



IDEA
FEDERATION

NEWSLETTER

The Billion dollar question Single or double digit decline?

Future Horizons, who has been providing market research and industry analysis since 1989, is predicting a much deeper decline than other analysts. Malcom Penn, founder and CEO of Future Horizons explains the thinking behind their belief that there will be a double-digit decline in the Global Semiconductor market in 2023.

MALCOM PENN, CEO of Future Horizons



EXECUTIVE OVERVIEW

In 2021, we shocked the industry with our prediction of a double-digit 'supercycle' in 2022, followed by a crash in 2023. Despite industry skepticism, bordering on outright disbelief, our predictions were on point, based on decades of semiconductor experience and data analysis (See Figure 1).

Now, as the industry finally accepts the impending crash, many still cling to the belief that their sector or application will be unaffected. As such, today's debate has shifted from whether the market will go negative to whether it will be a single- vs double-digit decline.

We stand firmly by our belief that the market is heading for a 22 percent double-digit decline, despite, once again, being at odds with the industry consensus.

**“MANY STILL CLING TO THE BELIEF
THAT THEIR SECTOR OR APPLICATION
WILL BE UNAFFECTED”**

THE BILLION DOLLAR QUESTION

At our recent January 2023 industry update webinar, we reconfirmed our May 2022 forecast for a 22 percent double-digit decline in 2023, despite the fact most (if not all?) other industry pundits were suggesting only a minor single digit decline, once again placing us well and truly out on a limb (See Figure 2).

This now marks the third time in a row where we have been at odds with industry consensus. We do not do this to be contrarian, we simply cannot see how the low single-digit forecasts can be achieved. For this to happen, the market would need to have already bottomed out and there is not a single piece of evidence, either anecdotal or factual, to substantiate that view. Almost two months into 2023, with the first quarter virtually in the bag, not a single individual, firm, or organization is forecasting the worst of the downturn is over.

APRIL 2023



1. The Billion dollar question: single or double digit decline?
3. The Lessons of 2022
6. Passive Components - Raw Material Index
8. News form Italy
9. Proud to be Counterfeit free
11. January 2023 - Electronic components sales sentiment
13. IDEA Q4 2022: Year Ends with strong sales but declining orders
18. Connector Industry final results 2022

ASSOCIATIONS



AREI - SOUTH AFRICA

Association of Representatives for Electronics Industry

ASPEC - RUSSIA

Association of Suppliers of Electronic Components

ASSODEL - ITALY

Associazione Nazionale Fornitori Elettronica

CEDA - CHINA

China Electronics Distributor Alliance

ECAANZ - AUSTRALIA

Electronic Components Association Australia and New Zealand

ECIA - UNITED STATES

Electronic Components Industry Association

ECSN - UNITED KINGDOM

Electronic Components Supply Network

ELCINA - INDIA

Electronic Industries Association of India

FBDI - GERMANY

Fachverband der Bauelemente Distribution

FEDELEC - TUNISIA

Tunisian Federation of Electric and Electronic Industries

SE - SWEDEN

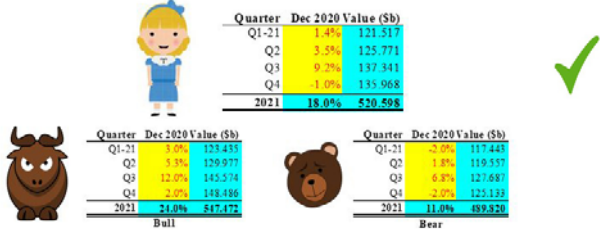
Svensk Elektronik Trade Associations

SPDEI - FRANCE

Syndicat Professionnel de la Distribution en Electronique Industrielle

WE CALLED THE UP & DOWN TURN RIGHT

Reprinted From IIFS2021 (Jan 19, 2021)



There's No Tight Capacity Relief Before 2022 At The Earliest

**Enjoy The Super-Cycle ... It'll Crash In 2023!
Biggest Forecast Risk? ... A Major Economic Hit**

Future Horizons 1989-2022

**“CUSTOMERS FIND THEMSELVES
HAVING ALREADY BOUGHT A LOT OF
TODAY’S NEEDS YESTERDAY”**

The fact of the matter is the 2021-22 boom and 2023 bust are just a re-run of the infamous chip industry cyclicity ... the seventeenth such bust since the first cyclical downturn in 1961. It's just that the gap from the last downturn had been longer than normal, lulling the industry into a false sense of security that, for a whole sense of intellectually compelling reasons, the chip cycles had been tamed. In retrospect, all that had happened was a **weak economy** since the mid-2020's financial meltdown had enabled the industry to dodge the cyclicity bullet. The market boom and shortages would have hit home four years earlier, in 2018, had the chip market not collapsed due to the US-China trade war and tariffs.

BACK TO BASICS

Why are we so convinced the 2023 correction will be strong when everyone else thinks otherwise? Because the key industry fundamentals, namely unit demand, manufacturing capacity and IC ASPs, are all in bad shape.

First, driven by product shortages and extended delivery lead times, **unit demand rose well above the long-term average** and, as a result, inventory levels throughout the industry are at historically high levels. That's akin to shipping ahead, and with lead times now falling, customers find themselves having already bought at lot of today's needs yesterday.

Second, as demand fell away in the second half of 2022, **ASPs started to plummet** as suppliers dropped prices in order to stimulate new demand.

Third, it takes a long time to add new production but eventually it catches up and lead times then start to fall triggering **a liquidation of the now excess inventory**. In the meanwhile, the new capacity buildout continues to gain momentum stoking capacity just when it is no longer needed. It takes a minimum of four quarters to rein in CapEx once this happens.

So, we now have a perfect storm scenario with unit demand falling, an ASP rout in full swing and excess capacity yet to peak. It will take at least two to three quarters for this imbalance to stabilize which means the whole of 2023 is going to face strong structural headwinds.

Add to that a global economic outlook clouded in fog and uncertainty, there is no way one can reasonably expect a single digit chip market downturn.

**“TIME NOW TO ROLL UP ONE’S
SLEEVES AND DO WHATEVER IS
NECESSARY TO SURVIVE”**

TIME FOR CLEAR HEADS & ACTION

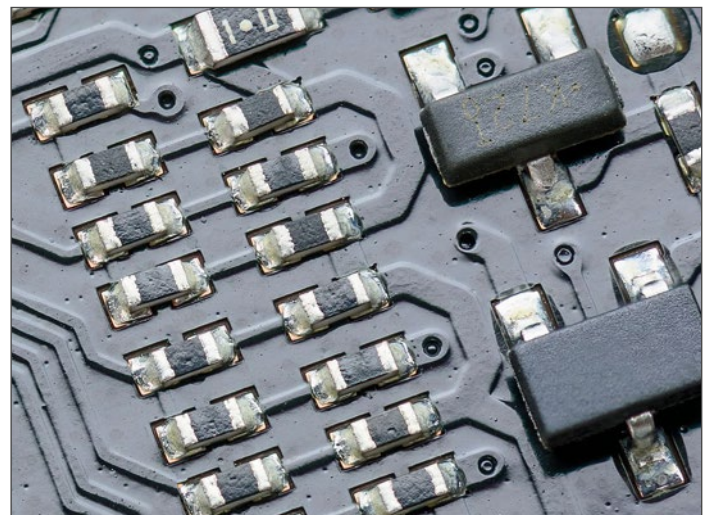
That said, there is no need for panic or despair; the industry has been here several times before and, whilst these situations are always challenging and harsh, they are quite normal and natural and, ironically, a time when real market share gains are made. It's just a classic semiconductor market downturn, treading a well-trodden path.

Time now to roll up one's sleeves and do whatever is necessary to survive in the near-term but without prejudicing the longer-term; whatever actions are taken now need to be with the inevitable 2024 upturn clearly and firmly in mind.

This is no time to panic, more a time for decisive action, cool heads and first mover advantage. It is time to get ready for the 17th industry upturn just around the corner.

Malcolm Penn is the Founder, Chairman and CEO of Future Horizons. Established in April 1989, Future Horizons provides semiconductor and electronics industry consulting, market research reports, training and business support services for use in opportunity analysis, business planning and new market development. Emphasis is placed on the world-wide microelectronics industry, and the European market environment.

Article Reprinted with permission from Future Horizons.



The Lessons of 2022

GEORG STEINBERGER, FBDi & IDEA



The mother of all allocations, yet two years of record growth in distribution with 50% more components shipped – and a market that is utterly lost in determining which way the beast will turn its head.

Can we learn from the past? Here are a few lessons I have taken from the last 24 months, in humble and blissful ignorance.

First the positive news: The European market for components distribution experienced the second consecutive year of significant growth: According to DMass' latest press release, the components distribution market grew in 2022 by over 32 percent to nearly 20 Billion Euro, and DMass claims to represent only ~85% of the DTAM (Distribution Total Available Market). Remember, in 2021 it also grew by over 32%. In these two years, despite allocation and growing tension across the supply chain, delivered volume to customers increased by an impressive 50%.

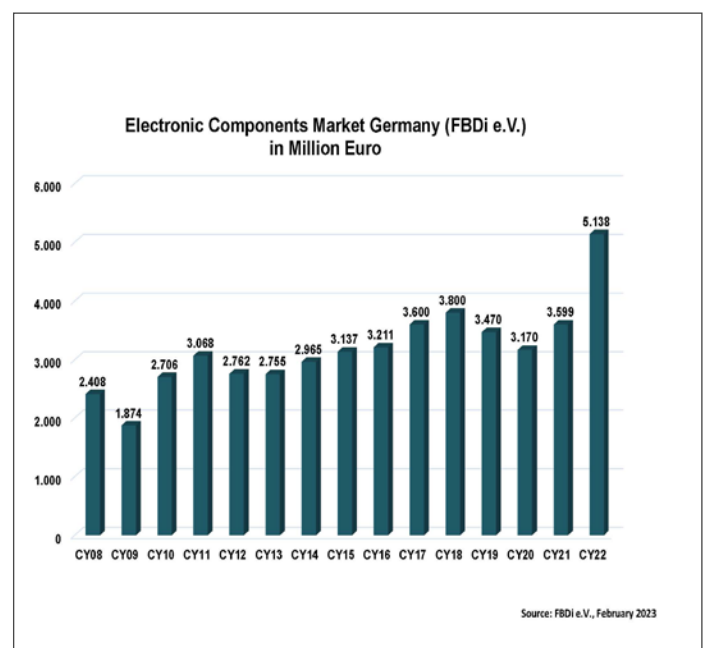
Semiconductors according to DMass grew by nearly 40% to **13.5 Billion Euro**, while IP&E (Interconnect, Passive and Electromechanical) components grew by ~20% to 6 Billion Euro – in 2021 it was nearly the opposite. Compared to the total available market as reported by the World Semiconductor Trade Statistics (WSTS), Europe **grew by 12.7% in US Dollars** and **~25% in Euro**, which means that Distribution extended its reach significantly during the crisis. As distribution serves 95% of known customers (only a limited number of "biggies" are served by manufacturers directly), the channel has done a great job to help its clients through a severe situation, even if not all wishes could have been fulfilled in time and volume.

“THE VALUE OF DISTRIBUTION HAS NEVER BEEN GREATER THAN TODAY”

A similar situation unfolds in Germany. According to the FBDi e.V., the German Components Distribution Association, distribution sales in 2022 grew by 42% year over year, to a record 5.14 Billion Euro. As the FBDi represents ~80% of the DTAM, you can safely guess the total market size. The DTAM percentage in Germany grew as well, however, it is still lower than in other countries or than Europe in total, as manufacturers serve more customers directly. So, distribution gained a higher share of the market, shipped huge volumes, helped ease the mother of all allocations wherever possible, admittedly passed on higher prices from manufacturers and inflation related cost. Despite some frustration in the market

and doubts if distribution could have done even more, I think the value of distribution has never been greater than today. In my over 30 years in the market, I have seen massive improvements in processes and services at way much lower cost than in the past. And with the **growing complexity of global supply and production chains**, with the growing complexity of products and subsequent support, most customers would be lost without distributors managing hundreds of supplier relations for them, covering a huge part of the working capital issues and driving transaction cost out. Delivering nearly 50% more components in two years needs a lot of planning, understanding, manpower and solution orientation. Please remember this in your next emergency call.

So much for the status quo in Distribution. What about 2023? Is there any lesson we may be able to learn from 2022 and the previous crisis years? One thing is for sure: we are just a player in a much bigger game that entails geopolitics as well as industry politics and it won't be our wisdom or decisions that will define





the future. However, it is important to know the driving factors, structural, short-term and long-term, that will define distribution's future business in Europe.

I dare here to cast my observations from the recent past into 5 lessons that I deem significant to consider (there may be more).

“AI AND METAVERSE WILL CONSUME MASSIVE AMOUNTS OF PROCESSING POWER AND MEMORY”

LESSON 1: AFTER THE CYCLE IS BEFORE THE CYCLE

In over 60 years of its existence, **the semiconductor industry specifically has experienced cycles of downturn and allocations like probably no other industry.**

It would need a book to describe the psychology and mechanics of these cycles, but obviously not a single of the land sliding changes in the high-tech industry has managed to erase the suite of ups and downs that haunt us every couple of years.

The nature of each specific cycle era may differ from the last, but one thing is for sure: the beginning downturn or correction will be followed by the next surge in demand and a race for components.

Don't nail me on the exact time, but **the main drivers of the next cycle may be AI and Metaverse**, who will consume massive amounts of processing power and memory in data centers as well as new smart phone generations, notebooks and tablets to run new algorithms, graphics and features.

You keep hearing of a rebound of the computer industry later this year, while the “other” industries like industrial and automotive are barely out of the last allocation.

Sure, huge amounts of semiconductor manufacturing will hit the

market in the next 2 years (although as many investments have been delayed as well) – so will a huge demand driven by overdue investments in a million infrastructure projects around the world.

LESSON 2: AVAILABILITY BEATS COST

The big shortage”, as Luc Van den Hove, the CEO of IMEC, called it last year at a semiconductor summit, resulted from a perfect storm of post-pandemic upsurge combined with pre-pandemic inventory level at its lowest, and during the pandemic the computer and communication industries could build enough equipment to cater for a new, home-based, working environment. Throughout the whole period, transport and logistics problems disrupted nearly every supply chain.

Then came the Russian attack on Ukraine and made everything worse.

Availability across the components industry became a severe issue, and prices went up subsequently. Apart from the severity of this perfect storm, the underlying mechanism were the same as in the past. So why do people in the industry react surprised or are frustrated? Cost of ownership is well known for a very long time, and the prices of single components are but a small fraction of it. Availability or the lack of it is much more expensive. If you think the next down cycle will bring lower prices and the game table will turn, you may be right – short-term. Long-term, considering the growing cost of production and raw materials and the further disruption of the market by a deglobalization, the hunt for the last cent may be over. **Deglobalization will cost a fortune**, so will the “strategic independence” the US or Europe are striving for. Availability of key components will depend on much more than commercial or technical factors and this insight should become part of strategic planning rather than mere purchasing tactics. Happy retirement, Mr. Lopes.

LESSON 3: DISTRIBUTION RELEVANT MORE THAN EVER

Arguably, a growing DTAM and a DTAM% of 30% also mean that 70% of the market are still direct business of manufacturers with key customers. But clearly, even these key customers buy from distribution in many instances.

In total, **probably 99% of customers buy from distribution** and more than 80% probably by distribution only. The reasons are simple: manufacturers develop and produce new products, most of them do not want to own warehouses and run sales organizations for a myriad of companies with small to medium-sized purchasing volumes. It does not make sense commercially, as distribution has a much better reach into all nooks of the regional markets.

The aggregative power of distributors creates a much better offering across many different products, technologies and portfolios. Also, terms and conditions, extra services are mostly not to be had by manufacturers. When distributors were created in the 50s and 60s, they helped build a mass market that otherwise would not exist. Today, they also help build markets and have extended the value prop to world-class logistics and supply chain

services that no OEM, EMS or manufacturer can provide itself. The different channels of distribution – volume distributors, online distributors, specialist distributors and independent distributors – work in happy coexistence or co-opetition, as worldwide partners, trouble-shooters, scouts and many more roles that seldomly are appreciated.

For all these reasons, **the DTAM is a key part that is likely to grow more in the coming years.** Players may change, offerings may extend, digital solutions may take over more transactions, distribution will stay.

“DTAM IS A KEY PART THAT IS LIKELY TO GROW MORE IN THE COMING YEARS”

LESSON 4: EUROPE HAS A LONG WAY TO LEADING-EDGE

The majority of Europe’s semiconductor and components consumption happens in two areas: **Automotive** and **Industrial**. By far the biggest consumers of components at a worldwide basis are Communications, Computing and Consumer, three markets that have experienced a huge convergence over the last 25 years and drive a demand for more and more semiconductor content.

The complexity of processors, complex logic devices and high-end memories is mind boggling and needs leading-edge structures like the 3 nanometer geometries that only the last remaining top players are able to finance. 30 Billion US Dollars for a 1nm-Fab are realistic.

Europe’s demand on the other hand is not only limited (less than 10% of the world market) but not leading edge at all.

The two-year allocation hit Europe in areas like, power, microcontrollers and analog, technologies with much less manufacturing complexity, where a fab might cost anything between 2 and 5 Billion US Dollars. Strategic independence, as declared by the **European Union’s EU Chips act**, has to address these European needs first and support companies that are able to produce what Europe needs (although no semi manufacturer whether foundry or IDM, will produce for Europe only as this is not commercially reasonable).

The Chips Act has many good components and first fab projects are supported in the meantime, but the ecosystem around a thriving semiconductor industry should have priority. And here, things have been left to a global market far too long. Recreating a Silicon-Valley-type enthusiasm would take generations and must go way beyond the current needs of its industries. Today, 32-Bit-ARM-MCUs for Automotive might be a scarce product, but it does not define the future.

LESSON 5: IP IS KING

As a distribution veteran, looking back at the development of the semiconductor technology, it is amazing to see, which products

and companies have thrived over the years and which now define what is leading edge. What all have in common is they are intellectual property in hardware. Understanding production processes and semiconductor physics is super important to drive a processor or a complex logic device to the next performance or cost level. But it all starts with the design, with ideas put in Silicon. Ideas that can change the way we communicate, work, live, commute.

To become a **leading region for designing** the world’s future in these fields of use, you have to have people who love engineering new ideas. Europe has a gap of engineering people that becomes bigger by the year.

We experienced a lack of application specialists in distribution many years ago. How big must the gap be by now for all the other industries? Designing the winning technologies of the future – AI Chips are only one example – will not be an easy feat. But where do we find the corresponding startups? Right, in the US.

Europe has some key players like Infineon, ST and NXP, and they all are set on supporting European industries with their IP. We do not have the Intels, Qualcomms, AMDs, Nvidias, who will power the next generation Internet, Metaverse or whatever else may come.

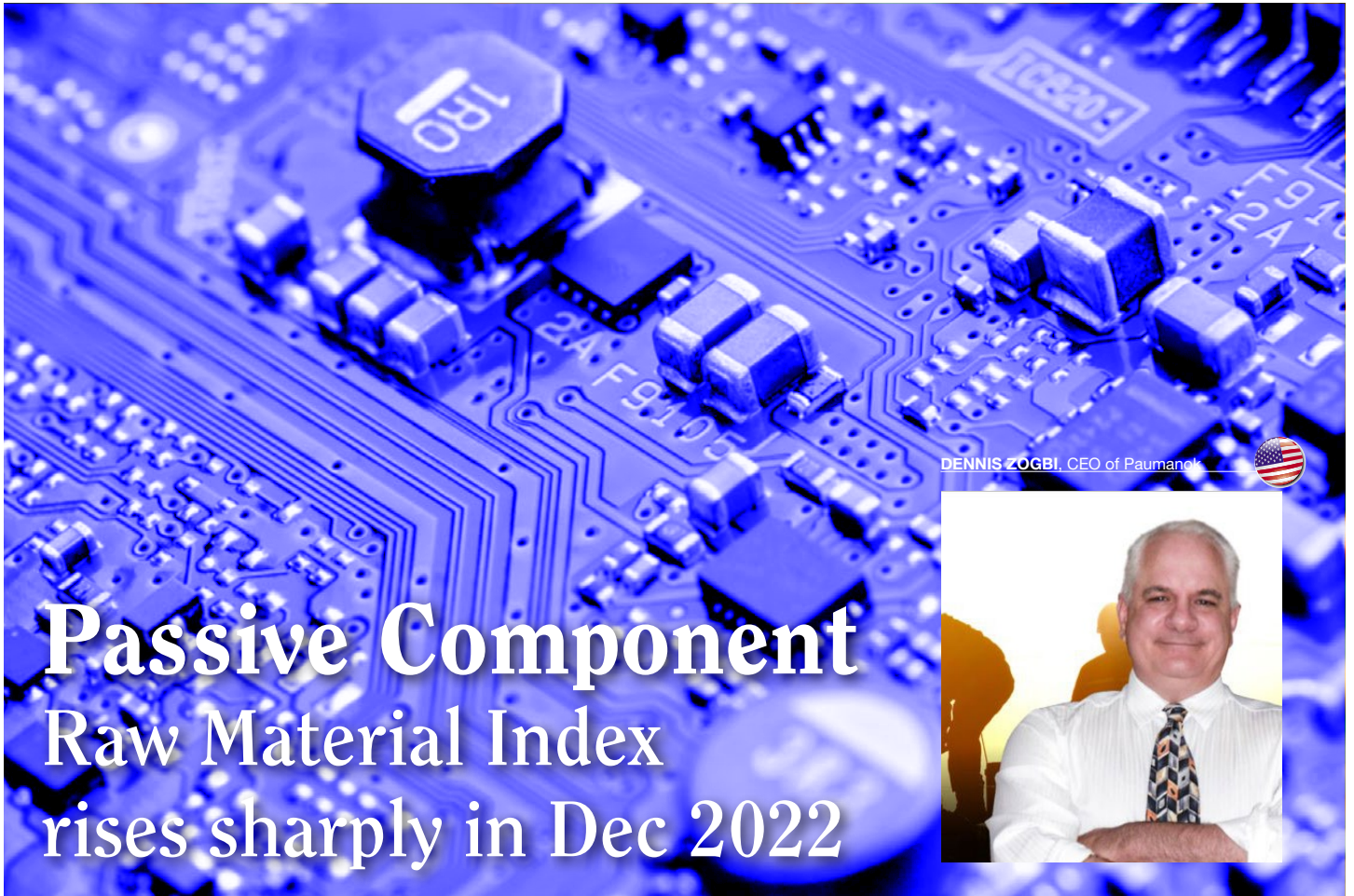
What’s worse, big players like Apple and Samsung design their own cores and will thrive, not for a regional, but an enterprise independence. So are other digital giants. They are on their way, and none of them thinks buying anymore – a very challenging sign for the current core component suppliers. None of these “captive” suppliers or digital giants will market their technology to the mass market.

“EUROPE CANNOT STOP AT DECLARING LITTLE SUCCESSES WITH ITS CHIPS ACT”

A huge piece of the future market will turn towards **protected IP**. Even the – in a global context – tiny car industry in Europe will start to develop their own architectures (probably not developed in Europe for lack of engineers).

The period until 2030 is critical in so many ways: **climate change, energy, education, democracy, sustainability** (the real one, not the current) and also **technical innovation**.

On the latter, Europe cannot stop at declaring little successes with its Chips Act here and there or refer to ASML and IMEC as success stories (which they are, but we need hundreds of them). It must create an environment, where ideas can thrive and become IPOs, where risk capital is turning into venture capital, where young generations embrace technology and sustainability together. Europe’s advantage is that **we still are an open society where things are possible**.



Passive Component Raw Material Index rises sharply in Dec 2022

DENNIS ZOGBI, CEO of Paumanok



Passive electronic components are raw material intensive. Raw materials consumed in the production of mass-produced, surface mount passive components usually come in the form of engineered powders and pastes.

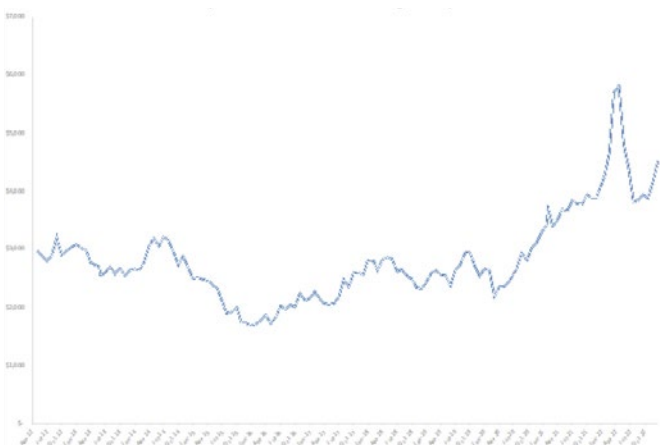
These powders and pastes make up the largest variable cost associated with the production of capacitors and resistors. This is why **Paumanok Publications, Inc.** has tracked the price and availability of specific ceramics and metals consumed as dielectrics and resistive elements for the past 35 years.

Figure 1 shows the long-term trend in the costs to produce passive components. The trend in December is up sharply led by increases in multiple metals products through November and December 2022; with price increases in nickel and copper showing a substantial upturn in pricing over the past 60 days. The reader will note that the entire index has demonstrated substantial volatility since the conflict in Eastern Europe created price volatility in mission critical "choke point metals," impacting primarily the variable costs to produce capacitors and inductors, which are ubiquitous parts consumed in all electronic circuits.

MATERIALS IMPACT PASSIVE ELECTRONIC COMPONENT COSTS OF PRODUCTION

Raw materials are the most expensive variable cost associated with the production of passive components. Any fluctuation in price or availability for these key feedstocks can have a negative impact on profit margins. As Figure 1 illustrates, raw material prices for passive components are on the rise again in the

PASSIVE COMPONENT RAW MATERIAL INDEX: PRICING TREND FROM 2012-2022 Figure 1



Source: Paumanok

December quarter of 2022 following a downward price trend in the later part of 2021 due to government quantitative easing. The index shown in *Figure 1* is comprised of the following materials:

NICKEL: Nickel is the primary electrode material consumed in **high capacitance multi-layered ceramic chip capacitors (MLCC)**. The fluctuations in nickel price are primarily the result of competition for the metal with the steel industry, where it is used as a hardener. Nickel supply is in turn important for the production of X5R, Y5V and X7R MLCCs, which are the capacitors of choice for the operation of smartphones, tablets and TV sets. The market has shown extreme volatility in 2021 and 2022 due to supply chain problems and speculation due to its substantial sourcing from Eastern Europe, which is immersed in conflict. The price of this metal, which is key for energy storage solutions, is expected to continue to rise in 2023. Expect the price of MLCCs to follow to absorb any small increases experienced in their nickel electrode paste supply chains.

“ALUMINIUM ELECTROLYTIC CAPACITORS ARE IMPORTANT COMPONENTS CONSUMED IN RENEWABLE ENERGY SYSTEMS,”

COPPER: Copper engineered powders are consumed in the production of **MLCCs** as well, as the termination material consumed in conjunction with the nickel type electrode. Therefore, copper and nickel are an important type of base metal duo. Copper is used in some MLCC electrode systems because, unlike its counterpart nickel, it is non-magnetic.

The price of this metal, which is key for energy storage solutions, is expected to continue to rise in 2023. The market has shown extreme volatility in 2021 and 2022 due to supply chain problems and speculation due to its substantial sourcing from Eastern Europe. Expect the price of MLCCs to follow to absorb any small increases experienced in their copper termination paste supply chains.

ALUMINIUM: Etched anode and cathode foils are consumed as the dielectric layers of aluminium electrolytic capacitors the world over. Aluminium comes from bauxite, which is a mined material and whose price is easily calculated. Aluminium is abundant in the Earth’s crust and its price has been historically stable.

Aluminium electrolytic capacitors are important components consumed in power supplies, television sets, computers and power electronics, including renewable energy systems. The market has shown extreme volatility in 2021 and 2022 due to supply chain problems and speculation due to its substantial sourcing of processing in Eastern Europe.

ZINC: Zinc is used as an additive in **ceramic chip capacitors**

and as the primary ingredient in the production of **metal oxide varistors**, which are consumed for circuit protection components in all known AC-line voltage equipment.

PALLADIUM: Palladium is a platinum group metal that is mined in South Africa and Russia, among other locations, and is consumed primarily for auto-catalysts but also for jewellery and as the primary electrode material in precious metal based MLCCs, which are in turn used in high reliability, high temperature and high voltage product markets globally. Historically, palladium has proven a difficult raw material partner for the MLCC supply chain because of its price volatility, which is compounded by it being a significant commodity metal subject to outside speculation on price.

RUTHENIUM: Ruthenium is a precious metal that is similar to that of palladium, but its primary purpose is to be consumed in all **thick film chip resistors** and **resistor networks** produced worldwide. The price of ruthenium has shown extreme volatility because of its association with palladium mining activities in South Africa. The reader should remember that reliance on ruthenium for all mass-produced thick film chips is a weakness that threatens the entire high-tech economy.

TANTALITE: The majority of tantalite metal used in the production of **tantalum capacitors** came from Central Africa in 2022. Other known tantalite resources are located in Australia, Brazil and Canada. Tantalite’s primary use is as capacitor grade tantalum metal powder for consumption in capacitor anodes. Tantalum capacitors are consumed in communications networking equipment, smartphones, automotive, medical and defence electronics. Tantalite and tantalum ores have demonstrated volatile pricing in the past but have remained relatively stable in price during the current market shortages. The reader should know that the lessons learned from the tantalum supply chain have been and will continue to be valuable as OEM brands insist on transparency on all material supply chains. Tantalum pricing has been stable in comparison to other dielectric materials since 2019.

“RAW MATERIALS IMPACT THE OVERALL COSTS TO PRODUCE PASSIVE ELECTRONIC COMPONENTS”

SILVER: Silver is consumed as a termination material for many electronic components but primarily for **MLCCs** that employ precious metal electrodes.

MLCCs with precious metal electrodes and silver terminations are in turn consumed in high voltage, high temperature and high reliability MLCCs for similar end-use market segments. Silver prices jumped up in December 2022 due to speculation in South American markets.

News from Italy

Since 2004, **Fortronic** is the international exhibition devoted to power electronics and industrial electronics. The event, which is promoted by the Italian association Assodel and organized by Consorzio Tecno, will be held in Bologna on the **19th and 20th of April** and will be co-located with E-Tech, the event on innovative electrical and electronic technologies for e-mobility.

The event has a rich calendar of workshops and conferences that have as the following topics:

- wide bandgap semiconductors
- IGBTs and MOSFETs new technologies
- Motor control
- converters
- powertrain
- thermal management
- energy storage solutions
- smart grid technologies.

The attendance is free. Information on fortronic.it

A second edition of Fortronic will be held in autumn, on the **16th and 17th of November**, in Bologna and will cover all the electronic components and solutions for e-charge, electric vehicles and batteries. The event will be co-located with E-Charge, the international exhibition dedicated to the industry and supply chain of EV charging technologies.

For further information: fortronic.it

OIL: Crude oil pricing is of interest because it sets the stage for so many other commodities but is also included because any wild swings in its supply would impact the plastics industry, which in turn would impact the **film dielectric capacitor segment**.

Film capacitors are consumed in both DC and AC circuits and are primarily associated with power related equipment, lighting and home appliances. Oil prices have remained stable in November and December 2022.

PRICING IMPACT

Raw materials impact the overall costs to produce passive electronic components and in fact dielectric materials, electrode materials and termination materials represent the largest variable "cost" associated with the production of electronic components. Any fluctuation in price or availability for these key feedstocks can have a negative impact on profit margins for electronic component producers, but seldom does a component manufacturer or their customers in OEM and EMS output have long term visibility on the various sub-levels of the supply chain.

The upward trend in materials price in the Passive Component Raw Material Index matches the forecasts from Wall Street in December 2022 warning of price increases in raw materials due to increasing pressure to speed up a transition away from fossil fuels by investments in infrastructure and electric mobility.

+17 addizionali di successo

+150 espositori nella prossima edizione

+25 seminari di livello ogni edizione

+2000 visitatori la scorsa edizione

UN ESPANNO di In collaborazione con

FORTRONIC
ELECTRONIC FORUM

marketing@tecnoinnovazione.it www.fortronic.it



NEW RELEASE!

Paumanok Industrial Market Research announces the publication of "Tantalum Capacitors: World Markets, Technologies and Opportunities: 2022-2027 ISBN #:1-893211-11-8 (2023)" This global market study updates prior versions of this same title on global tantalum capacitor market.

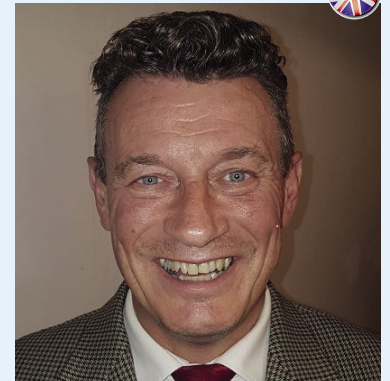
The study offers a detailed analysis of global consumption value, volume and ASPs for tantalum capacitors by type, configuration, size, region and end-use market segment with detailed for forecasts for each year from 2023 to 2027. Published February 2023 Price: \$3,750.00 USD169 Pages, 71 Tables and Graphs ISBN #:1-893211-11-8 (2023) ©2023 Paumanok Publications, Inc.

Proud to be Counterfeit free



Electronic components industry associations around the world have for many, many years highlighted the risks that counterfeit electronic components pose to national commerce and the global economy. Their collective advice is: “Any purchases made outside the authorised channel (the manufacturer or one of its authorised distributors) significantly increases the risk of sub-standard components finding their way into their end product, probably causing early field failures, expensive warranty claims and loss of brand reputation”. In this article Adam Fletcher, Chairman of the International Distribution of Electronics Association (IDEA) wonders why some Buyers insist on ignoring this advice and puts forward his thoughts on what the industry should do to mitigate the threat posed by counterfeit electronic components...

ADAM FLETCHER, ECSN



ELECTRONIC COMPONENTS SUPPLY IMBALANCE

For the past two years there has been an imbalance in the electronic components supply network as the global semiconductor and passive components markets went into and then out of COVID-19 lockdowns and dealt with the knock-on problems with logistics etc., that ensued. Electronic Components manufacturers and their authorised distributor partners worked tirelessly to meet the wide and varied demands of their customers and generally speaking the good faith relationships between all parties achieved satisfactory results. Inevitably though, despite difficult and protracted negotiations not all supply demands could be met fully and customers’ procurement teams were faced with difficult options... Delay production by months, place orders with multiple suppliers, harass existing suppliers to expedite earlier deliveries, or source on the Grey Market.

The evidence suggests that many turned to the latter option, who were able to “find” the products required in Asia, albeit at highly inflated prices. This suggests that OEM/CEM organisations in China were either selling off surplus inventory at a significant profit or that Professional Counterfeiters had stepped up to meet the additional demand.

ENDEMIC

Counterfeit products are today endemic in daily life, spanning products such as expensive branded running shoes, ‘labelled’ clothing, watches, alcohol, and cigarettes. Whilst these goods may have the outward appearance of the real branded product, it generally becomes quickly apparent that the quality of the product is not what it’s expected, and the product is quickly discarded.

Most high-end consumer brands have a price-tag that reflects their exclusivity and the high profit margin demanded by the manufacturer and high street retailer. The primary reasons for the proliferation of counterfeit consumer goods is simply that they can be made available at significantly **lower prices** than their 'real' counterparts. Counterfeit watches for example often sell for less than 5% of the retail price of the legitimate product.

INTELLECTUAL PROPERTY THEFT

China enterprise has been the manufacturing source of most counterfeit products over the past few hundred years. Not that there was originally a general intent to defraud as the Chinese populace then had little understanding of the concept of intellectual property (IP) ownership. Rather they just set out to manufacture copies of Japanese plates and bowls etc., to 'help' fulfil demand in an existing market. But things have progressed, and Chinese organisations, legislators and the populace are today apparently proud of their ability to produce counterfeit products.

“CUSTOMERS’ PROCUREMENT TEAMS WERE FACED WITH DIFFICULT OPTIONS,,

But that all counterfeiting is IP theft is a widely recognised fact, at least in Western economies. For many years Western governments have written IP protection into their economic legislation in order to protect the endeavours of the inventor or designer and protect the interests of individual and corporate investor(s).

COUNTERFEIT ELECTRONIC COMPONENTS

Unlike counterfeit consumer products that are sold primarily at low price, counterfeit electronic components are usually made available at prices significantly higher than market pricing, driven by product scarcity caused when the IP holders for whatever reason, are unable to meet the current market demand. The market has always been awash with counterfeit electronic components but the types of devices available tends to move in waves closely linked to supply and demand cycles in the global semiconductor market.

“THE LAST 20 YEARS HAVE SEEN A MASSIVE RISE IN PROFESSIONAL COUNTERFEITING,,

Until quite recently the Chinese counterfeit electronic components industry was led by “mom & pop” operations that typically targeted military and aerospace customers who require

highly specialist components in very small volumes. But the last 20 years or so have seen a massive rise in **‘Professional Commercial’ counterfeiting companies in China**, estimated to be responsible for the **production of >99% of counterfeit electronic components available to the market today**. Often initially established by Western based technologists who simply needed a high-volume sub-contract manufacturing source in a significantly lower labour cost area compared to the EU or USA, Chinese commercial counterfeiting companies are typically large and highly organised and give employment to 100s of highly trained personnel across many technology disciplines.

Accordingly, the products they produce are usually remarkably good, passing demanding OEM test procedures and operating to data sheet specifications for the predicted lifetime of the end equipment.

“COUNTERFEIT OPERATIONS CAN BE ELIMINATED IF “DEMAND PULL” IS REMOVED,,

To be clear, not all legitimate electronic components available on the market today are manufactured by the original IP holder. Many western technological manufacturers licence their IP to other organisations, sometimes for a fee but often in a cross-licensing agreement where each partner(s) agrees to share the IP they own. To put this in some perspective there are well over 500 IP licences involved in the design and operation of a typical smart phone.

CONCLUDING THOUGHTS


Poor quality counterfeit electronic components can cause the original components manufacturer irreparable reputational damage as the failure to stop counterfeiting is primarily their responsibility. Even “good” counterfeit products impinge on the Intellectual Property rights of the organisations that designed them and negatively impact their revenue streams, and therefore on their ability to re-invest. All counterfeit operations are driven by demand and can be eliminated if that “demand pull” is removed because they will have no market.

This will only be achieved once the response of all responsible purchasing organisations in the electronic components supply network when made an offer outside of their trusted supply network that sounds too good to be true is very simple: “Just Say No!”

FURTHER INFORMATION

If you wish to learn more about counterfeit avoidance may wish to review the information held by the **Anti-Counterfeiting Forum** www.anticounterfeitingforum.org.uk or attend the SMTA - “Counterfeit Electronics and Material Symposium” at <https://smta.org/events/EventDetails.aspx?id=1665471&group=>

January 2023 electronic components sales sentiment sustains momentum into January and slightly beats expectations

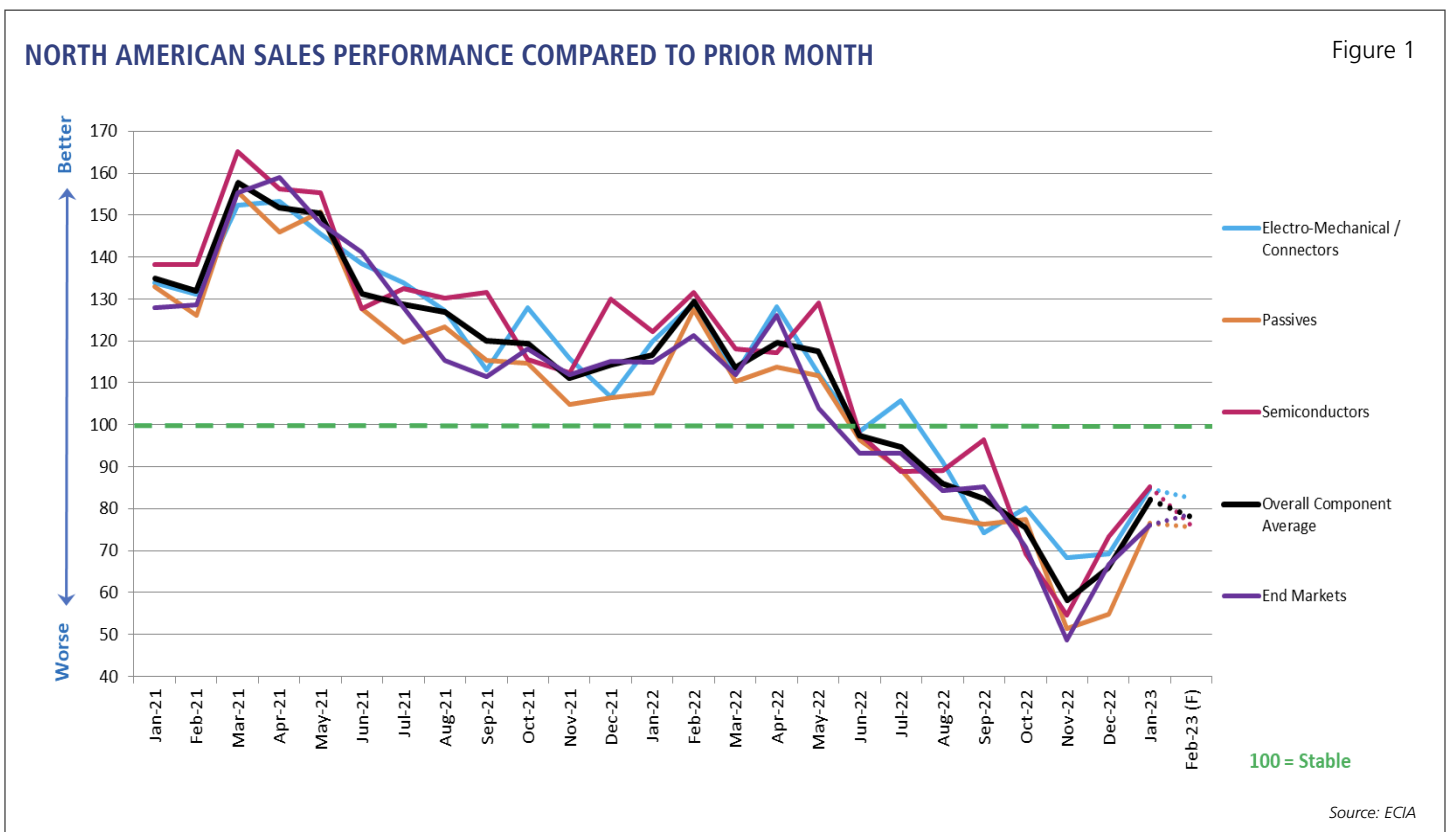
DALE FORD, ECIA 

ECIA's electronic component sales trend (ecst) january 2023 survey results

The new year rang in with encouraging results to begin 2023. Overall average sales sentiment jumped by 16.4 points from December's reading as it climbed to 82.2 points. This result slightly beat expectations from the December survey by 2.2 points. This improvement in sentiment is mostly sustained in the February outlook as the overall index only drops by 4.3 points to 77.9. Passive Component sales sentiment saw a dramatic jump of 21.8 points as it rebounded back to 76.5.

Semiconductor components delivered the best overall index score in January at 85.3, a 12.0 point improvement. In recent months, Electro-Mechanical Components have typically registered the best sentiment index rating and with a jump of 15.4 points up to 84.8 it came in just below Semiconductors in January.

All three major component categories see a projected dip in sales sentiment between January and February with Semiconductors losing the most ground to slip back to 75.8, just above Passive Components. However, Electro-Mechanical/Connectors and Passive Component indices decline by only 2.4 and 1.0 points respectively in February.



The Overall End-Market index saw a healthy improvement in its reported sales sentiment as it increased to 76.1 points in January. This is modestly below the component sentiment index in January. However, the end-market sentiment continues its improvement in the February outlook as it grows by 2.7 points to 78.8, slightly ahead of the product index for February.

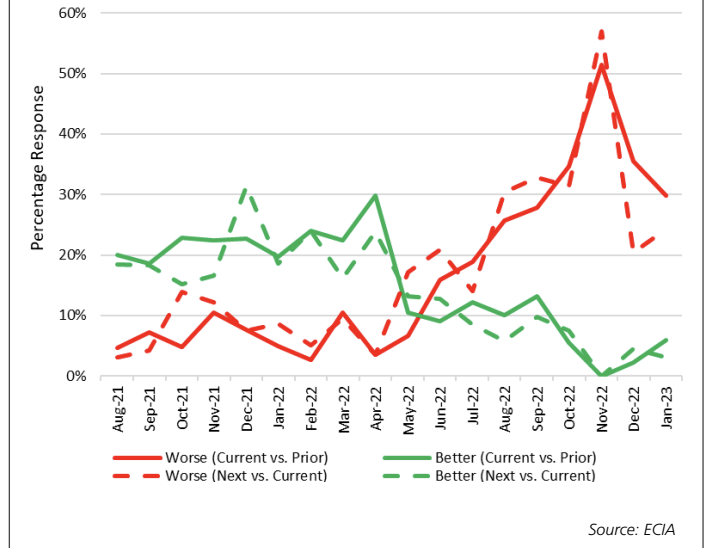
“THE OVERALL END-MARKET INDEX SAW A HEALTHY IMPROVEMENT,,

Five out of the eight individual end-market measures delivered a solid to strong improvement in sales sentiment in January. Looking forward to February, every index anticipates improvement except for Avionics/Military/Space.

However, the Avionics/Military/Space is the only index that points to growing month-to-month sales with a score above 114. February only dips slightly and points to continued growth in this segment. While the welcome turnaround in most index measures

“THE REPORTED PRODUCT LEAD TIME TRENDS CONTINUE TO IMPROVE,,

OVERALL MARKET - market status & outlook Figure 2

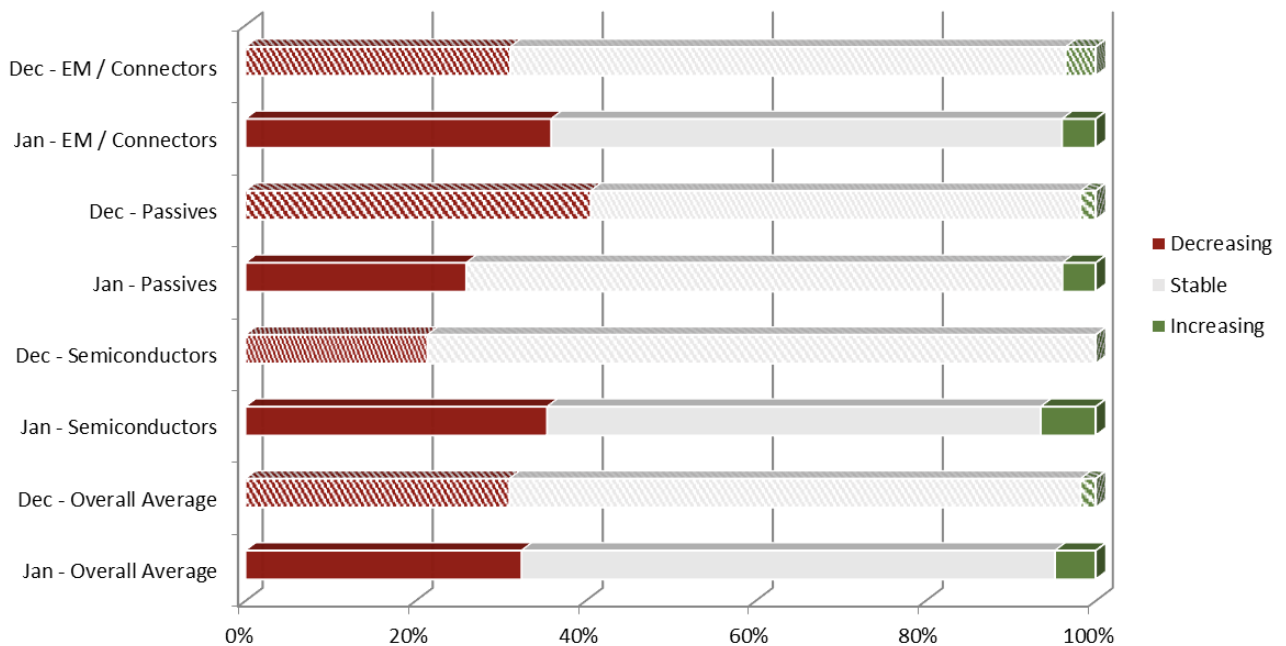


is positive news it should be remembered that any measure below 100 indicates declining month-to-month sales sentiment.

The recovery of sales sentiment scores to this range for components and markets supports a soft-landing scenario in the market that has been anticipated by most electronics component supply chain participants. It is hoped that the sales sentiment can defend the gains achieved in recent months.

PRODUCT LEAD TIME - DECEMBER TO JANUARY COMPARISON

Figure 3



Q4 2022: Year Ends with strong sales but declining orders

The global conditions that dominated the second quarter of 2022 have continued throughout the second half of the year. The global economy has continued to decline as the effects of the war in Ukraine impact energy costs causing global inflation and a lack of confidence. The slowing of demand is bringing down lead times on electronic components and prices are once again under pressure. Against this background the IDEA European Electronic Components statistics show that sales have continued to grow although new orders are declining meaning that a slowdown in sales in 2023 is inevitable.

AUBREY DUNFORD, IDEA



After the increase in the first two quarters of 2022, the European Electronic Components Distribution Market continued to grow in the second half as shown by the Q4 2022 European Electronic Components Statistics. **Billings were 45% higher in Q3 2022** than in Q3 2021 and **40% higher in Q4 2022** than in Q4 2021, meaning that overall sales in Europe were over 41% higher for 2022 as a whole compared with 2021. Total billings measured by these statistics were therefore **7.7 Bn dollar in 2022** which is 52% higher than the total in 2019 before the COVID-19 pandemic. Although some of this growth is due to increases in prices the European Electronic Components Market has clearly recovered after the trauma of the pandemic.

“SALES IN EUROPE WERE OVER 41% HIGHER FOR 2022 COMPARED WITH 2021,”

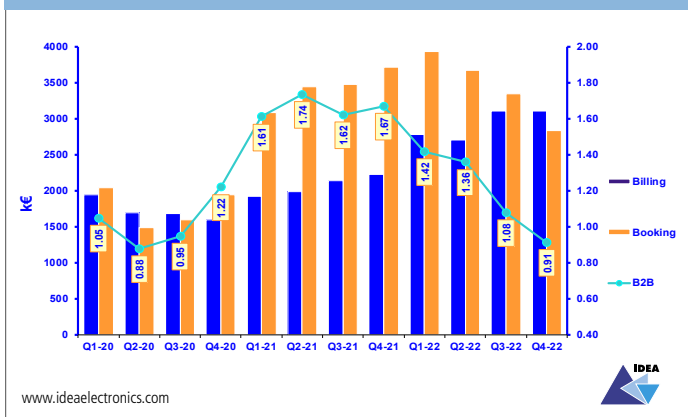
Bookings overall were 3.7% lower in Q3 2022 than in Q3 2021 and 24% lower in Q4 2022 compared to Q4 2021. Total bookings for 2022 were just 0.4% higher than for 2021 total.

As can be seen in *Graphic T1*, the COVID 19 pandemic drove the book:bill ratio down in the middle quarters of 2020 before rising to 1.74 in the second quarter of 2021. Since that time the ratio has declined, passing back below unity in Q4 2022. This is to be expected as demand decreases and thus lead times also decrease and the supply chain becomes more in balance.

INFLATION PEAKING AMID LOW GROWTH.

According to the **International Monetary Fund's World Economic Outlook (WEO)** published in Jan 2023 – “The global

4TH QTR. 2022 TOTAL COMPONENTS BOOKING, BILLING & BOOK : BILL RATIO *Graphic T1*
Total distribution electronic components booking, billing and Book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



fight against inflation, Russia's war in Ukraine, and a resurgence of COVID-19 in China weighed on global economic activity in 2022, and the first two factors will continue to do so in 2023”.

Despite these headwinds, real GDP was surprisingly strong in the third quarter of 2022 in numerous economies, including the United States, the euro area, and major emerging market and developing economies. The sources of these surprises were in many cases domestic: stronger than expected private consumption and investment amid tight labour markets and greater than anticipated fiscal support. Households spent more to satisfy pent-up demand, particularly on services, partly by drawing down their stock of savings as economies reopened. Business investment rose to meet demand. On the supply side, easing bottlenecks and declining transportation costs reduced pressures on input prices and allowed for a rebound in previously constrained sectors, such as motor vehicles. Energy markets have adjusted faster than expected to the shock from Russia's invasion of Ukraine.

In the fourth quarter of 2022, however, this uptick is estimated to have faded in most, although not all, major economies. US growth remains stronger than expected, with consumers continuing to spend from their stock of savings (the personal saving rate is at its lowest in more than 60 years, except for July 2005), unemployment near historic lows, and plentiful job opportunities. But elsewhere, high-frequency activity indicators (such as business and consumer sentiment, purchasing manager surveys, and mobility indicators) generally point to a slowdown.

“REAL GDP WAS SURPRISINGLY STRONG IN THE THIRD QUARTER OF 2022,,

Economic activity in China slowed in the fourth quarter amid multiple large COVID-19 outbreaks in Beijing and other densely populated localities. Renewed lockdowns accompanied the outbreaks until the relaxation of COVID-19 restrictions in November and December, which paved the way for a full reopening. Real estate investment continued to contract, and developer restructuring is



proceeding slowly, amid the lingering property market crisis.

Developers have yet to deliver on a large backlog of presold housing, and downward pressure is building on house prices (so far limited by home price floors). The authorities have responded with additional monetary and fiscal policy easing, new vaccination targets for the elderly, and steps to support the completion of unfinished real estate projects. However, consumer and business sentiment remained subdued in late 2022. China's slowdown has reduced global trade growth and international commodity prices.

Global growth, estimated at 3.4 percent in 2022, is projected to fall to 2.9 percent in 2023 before rising to 3.1 percent in 2024. Compared with the October forecast, the estimate for 2022 and the forecast for 2023 are both higher by about 0.2 percentage point, reflecting positive surprises and greater-than-expected resilience in numerous economies. Negative growth in global GDP or global GDP per capita - which often happens when there is a global recession - is not expected. Nevertheless, global growth projected for 2023 and 2024 is below the historical (2000–19) annual average of 3.8 percent.

“THE INCREASE WAS LOWEST IN THE UK AT 19.2% AND HIGHEST IN GERMANY AT 48.8%,,

The forecast of low growth in 2023 reflects the rise in central bank rates to fight inflation - especially in advanced economies - as well as the war in Ukraine. The decline in growth in 2023 from 2022 is driven by advanced economies; in emerging market and developing economies, growth is estimated to have bottomed out in 2022. Growth is expected to pick up in China with the full reopening in 2023. The expected pickup in 2024 in both groups of economies reflects gradual recovery from the effects of the war in Ukraine and subsiding inflation.

Following the path of global demand, world trade growth is expected to decline in 2023 to 2.4 percent, despite an easing of supply bottlenecks, before rising to 3.4 percent in 2024.

These forecasts are based on a number of assumptions, including on fuel and nonfuel commodity prices, which have generally been revised down since October, and on interest rates, which have been revised up. In 2023, oil prices are projected to fall by about 16 percent, while nonfuel commodity prices are expected to fall by, on average, 6.3 percent. Global interest rate assumptions are revised up, reflecting intensified actual and signalled policy tightening by major central banks since October.

About 84 percent of countries are expected to have lower headline (consumer price index) inflation in 2023 than in 2022. Global inflation is set to fall from 8.8 percent in 2022 (annual average) to 6.6 percent in 2023 and 4.3 percent in 2024, above pre-pandemic

(2017–19) levels of about 3.5 percent. The projected disinflation partly reflects declining international fuel and nonfuel commodity prices due to weaker global demand. It also reflects the cooling effects of monetary policy tightening on underlying (core) inflation, which globally is expected to decline from 6.9 percent in the fourth quarter of 2022 (year over year) to 4.5 percent by the fourth quarter of 2023. Still, disinflation will take time: by 2024, projected annual average headline and core inflation will, respectively, still be above pre-pandemic levels in 82 percent and 86 percent of economies”.

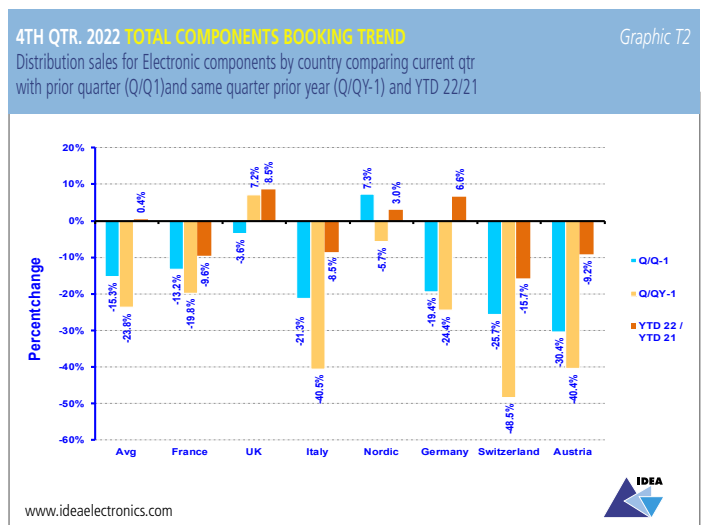
The **Chinese government** set its 2023 growth target for its economy at around 5%, lower than last year’s target of 5.5%, according to a government work report released at the opening of the country’s annual meeting of parliament, as the world’s second-biggest economy began to emerge from three years of severe COVID-19 restrictions. The Chinese economy grew 3% last year, significantly missing the 2022 target and marking one of the slowest rates of growth in almost half a century. In the report, China has set a 2023 target of around 3% for its inflation, unchanged from its 2022 target. The CPI rose 2.0% last year.

The **Japanese economy** stagnated quarter-on-quarter in the three months to December 2022, after a 0.3% contraction in the previous period. The latest figure highlighted the fragility of a recovery in the economy, as private consumption grew less than initially anticipated amid rising cost pressures. At the same time, capital spending fell for the first time in three quarters. Meanwhile, government spending increased 0.3%, after a 0.1% rise in Q3. Also, net trade contributed positively to the GDP, as exports rose by 1.5% while imports fell by 0.4%. In 2022, the Japanese economy advanced 1.1%, slowing from 2.1% in 2021.

The **US economy** expanded an annualized 3.2% on quarter in Q3 2022 and 2.7% on quarter in Q4 2022. Consumer spending rose 1.4%. Spending on goods went down 0.5%. Spending on services went up 2.4%. The contribution from net trade was revised lower (0.46 pp vs 0.56 pp), as exports fell more (-1.6% vs -1.3%) and imports declined less (-4.2% vs -4.6%). Fixed investment declined less (-4.6% vs -6.7%), led by equipment (-3.2% vs -3.7%) and an increase in intellectual property products (7.4%). Considering full 2022, the GDP expanded 2.1%.

After a growth of 0.4% in Q3 2022, the **Eurozone economy** showed no growth in the final quarter of 2022. Household consumption slumped 0.9 percent and gross fixed capital formation tumbled 3.6 percent, as stubbornly high inflation, rising borrowing costs, and supply chain bottlenecks hit activity and demand. Meanwhile, government spending rose 0.7 percent and net external demand contributed positively to the GDP as exports inched 0.1 percent higher and imports were 1.9 percent lower. Amongst the bloc’s largest economies, the GDP grew in the Netherlands, Spain, and France, but contracted in Germany and Italy.

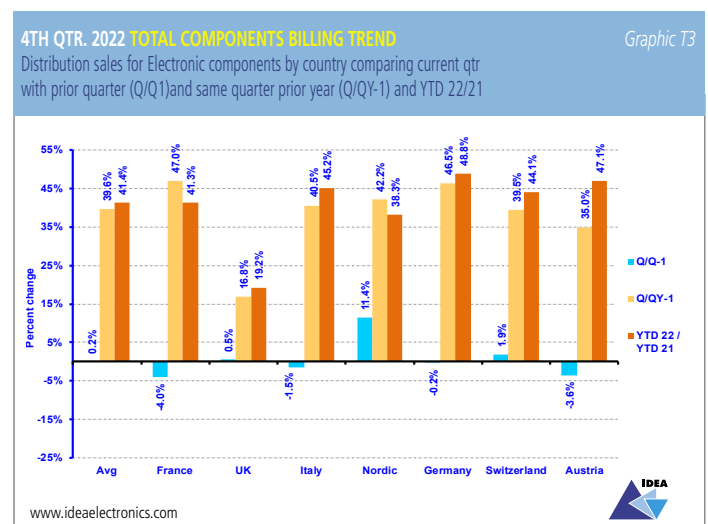
The **British economy** stalled in the last quarter of 2022, following a 0.2% fall in Q3 2022, and narrowly escaping a recession. Figures came in line with market expectations. Growth of 0.3%



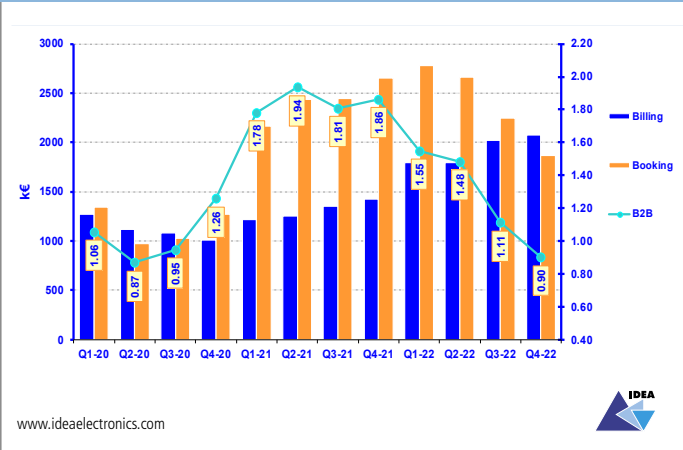
in construction was offset by a 0.2% fall in the production sector. Exports declined 1% while imports were up 1.5%. Figures also showed businesses were de-stocking their levels of inventories in the final quarter of the year. The level of quarterly GDP is now 0.8% below its pre-coronavirus level. Considering full 2022, the British economy expanded 4%, following a 7.6% increase in 2021. Looking at the data from the Q4 2022 European Electronic Components Statistics we can see:

BOOKINGS STALL AS BILLINGS STABILISE

As can be seen in *Graphic T3* there was only a small increase (0.2%) in billings (sales) Q4 2022 over Q3 2022 after an increase of nearly 15% of Q3 2022 over Q2 2022. This pattern was very similar in all countries with the largest increase in Q4 in the Nordic Region and the largest decrease in France. Overall billings in Q4 2022 were 39.6% higher than Q4 2021. For 2022 as a whole billings were, as mentioned above, over 41% higher than in 2021. The increase was lowest in the UK at 19.2% and highest in Germany at 48.8%.



4TH QTR. 2022 SEMICONDUCTOR BOOKINGS, BILLINGS & BOOK: BILL RATIO *Graphic S1*
Semiconductor components bookings, billings & book : bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



The figures in *Graphic T2* show that bookings in Q4 2022 were overall 15.3% lower than Q3 2022 (with Q3 being 9% lower than Q2 2022) and 23.8% lower than in Q4 2021. There was a wide variation between countries, with bookings in the Nordic region 7.3% higher than in Q3 2022 whilst booking in Austria and Switzerland were 30.4% and 25.7% lower respectively. Overall total bookings in 2022 were virtually identical to 2021.

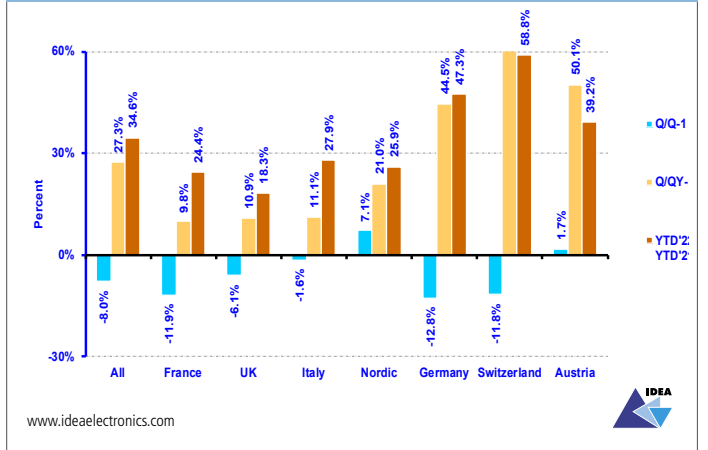
QUARTERLY SALES BY PRODUCT FAMILY

As we do each quarter, we look at the booking and billing trends by product and regional market.

SEMICONDUCTORS

The book:bill ratio for semiconductors as shown in *Graphic S1* shows the same pattern as for the total components, with the ratio turning positive in the last quarter of 2020 rocketing to 1.94 in Q2 2021, and has declined throughout 2022 passing below unity in the last quarter. As availability of products has improved and lead times have

4TH QTR. 2022 PASSIVE COMPONENTS BILLINGS TREND *Graphic P3*
Distribution sales for passive components by country comparing Q2 2017 with the prior quarter (Q/Q-1) and the same quarter prior year (Q/QY-1)



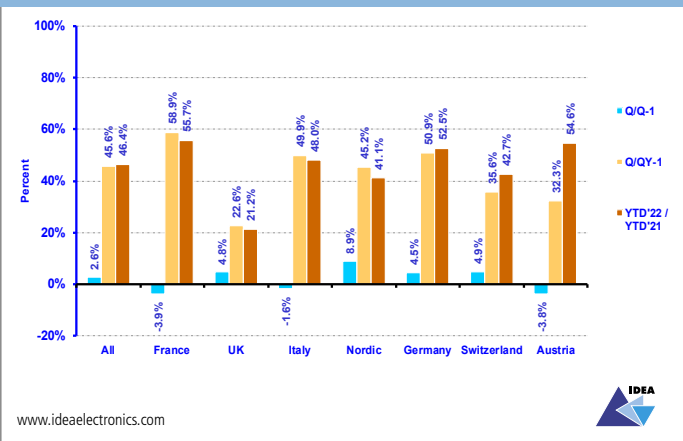
started to return to more normal levels, it is natural that there will be a correction in the bookings. It will be important in the early quarters of 2023 to see if this decline in bookings is just a correction in the order books (backlog) or indicative of a more fundamental fall in demand.

As can be seen in *Graphic S3* Billings in Q4 2022 were slightly higher than in Q3 2022 but 45.6% higher compared with Q4 2021. Billings for the total of 2022 compared to 2021 were 46.4% higher and the pattern is similar in all countries although the range is 21.2% in the UK to 55.7% in France.

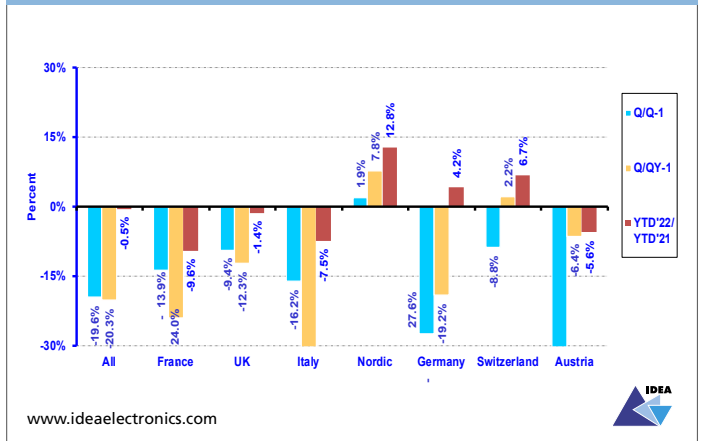
PASSIVES

In the Passives Sector the book:bill ratio increased rapidly from 0.83 in Q2 2020 to 1.54 in Q2 2021. Since that time the ratio has declined being just above unity in Q3 2022 and declining past unity to 0.89 in Q4 2022. Having increased by 18.4% in Q3 2022 when compared to Q2 2022, sales of passives, as can be seen from *Graphic P3*, declined in Q4 2022 compared to Q3 2022 in all countries except Austria and

4TH QTR. 2022 SEMICONDUCTOR BILLING TREND *Graphic S3*
Distribution sales for semiconductors by country compared with the prior quarter (Q/Q1) and the same quarter prior year (Q/QY-1) and YTD 2021



4TH QTR. 2022 PASSIVE COMPONENTS BOOKING TREND *Graphic P2*
Distribution orders for passive components by country comparing Q2 2017 with the prior quarter (Q/Q-1) and the same quarter prior year (Q/QY-1)



the Nordic region. Overall sales were 27.3% higher than in Q4 2021 and 34.6% higher for 2022 compared to 2021.

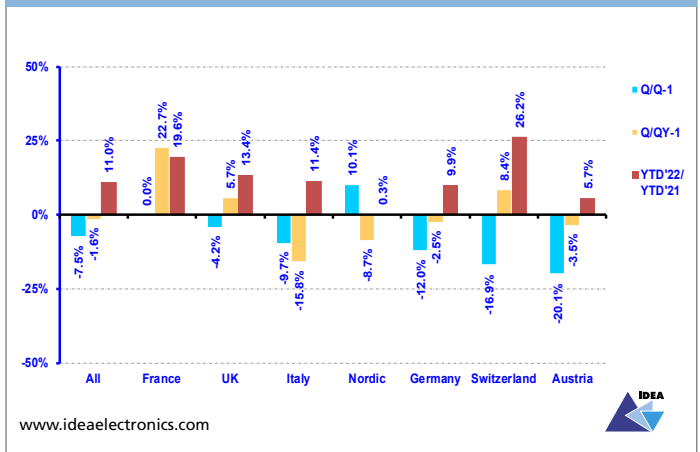
“BOOKINGS OF PASSIVE PRODUCTS DECLINED BY NEARLY 20% IN Q4 2022,,

As shown in *Graphic P2* bookings are declining rapidly. For Europe as a whole, bookings declined by nearly 20% in Q4 2022 compared to Q3 2022 (Having risen by nearly 5% in Q3 2022 compared to Q2 2022), by over 20% compared to Q4 2021 and were virtually the same for 2022 as a whole compared to 2021. This pattern is similar in all countries with the exception of the Nordic region.

4TH QTR. 2022 EMECH COMPONENTS BOOKING TREND

Graphic E2

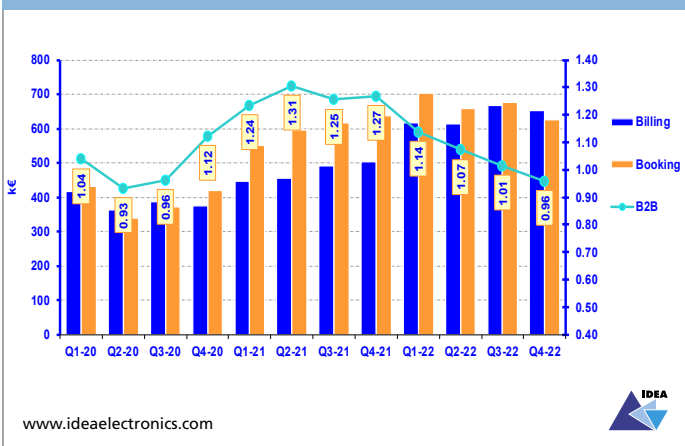
Distribution orders for passive components by country comparing Q3 2019 with the prior quarter (Q/Q-1) and same qtr prior year (Q/QY-1)



4TH QTR. 2022 EMECH COMPONENTS BOOKING, BILLING & BOOK:BILL RATIO

Graphic E1

EMECH components Bookings, billings & book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



E-MECH AND OTHER COMPONENTS

As can be seen from the *graphic E1* the trend for the book:bill ratio is more stable than the other two product categories but still shows the same basic pattern including the upswing in Q3 2022, peaking in Q2 2021 with a slow decline but remaining positive at 1.01 in Q3 2022 but dipping slightly below unity (0.96) in Q4 2022.

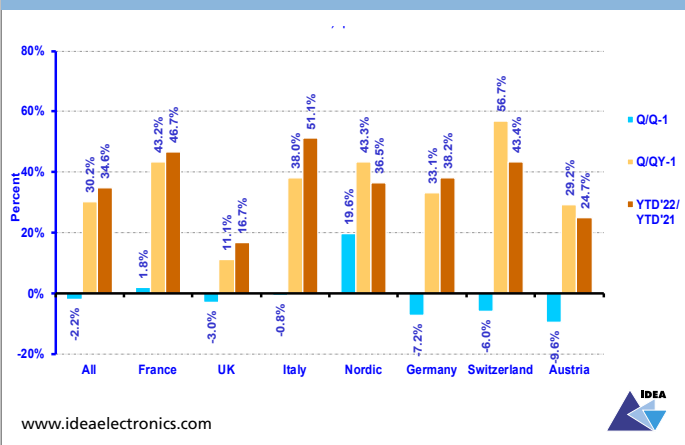
Overall billings increased by nearly 9% in Q3 2022 compared to Q2 2022 and as *Graphic E3* shows overall billings in Q4 2022 were just over 2% lower when compared to Q3 2022 but a 30.2% increase over the last quarter of 2021. Again, with the exception of the Nordic region there was a similar picture across the different countries.

Total Bookings for 2022 were 11% higher than in 2021. Bookings in Q3 2022 showed just under a 3% increase on Q2 2022 but bookings in Q4 2022 shows a decline of 7.5% compared to Q3 2022. Bookings for 2022 overall were 11% higher than in 2021.

4TH QTR. 2022 EMECH COMPONENTS BILLINGS TREND

Graphic E3

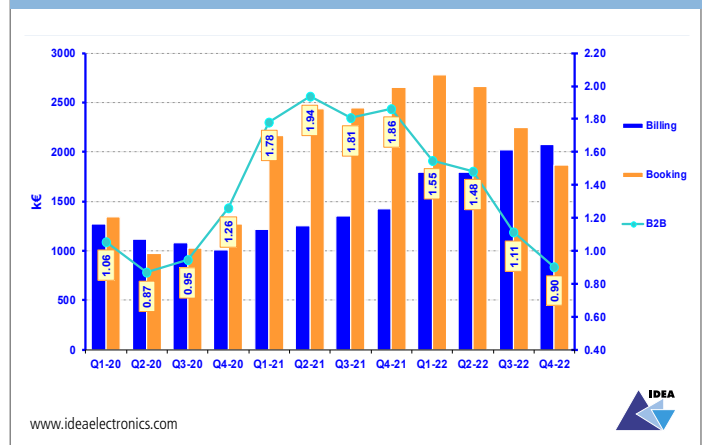
Distribution sales of emech components comparing current qtr with prior qtr (Q/Q-1) and same qtr prior year (Q/QY-1) plus YTD trend



4TH QTR. 2022 SEMICONDUCTOR BOOKINGS, BILLINGS & BOOK:BILL RATIO

Graphic S1

Semiconductor components bookings, billings & book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



RON BISHOP, BISHOP & ASS.



Connector Industry final results - 2022



The connector industry achieved full year 2022 sales growth of +7.8%, reaching global sales of **\$84.1 billion**. This is a new industry record for sales in a year. The following table displays 2022 sales results by geographic region.

It is interesting to note that North America achieved better sales growth than China in 2022. In fact, North America outperformed China in three of the past five years. The days of China consistently outpacing North America in sales growth is probably ending.

First, labor costs have risen in China, creating an opportunity for other countries to compete for Western investment. As a result, companies are moving production out of China to Vietnam, India and elsewhere.

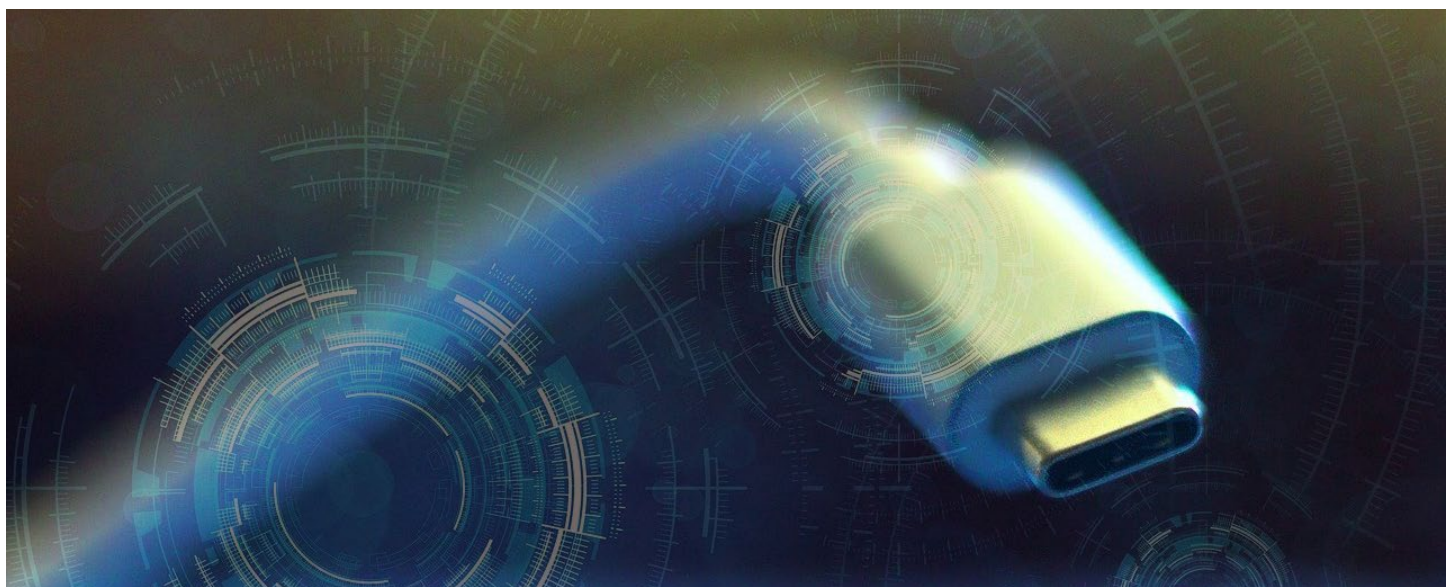
“NORTH AMERICA ACHIEVED BETTER SALES GROWTH THAN CHINA IN 2022,,

Second, China’s aggressive stance on Taiwan threatens peace in that part of the world. Companies are diversifying their manufacturing

2022 SALES CONNECTOR INDUSTRY Figure 1
\$ BILLION

	2021		2022	
	Results	Change	Results	Change
North America	\$16.5	22.2%	\$18.9	14.6%
Europe	\$16.3	26.8%	\$17.3	6.4%
Japan	\$5.3	19.1%	\$5.2	-2.0%
China	\$25.0	23.8%	\$26.5	6.1%
Asia Pacific	\$11.4	25.9%	\$12.2	7.1%
ROW	\$3.5	31.2%	\$4.0	11.7%
Total	\$78.0	24.3%	\$84.1	7.8%

Source: Bishop Ass.



footprint to be less dependent on China. Additionally, Western governments are becoming concerned about critical industries being in China, especially electronics and pharma.

Third, China's "no Covid policy" shut down significant portions of China's manufacturing which caused global shortages of many products. This was another warning that companies needed to densify their manufacturing footprint away from China.

IMPACT OF CURRENCY & INFLATION

The US dollar significantly strengthened in 2022 reducing industry growth in real terms. The industry achieved +7.8% sales growth in US dollars but only +2.0% growth in local currencies. This is shown in the following table.

INDUSTRY SALES PERFORMANCE Figure 2
YTD DECEMBER 2022 USD VS LOCAL CURRENCIES

Region	U.S.\$	Local Currency
North America	14.6%	14.6%
Europe	6.4%	-0.9%
Japan	-2.0%	-22.3%
China	6.1%	-4.9%
Asia Pacific	7.1%	7.1%
ROW	11.7%	11.7%
World	7.8%	2.0%

Source: Bishop Ass.

Considering that global inflation in 2022 was in the 8% to 10% range and the industry implemented price increases in the same range, the connector industry probably did not achieve growth when measured in units.

Full year 2022 financial results have not been reported at the time of publication, but we believe price increases were able to offset raw material and labor cost increases. Anecdotally, we expect that connector profitability in 2022 was good to excellent.

“THE 2023 BEGINNING BACKLOG IS 14.8 WEEKS OF SALES,,

HEALTHY BACKLOG GOING INTO 2023

The 2023 beginning backlog is \$22,983 million or 14.8 weeks of sales. The industry averaged \$21,023 million sales per quarter in 2022. So, we should have sufficient backlog to achieve flat, or low, single digit sales in the first quarter.

Note, Amphenol and TE forecast 2023 first calendar quarter sales of -2.8% and -2.7% respectively. Bishop forecast sales growth of +0.5%. We believe the industry may do better than these forecasts because:

- Amphenol and TE results generally exceed expectations.
- The backlog is sufficient to produce growth in the first quarter assuming no significant order cancellations.

The following displays first quarter 2023 forecasts by Amphenol, TE and Bishop.

SALES RESULTS & FORECAST Figure 3
AMPENOL, TE & INDUSTRY
\$ MILLIONS

Company	4Q22	YOY Change	1Q23 Forecast	YOY Change	2022 Actual	YOY Change
Amphenol	\$3,239	7.0%	\$2,870	-2.8%	\$12,623	16.1%
TE	\$3,841	0.6%	\$3,900	-2.7%	\$16,281	9.1%
Industry	\$22,171	2.0%	\$21,300	0.5%	\$84,091	7.8%

\$ Millions, Company forecasts to midpoint, TE Fiscal 2022 Actual (ending in September)

Source: Bishop Ass.

The connector industry achieved fourth quarter sales increase of +2.0%. This is down from full year 2022 growth of +7.8%. Clearly demand is slowing. Also, Amphenol achieved fourth quarter growth of +7.0% while full year was +16.1%. Also, an indication of slowing. TE achieved fourth quarter growth of +0.6% and full year of +9.1%. Still another confirmation that connector demand is slowing.

Amphenol and TE forecasts for the first quarter of negative growth are further evidence of a slowdown.

Economic consensus is that we will not have a serious recession.



IDEA NEWSLETTER
INTERNATIONAL DISTRIBUTION
OF ELECTRONICS ASSOCIATION

EDITOR IN CHIEF: Aubrey Dunford

EDITORS: Ron Bishop (USA); Georg Steinberger (Germany)
Adam Fletcher (UK); Dale Ford (USA); Malcom Penn (UK); Dennis Zogbi (USA)

PUBLISHER: Laura Baronchelli

INTERNATIONAL PROMOTION BY: CONSORZIO ELINT

PUBLISHED BY: Consorzio Tecno Scarl - Via C. Flamini, 19 - 20134 Milan - Italy