them in the top 10 distributor rankings. Arrow has a strategy which targets BoMs too.

Mouser has partnered and adopted SamacSys, a free ECAD data download providing to customers an easier path for part selection and purchase. If a part is not available through SamacSys, a free part creation service is offered. Typically, the time to download is faster than a single engineer would be able to add to their ECAD library.

Digi-Key formed an alliance/partnership with Ultra Librarian which now also offers a free download service.

The ECAD model download is a value-added service from distributors that helps SMEs and enterprises reduce design time and librarian resources. This also improves overall design time by supporting rapid prototyping environments.

locations and hunting for details is time consuming and frustrating. Having a single point to access for this information reduces engineering time. Having specification, compliance, stock levels and pricing are helpful to the decision-making process.

SupplyFrame's FindChips is a subscription service with a suite of part information. Performing risk analysis, it presents part information including specification, datasheet, pricing, inventory/stock, where used, suppliers and alternatives.

Engineers can browse parts using parametric search, leading them to details and intelligence. Once the engineer has confirmed all aspects and the risk factors are acceptable, then adoption is further eased through ECAD model download, schematic symbol, PCB footprint and 3D model. This is downloaded and merged into the user's library.

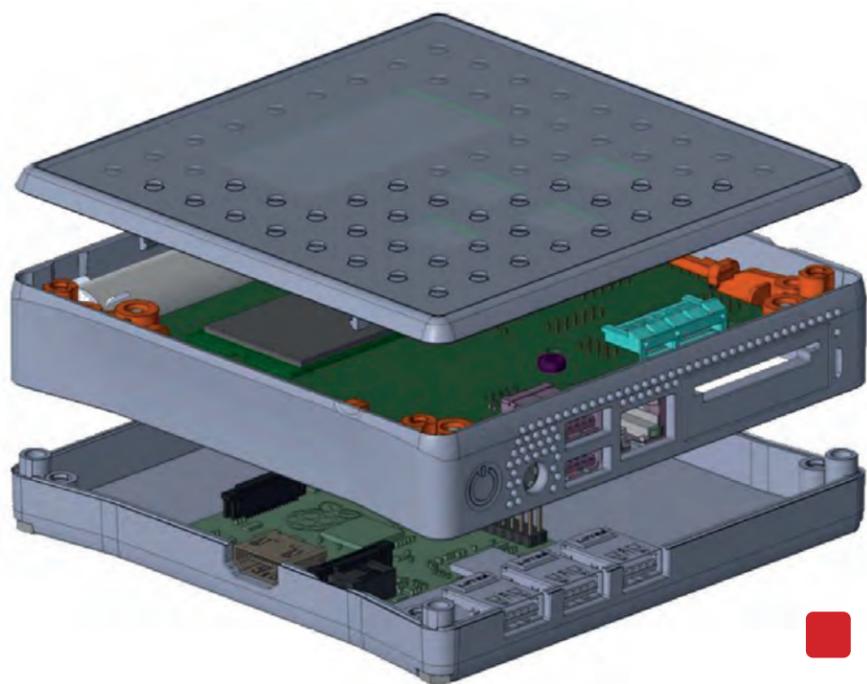
Arrow subsidiary Silicon Expert Technologies supports engineers regarding part information and BoM analysis. This subscription service provides detailed part information and equivalent parts, capturing information through links with manufacturers. Depending on subscription and integration levels, this can be review and action, or a closer communication where Product Change Notices inform the user if the part changes during the subscription period.

A part's lifecycle is documented, and engineers can make informed decisions about the part before manufacturing commences.

A product's BoM can be processed, providing a quality grading which can help engineers address risks. This results in a higher confidence level for company and engineer.

What next?

Future thoughts are for reference designs provided by component manufacturers to be available in formats that suit EDA vendors.



Then we come to availability and sourcing. Many companies require a minimum of two suppliers. In some cases, an EMS may perform this sourcing task. However, PCB fabrication and assembly may be done by different companies, for which component sourcing may be required.

The product's target market impacts the decision. Lifecycle in consumer and defence/military is very different, requiring a part's lifecycle to be sufficient to fulfil future product demands. This is factored with stock/inventory levels available from component distributors.

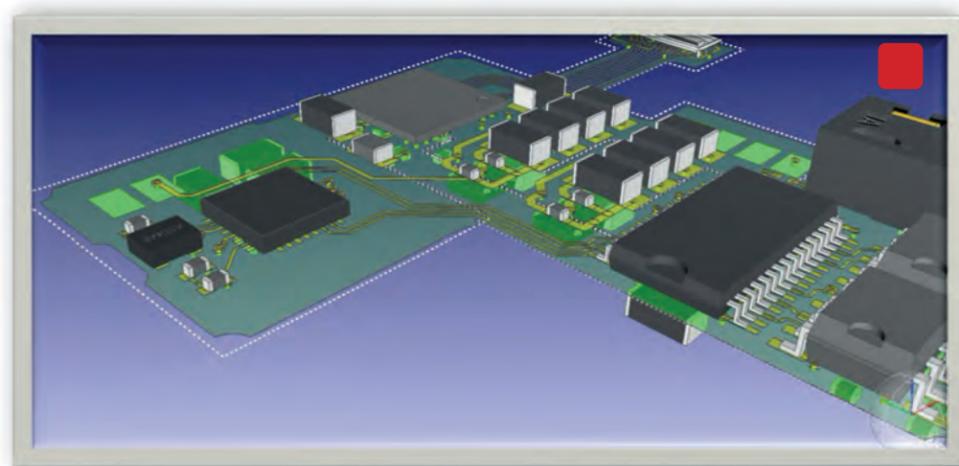
Lead time, historic pricing and stock levels are factors to consider. These tasks are typically combined with the engineer considering the technology, both from packaging and physical package perspectives. Some critical performance products may need memory and process to be located very close, physically stacked on a single package. If security and piracy are concerns, embedded die can be considered, although this can impact costs significantly.

clearance issues. Forward plan to consider standards related to the product's target market, such as IEC-62368.

When engineers start the detail design tasks, parts are reviewed, and the circuit design is started. However, the first challenge is getting parts approved for use. In larger companies an engineer may hand a bill-of-materials to a procurement team. Parts are then searched and approved if they meet all criteria and checks. In an SME, this task may be done by the engineer themselves which diverts them from the design process and consumes valuable time.

One hurdle in using some parts is the availability of ECAD data. It can take an engineer two or three days to create a part for an ECAD library. Each EDA/ECAD software application uses its own data model.

Adopting a part has been made easier by component distributors and information providers via part download services. These suppliers also offer part creation services if



Links to Spice simulation models help engineers explore and verify circuit designs at an early stage.

It is excellent to know part stock levels and pricing in real time. Many services offer this including Electronics Weekly Compare. Getting more information from multiple

To further improve rapid prototyping, a service where distributors can fulfil a BoM and have close links with PCB fabricators via a single point of contact.

www.zuken.com

SEMINAR PRESENTED
BY TOM GREGORY

Costs of thermal design failures

Good thermal simulation focused on speed, accuracy and reliability helps ensure engineering projects go as planned, on time and under budget

For today's electronics engineers, balancing power, heat and performance in product design is vital. However, it is also more difficult than ever. As devices become smaller and more complex, thermal performance rises in importance. Excess heat leads to higher rates of failure. To overcome this, engineers are placing greater focus on thermal management.

While overheating is certainly an issue for modern devices, its effects are not always immediately visible. For this reason, thermal simulation comes into play, providing a more accurate view of where heat flow isn't being managed and future reliability issues could occur.

Despite this importance, there is still resistance to thermal simulation among engineers. Industry-wide research by 6SigmaET shows that, while a quarter of engineers simulate their designs before producing physical prototypes, 13 per cent don't test the thermal performance at any stage of the design process. This exposes them to significant risk of failures further down the line.

However, engineers are aware of this issue, with 33 per cent admitting they need to devote more time to thermal management when producing their designs.

When to simulate

For many engineers, it's not just if they choose to use thermal simulation, but when. To limit design failures, and keep costs low, it's important that engineers simulate as early in the design process as possible. Nobody wants to devote months to developing and launching a new product only to discover it contains a serious thermal design flaw.

Unfortunately, that's exactly what many design engineers do, with 27 per cent waiting until after a design has been completed before testing for potential thermal issues. Some 56 per cent also wait until after a physical prototype is produced. While this is better than waiting until the end of the process, it still wastes valuable budget producing and testing prototypes which could have been rendered virtually at no additional expense.

What's the risk?

Thermal management is critical for three things. Firstly, performance. Will the product work correctly when used? Secondly, reliability. Will the product fail prematurely? Thirdly, safety. Is the device at risk of becoming too hot? Does it pose a risk of fire? Without good thermal management, none of these factors can be guaranteed.

It's not just end-products that suffer. Engineers themselves face challenges due to poor thermal management. In fact, 99 per cent of engineers said projects had been derailed by late-stage complications, with one in five identifying thermal issues as a common cause of these delays.

This failure to take advantage of the available simulation tools is costing engineers time/budget and making end products less reliable and possibly less safe. Given these potential costs, why are some thermal engineers still not making the most of thermal simulation.

Why the delay?

A big source of resistance to simulation is undoubtedly cost. Research shows one in four thermal engineers are dissatisfied with their current simulation package's costs. It would be foolish to ignore the cost of

simulation tools, with a thermal simulation licence costing between £7k to £15k a year depending on supplier.

It seems like a lot when viewed in isolation. However, the value of simulation is in enabling engineers to test their devices much earlier in the design process, reducing the possibility of failures (and future costs associated with those failures) further down the line.

Correcting late-stage failures typically involves going back to the original design, identifying and addressing the causes, building a new prototype and then testing the revised design to ensure fixes were successful. The failure's severity will determine how much rework it will entail. On average you can assume around two weeks.

Average day rate for an electronics engineer varies from £500 to £1,000. So, for a two-week respin you are looking at approximately £5,000 to £10,000 of engineering time costs, assuming it is a relatively simple failure fixed by one person.

There are also costs associated with producing a new prototype, plus the cost of repeating the environmental testing. Most prototypes won't overheat operating at 20°C on a test bench: performance needs to be tested at temperature extremes. Environmental testing is crucial. Putting a prototype through its paces in a test chamber can cost upwards of £1,000 a day.

Even using conservative estimates, you are looking at one failure costing upwards of £10,500 to correct. With a few extra complications it could be upwards of £20,000. That's not just a waste of money,

it's also a waste of engineering resources, which could be more usefully deployed elsewhere.

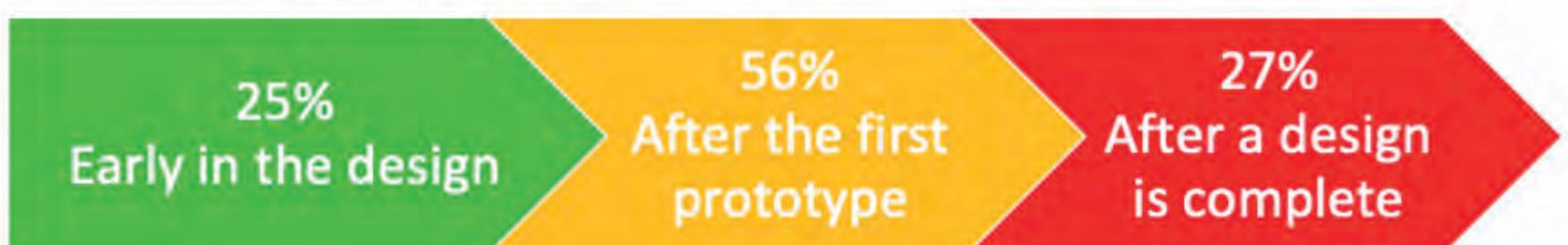
Remembering that 99 per cent of engineers have had a product derailed by late stage complications, up-front investment in thermal simulation pales in comparison.

Making the change

When thinking about the costs of thermal simulation, don't just think in terms of immediate monetary costs, but rather about the overall return on investment for the project long-term. While it's easy to dismiss thermal design as low priority, the truth is that considering thermal issues early in the design process is essential for ensuring a product is right first time, while minimising wasted money and effort that come with design failures.

www.6sigmaet.info

When do engineers test the thermal management of their designs?



SEMINAR PRESENTED
BY MICHAEL BARRETT

Stay safe

As Covid-19 challenges our industry it's important we don't lower our guard against digital viruses. Nexus Industrial Memory's MD, Michael Barrett, explains how 'going industrial' can improve security in removable memory applications

Cybersecurity is a growing concern in all sectors and electronics is considered particularly at risk because it comprises many SMEs, sole traders, freelancers and consultants that, unlike large organisations, are less likely to have robust cybersecurity measures in place.

These SMEs and individuals are essential supply chain links. Whether trading commodities, such as materials and components, or offering support services, all have essential roles to play. They are also parts of the increasingly 'cloud-based machine' that keeps the industry alive and well.

Even though all businesses have been severely disrupted by Covid-19 they must not become complacent where digital viruses and the role they play in cyber-attacks are concerned. Digital threats have not gone away. Indeed, they are increasing, as is the sophistication of the attacks.

Risk Management

The UK Government's *Cyber Security Breaches Survey 2020* reported that 46 per cent of UK businesses had been hit by a cyberattack in the past year, noting the survey was conducted in late 2019 and almost half of those lost data or money as a result.

On the plus side, the survey also identifies 'a growing resilience to cyber-attacks, based on the changes that businesses have made over the last five years'. Increased awareness partly fuelled that trend with a prime example the National Cyber Security Centre's *10 Steps to Cyber Security*. At the heart of this is the recommendation that companies establish a risk management regime.

The guide offers advice around network security, AVS on computing platforms and increased vigilance. One of the 10 steps is to control removable media, the most common form factor being USB drives/sticks and to secure against data loss. Again, the National Cyber Security Centre offers advice in its *Secure Sanitisation of Storage Media*. It defines sanitisation as 'the process of treating data held on storage media to reduce the likelihood of retrieval and reconstruction to an acceptable level'.

For removable media the sanitisation must be more than a standard 'erase' as there are ways of recovering deleted data. Re-formatting is one sanitisation option, but it may damage the device. That may not be a problem, as the guide also talks of destruction as a sure-fire means of sanitation.

The guide also acknowledges the importance of data encryption. Standard USB drives can be encrypted using tools like BitLocker, which is included within Windows 10, for example.

Under attack

Another security risk around USB drives in industry is programs that steal data. However, some hackers are not interested in accessing your data. They don't want you to either. Increasingly favoured by cyber-criminals, ransomware prevents users from accessing their files by encrypting them. A key which decrypts the files is supplied (though not guaranteed) on receipt of payment through a mechanism like cryptocurrency. This affords the hacker a high degree of anonymity.

Ransomware can lie dormant for a specific time period or until certain conditions are met. This means it might get backed up. Some viruses, like Locker are sleepers. Also, in 2019, it was reported that the WannaCry ransomware worm that hit the UK's NHS and many businesses so hard in 2017 is still around on the internet.

An even more malicious virus is one that hunts a network for specific controller software with the aim of shutting down key hardware. For example, the Stuxnet virus (though many now regard it as weaponised malware) was designed to spread through PCs running Windows and hunt for Siemens Step 7 software, which runs on programmable logic controllers (PLCs). The malware provides instructions to the PLCs that cause damage to hardware and it is believed that power stations were a target, with many of Iran's nuclear centrifuges damaged in 2010.

Industrial for a reason

As mentioned, for those worried about loss or theft of a USB drive containing sensitive data, encryption is an option. However, to counter the other threats already discussed it is worth considering moving away from the USB form factor. A USB port, whether on an office PC or industrial controller, is a data interface. Subject to the levels of security (physical and software) on the platforms, a portable computing device and USB cable might be enough to steal data or introduce malware.

Industrial removable memory devices are available that are still USB 'inside': they contain Flash memory and communication protocols are the same. However, the form factor is different. For example, Datakey UFX memory tokens (Fig 1) employ the USB 2.0 high speed comms protocol and have memory capacities ranging from four to 64Gbyte.

If a UFX drive containing sensitive information were to be lost or stolen it is extremely unlikely the finder would have a receptacle to interface with the device. Also, equipment fitted with UFX receptacles will only interface with UFX drives. Unlike consumer USB drives, UFX has a fixed USB vendor address and Product ID that can be used for authentication. Another option is to move from the USB comms protocol to serial

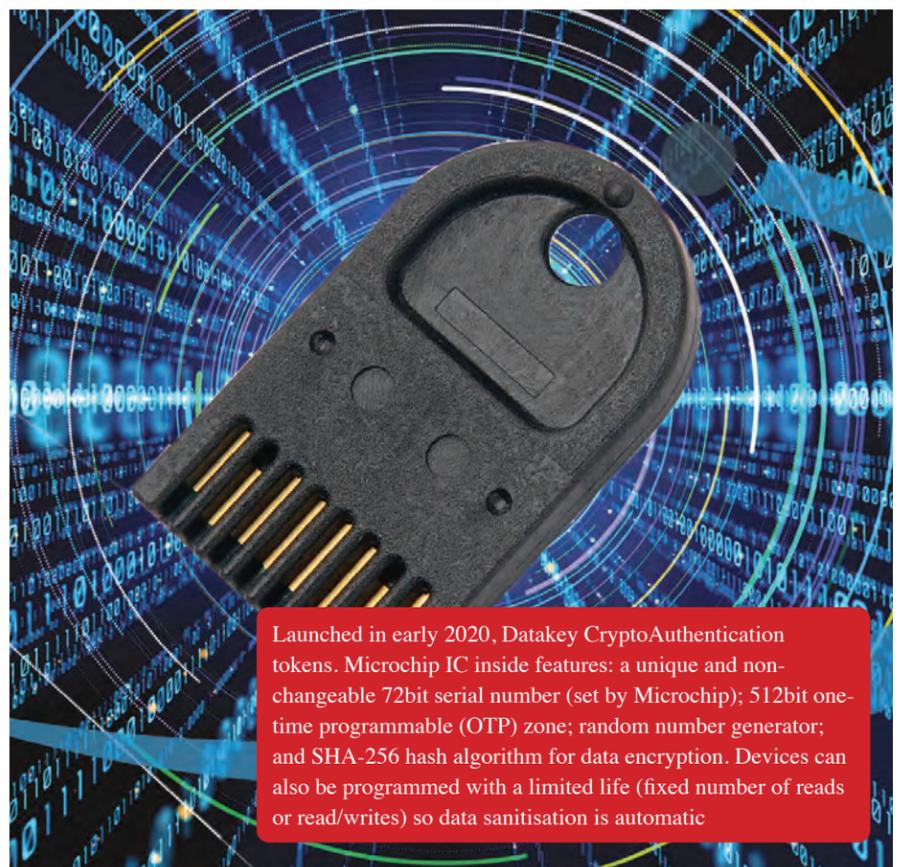
interfaces like SPI or SD with an industrial form factor.

Where removable memory devices are used for access control and user privileges (low memory capacity) devices are available that employ Microchip's CryptoAuthentication ICs (Fig 2).

In summary, the wide availability of USB drives makes them attractive to hackers and an ideal vehicle for introducing malware into a company from within its IT firewall. As a minimum, if operations rely on removable memory devices, move away from the USB form factor. Industrial applications warrant industrial devices.



Industrial memory devices are more secure than consumer USB drives because of their unique form factor



Launched in early 2020, Datakey CryptoAuthentication tokens. Microchip IC inside features: a unique and non-changeable 72bit serial number (set by Microchip); 512bit one-time programmable (OTP) zone; random number generator; and SHA-256 hash algorithm for data encryption. Devices can also be programmed with a limited life (fixed number of reads or read/writes) so data sanitisation is automatic

Collaborative robots offer big value in a small size

Collaborative robots are fast becoming the benchmark in industrial automation for their ability to offer higher productivity while working safely alongside human workers

Collaborative robots, or cobots, are compact and lightweight, making them ideal for factories of the future. Machines like ABB's YuMi are more than just robots able to carry out high-quality work with maximum consistency. Cobots offer benefits that add value at every step of the production process.

One example is their ability to work safely alongside humans without the need for guarding, greatly reducing their overall footprint. This makes them ideal for applications ranging from simple small-parts assembly to more complex packaging and palletising tasks where the robot can maximise productivity without compromising safety.

Another avenue for cobots to maximise flexibility and efficiency is synchronised collaboration, where operator and robot work together in a planned but more intermittent manner. Tasks including final trim and assembly in automotive manufacturing, where human interaction is needed alongside the robot's speed and precision, are ideal for a collaborative setup.

Collaborative robots also offer manufacturers the flexibility to manage the shift to low-volume/high-mix production. Collaborative robots add agility to change between products and introduce new products faster. People on the production line contribute their problem-solving capabilities, insights and adaptability to change, while robots bring tireless precision and endurance for repetitive tasks.

Originally launched in 2015, ABB's YuMi robot is carving its own niche due to agile movement on seven axes and industry-leading features making it the world's safest collaborative robot. In addition to meeting the ISO regulations for collaborative robot safety, YuMi has enhanced safety features on three levels:

- **Mechanical measures.** With the dual-arm robot weighing 38kg and the single-arm variant 9.5kg, YuMi's lightweight design reduces the power it can exert on collision. The robot's rounded geometry increases the contact area of the YuMi and inversely lessens impact.
- **Inspired by humans.** Complete with an 'elbow', the arms of the seven and 14-axes YuMi robots have been inspired by humans in size and shape. This friendly design makes humans feel safe and comfortable around the robot, increasing the readiness to work closely with them.

The fully integrated arms have no external wiring or hardware and have soft-padding for added safety. Moreover, YuMi's back-drivable brakes allow a human operator to push the robot's arms away in the case of contact.

- **Control system measures.** Force sensing technology built throughout the YuMi's arm and gripper, advanced friction modelling and collision detection technology limit the robot's power and force capabilities to levels that make contact situations safe for humans. This also allows the robot to

continue working at high speeds even in close proximity with a human operator. Technology like ABB's SafeMove2 robotic safety solution can make ABB's other industrial robots also work collaboratively. Replacing physical barriers like fences with virtual barriers such as laser scanners, SafeMove2 automatically stops a moving robot before it can collide with a worker.

Big potential in a small size

The global market for collaborative robots is estimated to be worth \$12.30 billion by 2025, with a compound annual growth rate of more than 50 percent, according to research firm Markets and Markets.

But where is that potential stemming from? One key driver for growth is the development of collaborative robots for workplaces outside large manufacturing environments. While robotic automation technology has evolved to meet the growing demands for high volume industrial production, it has also led to the creation of smaller collaborative robots such as YuMi, which are designed to fit easily into existing production lines to increase productivity while working safely alongside people.

The inherent qualities of collaborative robots such as the ability to mount them on tables, walls and roofs, and their easy-to-install and program features make them ideal automation solutions for smaller manufacturers. With their smaller size and reduced need for peripheral equipment, collaborative robots are also much less costly to install, typically reducing the investment needed for a robotic work cell to under \$50,000.

Filling the talent gap

Many manufacturers are experiencing difficulties finding experienced workers. Many young people who have grown up in the digital world see manufacturing as involving dirty, dull, dangerous and repetitive tasks such as assembling parts, tending to machines or packaging finished goods. Also, with shorter product life-cycles, small manufacturers which operate in high labour cost countries and are closer to their end customers cannot simply outsource to low-cost countries like large corporations do. In these conditions, collaborative robots not only reduce the need for manual labour, but can work tirelessly and with higher quality, allowing their human co-workers to perform more stimulating work that can lead to higher job satisfaction.

By automating monotonous and physically demanding jobs, manufacturers can also improve employee safety. Anodica is an Italian family-run business that makes high-end metal handles, knobs and trimmings for appliance and automotive industries. It uses a dual-arm YuMi alongside a human operator to assemble its products. The robot cell was designed around the operator so that all activities are ergonomically managed. By doing this, the company helps employees avoid short- and long-term injuries related to factory work.

Another example is payments software provider Abrantix. The Zurich-based company commissioned a dual-arm

YuMi to automate the testing of Diebold Nixdorf's ATMs. The robot tests common ATM operations such as inserting cards, punching in PIN codes and withdrawing and inserting money, just like a human. During the day, developers create new ATM software features that are then tested by the robot overnight. Feedback is checked the following day, enabling testers to perform more meaningful tasks.

Hit the ground running

The plug-and-play qualities of modern cobots mean they can be installed more quickly, minimising interference with production processes. Their small footprint and portability make cobots suitable not only for automating existing production lines, but also more diverse applications.

Such mobility makes the YuMi a perfect testing ground for developing automation capabilities in the medical field. At the Texas Medical Center in Houston, a prototype mobile YuMi robot is being trialled as a way of assisting medical and laboratory staff with laboratory and logistics tasks in hospitals. The robot will be able to autonomously sense and navigate its way around its human co-workers, while learning to find different routes between locations. It has the potential to undertake a wide range of repetitive and time-consuming activities, including preparation of medicines, loading and unloading centrifuges, pipetting and handling liquids and picking up and sorting test tubes.

Technological advances have made collaborative robots far more intuitive than

their conventional counterparts. Features such as lead-through programming and user-friendly touch screen interface allow operators with no programming experience to quickly program the robot. Offline simulation tools such as ABB's RobotStudio allow operators to program the robot and simulate an application on a PC without shutting down production. This helps reduce the time taken to get the robot running, ideal for organisations that have short product cycles. Moreover, digital twin technology can be used to develop a complete and operational virtual representation of a robot on which diagnostics, prediction and simulation can be run to optimise the machine even before it is set up.

Innovating for the future, today

The future of collaborative robotics will be in developing enhanced software features such as cloud connectivity, artificial intelligence and machine learning that increase their functionalities and make them even safer, intuitive and easier to use.

ABB is constantly developing new ways to make collaborative robots safe and effective. Software features like ABB's QuickMove and TrueMove guarantee superior motion control, thereby increasing shop floor productivity. In short, collaborative robots represent an unprecedented opportunity to transform industrial automation and improve work dynamics.

new.abb.com



Obsolescence: not the end of the world

Electronic Component life-cycles—the time between market introduction and formal end-of-life—are shortening. A large part of the world's semiconductor demand is driven by consumer electronics, and this market typically has shorter and shorter product lives. Component obsolescence is affecting more companies, more regularly than ever before. European manufacturers in the automotive, industrial, medical, transport, aerospace and military markets have product lives which now far exceed those of the components which go to make them

When long-term product availability is vital, companies need to ensure a reliable source of components is in place, even after the component is made obsolete. This means companies need to plan and manage obsolescence strategically. Failing to do so could lead to:

- Line-stops
- Unnecessarily large financial commitments tied up in last-time-buy stocks
- Long-term storage costs
- Forced product re-designs
- Premature product end-of-life (EOL) and reduced service lives

Here are the top tips to minimise the cost of obsolescence.

Obsolescence management starts at the design phase

Poor component selection in development can lead to premature product re-design and re-qualification. We have all heard of stories of products being launched with obsolete components inside. This is particularly relevant for customers with long development and qualification cycles. A new car, aircraft or industrial controller will typically spend up to five years in design and qualification. Add to this: five to seven years of production; and seven to 10 years of after-sales support and it is not uncommon to need a total of 20 years of component supply.

Choosing the right component technology and supplier can have a dramatic impact on long-term availability. Lowest cost may not be best choice for long-term supply. The first question to ask your supplier is 'what are their commitments to long-term availability'. It is always difficult to obtain absolute guarantees of availability over the long-term. There are unforeseen natural disasters, market instability and company acquisitions: all of which cannot be predicted years in advance. But can your supplier demonstrate a controlled transition process through the EOL and into long-term authorised supply or even long-term production?

Other important questions to ask your supplier. Are the heart-beat components of your design, the software packed microcontrollers, FPGAs or ASICs comprehensively documented? Can the true design files (VHDL, Spice models, test-vectors) be retained and archived at the design phase to offer a chance of re-build if the unexpected happens? Do they contain proprietary intellectual property? If so, the ability to port such designs when/if the components are made obsolete, will

be compromised or at least subject to re-licensing/royalties.

Understand the total cost of obsolescence

Does the company understand and model the cost and risks associated with obsolescence? Component obsolescence is not just a purchasing problem to be addressed as an after-thought. Does the project plan need to include anticipated product re-designs during its life? How will the capital locked down in long-term component storage be accounted for? How will component obsolescence impact on after-sales service commitments?

Plan for obsolescence and resource to management it

If your equipment has a long qualification, production or in-service life you will face component obsolescence. Customers who are surprised by component obsolescence and treat its resolution as an inconvenience to be overcome as cheaply as possible, will ultimately pay a heavy price in terms of disruption, cost and risk. The best-in-class devote skilled multi-disciplined resources to the task of obsolescence management. Preventative planning by purchasing, component engineering, design and programme management can reduce or eliminate the cost and risk. The devil is in the detail and analysis must be line-by-line. Unexpected obsolescence of a 1 cent transistor can stop a programme as easily as the obsolescence of the main microcontroller.

Pro-active monitoring of component life-cycles

Regular component monitoring allows a user to anticipate problems before they occur. There are some excellent tools such as IHS Parts Intelligence and BOM Intelligence which track a component's life-cycle, lead-time and specification changes during its life. Such tools provide a life-cycle prediction, and alerts can be triggered when product discontinuation notices (PDNs) are issued.

Be aware of product discontinuation notices

Many component management databases can provide PDN notification services. This can be generic, where you are shown everything, or specific where you load BoM structures into the database, and it matches and highlights PDNs which affects the products. Each manufacturer has its own unique PDN format so it can be time consuming to assess and log all the part numbers affected. There are attempts to standardise formats with initiatives like SmartPDN but this will take time.

It seems bizarre but it is increasingly difficult for customers to know which PDNs

affect their products. Increased system integration, and the use of embedded processing mean that sub-tier suppliers control these BoMs. A poorly managed component obsolescence in either of these areas can still trigger a forced re-design for the owner of the overall system. Will your sub-tier suppliers share their BoMs? Do your sub-tier suppliers have adequate obsolescence management processes in place?

While many CEMs offer pro-active component life-cycle management, some are completely re-active. PDN notifications are typically only aimed at the direct purchasers of the component in the last two years. Intermittent or irregular production, or low level after-sales service support, may not trigger the PDN notification. Does your CEM have an adequate obsolescence management process?

Last-time-buy: What to forecast?

Forecasting is not an exact science. It is almost guaranteed that your forecast will be wrong. If production forecasting is difficult, after-sales needs are a nightmare. Underestimate your needs and you risk prematurely killing a product and losing sales. Overestimate your needs and you will tie-up unnecessary capital in stock, whilst paying excessive storage costs. Should you plan a re-design in the future to limit your LTB? The design and re-qualification costs, plus the opportunity costs of using precious engineering resources looking backwards rather than forwards, need to be factored in.

Whilst there are few options except to place a traditional LTB order, a supplier with an established EOL transition path offers at least the hope of risk-free ongoing authorised stock and production. If demand rises, re-designs are delayed, or in-service commitments extended, then these aftermarket partners will be able to support. They provide an extra layer of security to the forecasting process.

Purchase from authorised sources

There is a common misconception that once the original manufacturer stops making a component, unauthorised/grey market sources are the only option. Nothing could be further from the truth. The zero-risk option of an authorised after-market supplier like Rochester Electronics, should always be the number one choice.

The risk of counterfeit and simple poor-quality product from unauthorised sources represents a significant risk to production yield and mean-time-between failure rates (MTBR) in the field. Inferior or substandard 'testing' by unauthorised third parties gives a veneer of confidence that 'goodness' can be tested. In truth, the testing is visual or x-ray or a poor partial copy of the original

manufacturers test processes. Full tri-temp testing can rarely be offered, and the risk of commercial grade components being re-marked as industrial, automotive or military parts has never been more real.

Unauthorised component risks include:

- Poor handling. Resulting in ESD damage and the destruction of the device. Externally there will be no indication that a failure has occurred
- Poor storage. Excessive heat, cold or moisture during any part of its storage life. Leading to: external lead corrosion and failed solderability; or moisture ingress into the plastic devices and a catastrophic failure when subject to reflow temperatures.
- Fake documentation.
- Recovered, re-marked or re-packaged components claiming to be something else.

There are also documented quality problems related to foreign chemicals. Cleaning chemicals used to recover, wash and re-mark used components, slowly migrate into the products, shorting and corroding bond wires and pads alike. Superficial testing will not guarantee to find these faults. Recovered components may pass these tests and survive for a period in-service. However, the ultimate failures will destroy MTBR figures, and result in reduced reliability and damaged reputations.

Original component manufacturers do not provide guarantees for products purchased through unauthorised channels. Many explicitly prohibit the sale of components to unauthorised sources. Sources like Rochester Electronics receive their stock exclusively from manufacturers.

Components never leave the authorised bubble so Rochester can offer the original warranties and guarantees. Increasingly, Rochester can offer ongoing build from known-good-die and test product according to original test procedures. Rochester produced parts are current date code with no solderability risk and marked with the original manufacturer's part number, 100 per cent compliant with the original specification. In some cases, Rochester continues to build components first made EOL by the OCM 25 years ago.

Rochester is the trusted authorised partner for most of the world's leading semiconductor industry. All product from Rochester is 100 per cent authorised.

www.rocelec.com



SEMINAR

Safe haven in dangerous waters

In these challenging times, the dangers of counterfeits entering the supply chain are dramatically increased. Astute guides readers to safety

Counterfeit material exists across all commodities but is a profound risk to life-critical applications such as those found in medical, aerospace and defence industries. Consequences can vary from minor to life threatening. For example, what if an IC fails to switch in an automatic defibrillator?

Counterfeit and fraudulent parts become more prevalent in a volatile market. Economic and political turmoil or natural disasters such as the current COVID-19 challenge, impact the supply via shortages and allocation. This fosters opportunity for counterfeiters when stock cannot be obtained from usual, trusted sources.

Counterfeit avoidance program

Astute's operations are run in accordance with quality processes certified to AS6081 that mitigates the risks of purchasing and supplying fraudulent/counterfeit electronic parts.

For parts obtained through non-traceable routes, Astute subjects products to rigorous destructive and non-destructive testing through its counterfeit avoidance program, market leading in its process that goes above and beyond the aerospace and defence quality standards it is based on.

The component inspection and laboratory team are still in action, at 75 per cent, on a split shift basis to ensure their safety and

preserve the departments' functions. They are doing an amazing job at this critical time.

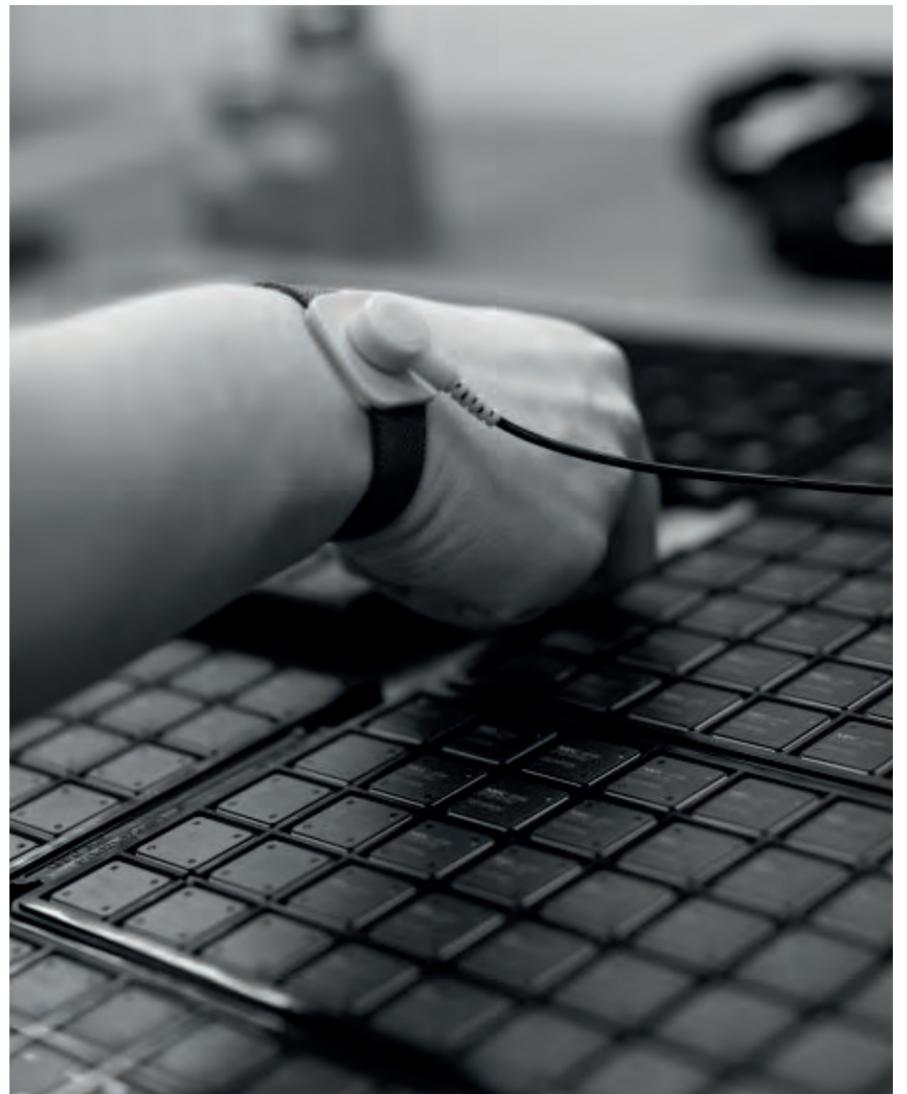
Counterfeit avoidance expertise

Astute is a highly accredited, quality-driven procurement expert, with a list of clients including the world's leading defence suppliers. Its mission is to shield customers against inferior quality products and services. As such, Astute's operations are run in accordance with quality processes including AS6081 that mitigates the risks of purchasing and supplying fraudulent/counterfeit electronic parts.

Astute was the first European distributor to attain AS6081 and proudly the only distributor with AS6081 accreditations across either side of the Atlantic.

The bespoke Astute Counterfeit Avoidance Programme (ACAP) is market-leading in its process and offers a secure, warranted route for these occasions. For parts obtained through non-traceable routes, Astute will subject products to rigorous destructive and non-destructive testing through their ACAP scheme, encompassing the AS6081 anti-counterfeit standards.

www.astute.global



SEMINAR PRESENTED
BY DEBBIE ROWLAND

Avoiding counterfeit components with quality-led distribution

Charcroft's Debbie Rowland explains making quality central to every part of the distribution process avoids the risk of counterfeit components entering the supply chain

The risk of receiving counterfeit components is a constant challenge in the electronics industry and procurement professionals now have higher levels of concern. Over the recent period of extended lead-times and allocation, buyers had to look to different channels to secure delivery. Lack of component availability led companies to consider sourcing components from the grey market. The grey market grew and increased the threat of receiving counterfeit components.

Vigilance is critically important and assessing the supply chain and processes used by suppliers plays a vital role in eliminating counterfeit components. The potential consequences of receiving and using counterfeit parts are significant for OEMs and CEMs. In some sectors, such as aerospace, defence and space, failure is not an option. Counterfeit parts which are not fit-for-purpose could be commercially damaging and a major safety risk. Sourcing components from approved, franchised distribution channels provides the confidence that components are valid, accurate and fit-for-purpose.

Planning for counterfeit avoidance

Every distributor supplying commercial, industrial or high-end sectors should have a plan which protects against supplying counterfeit components. The plan must address the balance between accuracy, vigilance and commercial viability. The plan must cover every eventuality and worst-case scenario to ensure counterfeit components are not inadvertently introduced into the supply chain.

As an approved supplier to major OEMs and CEMs in the industrial, defence and high-end sectors for 40-years, counterfeit elimination has been central to Charcroft's business model. The model is based on a strong reliance on quality-driven processes including defining and adhering to rigorous quality policies and procedures which govern every transaction, every day. Actively encouraging this culture of quality resonates throughout the company. It is not limited to the quality department but applies to every team. Each employee must take ownership of quality to create a viable management system which is embedded in each distribution process.

To minimise the risk from counterfeit components, a series of defined tasks maintains the absolute reliability of the sourcing process. One of the most important tasks is to ensure staff are fully trained and aware of the potential impact of counterfeit components.

All staff receive compulsory training and awareness of counterfeit components is covered in the key commercial training programme. Additional intensive training, specific to identifying and avoiding counterfeit components, is given to each member of the quality department. Members of the quality team are approved to act as Designated Supplier Quality

Representatives (DSQR) and attend customer-specific training to ensure they are approved by the customer to perform this role. Prioritising quality in every Charcroft team provides a solid foundation on which to develop further protocols.

Added certification to franchised components

Certification to AS9120 delivers a widely adopted and standardised quality management system for the aerospace industry. This qualification, in addition to JOSCAR certification, are integral to Charcroft's ability to supply to the aerospace industry. These accreditations reinforce an ongoing commitment to quality and to supplying components which are used in critical applications.

The most common way to minimise the risk of counterfeit components is for customers to source devices from franchised manufacturers. On very few occasions, it may be necessary for Charcroft to fulfil a customer's vital requirement by purchasing parts outside of a franchise agreement, but not from the grey market. The protocol for these situations ensures parts are flagged up and the purchase is authorised by a director. The parts are stored separately in a designated area and kept separate from franchised stock. All parts, whether from franchised manufacturers, or acquired with special authorisation, are subjected to rigorous, multiple testing prior to shipment to the customer. Tests include checking the component's body and markings, plus checking accompanying documentation. All returned franchised parts are subjected to rigorous checks before being released back into stock. This ensures security at every stage of the distribution cycle.

DSQRs and document archive

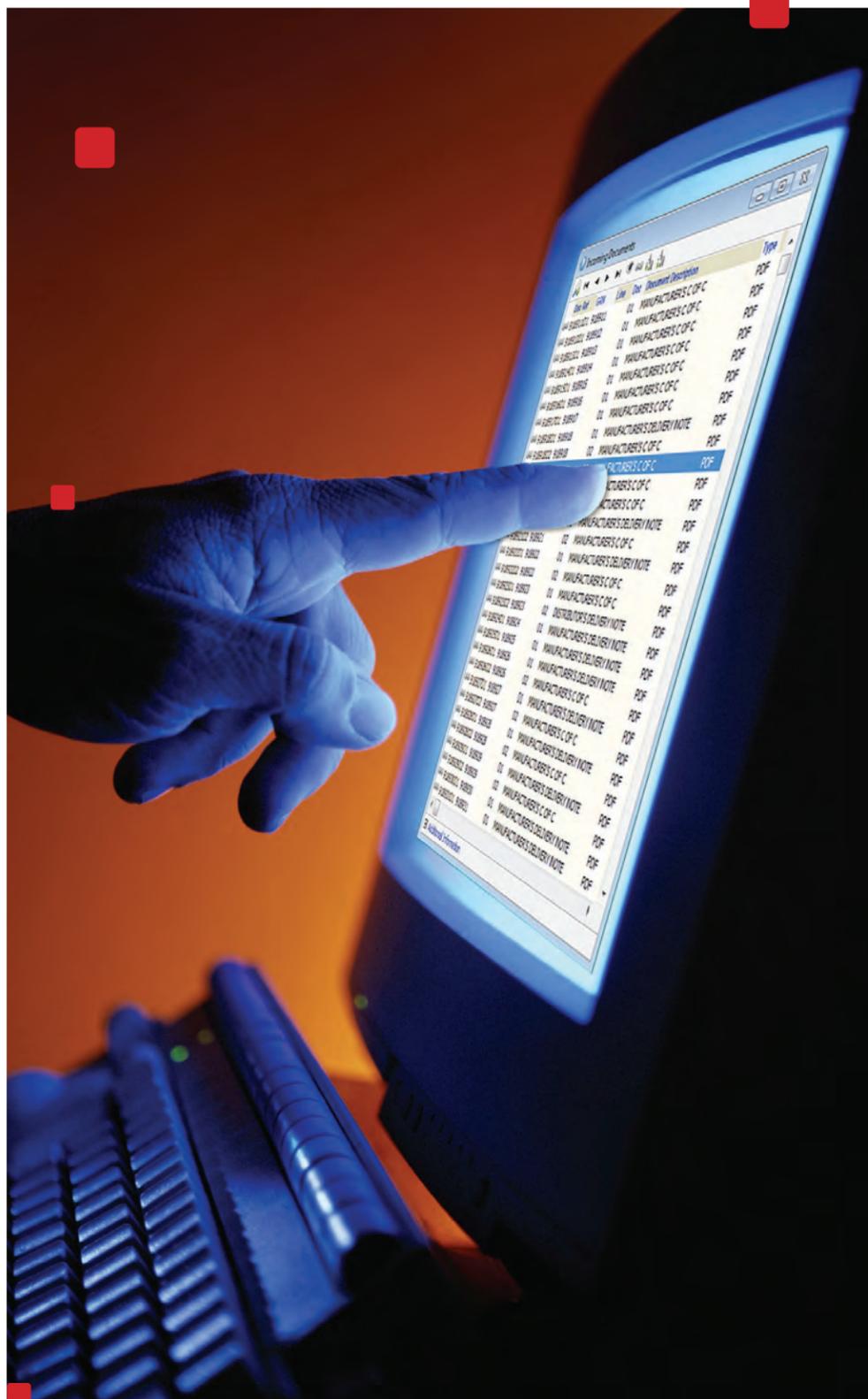
The introduction of the DSQR programme enables one member of staff to act as a named and approved representative to work on behalf of a customer. The DSQR personally checks each shipment before it leaves Charcroft's warehouse. These checks are intensive and senior managers may also check the parts in addition to checking the supporting documentation and accreditations. Supporting a customer with a named DSQR is an integral part of the quality process which enables the customer to have absolute confidence in the validity of the components that are supplied.

For many critical applications, the need for full traceability means each part must be accompanied by correct and accurate documentation. By storing supporting documents indefinitely, Charcroft's archive gives customers the ability to have full traceability of each part after the components have been supplied. The process also ensures that a Certificate of Conformance is printed on every despatch note. This includes the name and address of Charcroft and the customer, the manufacturer's name, part number and quantity and the customer's internal part number. The archived information can

also include the date code and lot code if these are provided by the manufacturer and required by the customer.

To maintain Qualified Supplier status and an efficient Design Verification Plan and Report (DVPR) process, each element of the distribution process is under continual assessment. Training is renewed each year for quality personnel and accreditations are renewed and reassessed regularly. In-house auditing also helps ensure the infallibility of the systems. Continual reviews enable utmost integrity to be maintained and prevent counterfeit components from entering the supply chain. This quality-led approach to counterfeit avoidance enables OEM and CEM customers to have full confidence in every part that is supplied.

www.charcroft.com



Order processing SEARCH, CHECK STOCK, TRACK, PURCHASE made easy

M MOUSER ELECTRONICS Simplify your purchasing with our custom productivity tools mouser.co.uk/servicesandtools

Genuine traceable components | Simple Buying Solutions | Ready-to-ship inventory

New e-tool makes purchasing easier than ever

Mouser Electronics' new pricing and availability assistant helps purchasers access detailed up to date information on millions of electronic components for a simpler quotation experience

Check prices and availability on millions of semiconductors and electronic components with ease using Mouser's new Price and Availability Assistant. Simply drag and drop, type in, or copy and paste, a parts list with desired quantities for rapid pricing and availability results.

Using the tool, purchasers can drag-and-drop spreadsheet files or copy and paste order data, adding up to 200 part numbers, with up to three different quantities per part number. The tool returns exact part matches for each line and offers replacement options for non-orderable part numbers.

Mouser's president and chief executive officer, Glenn Smith, said: "At Mouser, we are continually improving the tools we offer to help buyers and engineers manage their product specifications and purchasing. We are excited to add the Price and Availability Assistant to our collection of productivity tools, which help make buying as fast and hassle-free as possible. This is another way that our teams are working diligently to provide best-in-class service to our customers around the world."

The Price and Availability Assistant is the latest addition to a full suite of productivity tools from Mouser, including the FORTE intelligent bill of materials tool, ECAD design resource solution and inventory management tool.

A video about the new Price and Availability Assistant tool can be viewed on the Mouser Electronics website.

www.mouser.co.uk



Delivering 100% authorised solutions

Rochester Electronics helps reduce the risk of purchasing counterfeit semiconductors by providing a continuous source of authorised product

Semiconductors are the core of electronic systems in high reliability markets such as industrial, transportation, military, medical, energy, civil aviation, automotive, and telecommunications. Counterfeit and substandard products therefore introduce major risk to the health, safety, and security of people around the world.

As a founder of the Semiconductor Industry Association's Anti-Counterfeiting Task Force, Rochester promotes best procurement practices combating counterfeit and substandard products. These include buying only from authorised distributors or licensed manufacturers; purchasing from a provider that carries a full warranty for performance, quality, and reliability; and ensuring the provider complies with quality certifications as appropriate to the sale of the final product.

Solving EOL challenges

Rochester Electronics adheres to these guidelines and is the world's largest continuous source of semiconductors. It is 100 per cent authorised by over 70 semiconductor manufacturers. Rochester manufactures and distributes end-of-life and active products for the industrial, transportation, military, medical, energy, civil aviation, automotive, and telecommunication markets. It services distributors, original equipment manufacturers, contract manufacturers, and original component manufacturers.

As an original manufacturer stocking distributor, Rochester has over 15 billion devices in stock encompassing 200,000-part numbers, providing an extensive range of end-of-life semiconductors and the broadest range of active semiconductors.

This licensed semiconductor manufacturer 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.

A full range of manufacturing services are available including design, assembly, plating, electrical and reliability testing, and analytical services. The company provides single solutions through to full turnkey manufacturing, enabling faster time-to-market and providing a continuous source of supply over the entire semiconductor product lifecycle.

www.rocelec.com

Semiconductor Solutions at your Fingertips.

YOUR TRUSTED SOURCE FOR 100% AUTHORISED DEVICES

Whether you are facing obsolescence or concerned about counterfeit products, we have the right solution for you.

Rochester Electronics is the world's largest continuous source of semiconductors—100% Authorised by over 70 leading semiconductor manufacturers, including Texas Instruments, NXP Semiconductors, Infineon Technologies, ON Semiconductor, Analog Devices and many more.

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Specialist UK distribution addresses high-end demand

Complex, harsh environment and high-end applications are no problem for specialist UK distributor, Charcroft

Independent, UK-based distributor, Charcroft, has over 40 years' experience as an approved supplier to defence and aerospace OEMs and CEMs, working as a franchised supplier of specialist components for high-end and harsh applications. A single location in Powys, Wales, houses the company's sales and manufacturing teams as well as UK-held inventory.

Charcroft is certified to JOSCAR and AS 9120 with a line-card that combines components from global and niche manufacturers. Robust and quality-led processes provide high levels of support for demanding and critical applications. These processes include an archive of the documentation which is sent with each shipment to provide customers with long-term traceability of components.

Where required, alternatives can be identified, to provide replacements for obsolete or hard-to-find passives, as well as for sensors, power, and e-mechanical components.

In-house expertise

A team of in-house engineers and field product specialists supports the manufacturing division to produce custom passive assemblies, flying leads, printing and labelling, as well as providing design support, low production volumes and prototype builds.

The manufacturing division is approved as a centre of excellence by Vishay Precision Group and is CECC approved. This facility produces ultra-precision and audio resistors as well as silver mica capacitors and replacements for obsolete multilayer ceramic capacitors.

www.charcroft.com

Is quality your number one PCB priority?

PCB fabrication specialist, the NCAB Group, aims to deliver on what customers value most: on-time PCB delivery with zero defects

We produce our customers' most important component: the printed circuit board. Our target customer is one for whom the PCB is a strategic product throughout the entire product life cycle. Our ongoing goal is to help clients achieve the best possible time to market and competitive advantage by producing PCBs in a sustainable way at the lowest total cost through our competence, delivery accuracy and product quality.

With offices in 14 countries all over the world, we offer competitive terms, quality and delivery assurance. Working with a single point of contact, you have access to all types of PCBs, with support for all technical requirements from prototype through to volume.

Building long-term relationships

We understand that delivery on time with zero defects is what our customers value most. Our approach includes long-term thinking and shows how cost, quality and environmental issues go hand in hand. We are also continuously working on

improving our performance, with the help of clear goals.

We believe that business is done between humans, not companies or divisions. It is therefore important to have strong relationships with all the individuals we work with, including customers, colleagues or those at partner factories. Working in this way is crucial to achieve high quality and sustainable production. This transparent approach builds honesty, loyalty and trust.

Finally, we know that the PCB is a critical key component for our customers. We know that anything can happen in that complex production process. We therefore take a responsible and sustainable approach in everything we do—socially, environmentally and ethically. That's why when a problem occurs, we try as hard as we can to understand the problem and find a solution.

www.ncabgroup.com



Because failure is not an option.

In your daily life you are dependent on a lot of products. The car you drive, the airplane you fly in or the ECG equipment measuring your heart. You expect them to work – because they have to.

All electronic products have a PCB inside. At first sight they may all look the same. But it could be a world of difference between a normal and a High Reliability PCB. It all comes down to details, and thoroughness.

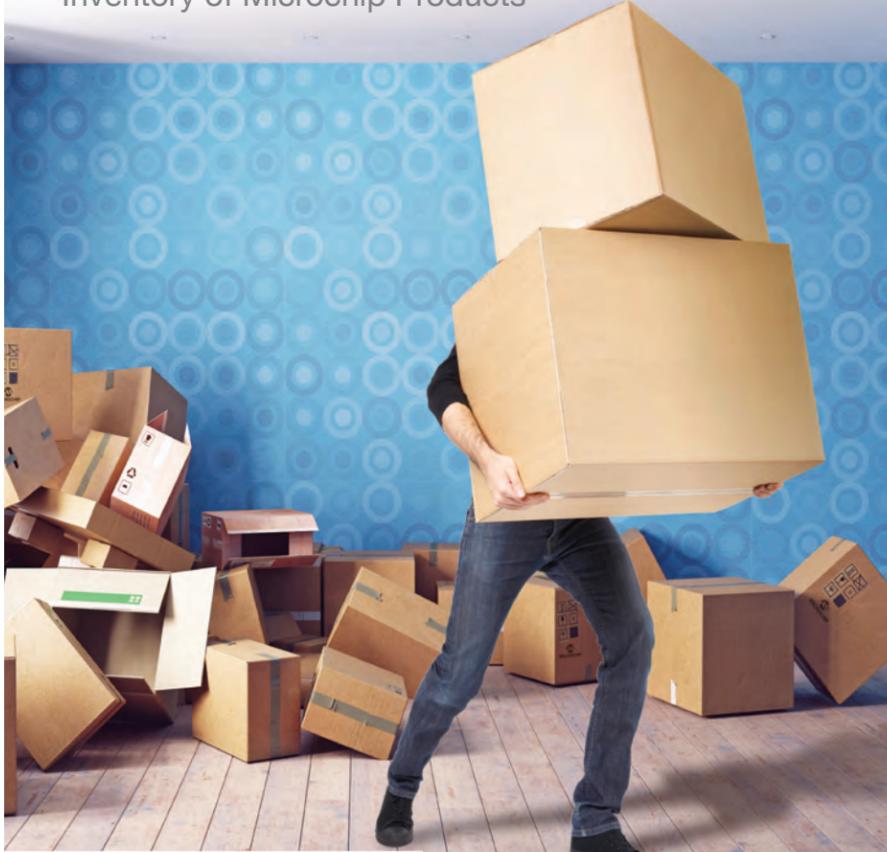
It starts with the design, the right specification and choosing the right production partner. It also includes logistics, delivery precision and making the whole process as sustainable as possible.

High Reliability PCBs
Because failure is not an option.

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Embedded IoT solutions support rapid prototyping

Microchip has launched a range of cloud-agnostic embedded development solutions for IoT projects, designed to increase security and reduce development times

Due to the fragmented nature of the IoT marketplace, increasing project complexity and costs, today's developers face more difficult decisions than ever before. Now Microchip has launched a range of cloud-agnostic, turnkey, full-stack embedded development solutions designed to help deliver smart, connected and secure systems.

With its latest additions, Microchip is enabling developers to connect to any major core and cloud using Wi-Fi, Bluetooth or narrow band 5G technologies—all while maintaining strong security through its Trust Platform for the CryptoAuthentication family. The portfolio of IoT solutions now includes six new options:

PIC-IoT WA and AVR-IoT WA boards: Two new MCU development boards with a companion rapid prototyping tool developed in collaboration with Amazon Web Services, helping natively connect IoT sensor nodes to the AWS IoT Core service via Wi-Fi.

Gateway solutions running AWS IoT Greengrass: Based on the latest wireless

system on module, the ATSAM5D27-WLSOM1 integrates the SAMA5D2 MPU, WILC3000 Wi-Fi and Bluetooth combo module, powered by the MCP16502 power management IC.

SAM-IoT WG: Connects the Google cloud IoT core with Microchip's popular 32-bit SAM-D21 Arm Cortex M0+ range of microcontrollers.

Azure IoT SAM MCU based IoT development platform: Integrates the Azure IoT device software development kit and Azure IoT services with Microchip's MPLAB X development ecosystem.

PIC-BLE and AVR-BLE boards: Two new PIC and AVR MCU boards for sensor node devices that connect to mobile devices and the cloud via gateways featuring Bluetooth Low Energy.

LTE-M/NB-IoT development kit: Features Monarch chip-based modules by Sequans enabling coverage of IoT nodes and leveraging the latest low power, 5G cellular technology.

www.microchip.com

Feel the pull of rugged connector expertise

Manufacturer of the original push-pull connector, Lemo uses its custom connection and cable knowledge to supply a variety of connectors for challenging environments

An acknowledged leader in the design and manufacture of precision custom connection and cable solutions, Lemo's high quality push-pull connectors are found in a variety of challenging application environments including medical, industrial control, test and measurement, audio-video/broadcast and telecommunications. Not only limited to push-pull technology, Lemo also manufactures screw and ratchet type connectors for high vibration applications such as aviation and motorsports.

For seven decades, Lemo has been designing precision connectors and now offers more than 75,000 combinations of product that continue to grow through custom specific designs. Lemo and its affiliated sister companies, Redel, Northwire and Coelver currently serve more than 100,000 customers in over 80 countries around the world.

Committed to innovation

The Lemo Group is a partner that anticipates and responds to its customers' needs by supplying superior professional connection solutions, which exceed the users' highest expectations.

All Lemo sales subsidiaries and production plants are integrated in a unique global quality management system. This

continuously improving system guarantees a level of service and quality that meets the highest customer requirements. Lemo products are designed and manufactured according to rigorous, controlled processes. Inspection and traceability of products are systematically ensured in compliance with our standards.

Lemo is ISO 9001 certified for design, manufacture, and distribution of self-latching push-pull electrical and fibre optic connectors, systems, and cable assembly. The company is also certified to ISO 13485, which specifies requirements for a quality management system where the organisation needs to demonstrate its ability to provide medical devices and related services that consistently meet customer and regulatory requirements applicable to medical devices and related services.

www.lemo.com



HIGH QUALITY CONNECTORS AND CABLES

LEMO, the Choice for Innovative, Cutting-edge Interconnect Solutions:

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- Robotics
- Autonomous Vehicles

 **LEMO**
The Original Push-Pull Connector

FROM CONCEPT TO CONSUMPTION



Taking a different approach from concept to completion

Representing many leading electronic component manufacturers, Ismosys offers a range of services including technical support, design expertise and verification capabilities

Independent sales, marketing and operations organisation, Ismosys has seven regional offices covering Europe as well as facilities in both India and North America. The company is part of the Spectrum Electronics Group, founded in 1994.

Representing many of the world's leading semiconductor and electronic component manufacturers, Ismosys provides a differentiated array of sales, marketing and operations services to its customers and partners utilising a ubiquitous technology and product portfolio.

Design-in expertise

We support advances in component and technology design through strong relationships with manufacturers and independent design houses, of which over twenty are contracted to Ismosys in Europe alone.

Demand and revenue generation are expressions commonly used but rarely successfully executed. The ISMO model, however, has been specifically designed

to serve the needs of an increasingly demanding customer base and industry sector—that of the global electronics industry.

Our services include multi-continent sales and marketing solutions, demand creation and focused technical and commercial support, as well as sales channel development. We also offer full turnkey design, test and verification services and reference design expertise.

Our aim is to provide a model that supports our customers from 'concept to completion'.

ismosys.com

Securing the cloud

With more and more devices connecting to the internet, cyber security is a must. Addressing this issue head on, Solid State Supplies offers various embedded products with security built in

In the last decade, the internet of things evolution has seen an ever-increasing number of embedded systems connecting to the internet, from wearables and smart home devices, to automotive, transportation, security, medical, industrial, and smart city control systems.

Billions of devices are connected to the internet, the majority remotely managed or field upgradable from the cloud. This presents a huge landscape for cyber-attacks; from malicious firmware uploads to corrupt device functionality, IP theft within the device or to hijack the device to gain access to the wider network to which it is connected.

To counter such threats, you must consider all design aspects that are prone to these types of attack. Typically, this requires a full understanding from the cloud layer down to the gateway, the protocols, types of embedded hardware and memory used. For those who are not security experts, this can be a daunting task.

Thankfully, technology companies have developed robust solutions to help by offering embedded technologies with security built in.

Digi International provides a suite of products which all incorporate the Trustfence security framework designed to run on Digi embedded products, from the XBee3 wireless control modules, to high performance ConnectCore CC6UL and CC8x NXP iMX based processor SoMs, and Digi industrial cellular gateways.

In conjunction with Trustfence, Digi Remote Manager is a cloud management layer that can be integrated to a variety of cloud platforms such as AWS, Azure, or Google. By using DRM, end products can be deployed, remotely managed and upgraded with confidence that the network of edge devices remain secure. Preconfigured APIs are available to tailor the DRM solution, along with a mobile app.

www.sssltd.com

Embedded & Networking Systems

Built-In Security IoT Solutions

DIGI



Device Security Framework



Device Monitoring Application



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A quality choice

Able to offer a variety of products, as well as complementary services such as rapid prototyping and contract manufacturing, Gelec stands ready to support all kinds of supply chain requirements

Since it was founded in 1975, Gelec has established its identity as a global supplier of high quality and competitively priced components.

Originally known for supplying passive components, our product range has expanded to include Sunon Fans, rubber products, metal fabrications and many more.

Alongside our extensive product range, we also offer a variety of services including rapid prototyping, tooling and contract manufacturing. For more information on these services, please contact us; our sales team and technical experts are readily available to assist in any way possible.

Focused support

Support is available from Gelec's head office in the prestigious Royal Arsenal, Woolwich, London. To assist its increasing international customer base however, the company also has an office based in Shenzhen, China and a warehouse facility in Hong Kong.

Since 2008, Gelec has implemented a quality management system that is certified to ISO 9001:2015 standards. We develop and maintain our business processes

and working practices to this level and regularly audit them as part of our commitment to continuous improvement. We are currently a member of the Electronic Components Supply Network (ECSN), a leading trade association based in the UK, which promotes positive collaboration throughout the electronic components supply network. The association is active in improving overall market visibility and opportunity identification while leveraging best industry practice to reduce costs.

www.gelec.co.uk

www.gelec.co.uk

Locate the sourcing support you need

A trusted supplier of complex electronic components, APC works with high reliability OEMs to help them achieve strategic component sourcing goals

With an emphasis on the design, specification and distribution of specialist electronic components and systems, lighting technologies and connectivity products, APC helps customers produce better equipment, improve efficiency and achieve superior performance in several sectors including military, aerospace, space, oil and gas and industrial.

As a trusted supplier of high reliability, high quality and technologically advanced components and products, we are the supplier of choice for an impressive list of blue-chip clients within the defence, aerospace, industrial, real estate and logistics arenas, as well as in healthcare and across the broader public sector.

An authorised UK representative for more than 100 manufacturers, APC is a single source supplier for best-in-class, global manufacturers of high reliability components, RF and microwave components, embedded computing and more.

Advanced technology solutions

APC also offers design-in distribution services, collaborating with the manufacturers we represent to provide customers with advanced technology solutions that meet your exact requirements and applications.

Operating to AS9120 aerospace quality standards for component distribution,

APC's specialist high reliability team supports the design, specification and distribution of high quality, high reliability electronic components for use in the most extreme conditions and the most demanding environments.

For three decades, the APC Locator team has worked with UK OEM and CEM customers to help them achieve their strategic component sourcing goals. In particular, we provide the cost-effective purchasing of regular component parts and the management and sourcing of end-of-life, obsolete and hard to find components.

www.apcplc.com



Choose a specialist electronics distributor with 38 years' expertise in design-in and technical sales

- Extensive list of franchised product lines with full manufacturer support
- Collaborate with our UK wide technical sales and support team



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- RF and microwave components
- Obsolescence management and component sourcing
- Connectors, glands and enclosures
- Test and measurement equipment
- Digital and connected technologies

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Ready for Tomorrow



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<p>EMECH</p> <p>Inventory increased by 5%</p>	<p>Connectors</p> <p>Inventory increased by 16%</p>	<p>Test and Tools</p> <p>Inventory increased by 17%</p>

ready4tomorrow.farnell.com



One source, multiple solutions

From electronic system design to repair and maintenance, Farnell's multi-channel approach addresses all kinds of customer needs with a tailored service and access to the latest products

Farnell element14 is your high-service distributor of technology products and solutions for electronic system design, maintenance and repair in Europe. By working with us, you have access to the latest products, services and development software for any type of project.

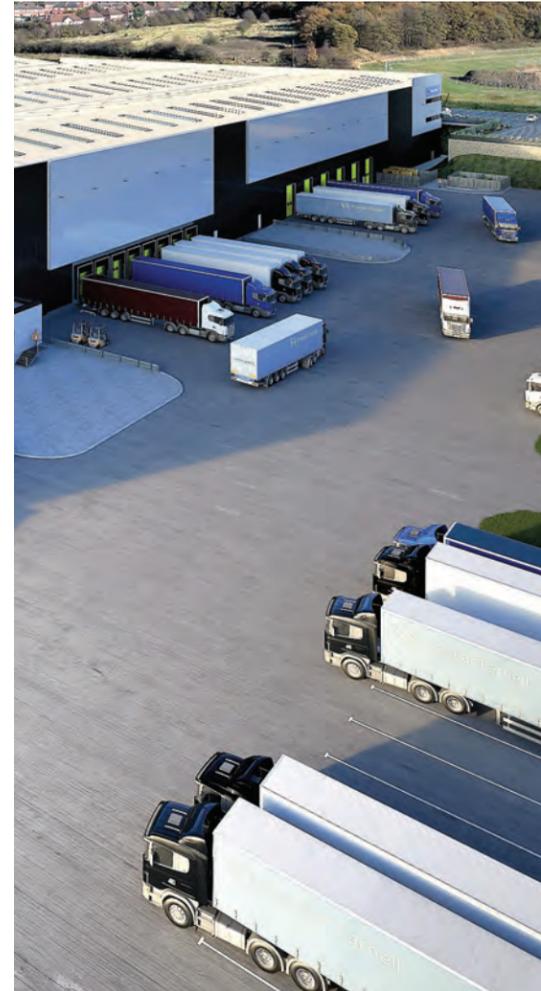
We are committed to supporting local language, currency and shipment needs across the world, and our multi-channel focus ensures we can meet the varying needs of our customers. This provides you with access to an extensive global network of transactional websites and more traditional sales channels when you need it.

Supporting diverse customers

Farnell element14 is your development distributor, providing support to all kinds of customers from makers, teachers and students, all the way through to design and maintenance engineers.

Whether researching a new technology, designing an electronic product, or looking for parts to repair an existing system, Farnell element14 is the trusted global source for engineering solutions.

uk.farnell.com



Military to medical: an effective technology transfer

When technology is engineered for the battlefield it is well prepared for the medical industry

The Fischer LP360 connector is an example of technology transfer from military to medical. The breakthrough plug and use technology of this connector has been used in defence applications as part of soldier modernisation efforts to optimise cable management and facilitate the integration of connectivity solutions into electronic ecosystems carried and/or worn by dismounted soldiers in the field.

Lightweight, easy-to-use, cleanable connectors are important in the military and the same characteristics are valued by medical professionals. Technology can be transferred from portable soldier communications to mobile medical equipment or, in the case of wearables, from integrated soldier vests to patient-worn diagnostic or monitoring equipment.

Wearable devices are non-invasive. They can perform a multitude of functions including data gathering, feedback and data transfer over time. Wearable devices are growing in adoption and use by the medical community, facilitating data gathering and communication, without encumbering the user.

When designing a connector for the medical community, usability is a main priority.

The 360deg of mating freedom of the LP360 offers benefits for portable devices or applications requiring mobility of the connector during use. Because the connector rotates, cables are less prone to tangling as they stay in-line to the application.

In both military and medical wearables, the clothing or vest itself may serve as a hub. Required electronics are located inside the vest, reducing the cables outside the vest. Connectors are strategically integrated into the vest. These connectors serve as locations where one may connect the specific application via a mating connector or cable.

The distributed power hub allows lights, cameras and other devices to be interchanged throughout locations on the vest providing even great flexibility.

As portable and wearable devices become more in demand by medical professionals and patients, the precise components that are part of their design will demand more characteristics and require a higher standard of performance. By migrating from the military market to a different but equally demanding medical market, the right connector, with the right characteristics, at the right time, can make all the difference.

www.fischerconnectors.com



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For decades our engineering team have met the challenges of providing technically demanding solutions for industries including, Defence, Aerospace, Space, Automotive, Rail, Medical and Industrial.

From the early stages of a design requiring a specific test module, to a solution for obsolescence that must meet the stipulations of harsh environmental tests, Winslow products have successfully met expectations.

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Minimise supply chain risk with an advanced interconnect solution

When supply chains suffer shortages and delays, fast and cost effective solutions keep production running. With the ability to design, develop, and manufacture advanced interconnect, Winslow Adaptics does just that

The threat of counterfeiters taking advantage of a diminishing supply can create havoc and ruin your day. A trusted supplier network is key to managing these risks to ensure authenticity and continued quality assurance.

Mitigating the risk of counterfeit and fraudulent parts entering the production environment means there is a requirement to test components. This can present a challenge, however, as in many cases, nothing off the shelf is suitable, or the devices must be tested in the destination environment.

Head of hardware design at Winslow Adaptics, John Winslow, commented: "The central factor when approaching a test socket design is that the information you gain is entirely from the device under test and not from an anomaly in the socket design or manufacture. The socket must be metaphorically invisible and the results consistent."

Testing times

With the industry gravitating towards denser arrays and smaller IC packages, Winslow works to integrate new materials

to support pitch requirements to 0.5mm and less. The engineering plastics used to manufacture Winslow test sockets are universally appropriate for high stress environments regardless of the application. Low coefficient of expansion, high wear resistance and spring probe integrity are vital for reliability at pitches down to 0.3mm to ensure compliance between the device and contacts.

Easily customised to suit any device, however obscure, Winslow Adaptics offers reliable test contactor modules proven in a variety of applications including RF, MEMS gyroscope non-magnetic, wafer level chip scale packages and application specific IC.

Based in the UK, Winslow Adaptics, has a rich history of designing and manufacturing quality products to support the electronic system lifecycle.

www.winslowadaptics.com



Guide makes light work of LED installation

Essentra Components' guide to LED lighting provides essential information on LED technology and its uses, plus invaluable advice on effective LED installation

As Essentra Components has witnessed, over the last three decades LEDs have taken over from incandescent lights in electronic equipment, then in higher power electrical applications and most recently of course in domestic and public decorative lighting and general illumination.

This popularity has led Essentra Components to become market-leaders in the manufacture of mounts, spacers and cable clamps that make the installation of LEDs a simple and inexpensive task.

Essential LED info

Drawing on the company's many years of worldwide experience in this field, it

has produced an "LED Light Guide" for product and panel building, which can be viewed on the Essentra website at www.essentracomponents.com.

Covering an informative description of the LED market, advantages of LED technology, colour availability, plus areas of use and installation, this guide deals with installation considerations as well as factors such as orientation and use of light pipes.

www.essentracomponents.com

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As an independent electronic component distributor, we are uninhibited by the restrictions of franchise agreements, allowing us to source components you need from around the world, and at the best prices.

We maintain our customers for our proactivity, our global reach and our dedicated excellent customer service – becoming partners as well as suppliers.

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Maintaining supply in challenging times

Chief executive officer, Simon Thake, explains how Rebound is operating to ensure purchasers can access consistent supply, during the Coronavirus pandemic and beyond



Purchasing professionals rely so much on receiving regular shipments of components for their manufacturing production lines. In the current circumstances, and with many people being encouraged to work remotely, Rebound reveals how it is operating to ensure that the supply chain is consistent, and customers can still get the high level of service they need.

At present, we believe we are delivering at speed and consistent with our normal service levels that clients have come to rely on.

Our message to potential new clients whether facing shortages, last time buy or end of life obsolescence, is to get in contact. If you need up to date information regarding components or pricing trends, allow us to prove why we have over 3,600 live customers that we support from 37 offices worldwide as they continue to procure and look for innovative solutions to resolve their supply challenges.

www.reboundeu.com

The Rebound Group of companies have been working remotely since the beginning of March, ensuring staff were not at risk and could continue working as much as possible, utilising the latest technology to remain in contact with clients. They were also able to work with operations within the group where we have multiple accredited warehouses, in the UK, Poland and Hong Kong, thus allowing us to move shipments to various territories, mitigating disruption to clients should the need arise. Procurement teams located in Asia, the Middle East and Europe also allow full coverage for all sourcing capabilities and covering all time zones.

Looking for industrial IoT expertise?

An agreement with Siretta ensures Easby Electronics can supply a range of industrial IoT solutions, with popular products from stock and access to high level system knowhow

Easby Electronics, part of the Rebound Group, has signed a UK and Ireland distribution agreement with Siretta, a leading manufacturer and developer of internet of things products, IoT software and IoT solutions focusing on industrial markets and business-to-business application.

Siretta boasts an extensive knowledge and experience within IoT with a focus on cellular technologies supporting 2G (GPRS), 3G (UMTS), 4G (LTE), NB-IoT and LTE Category M.

With an unrivalled level of regional and local technical expertise and applications knowledge, the Siretta portfolio includes cellular modems and terminals, routers, cellular network analysers and radio frequency antennas including solutions for WLAN, LoRa and Sigfox.

Also offered are RF cable assemblies and RF accessories. Frequencies are typically within the 75MHz to 5.8GHz range covering the HF, VHF, ISM, Cellular and GNSS frequencies.

End-to-end solutions

Bespoke customer solutions and design services are supported by an experienced team of dedicated development and application engineers as well as software specialists offering complete end-to-end solutions with a heavy emphasis on high level system design.

Easby Electronics is supporting Siretta with a stock profile of the company's most popular modems, terminals, routers and cellular network analysers, available same day from Easby's UK based warehouse.

www.easby.co.uk

Easby Electronics
part of the Rebound Group of Companies

Take a look at our...

Whats inside?

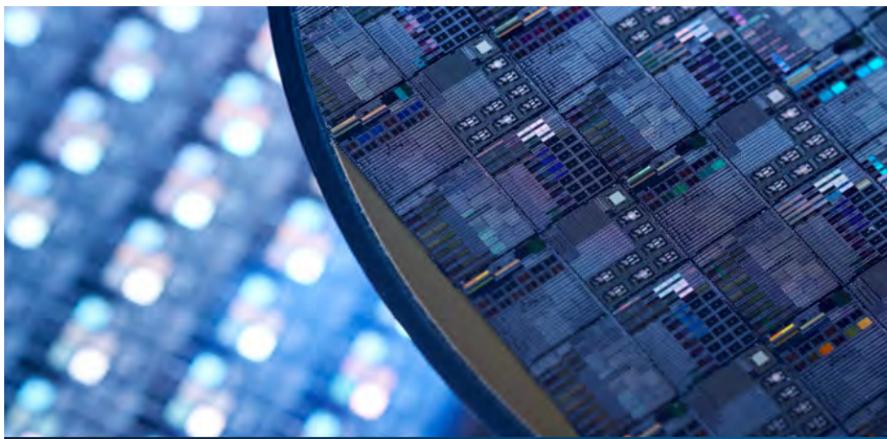
Whilst Easby has been growing through its core Franchises, we have also been expanding in markets such as IoT (with Telit modules and Siretta), EV (with Degson, Oaksum and Mornsun), Power/Batteries/Chargers (with EEMB, Ronda, AJ Pwr, and Xinsu) and Displays Technologies (with Team Source and Raystar).

These examples of our increased offering help us to invest further in our team with additional expertise, sourcing knowledge and engineers, offering end-to-end solutions and a wider range of product lines from Stock.

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Choose a supplier that's up for a challenge

From engineering custom manufactured ICs to sourcing replacements and product derivatives, Force Technologies can provide a long-term solution to all kinds of obsolescence issues

Modern electronic equipment across all sectors can have a production life of over 30 years. The average lifecycle of semiconductors designed into these applications is approximately three to five years. This obviously creates significant problems for equipment manufacturers that need to mitigate the risk of their end-product becoming impossible to support, offer or maintain.

This is where Force Technologies comes in, providing a continued source for obsolete and hard to find semiconductors across all IC product ranges. Whether the requirement comes from the commercial, industrial, defence or aerospace sector, we can provide long-term support for your IC obsolescence requirements.

Everything at Force Technologies starts with a requirement. Once we have been provided with a part number, quantity and ideally a support forecast, our team of experienced engineers work to find the most cost effective form, fit, and function, turnkey solution available, allowing you to maintain your application indefinitely.

Whether you are looking for a sustainable manufactured, tested or re-engineered solution, or simply looking to have questionable product verified, Force is here to support you. We offer all test levels of AS6081 from A to G and have extensive destructive physical analysis and device characterisation capabilities.

To date, Force Technologies has provided over a thousand fully custom manufactured solutions to solve obsolescence issues. Our current database lists over tens of thousands of direct replacements, supported products and derivatives.

We relish a challenge, so why not give us the chance to solve your IC obsolescence issue?

www.forcetechnologies.co.uk

A secure supply in uncertain times

Specialist supplier of high reliability and harsh environment connectors, Powell Electronics, is working hard to safely maintain your supply chain, even during challenging times

Powell Electronics is a specialist in high reliability, harsh environment connector design, manufacture and supply. The company boasts 70,000ft² of connector manufacturing capabilities at its Swedesboro, NJ facility, which is certified to ISO9001 and AS9100.

In support of these manufacturing facilities, we offer automated engineering solutions and connector original design manufacturer services. Powell is an authorised, QPL-qualified distributor for over 50 military specifications, as well as being ISO9120 certified, to support your custom and complex packaging and supply chain needs.

Safe, continuous operation

Powell Electronics is fully operational. During these uncertain and trying times we understand how important it is to maintain your supply chain. Powell Electronics is a Defence-in-Business member and that is why we are reaching out to let you know that Powell's production is at full capacity.

The company continues to ship daily, while maintaining all of the recommended protocols and health procedures to keep our employees and customers safe.

We also have one of the largest inventories ready for same day shipping, which

includes: military circular connectors, high performance relays, sealed switches and LED indicators, power connectors, RF connectors, sensors, backshells and connector accessories, custom connectors and system solutions.

Just as it has done for over 70 years, Powell continues to meet all your harsh environment interconnect and electro-mechanical needs.

www.powell.com

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Powerful expertise

Specialist distributor, Luso Electronics, provides expert technical advice on a variety of power products including switch mode power supplies, DC/DC converters and industry specific products

From a globe spanning array of manufacturers, Luso's experienced, factory trained product specialists can assist and recommend solutions for your power requirements.

We have solutions from 0.25W DC/DC converters through to 3kW stackable, programmable switch mode power supplies, with application specific products for rail, medical and specialist industrial requirements.

Some key highlights include solutions from Enedo Power, previously known as Efore. We support Enedo's complete range of industrial and medical products covering power requirements from 200 up to 1,200W. This includes the Enedo ultra-compact modular RCB series, samples of which are available from UK stock in 48 hours from our configuration centre.

Power supply manufacturer, Delta Electronics, offers switched mode power supplies from 100W to 1.2kW. We supply AC adapters and open-frame models for applications requiring high reliability and performance, plus an all-encompassing range for industrial and medical requirements.

N2Power offers its 1U, high efficiency, power dense XL series. The company also offers a modification service at low volumes, so if you need something slightly different, custom requests can be accommodated.

Luso supports a range of plugtop and desktop adaptors from Adaptor Technology. Products range from five to 300W with a choice of output connectors and global power outlets. Custom marking and alternate colour casings are also offered.

For magnetics, we represent Elec & Eltek's range of wound products including its Qi wireless power modules and automotive magnetic modules, aimed at electronic vehicles.

lusoelectronics.com

Maximise test accuracy with new mosfet relay

Omron's G3VM-21MT relay combines the advantages of mechanical and mosfet relay technology to minimise leakage for maximum test accuracy

In what is claimed to be a world first for semiconductor and other test equipment, Omron Electronic Components Europe has created a mosfet relay module that minimises leakage current.

With a unique T-circuit structure, the Omron G3VM-21MT offers an exceptionally low leakage current of just one pico-Amp or less, giving accurate measurements in all types of test equipment. Mechanical relays have previously been preferred in semiconductor and other test equipment, in part due to their low leakage current. However, mechanical relays have a much lower lifespan due to abrasion of contacts, which reduces measurement accuracy over time. In intensive use, frequent replacement may be necessary thereby pushing up maintenance costs.

With a T-type circuit structure that sends most leakage current to ground, the G3VM-21MT effectively combines the advantages of the mechanical and mosfet relays to provide an accurate, compact and long-lasting switching solution with no mechanical contacts. The compact size

of 5.0 by 3.75 by 2.7mm is achieved by incorporating the T-circuit into the module.

The device is surface mounted and is offered in SPST format with no configuration required. It features an impressive maximum load voltage of 20V and isolation performance of less than -30dB at 1GHz.

Omron is planning further T-circuit mosfet relay modules, including a high current and high voltage model.

components.omron.eu



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Developed for building automation and environmental monitoring Omron's D6T Thermal Sensors and 2JCE multi-function Environmental Sensors are just two of their latest solutions.

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- Detects abnormal temperatures
- Identifies potential problems before they become major hazards

2JCE Environmental Sensor

- Available as a USB unit 14.9 x 29.1 x 7.0mm
- Monitors temperature, humidity, light, UV barometric pressure, noise, seismic and air quality
- Accumulates data for 3 months & connects to multiple devices

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www.components.omron.eu

Talk to us we will have a solution!

RDS brings together technical expertise in displays, embedded systems and IoT platforms to produce custom products for a host of applications. We can build complete systems from design through to manufacture including all certifications on time and on budget.

Our production is ISO13485 approved so if you need extra capacity building medical sub assemblies we can help

Innovative design and manufacture of IoT platforms and devices.



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Ready to meet COVID crisis demands

As an ISO 13485 qualified manufacturer, RDS is producing vital subassemblies for much-needed ventilator systems, as well as providing extra capacity for medical manufacturers of all kinds

By bringing together the latest display technologies and embedded solutions, ISO 13485 qualified RDS is producing electronic medical subassemblies, including valuable display subassemblies for ventilator systems required by the NHS.

The company's innovative design approach and manufacturing capabilities span a range of platforms and devices, together with its team of experts, which are available to discuss its full range of products and technologies and to assist, should manufacturers require extra capacity.

Embedded solutions include the latest generation 24/7 industrial motherboards, AI edge computing boards, iMX8M and iMX8M Mini system on modules as well as its rugged long-life gateway solutions. Specialist memory, storage and MXM GPU modules that offer increased performance are also available.

TFT and touch displays in various sizes and formats are just some of the display options available, along with the latest PCAP PhotoReal printing on borders and high bright and optical bonding options.

RDS has designed and manufactured a range of products, including its own Sensconnect IoT delivery platform, USB monitors and Mini-STX PCs. The company's latest venture is IQRF, a low power wireless mesh technology ideal for edge device connectivity within the IoT world.

Backed by this experience and with its ISO13845 certification in place, all kinds of medical solutions can be manufactured.

www.review-displays.co.uk

Connector sourcing problems solved

As a niche manufacturer of 'problem-solving' connectors and assemblies, ODU works constructively to meet diverse requirements from the military, medical and instrumentation sectors

With a history extending back to the 1940s, ODU's expertise is predominantly in the design and manufacture of rugged, miniature 'push-pull' circular multipole connectors.

In the military sector, the needs of the dismounted soldier are being met by ODU with a new generation of miniature circular push-pull and snatch connectors. As a long-term supplier to the likes of Thales, Selex, Oerlikon, Saft, and General Dynamics, ODU has been able to base these new military connectors on specific feedback from several Future Soldier trials including FIST, FELIN, IdZ, Land Warrior, Nacre and Normans. In battlefield deployment, soldiers deserve a connector system that is totally secure, utterly reliable and fit-for-purpose, and this is exactly what we offer.

Medical applications demand the selection of the right connector system to ensure that everything functions flawlessly. Whilst 'smaller, lighter, cheaper' are constant demands, at the same time, technical requirements are always tightening, including demand for autoclave sterilisation, ISO 13485 approval, a high

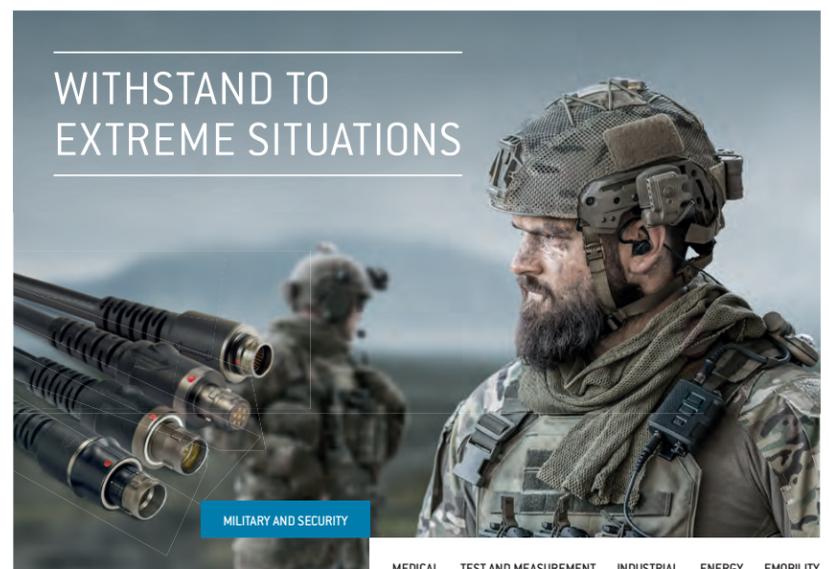
number of mating cycles, extreme contact stability and ultra-reliable connectors and cord-sets.

ODU is also your single point of contact for a complete instrumentation system solution, including assembled data cables. Durable connectors meeting all the relevant high-speed data transmission standards, including CAT-6A up to 10 Gbit/s, are available.

For industrial applications, ODU offers an extensive range of rectangular/modular connectors, offering mixed power, signal, high-speed data, fibre-optic, air and fluidic contacts to your exact needs, with impressive service life.

Custom connectors are also available, with ODU promising: 'if it's not out there, we'll work with you to develop it.' No matter how complex your connection requirements, we can offer a reliable and cost-effective solution.

www.odu-uk.co.uk



HIGHLY RELIABLE CONNECTORS FOR MILITARY AND SECURITY

ODU AMC solutions are rugged state-of-the-art circular connectors series with Push-Pull locking or Break-Away function for next generation military communication systems (C4I). These include radio equipment (PRR), navigation modules, robust computers and hand-held devices, GPS antenna, night-vision devices, helmet-mounted displays and UAVs. ODU also offers customized cable assembly and overmolding solutions.

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Secure your supply chain against times of crisis

As recent months have shown, there will always be events outside your control. Würth works closely with purchasers to minimise the impact of unforeseen issues like the current COVID-19 crisis

Although we can regulate everything within our own remit, there are always outside factors which cannot be controlled. Various natural events, most recently the COVID-19 outbreak, have left both manufacturers and suppliers in the lurch one way or another, mostly due to overseas supply.

At Würth Electronics, we firmly believe in collaboration with customers to ensure that, should these unlikely events occur, both ours and our customers' supply chains are secure. Our large technical sales force maintains regular contact with customers to ensure that orders are placed as far in advance as possible. As a stock-holding manufacturer we always aim to have the highest level of all our lines in the warehouse at a time, however demand can occasionally exceed this.

Therefore, we are working closer than ever with customers on their rolling 12-month demand, encouraging order scheduling to provide our production facilities

with adequate time to get stock to our warehouses in Europe.

We would always recommend purchasers work with their suppliers to place orders for the whole of the upcoming year if they know their stock demands, even if a part is low cost. Why have a part which costs 2p stop production?

In order to minimise the impact of any natural disasters, we are constantly evaluating our production locations and have many facilities all over the world to minimise risk.

As a privately owned company, investment in stock will always remain high, even during global economic downturns and in times of disaster. This kind of security is just one of the many reasons why people choose to work with Würth Electronics.

www.we-online.com

Partner up for a secure PCB supply

From prototyping to volume manufacture, Photronix can provide a complete solution for your PCB requirements by partnering carefully with overseas manufacturers

Founded in 1997 with the simple aim of developing long term customer partnerships for the manufacture of high-quality printed circuit boards, Photronix has become one of the leading suppliers to the UK market.

Photronix is consistently appraising new technologies and extending facilities in order to provide a comprehensive package from prototyping through to volume manufacture.

We supply standard rigid, metal base, HDI, flex and flex-rigid PCBs, together with access to a wide range of all the latest PCB materials.

In-house experience

Every quotation received is fully evaluated by our highly experienced in-house technical team to ensure we select the right manufacturing partner based

on technology, quantity and delivery timescales required.

Our extensive links with long-term manufacturing partners in China allow Photronix to offer extremely competitive pricing without compromise on quality. Photronix offers a full stockholding facility at our Rustington headquarters, backed up by a professional team with a wealth of experience in PCB manufacture.

www.photronix.co.uk

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Tailored support saves time and money

Specialist distributor, Rhopoint Components, brings extensive experience to support purchasers with technical advice, commercial support and expert quality management services

Rhopoint Components can offer fully customised solutions to meet your specific technical requirements. We take pride in our level of product knowledge, which is the same as that of our manufacturing partners and our office and field-based engineers, around the UK and in Europe, offer advice to provide the best possible solutions for your design.

Product support

Decades of experience working closely with our manufacturing partners puts us in a unique position to advise on projects that require special customisation. As a result, we can cover a broad range of areas such as resistance, TCR, VCR or tolerance values outside the standard ranges. Specialised lead lengths and terminations, unique package sizes and even component colour are all options.

deliveries within the UK, to Europe and overseas. Ancillary services include tape and reeling for surface mount, radial and axial devices, plus component preforming and barcoding.

Quality management

Rhopoint Components is ISO 9001:2015 certified, offering full traceability back to the manufacturer as part of its own certificate of conformance system. Verification by in-house testing helps meet additional stringent requirements, where requested, with RoHS, REACH and conflict minerals compliance statements produced in partnership with product manufacturers. Many of our products can also be supplied to order with specific military and aerospace certifications.

www.rhopointcomponents.com

Commercial expertise

The Rhopoint sales team can also assist with pricing and quotations, plus delivery options such as Kanban, scheduled orders and call-off orders. Further options include buffer stock agreements, multi-currency invoicing and single or scheduled

Help to combat COVID-19 disruption

With factories closed due to the coronavirus shutdown, component lead times could increase, making any surplus stock more valuable than ever. CCL can help by turning excess inventory into profit

Purchasing managers have a complex forecasting job to acquire the components required for current and future electronics production.

Sometimes products continue to be manufactured for years with no change to the bill of materials. Often, however, the design is altered and the BoM changes, meaning the components purchased are no longer required. At that point, you could dispose of unwanted components but there is another possibility.

Excess inventory holds significant value and can be resold rather than written-off and scrapped. This creates revenue and simultaneously avoids contributing to e-waste. Parts hold the most value when they are new; the longer they sit on the shelf, the potential for other manufacturers to use them declines. When faced with unwanted components, consider working with a specialist excess inventory management company to realise that value.

Coping with a slowdown

The electronics supply chain is now feeling the effects of COVID-19. With factories closing for longer than expected, lead times for many components will increase, which in turn means excess electronic component inventory may become more valuable in the open market. Electronics

manufacturers with surplus components may find their stock could be redistributed to help combat shortages in the market.

Excess inventory management company, CCL understands that companies may face surpluses due to the worldwide slowdown in manufacturing, or a shift in product focus, and is well placed to help in this area.

CCL is a specialist buyer of electronic component excess. We buy all active and passive board level electronic components and our experienced team are 100 per cent focused on achieving the best possible price for your overstock.

www.oemXS.com

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Datakey's new CryptoAuthentication™ tokens combine form and function; silicon geared for high security applications with a unique form factor that brings physical security and the ability to be used in harsh environments.

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NEXUS

Toughen up your purchasing strategy

Many industrial applications require removable memory devices, however, in harsh environments, commercial memory devices are not fit for purpose. Nexus offers a solution

In many applications, systems receive their initial configuration via removable memory device, as is the case with large wind turbines. Moreover, the device might then stay in place as memory for the wind turbine's monitoring system.

Clearly this is a harsh environment with high vibration levels, temperature extremes and high moisture levels in addition to salt. The removable memory device, however, might need to be operational for several years.

In harsh environment applications such as wind turbines or motorsport, commercial devices like USB memory sticks and SD cards are simply not fit for purpose.

Nexus Industrial Memory is the exclusive distributor of Datakey's rugged memory devices in the UK, Ireland, Germany, Switzerland, Austria and Scandinavia.

Products include serial memory tokens, which are available with industry standard serial EEPROM and NOR memory.

The internal electronics are completely encapsulated in a proprietary, high durability composite that makes them impervious to liquids and virtually crush proof.

RUGGEDrive tokens are another option. The UFX series is essentially a ruggedized USB version utilising USB 2.0 comms protocol. The DFX series offers ruggedized SD card functionality, while the Industrial DFX series boasts operation between -40 and 85°C.

Corresponding panel-mount and PCB mount receptacles are available for the above tokens. We also supply devices in bar, key and plug form factors, development kits for all product lines, a range of accessories and the latest in cyber-robust removable memory devices.

Industrial systems that rely on removable memory devices warrant fit-for-purpose industrial solutions.

www.nexusindustrialmemory.com

Perfect timing from start to finish

Geyer Electronic offers expert advice on frequency control products, providing technical support and guidance from design through to volume manufacture

Providing a technical support service for its FCP components has always been as important to Geyer Electronic as ensuring that its crystals, oscillators and other frequency control products meet the high quality standards demanded by clients.

The Geyer design team, based in Munich, can work closely with customers during the development phase of a project to identify the best components. They offer a comprehensive, free of charge, consulting service to assist with design validation and the selection of samples for initial prototypes. Specifications and package sizes are matched to circuit requirements using the Geyer Y-Quartz App to simulate the design and ensure optimum specifications.

An extensive library of EDA files is available throughout a project's initial design phase and sample quantities of the final components can be provided for first prototypes, followed by pre-production quantities as production increases. Geyer believes getting the part right at the

beginning saves time in the long run and enables the end-product to work exactly as intended. Whether the part is a standard, readily available crystal or a bespoke component, once it is designed and approved, Geyer can ensure delivery over the entire project cycle.

An extensive range of products at head office in Germany and an increasing stock at Geyer's UK office enable fast delivery once production schedules are known. For projects that require volume production overseas, a global sales network ensures international supply and a no-product-discontinuation policy guarantees availability for the lifetime of the product.

Whether you are looking for traditional FCP components or new ultra-miniature devices for the internet of things, Geyer Electronic can be your FCP partner from concept to production, offering full traceability, quality and availability throughout the lifetime of your project.

www.geyer-electronic.com

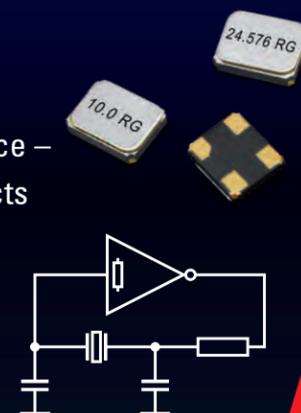
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pacer.co.uk

Never a dull moment

Optoelectronics plays an important role in diverse applications. Engineers at UK opto-specialist, Pacer, reveal some of the exciting custom solutions they have been creating

Manager of Pacer's Custom Solutions Centre, James Woodhead, explains: "Recent projects have included industrial, military and medical products, tackling environments as varied as trains, classrooms and football pitches—it's certainly never boring!"

You have probably heard of the video assistant referee used with some controversy at football matches across the globe. Pacer designed VAR's application-specific monitor, with bespoke features including all weather housing, anti-reflective technology and custom cabling. The end-product is now manufactured at our Taiwanese partner's manufacturing centre.

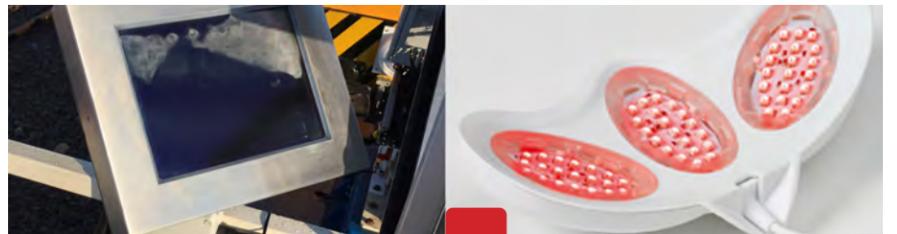
We also designed a customised display for a high end mixing desk for outdoor events, demanding the best in screen performance and reliability in outdoor conditions, and another for a train observation system, needing a complete rugged outdoor display plus an additional slave monitor for in-cab use.

One of the first medical designs Pacer worked on was a phototherapeutic face mask, incorporating LEDs emitting controlled red and infrared light to help rejuvenate skin. Pacer took the customer's initial design and applied 'design for manufacture' processes, transforming it for reliable high-volume production.

A military project called for a ground-based laser range finding device with a high sensitivity over a long distance involving the Pacer team in optics, electronics and mechanics as well as full environmental tests.

Another complex project was Pacer's Photochemistry LED Illuminator, developed for analysis of photochemistry samples. The project demanded optoelectronics expertise, mechanical and electronic design engineering, thermal engineering skills, manufacturing facilities, experience designing and calibrating specialist laboratory instrumentation—and last, but not least, considerable innovation!

www.pacer.co.uk



Simplify sourcing with one supplier

Able to provide both PCB fabrication and assembly from a single UK location, European Circuits aims to reduce costs and streamline services, from prototype to volume production

European Circuits is one of Europe's leading PCB fabrication and assembly houses and one of the few companies in the UK that offers both PCB fabrication and assembly from a single location.

Our goal is simple—to provide you with assistance and advice about your PCB requirements and produce these requirements to a high quality, on time and with excellent customer service, whether that is prototype PCBs or production volumes.

We are a privately owned company established in 1999. The company headquarters are based just outside Glasgow and we supply throughout the UK, Europe and the rest of the world, offering full integration services including PCB design, manufacture, plated through hole and surface mount assembly, cable assemblies and product build.

We supply to a wide range of industries including medical, security, broadcast, lighting, aerospace among many others.

Seamless manufacturing

As one customer commented: "We looked at several companies for our PCB and final assembly solutions. We found ECL not only cost effective, but the level of professionalism and service has been

faultless. They have provided a seamless manufacturing experience that saves us both time and money."

European Circuits understands every customer and every requirement is unique. We believe you need to be able to trust your supplier to deliver what is required and we know how to get your product to market quickly.

This ensures European Circuits is ideally placed to service your requirements. Why not request a quotation to see how we can reduce your costs and administration by having your PCBs manufactured and assembled by one supplier?

european-circuits.co.uk



EUROPEAN CIRCUITS LTD



We could use this advert to really sell our services but in the current climate, we'd simply like to say we hope you, your colleagues and families are fit and well.

Over the coming months, it's more important than ever to support businesses in the UK.

ECL are based in Glasgow and one of the few companies in the UK that genuinely offer PCB fabrication and assembly (as well as cable assemblies and product build) from a single location.

We can help get your product to market quickly whilst still maintaining high quality and excellent customer service.

If we can help, please feel free to contact us.

Stay well everyone!

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Collaborate to create a bespoke supply chain solution

Backed by robust supply chain management, Esprit's electronics manufacturing services can be tailored to create a bespoke solution for even high-complexity products

Providing a comprehensive range of electronics manufacturing services to UK and European markets, Esprit boasts a reputation for developing bespoke and robust solutions. This is underpinned by the company's extensive supply chain capability and recognised by customers as a key differentiator.

Established in 1985, Esprit is a privately owned EMS provider offering services including supply chain management, new product introduction, design for manufacture and test, surface mount and through-hole PCB assembly, as well as in-circuit and functional test, right through to full box build, integration and logistics.

Close co-operation

Esprit's recognised approach to customer service has been secured by a unique form of collaborative engagement with customers, working seamlessly to ensure each business can focus on its core competencies.

capability as an option to consider whilst maintaining UK management and control of the supply chain.

Esprit's comprehensive capability enables the design, manufacture and test of dual technology, high-mix, high-complexity products through to complete box build, integration and logistics. This makes Esprit an instinctive choice when sourcing a long-term manufacturing and supply partner.

Furthermore, Esprit is also part of the AEI Group, a leading UK provider of electronics manufacturing services, bespoke filtered connectors and OEM solutions to the building controls, automation and HVAC market. This extensive range of manufacturing services and OEM solutions is delivered through group companies: Esprit Electronics, along with Icon Electronics, PCB Partners, AEF Solutions and Open System Solutions (OSS).

www.aeiuk.com

In addition to Esprit's UK operation, we also have an offshore manufacturing

Looking for rugged connectors?

Yamaichi Electronics' waterproof push-pull Y-Circ P connectors are now rated for up to 5,000 mating cycles

The IP68-rated T-series of the Y-Circ P push-pull circular connector family from Yamaichi Electronics has now been qualified for up to 5,000 mating cycles. In addition, the connectors are now available in size 09, 12, 15 and 18.

Yamaichi Electronics is continuously expanding the Y-Circ P circular connector portfolio. The successful T-series offers protection against permanent immersion in water and is now available in four sizes with outer diameters of nine, 12, 15 and 18mm. All connectors have been tested and qualified at the company's in-house laboratory for 48 hours in water of one metre depth and thus correspond to the protection degree IP68.

Robust locking now allows Yamaichi Electronics to specify up to 5,000 instead of 3,000 mating cycles. The design still includes the patented cable sealing collet. The cable sealing and the collet are reduced to just one part for easy, quick and error-free installation. Together with the long service life, this offers considerable savings potential.

Various standard pin assignments are available for all sizes. Customer-specific pin assignments can also be implemented quickly and flexibly. Our online configurator helps with the correct compilation and generates the appropriate type number for easy ordering.

Contact the Yamaichi sales team for further information, or to request samples if required.

yamaichi.com



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THE INDUSTRIAL ONE RJ45 Cover40 Push-Pull (Y-CON)

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Explore one-stop industrial computing

Thanks to a combination of off-the-shelf products and industrial design expertise, Datasound Laboratories can provide optimised embedded systems, helping you accelerate innovative ideas to market

Growing organically year on year, Datasound Laboratories has been at the forefront of new technologies since designing its first embedded target platform in 1985. Located within the business technology park in Letchworth Garden City, this UK company is recognised as one of the leading specialist suppliers of embedded/industrial computing solutions to the OEM market.

Contributing to our product range is a variety of products including panel PCs, industrial PCs, single board computers and other off-the-shelf industry products. In satisfying day to day demand for these products, DSL distributes on behalf of established Taiwanese manufacturers such as ICOP Technology and Apex Technology.

Over sixty percent of DSL's activity is the design and on-going supply of embedded solutions via performance optimised, cost-effective target platforms. These tend to encompass a range of x86 and ARM architecture, microcontroller and embedded systems.

their products, exceeding their expectations regarding functionality, reliability and longevity. We help customers get 24/7 reliable products to market faster than their competition by cross-fertilising our off-the-shelf products and design capabilities to maximise client benefit. All whilst building strong long-term relationships through unprecedented customer service.

Operating with complete integrity and transparency is one of our core values, presenting only factual information, whether positive or negative. We work hard to make our client's jobs easier, seeking to go that extra mile and provide 'wow' service levels.

As the UK's leading cradle-to-grave industrial computing and electronics solutions provider, we operate across all industries, providing everything from off-the-shelf products to fully bespoke product realisation. We support every stage of our clients' projects through design, prototyping, certification and on-going manufacture in-house.

www.dsl-ltd.co.uk

Cross-fertilisation accelerates development

Our mission is to enable clients to focus on their core competency whilst we realise

Configure custom power fast

An alliance between TT Electronics and Vox Power provides purchasers with modular configurable power supplies, fuelling innovation in medical and industrial applications

A new range of user-configurable solutions enables OEMs in the medical and industrial markets to quickly customise and tailor a power supply; an ability which is crucial to expediting today's fast-paced product launches and upgrades.

The Vox Power product offering includes the VCCM600 series, which features 600W in a conduction cooled, fan-less architecture. The NEVO+ high density modular range is also available in 600 and 1,200W. This provides configurable power in the smallest, lightest packages on the market. Modular configurable power solutions are typically used in medical equipment, lasers, robotics, automation, and other pioneering applications.

Freedom and flexibility

Head of Vox Power business development, David Carley, commented: "Our modular products offer customers the freedom and flexibility to configure a custom power solution for virtually any single or multiple output voltage application requiring up to 16 individual outputs. With TT's global reach and expertise in medical

and industrial power supplies, design engineers now have wider access to all our solutions."

Together, TT Electronics and Vox Power are dedicated to offering global customers a distinct competitive advantage through a commitment to cutting-edge design and uncompromising quality. Contact TT Electronics for further information or to place an order for the Vox Power products.

www.ttelectronics.com/vox

TT Electronics



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600W modular configurable in a 3" x 5" package



VCCM600M

600W conduction cooled in a rugged 4" x 7" package



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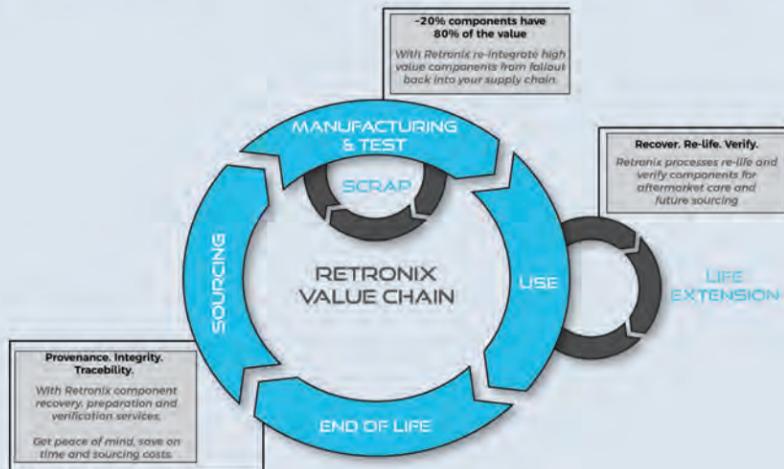
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“
For a market dominated by technological advancements, the electronics sector is also an industry with some outdated institutional ideas.

There is a seam of “but that’s how we have always done it”

”
TIME FOR A MINDSET CHANGE



Our wide range of services to the electronics industry allow us to offer a complete & robust service for reclaim and re-use of components. With the safest removal procedures in the industry, terminal re-life options, testing, X-Ray and re-reeling.

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A laser focus on quality

An emphasis on quality and innovation has seen Retronix invest in sophisticated laser reballing equipment, making its manufacturing services a popular choice with high reliability companies

Retronix offers a unique set of technology solutions aimed at reducing manufacturing costs and improving production efficiency in electronics printed circuit board assembly. Founded in 1992 by Tony Boswell, the company originated in the UK, but now operates in the Americas, Asia and many countries in Europe.

Quality and innovation are the two main reasons that the company has been—and continues to be—successful. To meet the continuing demands of the industry, our investment in people, factories, processes and equipment is accelerating.

Precision component reballing

Our most recent development, for example, is a top of the line system that will set a new benchmark for an advanced and reliable laser reballing service. With many high reliability companies now realising the need to minimise the amount of reflows you give any single component, using a laser to perform the reballing is the only way to guarantee that there is no long term damage to the silicon.

As ever, our services are audited by our high reliability customers and the fact that we are a preferred supplier to many of the market leaders is testimony to our track record and the quality of our services. Retronix is the only company with approvals from such customers as Leonardo Company, BAE Systems, Martin Baker Air Craft Company.

www.retronix.com

How to design the perfect Raspberry Pi housing

If you are looking for a custom solution to house the Raspberry Pi, here at Lincoln Binns we have three options to transform your idea from concept to finished product

Send your drawing

If you have a clear vision of what you require and can produce a dimensional drawing for the cut-outs and usable artwork, then we can use these to produce your design. Drawings can be anything from a hand drawn sketch up to a full CAD 3D model. Logos, icons and other images need to be in a vector format or equivalent so we can resize them properly. A list of components used in the end panels also allows us to doublecheck your cut-outs. We then send you final drawings for approval prior to production. We can provide STEP, IGES or DXF files for all enclosures, end plates and accessories if required.

Let us do the design

Send us your PCB, connectors and any other components and we will work on

design options based on your requirements. If you require artwork, we will need your logo in a vector format and a list of fonts that fit your corporate identity. Throughout the design process we will send you images and 3D PDFs. Once agreed, we will send you the final drawings for approval prior to production.

Visit us

Make an appointment to sit down with the design and engineering manager to talk through your design and leave with a working prototype of your product in your hands. We can achieve this because we do all the design and machining in-house, enabling us to offer a rapid prototyping service.

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Lincoln Binns Product Range

Lincoln Binns manufacture and modify a large range of enclosures

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The E-Case range of closed box section extrusion Available in the online shop in 4 sizes To suit 55mm, 100mm or 160mm wide PCBs Supplied in pre-anodised Silver or Black and in a range of lengths

Combi-Case Range

The Combi-Case 100 range of 2-part U-section extrusion 2 height options - make 3 height variants To suit 100mm wide PCBs Supplied in pre-anodised Silver or Black and in a range of lengths

U-Case Range

U-Case 6-piece electronics case kit Consists of 2 side extrusions 1U in height Enclosures can be manufactured to different widths & lengths Available in a range of fixed sizes in silver

UnioBox Range

UnioBox range of 6-piece enclosure kits Consists of 2 side extrusions in 66mm, 2U and 3U heights Enclosures to be manufactured to different widths and lengths Available in a range of fixed sizes in silver

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We'll inform you when the stock first arrives at our site in Colchester, at which point the agreement period will start*.

4. We'll keep track for you



We will send you a monthly update informing you of the balance of stock and the period left. We'll also give you some advanced notice for when the agreement will end.



*Our long term stock agreements are non-cancellable but we will always endeavour to help you with any challenges you have regarding changes in customer demand. Agreements can be renewed.

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Could life after lockdown be greener?

The COVID-19 pandemic will have profound social and economic consequences, but it may also be a catalyst for environmental change, says Rapid Electronics

Coronavirus has bought life to a standstill pretty much the world over with lasting social and economic consequences that will be felt for years to come. But in these difficult times there are some environmental positives.

In the UK we have seen reduced greenhouse gases and a huge leap in air quality, up to 50 per cent in major cities. Now, these effects will likely be temporary, but with pollution accountable for around seven million deaths globally, action on climate change is something all businesses need to build into their strategy and consider when evaluating suppliers.

Over the last two years, electronics component distributor, Rapid Electronics, has been making major strides towards being more environmentally friendly. In 2019 we achieved ISO 14001:2015 setting requirements for our environmental management system. We are proud to hold this certification and continue to

improve our environmental performance through more efficient use of resources and reduction in waste. We also launched our electrical vehicle charger installation brand, Replenishh in 2019, further pursuing our green agenda.

Our next project looks at how we deal with packaging. Increasingly customers are asking for non-branded boxes so they can reuse them. We have taken these wishes on board and gone further in adapting our packing strategy. That's why we have set ourselves and our customers a challenge to save 1,000 trees in 2020.

Not only have we changed to plain boxes, we have also switched to collapsible boxes to reduce the amount of void fill we use. These small changes will reduce our paper usage by 46 tonnes a year, lower transportation weight by 88 per cent, and will in turn save 1,100 trees.

www.rapidonline.com/recycling



A flexible approach keeps production moving

Supply chain and materials management expertise has kept disruption to a minimum despite the current disruption, explains FermionX

FermionX provides expert contract electronics manufacturing and design support solutions from its base in West Sussex. We pride ourselves on exceptional customer service, offering the best solutions in speed, flexibility and pricing to ensure long term manufacturing relationships.

A comprehensive supply chain and materials management process supports our contract manufacturing service as well as our own product brands. Our strength in supply chain management has ensured that through this disruptive period we have had minimal component shortages, further supporting our customers' production.

FermionX also offers an end-to-end, integrated manufacturing service, from PCB assembly, through sub-assembly, to fully integrated box-build and testing. From maintaining our own product brands, we understand the importance of rigorous control systems through each step of this production process to final build.

Quality control starts with a zest for continuous improvement. It drives

everything we do and forms the basis of all our manufacturing processes. For our customers, this means you can rely on receiving your product exactly as specified, saving you time and energy.

As a business, we are committed to playing our part in keeping the industry moving during these uncertain times, whilst ensuring the safety of our colleagues. Not only this, the production of our products, client management and business continuity remain key priorities.

We couldn't be prouder of how our team have adapted to this new style of working. We have a fantastic supply chain and purchasing team who are adept at managing global supply challenges and are working hard with all our customers and suppliers (old and new) throughout this period.

Don't hesitate to get in touch if there is anything we can do to support your production.

www.fermionx.com

FermionX

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- ▶ CABINETS & ENCLOSURES
- ▶ POWER SUPPLIES
- ▶ HANDLES & KNOBS



Supporting the technologies of tomorrow with a smooth supply

Specialist component distributor, Foremost Electronics, believes high calibre customer service is the secret of its success as it works to support emerging opportunities—from 5G and AI to electric vehicles and autonomous cars

Foremost Electronics was founded in 1989 as a direct importer and specialist distributor of switches, keypads, joysticks, connectors, cable management and other electro-mechanical products. We represent a truly global supplier base of more than 20 manufacturers from around the world, having strong partnerships with market leaders including Schroff, Icotek, NKK Switches, APEM, Thermodisc and Elma.

“Our success has been made possible by knowing our strengths and our place in the market, offering incomparable customer service, and having the wholehearted support of an outstanding team whose hard work has helped us achieve our goals. Without them we would not be where we are today.”

www.4most.co.uk

Emerging opportunities

Managing director of Foremost Electronics, Alan Cook, commented: “After thirty years of effort we have a very well established place in the UK electronic component distribution market and are looking forward to new opportunities in markets such as 5G, as well as advances in artificial intelligence, industrial internet of things, robotics, 4K/8K broadcast, electric vehicles, smart grid, autonomous cars and more.

For further details of our extensive product range please call or email us on:

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Cut lead times with a custom service

Plenty of experience, a personalised approach and a rapid turnaround ensure Materials Direct, a division of Universal Science can help reduce lead times for purchasers and design engineers in diverse sectors

Materials Direct is a new division of Universal Science which has an established history in two defined areas: thermal management of electronic assemblies and LED lighting assemblies. Spanning 15 years, our knowledge and understanding of both industries has enabled us to become the global organisation we are today. Our team boasts over 25-years in thermal management expertise and experience in LED lighting solutions.

Our core values are customer understanding, swift reactions and outstanding product quality. These are central to our working and through them we have been rewarded with prestigious, customers in various industries from LED and automotive to military, aerospace and telecommunications.

A fast, personalised and approachable service is something you can expect from the team, with all products channelling effortlessly into your design and production. Our experienced staff will be on hand to support you; we may have a global presence, but our clients can depend on local offices where and when they need them.

Custom cut technical materials, FAST

If you're tired of long lead times for your precision cut materials or have forgotten to source that final gasket or thermal interface material, then Materials Direct is the answer. You can receive production parts manufactured from your drawing in just 24 hours, with no hassle.

Materials Direct is a versatile online ordering system for custom cut technical materials to the electronics and LED lighting industries with a wide array of payment and ordering options. Choose from a comprehensive selection of materials in stock with no tooling charges.

With various trusted and well-known brands available, we can provide you with materials in the following categories: thermal interface materials; electrical insulators; tapes and adhesives; sealing gaskets; optical diffusers/reflectors; and EMI shielding.

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With a heritage spanning over 40 years, Microcross Components began transforming specialty electronics by creating a global company with the broadest offering of products and services in the industry. Quickly, the company became recognised as a global leading single-source supplier of specialty components designed and manufactured to the highest quality standards.

Over the years, Microcross Components acquired the specialised knowledge of these regional industry leaders into a single global marketplace for integrated circuits of all types and interconnect options.

Depend on hi-rel expertise

Today, Microcross continues to serve the aerospace, defence, space, medical and industrial markets with the most comprehensive range of hi-reliability components and services available from one source.

Our unwavering focus on our company mission and core values differentiate us from the competition and empowers our team to always deliver on customer commitments while continuing to uphold exceptional quality in everything we do.

www.microcross.com

Mission Statement:

To support customers' system-critical requirements through delivering hi-reliability microelectronic components & services on-time and to specification.

Microcross Core Values:

- Integrity**
Always be honest & ethical.
- Communication**
Share information quickly & openly.
- Teamwork**
Respect others viewpoints & the power of the team.
- Quality & Execution**
Strive for flawless execution; 100% on-time delivery & 100% to specification.
- Self-Discipline**
Be a problem solver; Deliver to your commitments.
- Accountability**
Hold yourself accountable; Seek to continuously improve.

Specify customised interconnect with confidence

EDAC's extensive industry experience makes all the difference when it comes to the design, manufacture and supply of customised interconnect solutions

EDAC has been designing and manufacturing interconnect products for over 50 years. This capability has been further enhanced by the acquisition of MH Connectors, which is now a wholly owned subsidiary of EDAC.

We supply customised and industry standard products manufactured to the highest standards at competitive pricing. Our ranges include card edge and press fit connectors, rack and panel, magnetic and modular jacks, waterproof, USB, HDMI, E-SATA and display port products, as well as custom connectors and cable assemblies. As purchasers tasked with specifying these products will appreciate, our experience makes the difference.

Tailored collaboration

Proudly working alongside some of the world's leading manufacturers, EDAC successfully creates solutions for a variety of applications from renewable energy to single board computers. With a dedicated project manager assigned to your project,

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Thru-hole reflow (THR) and surface mount device (SMD) circular connectors can be soldered onto the PCB at the same time as other components, unlike traditional connectors

Save time and money on your production line with our wide range of coding options available in M8 and M12 sizes.

For additional information call 0845 881 2222 or visit

phoenixcontact.co.uk/ap-connectors



Smart connector choices cut costs

M8 and M12 plug-in connectors from Phoenix Contact are suitable for both through hole and surface mount device soldering, potentially significantly reducing production costs

Originally designed for field cabling of sensors and actuators, circular plug-in connectors have become a versatile industry standard for transmitting signals, data, and power. In recent years, a wide range of colour coding and connection and installation options have developed for M8 and M12 plug-in connectors, however most solutions must still be manually integrated. Plug-in connectors with wires or round cables cannot be integrated into automated PCB soldering processes.

As a result, every device undergoes an automated soldering process for the surface-mounted components on the PCB and a manual assembly process for the device connections in the housing wall. Phoenix Contact's new connectors for direct PCB mounting greatly reduce these production costs and offer a new level of flexibility for device design.

The two-part male and female contact

carriers are made of temperature-resistant plastic, which enables them to withstand the high temperature loads associated with reflow soldering. The advantage is obvious: M8 and M12 circular plug-in connectors can be automatically positioned via pick-and-place processes and then automatically soldered by means of THR or SMD soldering.

This enables electronics and device connection technology to be attached to a PCB in a single process step. Costs associated with additional PCB connection technology or manual assembly processes are thereby eliminated. Furthermore, the device connectors feature standard design-in construction and can either be introduced directly into the housing via a threaded hole or integrated into the housing via a screw connection.

www.phoenixcontact.com

Specify surge protection with confidence

A new generation of surge protection devices, available from Switchtec, brings improved quality and performance plus enhanced ergonomic design for rapid replacement

Supplied by specialist distributor, Switchtec, Citel's new DAC/DDC range of AC and DC surge protection devices are available in Type 1, Type 2 and Type 3 for use with AC, DC and photovoltaic applications. They are suitable for all earthing systems including TN, TT/TN, TNS and TN-C-S and are available in single pole, single-phase, three-phase and three-phase plus neutral. Citel DIN rail mounted surge protectors are easy to install in any standardised distribution panel or control cabinets.

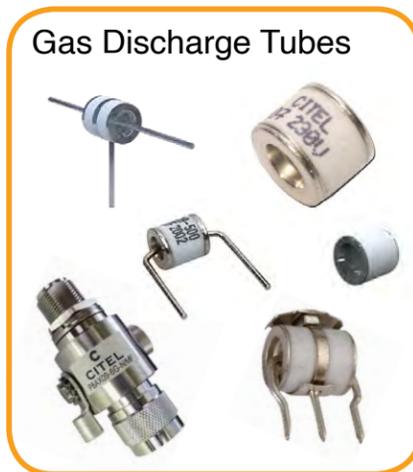
Designed with key features in mind including security, performance and ergonomics, Citel created this range to meet the most extreme constraints, beyond that required by the IEC/EN standards. In order to ensure total safety, the DAC/DDC series is designed to provide a safe disconnection, high resistance to fire and short circuit with a high mechanical robustness. The series utilises Gas Spark Gap technology unique to Citel along with proprietary varistors to obtain the best performance and reliability.

Key performance features include an

improved ergonomic design, which incorporates a quick release retaining clip for effortless module replacement.

Further features include, improved plastic materials to increase the product's strength and rigidity, plus a larger disconnection indicator to identify if the SPD has reached end of life. This is in addition to a built-in remote signal output, suitable for connection to an external signalling device. Identification is also enhanced by colour coding, enabling users to easily identify the SPD type and function.

www.switchtec.com



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Smart partnerships deliver reliable outcomes

Franchised distributor, Astute Electronics, strives to develop integrated partnerships with a technical focus, meeting hi-rel requirements with a traceable supply chain solution

Astute Electronics' growth spans three decades and crosses five continents. We are now one of the world's most knowledgeable, quality-driven experts in franchised high reliability electronics distribution, global procurement and supply-chain management.

Thanks to this focus, Astute offers a more technically focussed, integrated partnership that delivers smarter outcomes for customers. Trusted by many of the world's largest, most respected defence primes, OEMs and electronics manufacturers, we meet their everyday requirements for traceable electronic components, design-in support, parts procurement and integrated logistics.

Astute can also provide component engineering and technical support across franchises with the ability to manage supply-chains, vendor reduction, 3PL and kitting. We also offer anti-counterfeit electronic component testing, mitigation and de-risking as well as obsolescence management and through-life support.

To complement these services, Astute offers in-house counterfeit test laboratories in both the UK and USA. The company is highly accredited and is certified to AS6081, AS9120A, SC21 Silver. This makes Astute the ideal choice as a mil-aero 'specialist' franchised distributor.

www.astute.global

Supporting mil-aero demand

Our mission is to provide the answers that make a difference to your supply chain. To this end, our key services focus on franchised and traceable electronics global sourcing. We are a specialist in connector, semiconductor, passives, electromechanical and power technologies, offering commodities procurement and bespoke handling.

Pre-empt costly thermal challenges with simulation software

Thermal simulation can help to uncover and solve thermal issues in complex electronics, reducing the need for expensive prototypes, and cutting costs down the line

Thermal demands continue to grow as electronics from wearables to wireless become more compact, complex and powerful. Balancing these demands in the design process while maintaining thermal performance is a must. Despite being feared for its high initial investment, thermal simulation can provide a more affordable solution in the long run. It enables designers to uncover and solve design issues early in the process as well as cutting down on expensive physical prototypes.

6SigmaET is the fastest growing thermal simulation tool in the electronics cooling market. Now Release 14 brings everything our team has learned over the last ten years to the table. Newly improved, Release 14's intelligent, automated and accurate features help overcome the toughest thermal design challenges.

Release 14 supports the neutral ECXML file format, an unencrypted XML-based format used for the exchange of thermal

models. You can now share files as a new model, a component, or an assembly across thermal simulation toolsets easily with ECXML files. This format transfers files with material properties and environment settings, making it easier than ever to switch between thermal simulation toolsets. Release 14 also supports a range of import methods, such as ODB++ and IPC2581 files.

Release 14 also boasts several improvements to its user interface and model creation. A new optimisation feature, for example, provides powerful tools to analyse designs for sensitive parameters and optimise them according to precise cost functions. 6SigmaET can also model multiple temperature dependent power maps, providing more control over the localised power distribution of a component or subcomponent.

www.6sigmaet.info

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One source for industrial excellence

Able to provide customised plastic and metal enclosures, as well as a variety of industrial products, CamdenBoss offers a single source for innovative solutions engineered for today's demand

CamdenBoss continues to push the boundaries on providing customer driven solutions, utilising over 50 years of manufacturing experience.

The result—it provides customers with engineered solutions and modern products, all designed around today's market.

www.camdenboss.com

As the biggest innovator of high-quality plastic enclosures and electro-mechanical components in the UK, CamdenBoss has built an unbeatable and comprehensive range of products, guaranteed to satisfy any requirement.

Driving originality

In order to enable its customers to stand out from the crowd, CamdenBoss has consistently driven quality and innovation. It remains the only company to provide multiple industrial products including terminal blocks, waterproof connectors, fuses and fuseholders, along with customised plastic and metal enclosures.

Making satellite comms accessible for all

British manufacturer, Rock Seven, brings the internet of things within reach for organisations of all sizes. Its products help users to integrate tracking and communication capabilities with ease

Rock Seven is a British manufacturer of IoT products which use the Iridium satellite network to provide location tracking and short burst data (SBD) transmission. Founded in 2005, we make satellite communications accessible to everybody in a simple, easy to understand way.

Our products are designed, assembled and tested in the UK, giving us control over the process and the ability to maintain quality. We provide services to a range of organisations from governments, universities, NGOs and private companies through to hobbyists.

The RockBLOCK is our main IoT offering. This small but sophisticated board allows tracking and SBD to be incorporated into all kinds of engineering projects.

Connected

Wherever you are, our products allow you to track and communicate with people or products, via satellite from anywhere on Earth.

Rugged and reliable

Our devices are designed for use in the real world. We manufacture waterproof, drop-proof, products that you can trust.

No nonsense

We speak your language. Everything we do is designed to be easy to use, including both our products and our pricing—we keep it simple.

www.rock7.com



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 - 50Ω and 75Ω BNC





www.cliffuk.co.uk



UK manufacture secures connector supply chain

Flexible UK-based design and manufacturing capabilities ensure purchasers have rapid and secure access to high reliability connectors

Cliff Electronics delivers UK manufactured connectors to OEMs and global distributors from stock held in its own factory. Thanks to its flexible UK-based design and manufacturing the company is well placed to fulfil customer demand, which continues to grow and expand into new markets.

The company boasts over 40 years' experience in supplying cost effective and high reliability connectors to OEMs and system integrators around the world. Markets served include broadcast and professional audio, medical, industrial, building automation, video installations, instrumentation and test and measurement.

Key UK manufactured products include terminal posts, jack sockets and the market leading range of XLR footprint FeedThrough connectors.

Cliff terminal posts are widely used in audio, test and measurement and for connections on power supplies. Standard options include a choice of colours, various stud lengths and terminations. Metal parts are nickel plated as standard, with gold available to special order.

Having manufactured professional quality industry standard ¼in jack sockets since the beginnings of electronic music, Cliff has an extensive and reliable range. Products are available for PCB or through-panel mounting and with a nylon or rugged metal threaded metal 'nose', for secure connection of locking plugs and grounding to system chassis. The socket body is available in a variety of styles and several switching options.

Cliff's fastest growing product range is its XLR-Format Feedthrough connectors, offering a range of audio, video and data connectivity in the industry standard 24mm diameter XLR connector panel cut-out. The FT series meanwhile offers true feedthrough connection allowing standard cabling to be used to connect at both front and rear, eliminating the need to solder or terminate connections to simplify assembly.

www.cliffuk.co.uk

International production, local service

With facilities in both the UK and Slovakia, AWS Electronics Group operates internationally to provide a myriad of electronics manufacturing solutions backed by personal customer service

AWS Electronics, based in Newcastle-under-Lyme, UK, provides full turn-key product supply including printed circuit board assembly, electro-mechanical assembly, cable and harness assembly, alongside rapid prototyping and maintenance, repair and overhaul services.

A mirror-image facility, AWS-Slovakia, based in Námestovo, Slovakia, provides a cost-competitive volume manufacturing option, in addition to featuring a dedicated hall for automotive projects.

In response to customer needs, AWS Electronics Group has grown rapidly and now provides specialist, niche PCB assembly, complete product build and electro-mechanical assemblies. The group brings together the high-level technical capabilities and leading-edge production technologies that are normally associated with multinationals, with an approach to customer service based on partnership and personal service.

Flexible support

Customers enjoy the benefits of dedicated account support teams who seek to fully understand customers' business and

products to optimise delivery of specialist electronic manufacturing services and solutions that are both flexible and cost effective.

The company continues to work to a clear strategic plan to develop internal capabilities within both facilities in order to operate as a full-service provider. Supply chain services are supported by procuring globally at the best value and AWS seeks to optimise operations by standardising processes, procedures and equipment. The group also works constantly to further its design capabilities and acquire new technology with a clearly defined technology roadmap. AWS Group is also investing in business systems including materials requirements planning software to achieve standardisation across both manufacturing sites as well as adopting lean principles and enhanced control and reporting.

This strategy supports the ever-changing needs and demands of our customers and the markets they serve.

www.awselectronicsgroup.com



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Catering for complex needs

Contract electronics manufacturer, IEW, is dedicated to supporting complex build requirements. Its partnership approach provides a tailored service, leaving clients free to focus on innovation

In business for 40-years, IEW has over 60 employees working together to provide a high level of service in the contract electronics manufacturing market. The company is focused on providing services to companies that produce complex machines.

Its aim is to delight customers by understanding their exact requirements, then tailoring the service offered to meet their needs so they can focus on completing their technology led products and innovating future designs.

Partner with ambition

IEW's goal is to offer a cost-effective solution, delivering finished assemblies on time and fully tested to ensure the highest quality and reliability.

The company's vision is to grow its business by continuing to build a national reputation as the number one supplier for:

delivering the exceptional; understanding the complex; and innovating our service to meet the requirements of a constantly evolving electronics marketplace.

All this serves to help IEW fulfil its mission—to service the multifaceted needs of our electronics manufacturing customers today so they can focus on delivering the technology of tomorrow.

iew.co.uk

Miniature connectors, manufactured fast

Modular assembly ensures short lead times and low minimum order quantities for Nicomatic's miniature, hi-rel connector solutions

Nicomatic specialises in miniature connectors for rugged applications. The company retains all key manufacturing processes at its facility in France and the connectors themselves and the production lines have been designed to suit modular manufacturing. This means lead times are short, MOQs are low and customers can have samples of exactly what they need quickly.

Miniature connectors from Nicomatic include the new 1mm AMM series. Lightweight and secure, these connectors suit demanding space-constrained applications in harsh environments. Capable of carrying up to 4.8 or 2.5A, the miniature connectors can withstand vibrations of 15G and shock of 100G. Devices can handle up to 1,000 mating cycles and can operate between -65 and 200°C. Five standard layouts with 6, 10, 20, 34, 50 contacts distributed over two rows are stocked in depth for immediate shipment.

The 1.27mm pitch EMM series targets defence and high-reliability applications.

Designed to meet the performance requirements of MIL 83513, EMM series connectors occupy 40 per cent less space than previous-generation models. They are 20 per cent smaller than Micro D connectors for 16-pin configurations and around 10 per cent smaller in footprint than the closest competitor.

CMM 2mm pitch modular micro connectors meet or exceed IEC 60512-5-2 Test 5b, as well as older MIL-DTL-55302F and BS-9525-F0033 standards. Devices are available in 20 million configurations of signal, pin and coax pins from one to three rows and up to 120 pins, all on one-week lead time with low MOQ.

DMM connectors comply with MIL-DTL-83513G and provide a wide choice of arrangements compared to Micro-D or Sub-D. They deliver space-saving, electromagnetic and mechanical protection with a one- or two-piece backshell for 360deg shielding and protection.

nicomatic.com



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Take a closer look at testing

X-ray, optical and acoustic non-destructive analysis tools provide vital fault detection when testing electronic components and assemblies, explains Cupio

A big issue in non-destructive inspection is getting a clear visualisation of the area of interest with sufficient resolution to detect the smallest faults.

A straight two-dimensional image could mask issues, whereas the correct, low angle image can see them easily. Equally, computed tomography isn't always the answer as the part in question may be in the middle of a large board. In this circumstance a high-resolution, reduced angle CT could provide the required images. All these tools need to be available.

Expert counterfeit detection

The Nordson Dage Quadra 7 system, with 100nm resolution, full CT and tomosynthesis capability, can image the smallest structures. Cupio's engineers are experienced in the analysis of these images and, if needed, can reconstruct to provide three-dimensional models.

When investigating to die level for bond wires or voiding/delamination in components, the Nordson Yestech and Nordson Sonoscan systems can measure bond wire height and check for die

contamination using optical measurement and ultrasonic technology.

For customers tasked with identifying counterfeit components in a supply chain, Cupio offers both x-ray and electrical comparison.

www.cupioservices.co.uk



The Electronic Component Show

ECS 2021, an event worth waiting for



From the free seminars to the thousands of components and services, ECS would have been a day of innovation and conversation across the board for design engineers and purchasers.

I hope in the absence of the event, this newspaper has been a useful platform to give you an insight into the exhibitors of the *Electronic Component Show* and shown you some potential new suppliers and products to investigate.

In what could be a challenging year, I have no doubts that the electronics industry will stand tall and prevail through these difficult times. When normality resumes, the industry will absolutely bounce back stronger than ever and with that, the drive, desire and necessity for exhibitions will too. This will result in some incredibly buoyant and busy shows for exhibitors and visitors

alike and that ECS 2021 is an event worth waiting for.

I would like to extend a huge thank you for the understanding and support our exhibitors have shown us in the postponement of the show.

Lastly, I will take this opportunity to remind everybody to please follow the guidance from the Government and above all, stay safe.

I look forward to seeing you again soon.

Best regards,

Jack Pollard
Event Organiser

ELECTRONICS sourcing family

