ELECTRONICS
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The European magazine for purchasing professionals

Farewell to end-of-life components

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Farewell to end-of-life components

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Editor's Word

The invisible man

These days, if I'm not writing words, I'm writing code. This means I often find myself registering for software trials. It's common for such registration processes to ask me which industry sector I work in so the application can semi-configure itself to my needs.

A few years ago, I noticed these lists changing in style. Industries I expected to see were missing and ones I didn't expect to see were appearing. It wasn't a problem at the time as I considered myself working in the engineering or manufacturing sectors which were always there.

More recently, I saw another change. Instead of engineering and manufacturing on the list it was one or the other, typically manufacturing. Well, this week, my worst fear came true. I wasn't able to tick a box as the list I was looking at didn't feature engineering, manufacturing or anything like it. It did, however, include the 'vaping' industry.

All I can assume is that the person who compiled the list simply has no way to even conceptualise engineering or manufacturing because they are invisible to them. The dirtiest, noisiest, most visible aspects of manufacturing have been outsourced to far off lands. What remains takes place behind the closed doors of windowless buildings.

Maybe this person has never seen inside a factory and doesn't know anyone, friends or family, who works in one. I always thought the original Invisible Man film was great. I never imagined I would play the lead role. I am now invisible.

Jon Barrett

N ES News

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www.electronics-sourcing.eu

Nordic power

GS Yuasa Battery Sales UK has established a new sales company to serve the Nordic and Baltic regions. The distribution centre is located in Jönköping, Sweden.

The move means customers in Sweden, Norway, Finland, Denmark, Iceland, Latvia, Lithuania and Estonia will be better served with shorter lead times, local support and reduced order quantities. The distribution centre will stock and supply GS Yuasa's full product range.

Managing director of GS Yuasa Battery Nordic and GS Yuasa Battery Sales UK, James Hylton, said: "Our Jönköping base will allow us to better serve the territory with our industry-leading battery technology by increasing availability and reducing lead times.

"GS Yuasa have achieved significant growth in the Nordic-Baltic region over the past few years, in particular in Sweden and Finland with our distribution partners Batteripoolen and Akkupojat."

Batteripoolen's managing director, Johan Lyckow, added: "We view this as a natural next step in our close co-operation with GS Yuasa. We will continue to grow in all areas of a market that is dynamic and fast-changing in both the transportation and industrial sectors."

www.yuasa.com

A safe choice for memory

RS Components is offering Cypress Semiconductor's Semper NOR flash memory products which are designed to support automotive, communication and industrial applications. Semper achieves the ISO26262 automotive functional safety standard for electronics in vehicles and is compliant with IEC 61508 for industrial applications. It is said to be industry's first NOR flash memory to be Automotive Safety Integrity Level ASIL-B compliant and ASIL-D ready.

Offering densities from 256Mbit up to 4Gbit, plus the 10-year longevity required for mission critical applications, Semper NOR devices are compatible with multiple SoCs and FPGAs.

Semper NOR flash memories are AEC-Q100 qualified and proven at extreme temperatures from –40 to 125°C. Operating voltage is 3.0 or 1.8V. Packaging options include 24-contact BGA, 8-contact WSON and 16-pin SOIC.

www.rs-online.com

Sensing the future

Arrow Electronics, Panasonic Industry and STMicroelectronics have introduced a low-power wireless multi-sensor edge-intelligence solution for smart factory, smart home and smart life applications.

The IoT Solution Module combines Arrow's engineering and global distribution capabilities with Panasonic Industry's IoT modules based on the ST BlueTile multi-sensor development kit.

The Module features ST's latest BlueNRG Bluetooth Low Energy 5.0 system-on-chip paired with numerous inertial, environmental and audio sensors. The onboard sensors enable the cost-effective delivery of a broad range of compact and valuable IoT applications for smart factory, smart home and smart life scenarios.

The reduced BOM combines an accelerometer and gyroscope with time-of-flight, pressure, and humidity sensors in a low-power design with Bluetooth communications. This combination helps OEMs slash time-to-market and reduce complexity using certified modules.

Vice president of product management and supplier marketing at Arrow Electronics in EMEA, Matthias Hutter, said: "By working with ST and Panasonic we are bringing the fundamental sensor and wireless building blocks in a great package for accelerated design."

fiveyearsout.com

N ES News

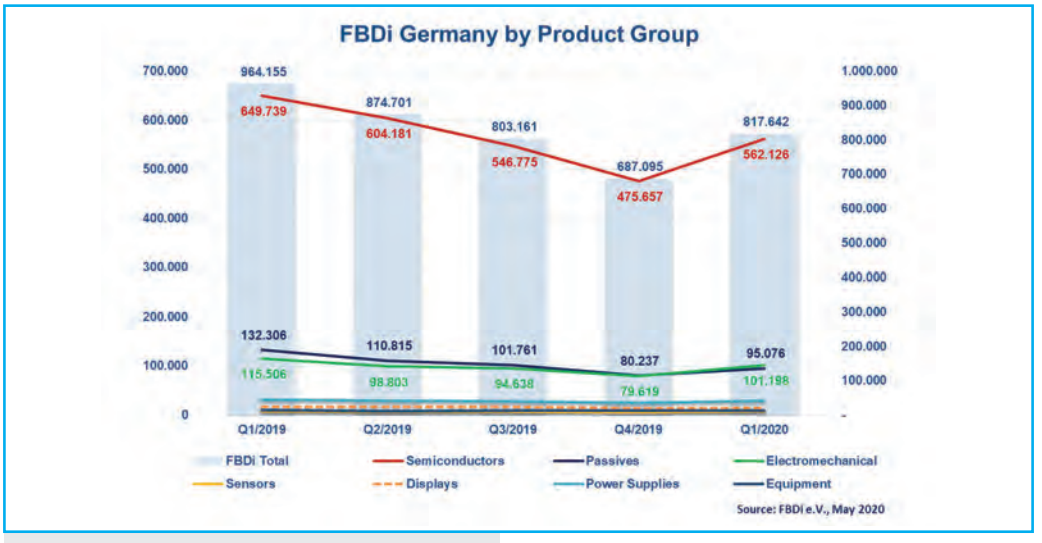
In Brief

Unwavering support
Commenting on the company's response to the pandemic, TTI Europe's vice president marketing, Geoff Breed, said: "There are so many challenging situations through all parts of the supply chain at this time, that no-one could possibly have predicted or planned for. We have witnessed an effort from the entire TTI team that goes well above and beyond and we are so incredibly proud of the fast and efficient way that every single person has reacted."
www.ttieurope.com

Computers for industry
Distec has expanded its embedded portfolio by adding Gigaipc's range of industrial PC solutions. Products include single board computers, Mini-ITX motherboards, box PCs and smart display module players. Applications include automation, industrial image processing, industrial signage, artificial intelligence and smart retail.
www.distec.de

Cryogenic cabling solutions
CryoCoax and Delft Circuits have announced a sales and technology partnership agreement which sees CryoCoax becoming the sole UK and US distributor for Delft Circuits' product family. Delft Circuits' product combines flexible cryogenic cabling with standard RF connector interfaces to produce an interconnect solution which offers both single and multi-channel cables combining microwave performance with compactness, durability and a low thermal load.
cryocoax.com

Buying into expertise
Suntsu has signed a new distribution agreement with Marbach Elektronik. Suntsu Electronics manufactures frequency control, connection technology, antennas, and printed circuit boards. Marbach Elektronik specialises in semiconductors and lighting products such as LED drivers, cooling solutions, and secondary optics. It also offers replacement ICs to discontinued components, customised electromechanics and DC/DC converters.
suntsu.com



Business development in German distribution slows

The German electronic components and distribution markets cannot expect any short-term improvement given the current uncertainty. Sales of FBDi distribution companies fell by 15 per cent to EUR 818M. This is considerably below Q1/2019. By comparison, orders fell by two per cent, a book-to-bill rate of 1.03.

FBDi chairman, Georg Steinberger, said: "As a result of the partial plant closures in Europe and the USA the overview in the supply chain is rather lost. Who needs what and when is probably not clear until autumn 2020. The presumed bottlenecks will most likely come later, but then with more force.

"What Corona has shown? We can operate digitally. This decade will show whether we can make the transition to a more conscious, economically sensible, environmentally compatible and fairer way of doing business. Politics have to rethink their way of catering only to strongest lobbies and to invest in infrastructure that will take us to the next level of digital society."

www.fbdi.de

Speeding automotive time-to-market

Avnet Silica has announced a new supplier agreement with Qorvo, a provider of radio frequency and power solutions. All Qorvo products for the automotive sector come with AEC-Q100/AEC-Q200 qualification.

Avnet Silica's director automotive EMEA, Thomas Foj, said: "Qorvo's portfolio boasts industry-leading and highly integrated solutions right across the board, negating the need for external discrete components and greatly simplifying the design-in process for engineers. It also enables an overall reduction in system size, cost and time-to-market for end customers, especially with automotive pre-qualification for fast deployment in a multitude of in-car systems and connected applications."

www.avnet-silica.com

A decade of IoT operation

Mouser is stocking Silicon Labs' latest Wireless Gecko system-on-chip (SoC) families. The SoCs are said to be highly efficient, delivering exceptional battery life for IoT applications.

BG22 SoCs are single-chip solutions supporting Bluetooth 5.2 connectivity, including Bluetooth Mesh, Bluetooth Low Energy and direction-finding with sub-meter accuracy. Coin cell battery life up to ten years suits them to consumer, commercial and industrial IoT applications.

The MG22 family is optimised for Zigbee Green Power applications including smart home sensors, lighting controls and building/industrial automation.

Finally, FG22 SoCs enable energy-friendly proprietary protocol networking in power and size-constrained IoT devices. Applications include building security, electronic shelf labels, industrial automation sensors and custom modules for commercial lighting.

www.mouser.com

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Covid-19 aftermath: what matters now

AVNET ELECTRONICS' VP COMMUNICATIONS, GEORG STEINBERGER

Avnet Electronics' VP communications, Georg Steinberger argues that if Covid-19 taught us anything, it's that we master it together or we fail together

The Covid-19 Pandemic is about to subside in many countries across Europe, Asia and presumably North America. Less cases of infection, less casualties, less lockdowns. The corporate world is slowly coming back to a new normal: a different mix of mobile and office working; stricter hygiene rules in plants, warehouses and offices; return to a different world of meetings with less physical and more virtual encounters.

What we will find coming back is—among other challenges—a significantly disrupted supply chain. Early on, manufacturing stops and travel/transportation restrictions in Asia hit our industry (most components are manufactured in Asia), only to be followed by production stops of European customers.

Recent quarter results were double-digit declines in orders and booking, shifts in backlog and a total lack of visibility on both ends of the supply chains. Component manufacturers don't see what customers need in a few months, customers wonder who will buy their finished products later this year. This is an unprecedented economic downturn happening across the globe: GDP, industry production, take your pick. Never was the mood so low.

Before the crisis, many industry leaders were already convinced our economic system needed an overhaul to ensure more sustainability. Many industries, including ours, need to change from a mountain of throwaway goods to higher value production. We can only hope this conviction remains and we have become smarter.

Why? Because it matters more than ever. Resources are finite, the planet does not grow and we need to operate better with what we have. Innovation is the key. Covid-19 has shown what we really need and what matters most: a faster way to establish health for everyone; better communication to allow more flexibility in work and society; better, sustainable products; a more innovative production landscape and an intelligent, sustainable supply chain with better information and less waste.

The electronics industry is complex regarding its overall production structure and not really sustainable in moving goods around. Often, when a disruption occurs, we become blind. We are supposed to drive innovation for the rest of the world, but cannot really solve our own backyard problems? Also, a lot of electronic products have a short half-life and end up in African or Asian landfills once disposed. Raw materials are often mined with giant collateral damage. Seriously?

Globalization has problems but ultimately it is the only way. We have to change some rules so everyone benefits, not just a few. Maybe the Covid-19 crisis can teach us something fundamental: we master it together or we fail together. Solidarity among people, companies, states is needed; what is not needed is opportunism and war-profiteering.

www.avnet.com

Tough connectors for harsh environments

Increasing industrial automation has led to rising demand for rugged, resilient connectors. TTI introduces Harwin Archer Kontrol range

Many connectors, supported by data sheets, claim to be reliable and suited to demanding applications. However, it is not always easy to tell whether they will perform as stated or uphold the documented range of conditions. The important and challenging thing is to match the application requirements to the connector type.

TTI stocks a wide choice of connector technologies. It also has a dedicated team of specialist engineers, with technical skills and years of experience in this area, available to consult with customers. They can offer advice and product recommendations. For example, the Harwin Archer Kontrol range of rugged connectors suits industrial applications like factory equipment, monitoring systems, trackside/roadside monitoring, drives, controls and IoT.

Archer Kontrol board-to-board connectors are designed to offer durability, performance and reliability. The Archer range comprises 1.27mm pitch, male and female shrouded board-to-board connectors available in vertical or horizontal orientations, with three height options on the vertical parts. The 1.27mm pitch helps free space for other components or smaller units. Shrouded and recessed contacts prevent accidental damage to the miniature contacts and the connectors are shaped to provide a positive polarisation to ensure assembly in one direction. This assists blind mating. These connectors also tolerance misalignment in all directions, including angled.

Archer Kontrol connectors have improved environmental specifications too. These components can withstand -55 to 125°C with 20g vibration for 12 hours (10 to 2000Hz). Maximum recommended soldering heat resistance temperature is 260°C for 10 seconds. Durability is also important for connectors in industrial applications and Archer Kontrol is capable of 500 mating operations. The range is manufactured using LCP housings rated UL94V-0 and none of the connectors contain any lead, brominated flame retardants, red phosphor or antimony. They are RoHS compatible without any REACH SVHCs.

The socket connectors are twin-beam female contacts which mate to solid pin male connectors. These phosphor bronze and gold finished contacts offer a current rating of 1.2A and a data rate of up to 3Gbits/s. Available in double row and surface mount packages, the connectors are supplied in tape-and-reel packaging for automated retrieval and PCB mounting. Vertical connectors are fitted with disposable pick-and-place caps, while horizontal connectors offer a flat surface on the connector itself. All the connector housings include location pegs that mitigate movement during the solder process, providing additional placement assistance on the PCB and surface mount technology side tabs for additional peel strength and strain relief.

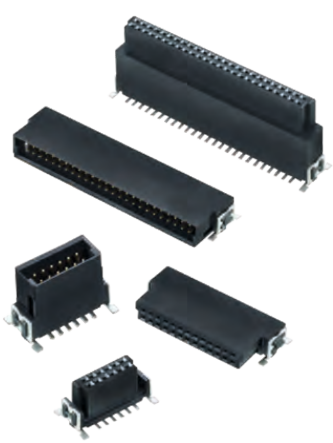
The Archer Kontrol range can be ordered from stock from TTI. All the part numbers start with M55 and TTI's specialist engineers are on hand to answer questions.

www.ttieurope.com

Maximum recommended soldering heat resistance temperature is 260°C for 10 seconds

Harwin Archer Kontrol connectors

ttieurope.com



Durable and robust BtB connectors - increased reliability for industrial applications

Archer Kontrol is a range of compact board-to-board1.27mm pitch connectors, offering designers a robust and flexible connection choice for a wide scope of industrial and other related applications.

1.27mm pitch durable, rugged board-to-board connectors. Available in a choice of orientations and mating heights, these connectors add a tougher option to the Archer family.

Due to the fully shrouded design, these connectors are suited for blind-mating applications.

They can withstand lateral and twisting forces, and tolerate a significant amount of misalignment.

Features:

- Enhanced Durability of 500 Mating Cycles Minimum
- Additional Strain Relief with Retaining SMT Tabs
- Increased Operating Temperature Range: -55 °C to +125 °C
- Current rating of 1.2A per contact, up to 3Gbits/s data rate

HARWIN

For more information on what TTI Europe has to offer, contact +49 (0) 8142 6680 0 or sales@de.ttiinc.com.

Farewell to end-of-life components

Sometimes service excellence for purchasing professionals means telling customers what not to buy, as Mouser Electronics explains

In the quickly evolving world of electronic components it's reassuring to know that Mouser works hard to identify products 'not recommended for new designs' (NRND). Buyers can be confident they're always sourcing the most advanced electronics available. They can subscribe to receive these product notifications online. This is just one way Mouser helps to foster its customers' speed to market.

Mouser's vice president of Americas sales and service, Coby Kleinjan, explained: "Having the newest, most advanced technology to develop cost-efficient prototypes limits costly redesigns, manufacturing delays or even the termination of a project.

"It also leads to a design edge in delivering more product features and capabilities as well as longer lifecycles. That's why we work closely with all of our manufacturer partners to provide the fastest and easiest access to the industry's newest components."

Each transaction is about more than a sale, it's about building relationships. Few things are more frustrating than a delay because of obsolete products. So, Mouser updates its website many times per day to provide options to help buyers easily find what they want.

Customer service and technical support representatives are available weekdays from 7am to 8pm (CST) to assist with requests including price quotes, order placement and order status, real-time product availability, technical support and more.

The company's website which features over 800 manufacturers and access to more than 5 million orderable part numbers. For added service, buyers can order and communicate with Mouser representatives via phone, email, fax and live chat. Orders are shipped same-day in most cases from Mouser's global distribution center, which features state-of-the-art automation for expedited processing.

For buyers who need to know real-time inventory, Mouser offers real-time product availability through its website and customer service representatives, providing the most accurate product information to make confident buying decisions. The company identifies end-of-life, obsolete and NRND products to avoid the use of older components in new designs, providing a speed-to-market advantage.

Mouser also suggests alternatives, plus the risk level for potential replacements. In addition, the company offers access to essential technical data and application resources such as product datasheets, application design notes, white papers, videos and other solution-based content.

mouser.com

Mouser's distribution center features the largest installation of vertical lift modules in North America

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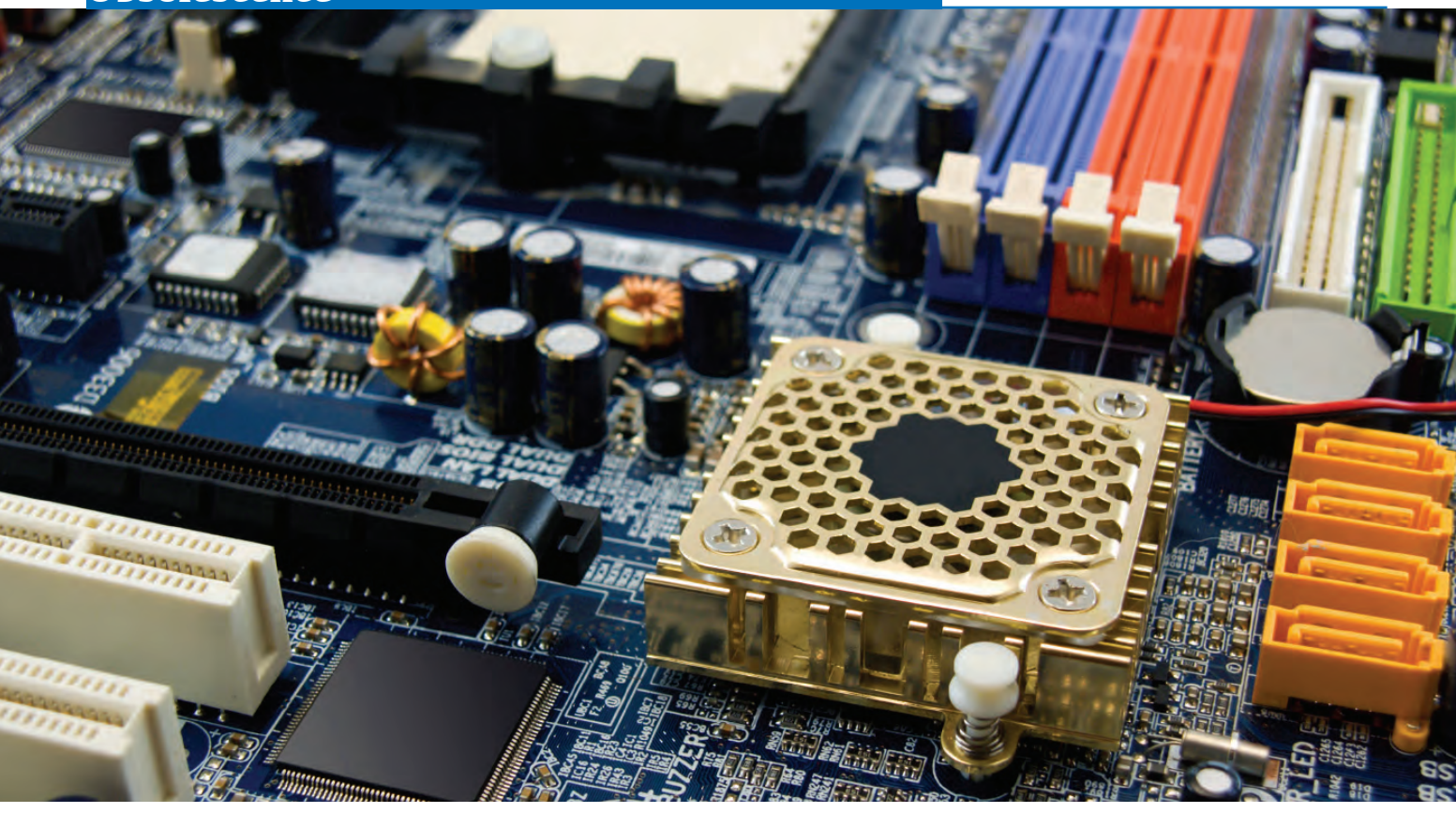


How chemical obsolescence affects electrical equipment

RINA principal regulatory consultant, Dr Paul Goodman, explains how the ability to make and maintain products is majorly affected by changes in chemical legislation

The manufacture, maintenance and repair of electrical products relies on a wide variety of chemicals, such as those used in adhesives, paints, sealants, coatings and fluxes. Some long service products such as medical devices and aircraft components rely on specific mixtures of substances being available while they are being manufactured (up to 30 years) and for subsequent repairs, maintenance and refurbishment.

Chemical obsolescence has become a problem for equipment manufacturers and users as EU substance legislation has increasingly resulted in many chemicals (and products that contain them) being withdrawn from the market.

The EU's main chemicals legislation is the REACH Regulation 1907/2006. This regulates substances in three main ways, all of which can result in obsolescence.

Substances of Very High Concern (SVHCs) are added to the Candidate List every six months. Currently there are 205 SVHCs. Suppliers of articles (metal parts, mouldings etc) must inform customers if an SVHC is present at >0.1 per cent by weight. This often results in substitution activities by article manufacturers, so substance demand declines and it becomes financially unviable for chemical manufacturers to supply it in the EU. Recently some adhesives and silicone sealants containing SVHCs were withdrawn.

Adding substances to the authorisation list (Annex XIV) of REACH. Currently there are 54 chemicals in this annex, including trichloroethylene. None can be used in the EU unless supply chain-specific authorisation is granted. This has significantly reduced or eliminated their use in the EU. This is especially problematic for applications where changing a formulation requires extensive testing before re-approval. It can also be a problem for repairs and maintenance if an authorisation is not granted. Applying for authorisation is expensive and usually prohibitive for niche sectors and maintenance where volumes are small.

REACH also restricts over 70 substances (Annex XVII), some of which are used to manufacture and repair electrical equipment. Some restrictions are not total

> **Chemical obsolescence has become a problem for equipment manufacturers and users as EU substance legislation has increasingly resulted in many chemicals being withdrawn from the market**

bans but limit how chemicals are used. Some substances cannot be supplied to consumers and others have specific limitations on how they can be used. For example, N-methyl pyrrolidone (NMP) is used in adhesives and paints. Employers have to ensure worker exposure is kept below very low limits. This requires considerable effort and cost which becomes a deterrent. It might be difficult for users of products containing the listed substances to find an alternative so they may be prepared to use the materials under the prescribed conditions. However, obsolescence is a risk as manufacturers often withdraw affected products from the EU market.

Obsolescence of one chemical can affect hundreds of adhesives, paints and other products. This then affects thousands of manufacturers who need to look for and validate alternatives. This can be costly and so equipment manufacturers need to ensure the alternative does not itself become obsolete. For example, only a few solvents can replace NMP. One is dimethyl formamide (DMF) but the EU is now considering restricting DMF.

Substitution is not straightforward. Any alternative needs to provide the required technical performance at a reasonable cost, while also having a relatively low toxicity to avoid future restriction. This can be an issue with newly developed chemicals as their toxicity is less well understood and may turn out to be more harmful than the substance they replace. Although equipment manufacturers located outside the EU are not directly affected by EU legislation, they can be indirectly, if a chemical or formulation manufacturer loses a significant portion of their market due to an EU restriction. Furthermore, an increasing number of countries are adopting their own chemicals legislation which is making use of hazardous chemicals more difficult.

RINA keeps a close watch on the uses of substances in products and potential proposed new regulation.

rina.org

Dr Paul Goodman, principal regulatory consultant at **RINA**

Obsolescence of one chemical can affect hundreds of adhesives, paints and other products

Exclusively sponsored by Digi-Key ELECTRONICS

Everyone is essential to recovery

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

In this article John Denslinger argues the best solution to a sustained recovery is a marketplace where all economic activity is seen as essential

Recovery • By John Denslinger

Essential versus non-essential must be one of the more disparaging labels applied to America's workforce and commerce in this new era of lockdowns. While I fully understand the good intentions safeguarding the health and well-being of the general population, the contrast should cease there. My take is that everyone is essential. Every opportunity to make a living is essential. Every business, big or small, is essential. Can anyone really argue each is indispensable to recovery, to growth, and to the absolute vitality of our industry?

The early decision in 2020 to lockdown a thriving economy created a staggering unemployment problem where more than 40 million people filed unemployment claims through May. Many were furloughed or temporarily laid off expecting a return to work soon. Others, not as fortunate, were immediately terminated and it's likely more will discover their jobs eliminated in the months ahead. The sheer magnitude can be summed in a recent *WSJ* article headline: Decade of job gains erased in April. No sector of the economy escaped this devastating ambush. If not for a massive work-from-home phenomenon, the unemployed casualty level would have been much worse.

Fortunately, the electronics industry was deemed essential early in the pandemic lockdown. Therefore, our employees, businesses and supply chains probably fared better than many of our customers and probably their customers as well. That is the point: customers are critical to our recovery. They are the ones creating demand. It takes a healthy customer base across all sectors of the economy to spur the type of growth needed for everyone to prosper, but according to Deutsche Bank only 30 to 40 per cent of lost output and employment in the US will be recovered by year end 2020. That means, near term, the road to recovery will be challenging.

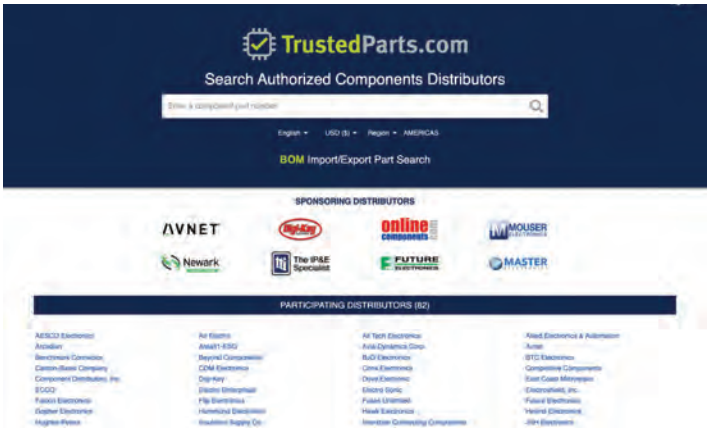
So why make such a big deal about essential vs non-essential? In a word, demand. It is demand from essential activity that drives this wonderfully intricate, American economic engine. To the contrary, non-essential activity does not. In a recent Thomas Insights report, 64 per cent of the manufacturers surveyed said the shutdown of non-essential business negatively impacted overall demand. It further detailed the sectors most affecting the decline as transportation, automotive, construction and agriculture. Make no mistake, that is a lot of ground to make up in some rather large segments.

Naturally, we hold out hope for a quick V-shaped recovery, but a gradual (hockey-stick) rebound is more logical. Steepening the slope of the curve hinges on how quickly we apply 'essential' to all aspects of America's economic activity. Bottom line, we need every person working and every business operating to stimulate maximum demand for goods and services.

Granted, government stimulus programs helped immensely steadying the ship and providing a lifeline to employers and employees alike. Still, the best solution to a sustained recovery is free enterprise, resumption of domestic and international commerce, and marketplace equilibrium where all economic activity is once again seen as essential.

24 million parts you can trust

Electronics Sourcing Europe asked ECIA to introduce its newly rebranded inventory aggregation site, TrustedParts.com



TrustedParts.com only displays information from authorized sources

Our readers will be familiar with ECIAauthorized.com. Can you share the strategy behind the rebrand to TrustedParts.com?

The site's primary value is listing genuine components from authorized sources. TrustedParts.com communicates this key differentiator more clearly compared with the old brand which promoted that participation was restricted to ECIA member distributors. Requiring ECIA membership to participate on the site limited our success in driving greater adoption, especially outside the Americas.

ECIA membership criteria is very strict, making it difficult to vet companies in other regions. To create a better user experience, and support manufacturer members, the ECIA Distributor Council decided that allowing non-members to display authorized inventory would increase participation, thus expanding the distributor network from which users can buy components.

Are there any functional changes?

While the site will have a new name, new logo and fresh look, functionality remains the same. Users who bookmarked the site will automatically be redirected to TrustedParts.com. Accounts and tools will continue to work seamlessly. No action is required by users. We continually invest in new features and tools to enable users to locate components they need more efficiently.

Will TrustedParts.com be 100 per cent authorised distribution focused?

TrustedParts.com only displays price and availability data for genuine components from authorized distributors. We continue our extensive efforts to verify this is so. Although ECIA membership is no longer required (neither is the need to be 100 per cent authorized for all the products a distributor sells) a manufacturer's proof of authorization will be needed before any products can be displayed. Since TrustedParts.com is funded by, and dedicated to, supporting the authorized distribution channel, only inventory from franchised distributors will be shown.

How do distributors include their inventories?

Distributors can participate in one of three ways. First, they can apply for ECIA membership and, if approved, they become eligible to display all their authorized products. Secondly, they can forgo ECIA membership, but are restricted to showing the ECIA member manufacturers' products for which they are authorized. Lastly, a manufacturer member that uses our Distributor Stock Search (DSS) widget or API to enable searches for their products on their site, can request that an authorized distributor, who is not a TrustedParts.com participant, be added to the system for inclusion in search results on that manufacturer's site.

All participating distributors are required to upload their inventory files via FTP. Files are in a specific CSV format and most distributors update daily. Files are automatically loaded into the system when received, any time of day. Some larger distributors also send information in real-time via an API, in which case their files are used as a back-up in case of performance issues with the API. Each search result lets the user know the age of the information.

What message would you like to say to electronics purchasing professionals who have not yet tried TrustedParts.com?

Sourcing components through the authorized channel is the greatest safeguard against unknowingly introducing counterfeit products into your supply chain and ensures that the products you buy are fully warrantied by the manufacturer. TrustedParts.com is the only inventory aggregation site that only displays price and availability information from authorized sources, so you can search for components you need with confidence. With over 24 million unique part numbers in the system, from more than 4,000 manufacturers, you can fulfill your requirements through the authorized distributors on TrustedParts.com. We also offer local language and true local currency in various regions to enhance your search experience.

Unlike other sites and services, use of TrustedParts.com, the BOM management tools and stock/price alerts is always free. Access to the API allows integration into your quote tool or ERP system to make your sourcing process more efficient. So, the next time you need electronic components I would encourage you to start your search on TrustedParts.com. It is fast, easy, accurate and always authorized.

trustedparts.com

Unprecedented success in medical device manufacturing

Digi-Key's vice president of global supplier management, David Stein, illustrates how the company is supporting suppliers and customers through Covid-19 supply chain challenges

Demand for medical equipment put tremendous pressure on supply chains and certain components. Suppliers who were running out of product requested we quarantine inventory for customers building critical medical technology. We provided this for medical and other key customers in dire straits, ensuring they had the components they needed when they needed them most.

This abnormal situation puts pressure on popular devices and they become scarce. Digi-Key's product management team worked closely with customers to identify options to keep their manufacturing processes moving. For example, one customer building ventilators specified a certain temperature sensor on its BoM. That part had already sold out but we had three other variations that our product management team felt could be substituted. Samples were sent overnight and the customer's design team used the parts to continue producing ventilators.

Digi-Key also partnered with Z2Data to offer priority support and component data for companies creating devices such as ventilators and testing solutions. By offering these services at no cost, Digi-Key helped medical device manufacturers source components quickly and ramp up production. Through the partnership, Z2Data offers no-cost access to its database of over one billion electronic components through its Part Risk Manager and Supply Chain Watch tools. These tools help organisations meet market demand by: managing their BOM; making informed part selection decisions; finding cross-references and alternatives; and tracking inventory availability of parts alongside real-time pricing and lead times.

Digi-Key also reallocated its engineering resources to help create a new, open-source ventilator called the Coventor, in partnership with physicians at the University of Minnesota and several other companies. At about the size of a cereal box, the inexpensive and rapidly scalable device will help meet the demand for ventilators in the treatment of Covid-19 patients.

After physicians at the University of Minnesota reached out to Digi-Key the company quickly assigned a team to help with the life-saving project. Digi-Key's team of engineers focused on identifying parts and addressing supply chain issues, including identifying vendors who could provide the needed components with a much quicker turnaround time than normal.

From design through production, Digi-Key helped not only select the parts but design the Coventor and provide the parts needed for production. Supporting the majority of parts on the BoM helped jumpstart the project and keep it moving. Digi-Key's sales team also played an important role, providing one point of contact.

Digi-Key played an important role during the design and manufacture of the Coventor open-source ventilator

Thanks to strong collaboration and speed, the Coventor was the first ventilator approved for use under the US Food and Drug Administration's Emergency Use Authorisation for the COVID-19 outbreak. It took just one month from concept to FDA approval: unheard of in the medical device world. The team also made sure this would be an open source device so manufacturers around the globe can quickly copy it: an unprecedented move in the medical device market.

www.digikey.com

Sourcing tomorrow's power solutions

Rutronik's Wolfgang Sayer and Rohm Semiconductor's Aly Mashaly explain how silicon carbide power semiconductors can reduce costs in renewable energy applications

As we move towards decarbonisation, an increasing number of applications, from solar generators to electric vehicles, rely on power conversion. Enter silicon carbide (SiC) power semiconductors. Benefits include greater efficiency, enhanced reliability and reduced cost. They also minimise the number of external components and allow smaller and more affordable passive components.

Benefits of SiC

When compared to ordinary silicon, SiC has a bandgap about three times greater and a dielectric breakdown field strength roughly ten times greater. This means MOSFETs can be designed with a much thinner drift layer, which translates into lower on-resistance despite a high breakdown voltage.

In comparison with ordinary silicon, SiC also permits lower MOSFET gate charge, enabling faster switching with lower energy loss. Other benefits including greater stability over temperature and a higher maximum operating temperature, which reduces thermal management costs without compromising reliability.

Great fit for green applications

Looking at typical applications, solar inverters, industrial DC/DC converters and battery chargers, often feature an auxiliary power unit. This runs off main input to supply subsystems such as sensor modules, displays, control units or drivers. The main power switch must be able to withstand worst-case voltages applied across the drain and source terminals, which can exceed 1,300V. Different options are available to ensure the power transistor can withstand worst-case voltages, some of which present clear disadvantages.

One solution is to source a power transistor with a high breakdown voltage. The problem is that ordinary silicon high-voltage transistors come with relatively high on-resistance which generally translates into unnecessary conduction loss and heat dissipation. They also tend to have high gate charge, which causes high driving losses and leakage current, especially at high temperatures.

An alternative is to connect two 800V silicon MOSFETs in series, but this requires a more complex gate-driving circuit and a voltage balancing circuit. Each MOSFET also requires a heatsink, which increases the footprint.

By contrast, a single SiC MOSFET combines high breakdown voltage 1,700V with on-resistance ranging from one half to one eighth that of a comparable 1,500V silicon MOSFET. In addition, gate charge and input capacitance are reduced significantly, which translates into higher switching frequency and smaller external components. SiC's ability to withstand higher operating temperature makes heatsinks unnecessary.

Increase efficiency

All these benefits show how switching to SiC can bring greater efficiency and significant savings. To demonstrate this, Rohm has built a 100W auxiliary power supply evaluation board that has shown how efficiency rises to 88 to 92 per cent at the nominal power output for input voltages of 300 to 900VDC.

www.rutronik.com

> **Looking at typical applications, solar inverters, industrial DC/DC converters and battery chargers, often feature an auxiliary power unit**

Coronavirus adds to the sourcing challenges of medical industry buyers

Shutdowns and cutbacks in component production during the pandemic and unprecedented demand for medical equipment caused sourcing headaches for many medical OEM and EMS purchasers

Electronics purchasing in the medical equipment industry has always been challenging because of strict quality and regulatory requirements and long product lifecycles, but the recent coronavirus pandemic has made sourcing in the industry even more demanding.

Demand for medical equipment including ventilators, patient monitoring and anesthesiology equipment and other medical products increased during the pandemic. At the same time, many component manufacturers shutdowns factories or slowed production of semiconductors and other components needed by medical OEMs and their electronics manufacturing services providers.

As a result, there have been shortages and long lead times for a range of components, including processors, multilayer ceramic capacitors, field programmable gate arrays, and memory ICs. Medical equipment manufacturers have had to leverage their relationships with suppliers and purchase more products from distributors because of tight supply.

"We saw an unprecedented demand for devices important in the diagnosis and treatment of COVID-19 patients, such as ventilators, anesthesia equipment, patient monitors, CT and mobile X-ray systems," said Carrie Uhl, chief procurement officer for GE Healthcare. As a result, the medical equipment supply chain has been stretched with the incredibly high demand for parts," said Uhl.

"GE has been able to manage through supply issues by working directly with suppliers to understand the specific challenges they're facing," she said. "Our teams worked across the organisation to understand and mitigate risks for each part and component in our supply chain to make sure we could continue to supply our customers with the equipment they needed," said Uhl.

Demand for medical equipment has also been a challenge for EMS providers building systems and subsystems for medical OEMs. One such provider is Jabil Circuit, based in St. Petersburg, Fla. Many of Jabil's healthcare customers are involved in either the prevention, identification, or treatment of COVID-19.

"As healthcare OEMs began responding to the increased worldwide demand on these products, Jabil experienced significant upsides and new orders," said Keith Lipinski, supply chain director, Jabil Healthcare. "As the world moved into partial lockdown, Jabil had to navigate through the complex network of constraints, identify materials needed to address COVID-19, and work to prioritise manufacturing centers as 'essential services' for healthcare production," said Lipinski.

Jabil has developed close relationships with key suppliers over the years and was able to get access to materials and capacity to meet production demands, he said. "Working together with our supply base, Jabil has been able to respond with speed, agility, and commitment to deliver product as quickly as possible," he said.

Unique challenges

Another EMS provider impacted by the surge in demand for medical equipment was Kimball electronics, headquartered in Jasper, Ind. Tom Ferris, director of medical EMS market for Kimball, said during the coronavirus pandemic, Kimball experienced increased demand from medical OEM

"We saw an unprecedented demand for devices important in the diagnosis and treatment of COVID-19 patients, such as ventilators, anesthesia equipment, patient monitors, CT and mobile X-ray systems

customers "specifically for those related to respiratory care and patient monitoring products."

The pandemic presented sourcing challenges that usually don't occur during stable market conditions, said Ferris. During the pandemic, there have been short-term spikes in demand for some components used in medical equipment to treat COVID-19 patients.

The surges in demand have created "many challenges from a supply chain perspective to the overall market," said Ferris. "We leveraged our supply relationships with our component partners, our tools and processes, as well as our internal teams, to actively work solutions that fulfill our customers' needs," he said.

COVID-19 will likely be a temporary challenge for medical industry buyers as more component manufacturers are reopening and increasing production. Many analysts believe business will be back to normal next year. However, buyers at medical OEMs and EMS providers will continue to have unique supply chain challenges compared to buyers in other industries because of government regulations concerning medical products, long lifespans of medical equipment, and overall stricter quality requirements for parts used in medical equipment.

Ferris said medical OEM customers require the "highest quality and reliability" from EMS providers. He notes EMS providers serving medical OEMs must adhere to ISO 13485 requirements as well as U.S. Food and Drug Administration regulations. "Many are now expecting compliance to MedAccred and looking for operations adhering to Good Manufacturing Practices (GMP)," said Ferris.

MedAccred is an industry managed supplier quality accreditation program focusing on critical manufacturing processes whose goal is to improve the quality and consistency of medical devices. The MedAccred program is managed by the Performance Review Institute (PRI).

ISO 13485 is a global quality management system standard that spells out the practices companies must follow in the design and manufacture of medical products. Good manufacturing practices (GMP) are the practices required in order to conform to the guidelines recommended by agencies that control the authorisation and licensing of the manufacture and sale of medical devices as well as other products such as pharmaceuticals and other products.

Rigorous qualification

Ferris said depending on the end product there may be more rigorous qualification for components used in medical products. Often components that are used in computer or industrial equipment are not allowed to be used in medical products because they do not meet the stringent durability, liability, and quality requirements of the medical equipment industry.

In many instances medical OEMs specify automotive grade components because of the rigidity of the testing requirements, said Ferris.

Medical industry buyers say strict quality requirements are all important because a defective part could result in a wrong diagnosis or the failure of a medical product which could result in death of the patient.

"What differentiates healthcare from other industries is our end customer is also the patient," said Lipinski. "Our product could have a major impact on someone's quality of life, so the burden to deliver a quality product on time could be arguably at the highest level given today's environment," he said.

Besides choosing suppliers that can build highly reliable parts on robust manufacturing processes, purchasers must also select suppliers that commit to producing components for 10 or more years. That can be challenging because the electronics industry is largely driven by the consumer market, which is different than the medical market, said Uhl.

For instance, in the consumer market the rate of development of emerging technologies is very rapid and the lifespan of a consumer product is relatively short. "However, our medical products require a long application life," she said. Not all component manufacturers want to produce parts for years and volumes are small, especially if there is a limited number of customers for those components.

She notes that while the medical segment is growing, it represents a small percentage of the overall electronics market. As a result, "obsolescence management is key." said Uhl.

Because medical product lifecycles are long, most medical OEMs require EMS manufacturers to support components for up to five years post production of the product," said Ferris. "That same requirement flows through the supply chain to the component manufacturers," he said.

Keith Lipinski, supply chain director, **Jabil Healthcare**

"As healthcare OEMs began responding to the increased worldwide demand on these products, Jabil experienced significant upsides and new orders

A significant gap

Lipinski said lifecycles of medical equipment are typically 10 to 12 years but have been often known to stretch well beyond that period.

"When compared to electronic component life cycles which can range from 6 months to 7 years, there is a significant gap," he said. As a result, medical OEMs often need to commit to large last time buys to make sure they have enough parts to support manufacturing of medical products.

"Of course, this has always been a risky move without a crystal ball that sees market demands, regulatory changes, and the potential for component quality issues," said Lipinski. "It's often a balancing act on what is the right quantity, how long will it last, what will be next?"

Because of long product lifecycles, obsolescence is a critical issue that medical industry buyers must manage. Kimball's buyers must closely monitor and manage end-of-life and last time buy options, said Ferris. In some cases, Jabil will help customers redesign a product "to mitigate the impact of obsolescence." He added that in new product introduction, Kimball will work with medical OEMs to "expand the approve vendor list (AVL)" to make sure there are no single sources for components.

"We offer supply chain services and engineering services where alternate components can be recommended to be specified," said Ferris. He added Kimball tries to provide its medical OEM customers with solutions that consider cost, quality, risk, longevity of supply, and lead time of components for our customers.

"By optimising the bill of materials with multiple sources for each component, we reduce the needs for future re-validation in cases of obsolescence," said Ferris.

Identifying risky parts

Uhl said part of GE's strategy to manage product obsolescence is to identify at-risk components and technology throughout the entire product lifecycle beginning with new product development. She said supply chain and sourcing teams are involved with new product development. "Our product teams bring together leaders from across GE Healthcare to ensure each aspect of the product lifecycle is considered, including strategic suppliers, manufacturability and serviceability across the life of the product—all of which impact total landed cost for the business," said Uhl.

The company has a process to effectively manage bills of material to avoid line down situations, unplanned re-designs and costly last-time buys, said Uhl. "The component lifecycle process is ingrained in our product DNA." Component lifecycle is reviewed during design, at new product introduction, bi-annual reviews throughout the life of the product, as well as with daily alerts on end of life notifications, according to Uhl.

Lipinski said there are several major trends in healthcare which will significantly change supply chain management and product development. Those trends include rapidly accelerating technology adoption, growth in aging population, value-based care, the consumerisation of healthcare, and patient choice.

An aging population represents the highest percentage of healthcare spending and as a result, there is a move towards Value Based Care, which standardises healthcare processes through best practices and including the mining of data and evidence to determine which processes work and which don't. Teams of doctors and healthcare professionals communicate with one another through the help of care coordinators to treat patients with more efficiency and less wasted time and effort.

As part of that effort the industry is moving quickly to integrate Internet of Medical Things applications and in-home therapy devices.

The Internet of Medical Things (IoMT) is the collection of medical devices and applications that connect to healthcare IT systems through online computer networks. IoMT devices, include such devices as heart monitors and pacemakers among other devices, collect and send patient health statistics over various networks to healthcare providers for monitoring, analysis, and remote configuration.

One example of IoMT is telemedicine in which patients are monitored at home and don't have to go to the hospital or doctor's office if they have a medical question or a change in their condition.

Other examples of IoMT include tracking patient medication orders and the ability to locate patients when they are in the hospital through the use of mHealth devices. IoMT applications are enabled by RFID and near field communication tags that can share information with IT systems.

Medical industry buyers will be challenged to find capable suppliers that produce highly reliable components for telemedicine devices at a competitive cost.

Tom Ferris, director of medical EMS market for **Kimball Electronics**

> **We leveraged our supply relationships with our component partners, our tools and processes, as well as our internal teams, to actively work solutions that fulfill our customers' needs**

UAV puts shielded connector to the test

PEI-Genesis explains how its Amphe-Lite D38999 connector lies at the heart of a novel NHS delivery drone

Amphe-Lite D38999 connector is a lightweight design

Cables and connectors manufacturer PEI-Genesis has partnered with Windracers and Southampton University on the Windracers ULTRA (unmanned low-cost transport aircraft) project. As part of its sponsorship, PEI-Genesis has provided a crucial connector free of charge during development, ahead of the test flights in coming weeks. The civilian drone project will see NHS supplies carried to the Isle of Wight while ferry crossings are limited.

Windracers ULTRA is the UK's largest civilian unmanned aircraft, capable of carrying 100kg up to 621 miles. To deliver vital NHS supplies, the aircraft will make the crossing from Hampshire to the Isle of Wight in ten minutes, twice as fast as the normal ferry crossing.

To allow the drone to accurately and reliably transmit its GPS location and instrument data, including wing flaps position and the cargo bay drop-mechanism, the UAV has been fitted with a connector supplied by PEI-Genesis.

The Amphe-Lite D38999 connector is a lightweight commercial connector derived from aviation-grade technology that will provide the Windracers UAV with protection against electromagnetic and radio frequency interference. More commonly known as electrical noise, EMI and RFI can cause the loss of data transmission in cables and connectors. The Amphe-Lite connector is shielded using electroless nickel plating, which is built into a 360-degree grounding system, providing up to 50dB of noise suppression over a frequency range of 100Mhz to 10GHz. This is combined with a rigid composite shell to add strength.

PEI-Genesis' area sales manager, Daniel Cross, said: "We partnered with Windracers and the research team at Southampton University because we felt our experience in the aerospace and military sectors can add value to this UAV project. Not only will the Amphe-Lite connector help in delivering vital supplies to the NHS during this difficult time, it's extreme performance will be vital in the future when the ULTRA UAV is deployed to deliver aid to humanitarian projects around the world."

Development team leader, Nickolay Jelev, added: "The Amphe-Lite connectors provide a fantastic balance between quality, availability, robustness, weight and cost. They are perfectly suited for our application, as the goal going forward is to manufacture the Windracers ULTRA platform in large numbers and operate it in harsh environments."

www.peigenesis.com

Windracers ULTRA is the UK's largest civilian unmanned aircraft

Windracers ULTRA, fixed-wing, unmanned aerial vehicle in flight

Some independent distributors see sales increases because of pandemic

Component demand from "essential" industries such as medical OEMs have boosted sales for independent distributors

James Carbone

Independent distributors say they have seen healthy demand and robust sales increases despite the slowdown in production at some global OEMs and electronics manufacturing services (EMS) providers because of the coronavirus pandemic.

Much of the sales growth for independent distributors has been driven by "essential" industries such as medical equipment, mobile computers and networking equipment.

"Electronic component demand has remained steady throughout the year and business has been brisk," said Todd Burke, president, Americas for independent distributor Smith, based in Houston. However, demand has not been steady across the board.

"Decreases in consumer demand have caused the smartphone and oil and gas markets to experience uncertainty," said Burke. However, Smith is seeing increased demand for components, including passives, microprocessors, and field programmable gate arrays from medical OEMs and their EMS providers.

"We also expect solid-state drive (SSD) demand to continue trending upward throughout the second half of the year as demand increases for cloud services that utilise hyperscale data center infrastructure," he said.

Availability is ample for most components, although there are shortages and longer lead times for some parts due to country lockdowns and shutdowns of some component production caused by the pandemic, he said.

"There are some spot shortages for commodities that are heavily used in server and enterprise applications," said Burke. "So far, we haven't seen any evidence of panic purchasing, but certain types of memory modules, SSDs, and CPUs are having supply difficulties."

Some distributors say there are spot shortages of MLCCs, chip resistors, microprocessors and some memory ICs.

With supply tight, there have been some price increases for multilayer ceramic capacitors, resistor arrays, memory and FPGAs, said Burke.

Uncertainty caused by the pandemic has increased demand for supply chain programs. Burke said there was significantly higher demand for programs such as vendor managed inventory and inventory hubbing in 2019. "The global pandemic has caused even more of a need for these services as customers look for ways to safeguard their supply chains while simultaneously not letting on-hand inventory get out of balance," said Burke.

Burke added that coronavirus will likely continue to impact the industry through the year, he expects Smith's business will remain healthy. "As manufacturers around the globe continue to come back online and consumer demand recovers, we expect electronic component sales to remain steady," he said. Smith will continue to provide customers supply chain support which will allow the distributor "to navigate market conditions," he said.

"Electronic component demand has remained steady throughout the year and business has been brisk"

Todd Burke, president, Americas for independent distributor **Smith**

Growth without shortages

Another independent distributor that has had sales growth during the pandemic is Fusion Worldwide, based in Boston. "The first quarter of 2020 was one of our better quarters," said Luke Lesaffre, director of sales for the Americas for Fusion. "We achieved good numbers without the benefit of a widescale shortage of anything. Our April 2020 was a top five month for us."

Lesaffre said the mobile computing market has been a strong segment for Fusion during the pandemic. "We've always been a company that was strong in computing," he said. "That is an area that has been positively impacted by the coronavirus. Business has been strong primarily for notebooks" because more people are working at home and have upgraded their computers, he said. "We've seen a tremendous amount of business," he said.

Enterprise computing, including servers, and cloud services providers has also been a strong segment, said Lesaffre. Lesaffre said while component demand was strong through May, it appeared to be peaking in early June. "We are starting to

see some signs of softening and growth tapering a bit. We think there may be a gradual flattening throughout the year compared to hockey-stick growth," he said.

A brutal market

Lesaffre said some customer segments were adversely impacted by the pandemic. "Automotive has been brutal," he said. Many auto plants closed down during the pandemic. "We don't do a ton of business with automotive. Most of our business in automotive is aftermarket business," he said.

Carleton Dufoe, CEO and founder of independent distributor NewPower Worldwide, based in Nashua, NH, said component demand varies depending on the customer. "Some of our customers' business fell off the cliff, while other customers' business exploded and they could not get parts fast enough," he said.

He said NewPower has a lot of medical equipment customers that build ventilators and other medical products and demand from those customers has been strong.

Companies that were hit the hardest are those that make nonessential goods such as desktop computers, he said. However, business has been strong from mobile computer manufacturers because more people are working at home and students are being taught virtually over the Internet rather than in the classroom which has boosted demand for portable computers.

"Anyone making a notebook has seen demand go through the roof. And conversely anyone who is making desktops has seen this business drop off," said Dufoe.

He added NewPower's sales to the industrial business sector, telecom and networking continues to be strong and "our services business has been through the roof. We have a lot of testing, kitting, repair business. We've also have taken on some kitting projects," he said.

Dealing with excess

Dufoe said that customers whose business fell off after the COVID-19 outbreak have excess inventories and many aren't sure what to do with it. Some have sought the advice of NewPower. "What they wanted from us is inside information" about what can be done with their inventory, said Dufoe. Such customers want to know "what's the best-case scenario. What's the worst," he said. "They are looking for a solution."

Dufoe said NewPower helps customers make decisions about inventory with its homegrown SCOUT system which can determine how much inventory can be sold at different price points. The system can tell customers if there are any customers for the parts they hold or a limited number of customers.

Dufoe said he is optimistic about NewPower's business for the rest of the year. "In 2019, we finished with $318 million in sales. Our goal for this year is to eclipse $400 million. We are on track. We finished May at about $200 million," he said.

Increased demand from medical manufacturers tightens supply

Many electronics purchasers turned to independent distributors over the last three months after some component factories shut down or slowed production of needed parts during the height of the coronavirus pandemic.

The factory shutdowns and cutbacks in production resulted in tightness of supply and shortages of a number of components, ranging from field programmable gate arrays and microprocessors to MLCCs and resistors.

In some cases, supply tightened because of the increased demand from medical equipment manufacturers who are building ventilators, patient monitoring equipment and other products needed to treat people who contracted COVID-19.

"One of the issues that we are seeing is many semiconductor manufacturers have prioritised their allocation to the manufacturing of needed medical equipment and rightly so," said Paul Romano, COO of independent distributor Fusion Worldwide, headquartered in Boston. The allocations are going to "medical builds globally" and that is keeping "some semiconductors from OEMs and EMS providers in other industries, he said.
In addition, there have been component factory shutdowns in Malaysia, the Philippines and Thailand. That has impacted supply of some components such as connectors, and other passives. The shutdowns have created "significant backlog demand of components, said Romano. Many of those factories are slowly coming back on line, but many are only at half capacity, according to Romano.

"That creates a major change in the whole supply chain because component manufacturers are only able to produce half or less of components that they had planned to produce," he said. He said there are shortages of MLCCs, tantalum capacitors, some connectors and voltage regulators.

"A lot of notebook memory is short so different verticals and segments are affected," said Romano.

An added wrinkle for the supply chain is factories in different parts of the world are resuming production at different times. "On the demand side, there are a lot of factories in China that shut down in January and February, but now are up and running, which is creating a lot of demand" for components, said Romano. However, in other parts of the world factories that build electronics equipment were not yet open as of early June.

On the supply side, factories in China are producing chips and other components, but other regions are not, he said.

MEMs sensor features self-test function

Murata's new single package MEMs 6DoF (six degrees of freedom) inertial sensor suits safety-critical automotive applications. The SCHA600 sensor offers centimetre-level accuracy regarding vehicle dynamics and position.

The AEC-Q100 qualified device includes self-diagnostic features and complies to ASIL-D level, the highest automotive safety integrity level. Orthogonality of the measurement axis is calibrated at Murata, saving systems integrators time and money on implementing this process step themselves.

The SCHA600 series features failsafe functions and error bits for diagnostics including internal reference signal monitoring, checksum techniques for verifying communication, and signal saturation/over range detection. Its component-level dynamic cross-axis calibration enables better than 0.3deg cross axis error over temperature.
www.murata.com

Expanding cable-to-board connector family

ERNI's expanded iBridge Ultra connector range includes vertical and right-angle male connectors with dip solder termination. Dip soldering is a reliable connection technology, especially in the automotive industry. Cable-to-board connectors are also available as pre-assembled cable connectors for efficient and time-saving processing.

The 2.0mm pitch connectors are designed for harsh environments, providing compact, reliable connections subject to high vibrations. Such requirements typically occur in automotive applications, for example inverters for on-board charging or engine control systems. Robustness is ensured by terminal position assurance (TPA), an additional securing of the crimp contacts in the socket housing. This locking system makes the connection resistant to strong vibrations.

The enhancements open new applications in industry, telecommunications and medical.
www.erni.com

Product spectrum for electromobility

Mersen offers five product lines for electric vehicles: DC fuses for protection of the battery and auxiliary circuits; DC hybrid pyro-based fuses for advanced battery overcurrent protection; laminated busbars with monitoring functions; cooling solutions for batteries and inverters; and film/electrolytic capacitors.

Regarding busbars, Infinicell features an ultra-thin, single layer interleaved laminated busbar with smart current and temperature monitoring. It is designed for easy installation, low-cost, good shock/vibration resistance and improved current load capacity. Thanks to a proprietary laser welding technique, it can achieve an assembly process over four times faster than traditional wire bonding.

From the capacitor division, the new FischerLink 2.0 capacitor bank comprises Mersen FTCAP foil capacitors laser welded to a laminated high-temperature MHi-T series busbar. The design is claimed to allow up to 20 per cent more capacity than comparable capacitor banks with the same low installation height.

ep.mersen.com

Capturing industrial processes

Farnell has announced a new 12-megapixel, ultra-definition Raspberry Pi camera for machine vision applications and low light conditions. The camera can capture stills and video and is compatible with Raspberry Pi boards from the Pi 1 Model B onwards. The camera suits professional applications including machine vision, robotics, industrial and agriculture. It is also ideal for home and professional security systems operating in low ambient light. The camera can be programmed to collect data to support facial and number plate recognition and parking space monitoring.

Engineers will find the camera and interchangeable lens combinations are designed to be simple to integrate into monitoring and quality control systems.

www.farnell.com

Buyers' Guide

Manufacturer	Distributor	Telephone	Website	Location	Franchised Distributor	No. of Lines for Principle	Stock Value for Principle	Minimum Order Value	% Lead Free for Principle Range	No. of Technical Support Staff	Total No. of Staff	Buffer Stock Facility
ENCLOSURES												
Metcase Enclosures	OKW Enclosures	+44 (0) 1489 583858	www.metcase.com	EU	N/A	288	£40K	0 €	100%	5	22	Y
INTERCONNECTION												
Amphenol	PEI Genesis	+44 8716060	www.peigenesis.com	EU	Y	N/A	£1.3m	10 €	N/A	N/A	85	Y
Hirose Electric Europe B.V		0031-(0)2 655 7460	www.hirose.com/eu	EU	Y	50,000	N/A	0 €	N/A	N/A	4,190	Y
ITT Cannon	PEI Genesis	+44 8716060	www.peigenesis.com	EU	Y	N/A	£1.3m	10 €	N/A	N/A	85	Y
ODU		+49 8631 6156-0	www.odu.de	EU, USA, ASIA			N/A	0 €	N/A	50	1,650	
OBSOLESCENCE / HARD TO FIND												
	Chip 1 Exchange	949-589-5400	www.chip1.com		Y	850,000	N/A	$0	85%	20	150	
PASSIVES												
Kemet	RS Components	08457 201201	www.rs-components.com	EU	Y	N/A	£161m	0 €	N/A	50+	2,500	Y
Würth Elektronik	Würth Elektronik	+49 (0) 7942 945 0	www.we-online.com	EU	Y	N/A	N/A	0 €	100%	250	4,000	Y
POWER & BATTERIES												
Sanyo Electronic Industries Co., Ltd.	Sanyo Electronic Industries Co., Ltd.	+81 36699 8080	www.eta.co.jp	JP	N	1,000	€3000k	20 €	90%	10	100	Y
SWITCHES & KEYBOARDS												
CHERRY	RS Components	08457 201201	www.rs-components.com	EU	Y	600	N/A	0 €	N/A	50+	3,500+	Y
Rubbertech 2000	Rubbertech 2000	+44 1594 826019	www.rubbertech2000.co.uk	EU	N/A	N/A	£40k	100 €	N/A	N/A	25	Y

PCB Buyers' Guide

Manufacturer	Telephone	Website	Service Provided (i.e Broker, Manufacture &/or Repair)	Location	Approvals	Volume - Small, Medium, Large	Double-sided	Multi-layer 4-10/10-20-30	Metal PCBs	Flexi / Flexi-Rigid	Obsolescence Solutions	Modifications	Prototyping
Elvia PCB Group	+33 233 763 200	www.gepcb.com	M/B	France, Tunisia, China	AS9100, PRI-NADCAP, ISO-TS16949, ESA, UL, ISO9001, ISO14001	S/M/L	Y	1-30	Y	F, F/R	Y	Y	Y
Graphic Plc	00441363 774874	www.graphic.plc.uk	M	UK/China	AS9100, NADCAP, ISO 9001, AISO14001, OHSAS 18001, Mil 31032, Mil 55110, Mil 50884	S/M/L	N	4-10	Y	Y	N	Y	Y

Contract Manufacturers Buyers' Guide

Manufacturer	Telephone	Website	Turnover	Location	Approvals	Employees	Number of Surface Mount Lines	BGA Capacity	Lead Free Manufacturer	Prototyping	Design Capability	Full Turnkey	Cables and Harnessing
AWS Electronics Group	+44 (0)1782 753200	www.awselectronicsgroup.com	£40m	UK & Slovakia	AS9100, ISO9001, 13485, 14001, TS16949, IPC-A-610 Class 3, NADCAP	430	11	Y	Y	Y	Y	Y	Y

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