

Issue No. 354 2nd Quarter 2022 May 2022

Orders/Sales Negative First Time Since Mid-2020 War and Inflation Dampen World Economies

Regional Performance:

World sales are up +8.3% YTD April.

In April, North America achieved the highest regional sales growth at +17.0% YTD.

North America also has the highest YTD growth in bookings at +15.1%.

Industry Outlook:

Industry sales for 2022 are forecast to be \$82,989 million, up +6.5%. Based on our historical modeling, the increase could range from as high as a +13.7% increase down to a +4.2% increase over prior year.

Industry Backlog:

April backlog increased to \$25,868 million equaling 16.1 weeks. This is an increase of \$4,369 million since January 2022.

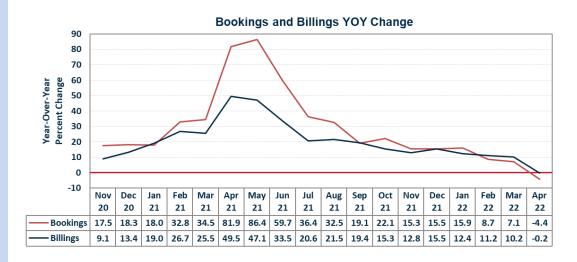
2022 Currency Impact:

The industry grew +8.3% YTD in April in USD and 4.7% in local currencies. Sales growth is 3.6 percentage point lower when stated in local currencies.

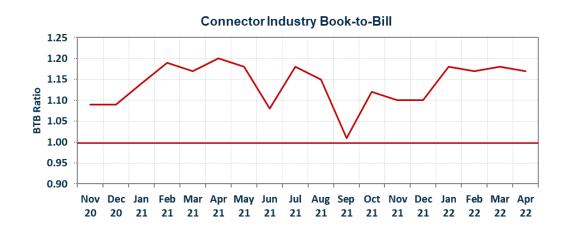
Merger and Acquisition Services Buy & Sell-Side

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April sales and bookings were down -0.2% and -4.4% YOY, respectively. This ended a 19-month growth streak in sales and 20-months in orders. The Ukraine war, inflation, COVID variants, and sputtering financial markets are beginning to take a toll on the industry.



The book-to-bill ratio in April was 1.17 and YTD was 1.16.



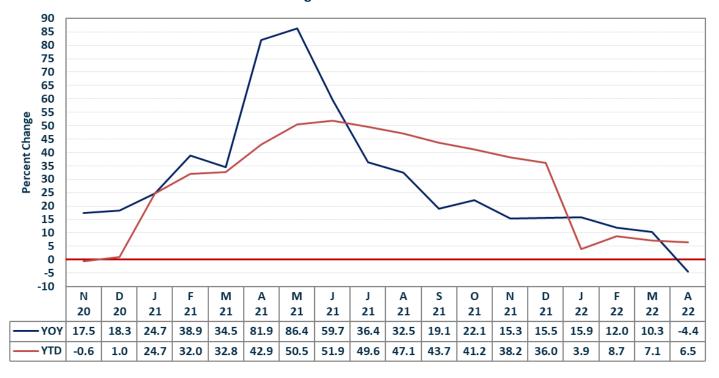


Booking Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Bookings Percentage Change – 2020/2021/2022

		Sequentia		Y	'ear-Over-Yea	ır		Year-To-Dat	te
Month	2020	2021	2022	2020	2021	2022	2020	2021	2022
Jan	0.2%	2.3%	2.6%	3.9%	24.7%	15.9%	3.9%	24.7%	15.9%
Feb	5.5%	17.7%	10.4%	1.8%	38.9%	8.7%	2.8%	32.0%	12.0%
Mar	-1.4%	-3.5%	-5.3%	5.0%	34.5%	7.1%	3.5%	32.8%	10.3%
Apr	-27.2%	3.2%	-7.5%	-21.8%	81.9%	-4.4%	-2.7%	42.9%	6.5%
May	2.9%	5.1%		-24.8%	86.4%		-7.3%	50.5%	
Jun	7.0%	-8.3%		-11.6%	59.7%		-8.0%	51.9%	
Jul	15.2%	-1.9%		-1.0%	36.4%		-7.0%	49.6%	
Aug	10.7%	6.6%		1.8%	32.5%		-5.8%	47.1%	
Sep	-0.9%	-11.9%		8.4%	19.1%		-4.3%	43.7%	
Oct	4.7%	6.8%		13.0%	22.1%		-2.6%	41.2%	
Nov	15.2%	9.3%		17.5%	15.3%		-0.6%	38.2%	
Dec	-7.2%	-7.0%		18.3%	15.5%		1.0%	36.0%	

Bookings - YOY and YTD



- April bookings declined -4.4% YOY but are still up +6.5% YTD.
- Orders decreased -7.5% sequentially.
- The book-to-bill ratio for April was 1.17. The YTD ratio is 1.16.

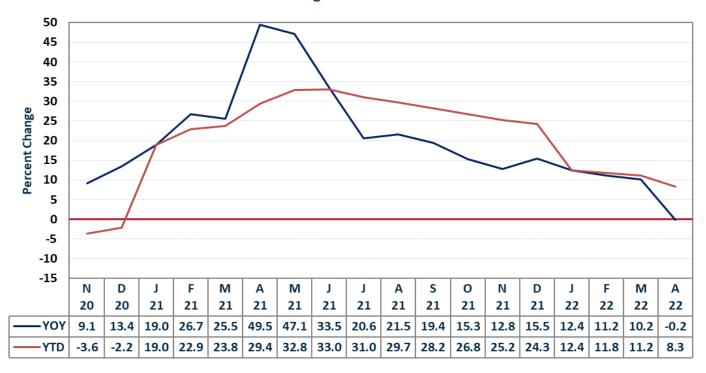


Billing Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Billings Percentage Change – 2020/2021/2022

		Sequentia	l	Y	'ear-Over-Yea	ır		Year-To-Dat	:e
Month	2020	2021	2022	2019	2020	2022	2020	2021	2022
Jan	-2.8%	-1.6%	-4.3%	-3.1%	19.0%	12.4%	-3.1%	19.0%	12.4%
Feb	5.5%	12.6%	11.4%	-4.3%	26.7%	11.2%	-3.7%	22.9%	11.8%
Mar	-0.9%	-1.1%	-2.0%	-2.0%	25.5%	10.2%	-3.1%	23.8%	11.2%
Apr	-21.2%	-1.2%	-10.5%	-19.9%	49.5%	-0.2%	-7.2%	29.4%	8.3%
May	8.8%	7.0%		-20.0%	47.1%		-9.9%	32.8%	
Jun	5.8%	-3.8%		-11.6%	33.5%		-10.2%	33.0%	
Jul	9.0%	-2.0%		-1.6%	20.6%		-9.0%	31.0%	
Aug	9.0%	8.7%		-0.3%	21.5%		-7.8%	29.7%	
Sep	1.7%	-2.3%		5.0%	19.4%		-6.3%	28.2%	
Oct	-1.0%	-3.4%		7.6%	15.3%		-4.9%	26.8%	
Nov	11.4%	9.4%		9.1%	12.8%		-3.6%	25.2%	
Dec	-7.7%	-5.6%		13.4%	15.5%		-2.2%	24.3%	

Billings - YOY and YTD



- April billings decreased -0.2% YOY, ending 19 consecutive months of growth. YTD, billings are up +8.3%
- Sequentially billings decreased -10.5% in April.



Regional Performance: BOOKINGS

April 2022 Bookings

Region	Sequential	YOY	YTD
NA	-4.7%	4.7%	15.1%
Europe	-11.6%	-9.0%	1.9%
Japan	-2.7%	-11.8%	1.5%
China	-10.6%	-8.5%	4.6%
AP	-3.2%	-4.7%	5.6%
ROW	5.9%	17.0%	10.3%
Total	-7.5%	-4.4%	6.5%



- April bookings decreased -4.4% YOY, ending 20 consecutive months of growth.
- North America and ROW are the only regions that reported growth in April.
- Japan was down a significant (-11.8%) in April. Europe and China also experienced a significant decline in April sales (-9.0% and -8.5%, respectively).

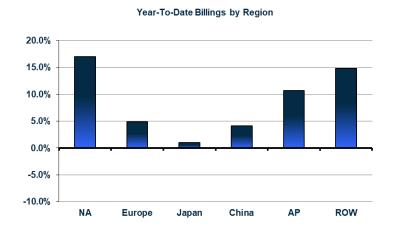
Note, the declining orders in April could be a precursor to a shrinking backlog.



Regional Performance: BILLINGS

April 2022 Billings

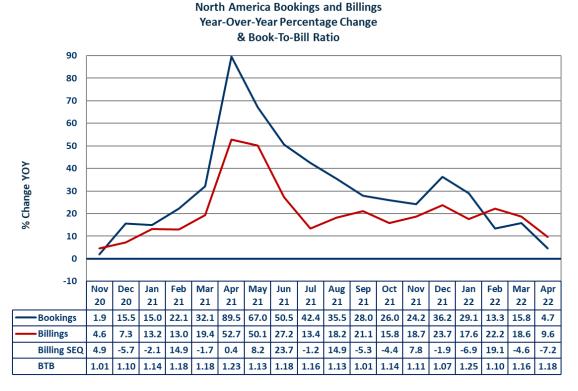
Region	Sequential	YOY	YTD
NA	-7.2%	9.6%	17.0%
Europe	-13.1%	-2.7%	4.9%
Japan	-5.0%	-2.5%	1.0%
China	-15.4%	-9.2%	4.1%
AP	-5.0%	3.1%	10.7%
ROW	-5.3%	14.6%	14.8%
Total	-10.5%	-0.2%	8.3%



- April connector sales declined slightly at -0.2% YOY. However, the industry is still up +8.3% YTD.
- Only North America (+9.8%), Asia Pacific (+3.1%), and ROW (+14.6%) achieved growth in April.
- The industry has ended 19 consecutive months of sales growth.



North America: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill (BTB) ratio is also displayed.



North America Performance

- Sales grew +9.6% and orders were up +4.7% YOY in April. North American billings were down sequentially -7.2%. The book-to-bill was strong at 1.18.
- US inflation was down slightly to 8.3% in April. The rate has been above 5% for 11 months.
- Industrial production increased 6.4% YOY in April.
- Manufacturing PMI was up to 59.2 in April.
- US unemployment remained at 3.6% in April.
- Retail sales were up 8.2% YOY in April.
- New home sales fell 16.6% in April, the largest drop since 2013.
- US automotive sales in April decreased 21.5% YOY but demand remains strong. The average age of vehicles on US roadways reached a record 12.2 years in 2021.

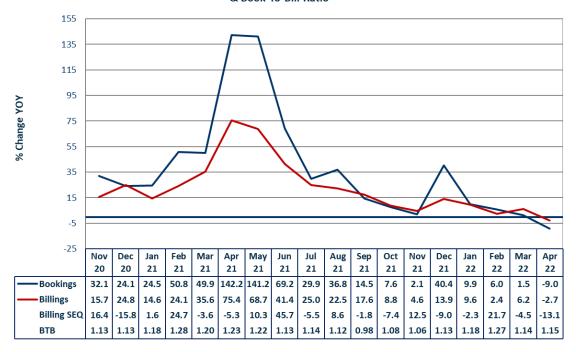
Conclusions

Higher prices/inflation, supply chain issues, unstable financial markets, and the situation in Ukraine are a few of the headwinds. The production of new vehicles is still slow due to the shortage of semiconductors. China's delivery of products and components have slowed due to COVID outbreaks. The ports on the West Coast (and East Coast and Gulf) are still backed up. These issues are negatively impacting the connector industry.



Europe: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.

Europe Bookings and Billings Year-Over-Year Percentage Change & Book-To-Bill Ratio



Europe Performance

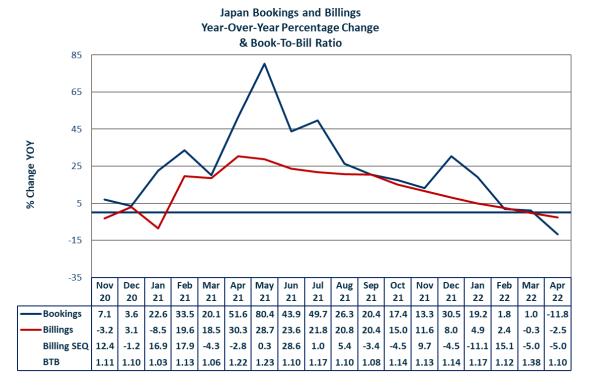
- YOY billings contracted -2.7% and orders were down -9.0%. The book-to-bill ratio was 1.15. Sequentially, sales were down -13.1%.
- 1Q22 Euro Area GDP grew 5.1% YOY and 0.3% sequentially.
- Euro Area industrial production decreased 0.8% YOY in March.
- The April manufacturing PMI was revised higher to 55.5 from 55.3.
- March retail sales increased 0.8% YOY, the smallest gain in a year.
- The inflation rate remained at 7.4% in April.
- Year-over-year, Euro area April new car registrations contracted 20.2% due to part shortages and the war in Ukraine.
- The unemployment rate dropped to 6.8% in March from 6.9% in February.

Conclusions

European new car registrations started to increase in January but the war in Ukraine disrupted the supply chain. Ukraine has several large cable assembly manufacturers that service European car companies and there are already reports of shortages. Automotive is the largest connector market in Europe. The connector industry appears to be headed for a difficult year in Europe given the ongoing shortages, high inflation, the situation in the Ukraine, and supply chain issues that will likely continue to dampen results.



Japan: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.



Japan Performance

- Bookings were down -11.8% in April. Sales decreased -2.5%. Sequentially, sales decreased -5.0%.
 Japan's book-to-bill ratio was 1.10.
- 1Q22 GDP grew 0.2% YOY and contracted 0.2% sequentially.
- Industrial production decreased 1.7% YOY in March.
- March retail sales grew 0.9% YOY.
- Exports decreased 4.6% sequentially in April.
- The April manufacturing PMI was to 53.5.

Conclusions

Up until April, Japan's bookings performance primarily was reflective of easy comparisons to 2021 results. The shortage of semiconductors is holding back growth in the automotive industry sales. Their bookings performance, in the last 14 months, primarily reflects easy comparisons to the poor results in 2020/2021. Billings were negative for the second time since January of 2021.



China: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.



China Performance

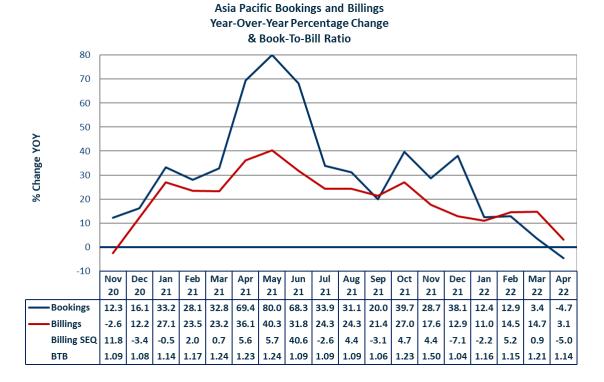
- China's sales decreased -9.2% YOY and orders decreased -8.5% YOY. The BTB was 1.20. Sequentially, sales decreased -15.4% in April.
- Industrial production decreased 2.9% YOY in April.
- China's manufacturing PMI fell to 46.0 in April, a 26-month low. This is also the third contraction in 2022.
- Retail sales decreased 11.1% YOY in April, the second drop in 2022.
- Exports from China were down 0.9% sequentially in April.
- China's auto sales plunged 47.6% YOY in April, the biggest drop since March 2020.

Conclusions

China's economy is slowing. Their headwinds include slowing sales domestically and internationally; recurring outbreaks of COVID variants (and strict lock-downs); supply chain issues; material shortages; power shortages; and political disagreements within the CCP. This is likely to impact the growth in the Chinese connector industry.



Asia Pacific: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.



Asia Pacific Performance

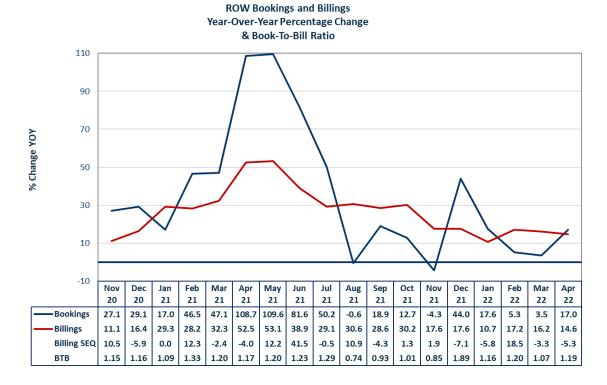
- Orders were down -4.7% in April and sales increased +3.1% YOY. The book-to-bill ratio was 1.14. Sequentially, sales decreased -5.0%.
- India's industrial production grew 1.9% YOY in March. Exports were up 30.7% YOY in April driven primarily by petroleum products. The manufacturing PMI increased to 54.7 in April. Inflation in April increased to 7.79%.
- South Korea's industrial production rose 3.7% YOY in March. Exports decreased 9.1% sequentially in April. The manufacturing PMI increased to 52.1 in April.

Conclusions

South Korea's GDP continues to grow YOY and sequentially. South Korea's connector sales have a positive outlook with strong growth anticipated in the electronics and automotive industries. India's economic growth has been weak. India has a smaller connector market than South Korea, reducing the impact on regional connector sales.



Rest of World: The following chart displays the year-over-year percentage change in bookings and billings for the last 18 months. The monthly book-to-bill ratio is also displayed.



Rest of World Performance

- Orders increased +17.0% and sales increased +14.6% YOY in April. Sequentially, sales in the region decreased -5.3%. The book-to-bill ratio was 1.19.
- Brazil's industrial production decreased -2.1% YOY in April, the eighth consecutive month of declines.
 The inflation rate rose to 12.13% in April. The manufacturing PMI fell to 51.8 in March from 52.3 in the previous month.
- Russia's economic data has been reported as unreliable at this point in time.

Conclusions

The region continues to experience growth within their connector industries. Sales have grown in the double-digit range since September 2020.

We anticipate that slowing economic growth in both countries will adversely affect connector growth in 2022. The black swan event for the region is Russia's invasion of Ukraine and the economic sanctions imposed by many NATO and Western countries on Russia. We anticipate a drastic contraction of the Russian economy in the coming months although they are not a large connector market due in part to the majority of their connector sales being captive.



Industry Backlog now at 16.1 Weeks

The industry backlog increased to \$25,868 million in April. The industry is current shipping \$1,606 million per week. This converts to 16.1 weeks of backlog.

The following table displays the industry backlog year-to-date April 2022. To date, the industry has booked \$31,673 million and achieved sales of \$27,304 million.

Industry Backlog

		YTD Apr
	2021	2022
BtB Ratio	1.14	1.16
Beginning Backlog	\$10,530	\$21,499
Bookings	\$88,910	\$31,673
Billings	\$77,991	\$27,304
Ending Backlog	\$21,499	\$25,868
Backlog in Weeks	14.3	16.1

\$ Millions

The industry has now achieved 19 consecutive month with a book-to-bill ratio above 1.0. The last time the BtB was below 1.0 was September 2020.



2022 Industry Outlook

Over the past 14 years, sales through April averaged 32.0% of full year sales. Year-to-date, sales were \$27,304 million. Assuming the historical average of 32.0% repeats, the industry will achieve sales of \$85,325 million. This is a 9.2% increase over 2021 sales of \$77,991 million.

The following table identifies the range of full year 2022 sales based on the 14 year averages for January through April combined.

2022 Forecast Range

	Historical Range			
	High	Avg	Low	
YTD Apr Sales %	30.8%	32.0%	33.6%	
YTD Apr Actual Sales	\$27,304	\$27,304	\$27,304	
Full Year Forecast	\$88,649	\$85,325	\$81,262	
2021 Actual Sales	\$77,991	\$77,991	\$77,991	
% Increase	13.7%	9.4%	4.2%	

\$ Millions

The following table summarizes this forecast analysis, including the Bishop forecast.

Category	2022 Sales	% Growth
14 Year High	\$88,649	13.7%
14 Year Average	\$85,325	9.4%
Bishop Forecast	\$82,989	6.5%
14 Year Low	\$81,262	4.2%

\$ Millions

You will note that the Bishop forecast is just above the lowest historical 14 year sales amount. We believe the industry will slow down in the remainder of 2022. We also are comparing new sales to an incredibly positive 2021 when connector sales were up +24.3%.

The remainder of 2022 and full year 2023 is anticipated to experience significant headwinds:

- The war in Ukraine is now four months old with little progress toward a negotiated peace.
- Inflation is rising to historical levels.
- Interest rates are being driven up by the central banks.



- Global GDP growth is slowing.
- Discretionary spending is declining due primarily to the previously mentioned rising inflation.
- The financial markets are uncertain.
- Semiconductors, food staples, petroleum products, baby formula and other materials are in short supply.
- New home sales in the US are declining, dropping 16.6% in April.
- Shutdowns in China due to COVID are slowing the delivery of products and components.
- Backups continue in the supply chain.

Forecasting in this environment is difficult. However, it is a little comforting to know that the first four months of 2022 are positive (YTD sales up +8.3%; YTD orders up +6.5%). Further, with YTD April sales as high as they are (\$27,304 million), we have historically ended the year with growth.

The following table displays the 2022 Bishop forecast by geographic region of the world:

	2021	2022	
	Results	Forecast	Change
North America	\$16,484	\$17,999	9.2%
Europe	\$16,278	\$17,109	5.1%
Japan	\$5,276	\$5,355	1.5%
China	\$24,978	\$26,443	5.9%
Asia Pacific	\$11,384	\$12,195	7.1%
ROW	\$3,590	\$3,888	8.3%
Total	\$77,991	\$82,989	6.4%

\$ Million, Bishop ©2022



2022 YTD Currency Impact on Regional Industry Growth

The dollar has been weakening against the euro, the yen, and the yuan. The following table measures the impact for April 2021 versus April 2022 and shows results for these three currencies.

Local Currency to One USD April 2021 versus April 2022

Currency	2021	2022	% Change
Euro	0.8367	0.9233	10.4%
Yuan	6.5266	6.4198	-1.6%
Yen	109.1396	126.0493	15.5%

Europe, China, and Japan account for approximately 60% of world connector sales. Currency fluctuation to the US dollar can have a significant impact on our reporting of sales performance in US dollars.

The following table shows April YTD sales performance by region in US dollars and local currencies.

Industry Sales Performance YTD April 2022 USD-vs-Local Currencies

Region	U.S.\$	Local Currency
North America	17.0%	17.0%
Europe	4.9%	-6.0%
Japan	1.0%	-14.6%
China	4.1%	5.8%
Asia Pacific	10.7%	10.7%
ROW	14.8%	14.8%
World	8.3%	4.7%

Connector sales are 3.6 percentage points lower when stated in local currencies rather than in US dollars, putting industry performance at +4.7% in April (versus +8.3% in US dollars). This is the result of a stronger US dollar, on average, compared to these currencies as the yaun partially offsets the yen and the euro.



Significant Events

Fischer Connectors Appoints Fustagueras General Manager



Fischer Connectors Group announced that Xavier Fustagueras has been appointed General Manager of Fischer Connectors Inc. based in Atlanta, to pursue the group's growth in North and South Americas. The technology group provides high-performance connectivity solutions that manage power and data flows across sensors, devices, and the cloud – from end-to-end electrical and optical interconnectivity for devices, to IoT solutions for connected workers – in various markets such as defense and security, medical, industrial, instrumentation, audio visual, transportation, and energy. Fustagueras holds a master's degree in telecommunications engineering from the Universitat Politècnica de Catalunya, Barcelona,

Spain. He started his career in the broadcast industry and worked for more than 15 years in the media and entertainment industry in PayTV at NAGRA (Kudelski Group), where he managed business development for Spain and Portugal, then held different positions in key accounts, and pre-sales and sales enablement in the Kudelski Group's headquarters in Switzerland, until 2017, when he moved to Phoenix, for the position of SVP General Manager Americas.

TTI Promotes Drabik to President, TTI Americas



TTI Inc. promoted John Drabik to president, TTI Americas. Drabik, who joined TTI in 2020, previously held the position of senior vice president, TTI Americas sales and product management. Prior to TTI, he served as president, Americas components at Arrow Electronics. Drabik began his career with KEMET working closely with TTI. In making the announcement, Mike Morton, TTI CEO, stated, "When we invited John to join the TTI leadership team we anticipated his progression into this role. Since joining us he has worked across multiple areas of our company, becoming familiar with our process and most

importantly our people. John is a highly qualified, talented individual and well suited to serve all those invested in the continued growth and success of our company." Drabik succeeds TTI Americas president, Don Akery, who will be joining non-competitor, master distributor Waldom Electronics as CEO.

Amphenol SV Microwave appoints Andrew Dinsdale as General Manager



After 26 years, effective July 1, 2022, Subi Katragadda will step down as general manager of Amphenol SV Microwave. Under his stewardship, SV has experienced tremendous growth, diversification, and organizational development.

Taking up the mantle, Andrew Dinsdale will become the next general manager of SV Microwave, effective on July 1. Dinsdale joined SV in 2008 as an application engineer, and since then has worked as a business development manager focused on diversification into

the high frequency commercial market and most recently, as director of marketing and applications engineering. In his latest role, Dinsdale has been instrumental in driving SV's performance over the last several years. As GM, he will continue to push the entrepreneurial culture and people-focused approach that embodies SV Micro.

Omnetics Announces Move to New Facility

Omnetics has moved their manufacturing to a new state-of-the-art facility in Minneapolis. This move more than doubled their space from 55,000 to 124,000 square feet allowing Omnetics to expand capacity and capabilities. Omnetics new address is 8840 Evergreen Blvd, Minneapolis, MN 55433.



Manufacturing Activity Remains Sluggish

U.S. manufacturing activity in April expanded at its slowest pace in nearly two years amidst high levels of employee turnover and Covid lockdowns in China. The Institute for Supply Management's factory index, the

PMI, decreased by 1.7 percent to 55.4 as the employment, production and new orders indexes slipped slightly from March. Any number above 50 indicates growth, so manufacturing remains at a healthy level despite multiple headwinds. There are no indications demand for U.S.-made products is declining, said Tim Fiore, chair of the ISM's manufacturing survey committee. Customer inventories remain low and factory backlogs high. The biggest problem remains getting enough workers — April's employment index declined by 5.4 percent. ISM panelists reported higher rates of quits compared to previous months, with fewer panelists reporting improvement in meeting head-count targets. Despite increased wages, employment hasn't bounced back to pre-pandemic levels and workers are changing jobs more frequently. The situation might ease as recent college graduates join the workforce.

New orders in April decreased by 0.3 percent to 53.5 and production by 0.9 percent to 53.6. Input — expressed as supplier deliveries, inventories, and imports — continues to constrain production. Supplier deliveries, inventories and imports all slowed from the prior month. Factory inventory may be exceptionally low because Q1 closed in March.

In electronics, component lead times frequently extend beyond 50 weeks and some by more than a year. It's unlikely that will improve, according to analysts, who point out China's "zero-Covid" policy has constrained the nation's exports. Several U.S. manufacturing sectors rely on China for metals, materials, and subassemblies.

Asia Factory Output Rises, Led by South Korea

Only Taiwan was caught in China's downward trend, reflecting its ties to the country, while all other Asian countries saw production rise. Asia's factories did a better job in the past month than their European counterparts of weathering the supply chain effects of China's lockdowns and the conflict in Ukraine. South Korea's purchasing managers' index (PMI) climbed to 52.1 last month, recovering some ground lost in March. The Philippines, Myanmar, and Australia all advanced as well, while only Taiwan proved an outlier.

China's GDP Dives as Lockdowns Bite

Retail sales last month dropped 11.1 percent annually, while industrial production fell 2.9 percent — the largest declines since early 2020. China's economic activity cooled sharply last month as widening COVID-19 lockdowns took a heavy toll on consumption, industrial production and employment, adding to fears that the economy could shrink in the second quarter. Full or partial lockdowns were imposed in dozens of cities in March and last month, including a protracted shutdown in commercial center Shanghai, keeping workers and shoppers confined to their homes and severely disrupting supply chains. Retail sales shrank 11.1 percent from a year earlier, the biggest contraction since March 2020, worse than forecast.

Hon Hai Posts Robust First-quarter Profit

Hon Hai Precision Industry Co posted its strongest first-quarter earnings in about 14 years and raised its gross margin outlook for this year, as a better product mix and a more favorable foreign exchange rate help it combat rising manufacturing costs and operating expenses.

Net profit expanded 5 percent year-on-year to NT\$29.45 billion (US\$987.49 million) from NT\$28.16 billion. However, on a quarterly basis, net profit plummeted about 34 percent from NT\$44.4 billion.

Gross margin improved to 6.02 percent from 5.8 percent a year earlier but declined from 6.03 percent in the prior quarter. Revenue is forecast to be flat this quarter and for the full year, he said, sticking with the company's March forecast.



Computing products would post significant growth this quarter and for the full year, benefiting from market share gains and faster capacity expansion for PCs and servers at its Mexico site, Liu said. Cloud-based servers are another business that is showing robust growth momentum this quarter, he said.

Smart consumer electronics, mainly smartphones, which accounted for 52 percent of the company's revenue last quarter, are forecast to decline this quarter due to product transition, the company said.

Hon Hai's electric vehicle business drew investors' attention yesterday, as the firm said it has signed a contract manufacturing agreement and a joint-venture agreement for product development with Lordstown Motors Corp. Hon Hai is to invest US\$55 million in the new joint venture, giving it a 55 percent stake. Based on the joint-venture agreement, Hon Hai and Lordstown will use the Taiwanese firm's MIH Open EV Platform to codesign and develop vehicle programs for the global commercial vehicle market.

Hon Hai added that it completed the purchase of Lordstown's electric light-duty truck manufacturing facilities in Ohio yesterday, paving the way for Hon Hai to make its first electric trucks for Lordstown in the second half of this year. The Ohio electric vehicle facilities would also be utilized to produce electric sedans for Fisker Inc, starting in 2024, Liu said.

Hon Hai plans to invest US\$500 million to convert some electric truck manufacturing facilities in Ohio into an electric sedan manufacturing site. Hon Hai also raised the shipment target for Model C electric vehicles to 10,000 units next year from its previous estimate of 5,000 units.

GM Production Resurgence Indicating Stronger Chip Supply in 2022?

Although the worst is over for most parts of the world when it comes to the pandemic, the global economy would inevitably take its time to recover. The consensus among analysts at this juncture is that the semiconductor pipeline remains fragile, after over two years of battling with spiked demand and severe shortages. For US auto giant General Motors though, the chip crisis appears to be over. Production is mostly back to normal for the GM and it expects stronger chip supply in the second half of the year. GM's CEO Mary Barra during a media call admitted that while "There's still volatility in chips", there has been an improvement in semiconductor availability compared to late 2021. "We'll see stronger chip supply in the second half of the year. We still believe that we'll be able to make 25-30% more vehicles this year than last year," according to Bloomberg's report. For the auto giant's first-quarter profit, GM beat analysts' estimates, despite reporting a decrease in their numbers. GM also reaffirmed its guidance for the year-a move that signals a lingering shortage of semiconductors is starting to fade. For context, net income in the first quarter dipped 3% to US\$2.9 billion on an 11% jump in revenue to US\$36 billion. When it comes to electric vehicles (EVs)-a space it rapidly pivoted to recently-GM is working on having six new EVs off its Ultium battery platform for sale by the end of next year. Crucial to that are what Barra called "affordable EVs" such as the upcoming all-electric small Chevy Blazer SS SUV and US\$30,000 Chevy Equinox crossover EV, both of which are due around mid-2023.

Laptop Industry Warns of Possible Price Increases Later This Year

DigiTimes Asia writes that the Covid-19 lockdowns in China and Russia's invasion of Ukraine have led to increased manufacturing costs, supply chain issues, and logistical problems for laptop makers. As such, they are "mulling raising their prices to reflect rising logistics and other costs in the second half of 2022."

India Wearables Market Records Double-digit Growth in 1Q22

The India wearables market shipped 13.9 million units in 1Q22, up 20.1% YoY (year-over-year) according to the recent data from the International Data Corporation's (IDC) India Monthly Wearable Device Tracker. This growth can be attributed to new launches, discounts across channels, and aggressive marketing by brands. The ASP of the overall category declined 17.1% YoY primarily due to a stronger decline in the ASP of watches.



Watches continued to be the fastest-growing category shipping 3.7 million units with a growth of 173.0% YoY in 1Q22 (Jan-Mar). Basic watches accounted for 95.1% of the overall watch category shipments. Aggressive competition at entry-level price points helped the basic watches grow 202.1% YoY, whereas the smartwatch shipments declined 4.2% annually. Furthermore, the ASP of the watches declined 41.5% YoY to reach \$50.3 in 1Q22 compared to \$86.0 in the same quarter last year. On the other hand, Wrist bands continued to decline annually for the 9th consecutive quarter. Overall wristwear (which includes watches and wrist bands) grew 87.5% yearly in 1Q22, with a total shipment of 4.0 million units. The earwear category accounted for 71.3% of the overall wearables category; the truly wireless stereo (TWS) share grew to 48.3% from 34.2% in 1Q21, with a growth of 48.2% YoY.

Pegatron Cuts Forecasts Due to China Lockdowns

Pegatron Corp, which assembles iPhones and notebook computers, slashed its forecast for notebook computer shipments to a quarterly decline of between 5 and 10 percent this quarter as China's COVID-19 lockdowns suspended productions and upended supply chain logistics. That compared with the company's previous guidance of a quarterly increase of between 25 and 30 percent this quarter.

Shipments of desktop computers and motherboards would drop by between 30 and 35 percent this quarter from last quarter, Pegatron said. Non-notebook computer business is to see a quarterly decline as well, it said. In the January-to-March quarter, Pegatron reported a 64.3 percent year-on-year decline in net profit to NT\$1.67 billion (US\$56 million), from NT\$5.22 billion, hitting the lowest level in about 11 quarters.

Apple Manufacturers Beef Up Hiring to Meet Rising Market Demand

Apple's contract manufacturers Foxconn and Pegatron Corp are hiring more people to meet a reported order increase for the iPhone 13 series, even as other players in the domestic mobile phone industry are cutting shipments. Media reports have said that Apple's iPhone sales are relatively stable, and it may even increase production of iPhone 13 Pros in the second quarter this year.

Meanwhile, Xiaomi, OPPO and Vivo, China's three major mobile phone brands, have reportedly notified suppliers that the expected orders in the second quarter will be reduced by up to 20 percent compared with the previous production plan. The order cuts reflect the epidemic situation as well as the consideration of supply chain snags and weakened market demand, according to the report.

Apple Prepares to Switch the iPhone From Lightning to USB-C

After years of complaints from consumers—and a pending law from the European Union—Apple is finally preparing to switch the iPhone from Lightning to USB-C. Apple Inc. is testing future iPhone models that replace the current Lightning charging port with the more prevalent USB-C connector, according to people with knowledge of the situation, a move that could help the company conform with looming European regulations. By moving to USB-C, Apple would streamline the collection of chargers used by its various devices. Most of the company's iPads and Macs already rely on USB-C rather than Lightning. That means

that Apple customers can't use a single charger for their iPhone, iPads and Macs -- an odd setup given Apple's penchant for simplicity. Wireless chargers for both the iPhone and Apple Watch also use a USB-C connector for their power bricks.

China Supply Woes Hit Acer PC Production

PC vendor Acer Inc said that lockdowns in China to control COVID-19 upended key component supply and disrupted PC production, although chip shortages have been improving. While chip supply constraints largely eased in the first quarter, the company faces uneven supplies of key components due to COVID-19 restrictions in China, Acer chairman and CEO Jason Chen told an online news conference. "Semiconductor shortage was the biggest problem in the first half of last year," Chen said. "Now, we are beset by a supply chain issue caused by China's lockdowns." With key components unable to be delivered and backing up in warehouses, notebook computer makers have had to halt production, Chen said, adding that a full reopening,



and not gradual steps, would be the only way to resume production. Inventory has increased to about twice its normal levels due to port gridlocks, he said, adding that channel inventory has recovered to pre-pandemic levels. Demand is weakening as the war in Ukraine has stoked fears over inflation and an economic slowdown, Chen said, adding that lower household disposable income is affecting PC sales. Worldwide PC shipments fell 3 percent annually to 118.1 million units in the first quarter, Canalys data showed. However, commercial PCs and green PCs are growing, despite the industry downtrend, as enterprises are purchasing computers for employees returning to offices, he said, adding that sales of Acer's green Vero PC series expanded 6 percent month-on-month last month.

March Handset Sales Fall in China

China's handset shipments came to about 21.46 million units in March 2022, down 40% from a year earlier, with 5G smartphone shipments falling 41% on year to 16.19 million units, according to data compiled by the Chinese Academy of Information and Communication Technology (CAICT). For the first quarter of 2022, China's handset shipments totaled 69.35 million units representing a 29% decline compared to the same period in 2021, the CAICT data show. Apple has also seen its iPhone sales drop in China thus far this year. The vendor sold around two million iPhones in China during March, down from about six million units in January. Apple's iPhone sales in China hovered around 10 million units in the first quarter of 2022, according to CAICT. Apple's share of China's handset market in terms of unit sales also slid to about 10% in March from nearly 30% in January, CAICT disclosed. Xiaomi, Oppo, Vivo and other Chinese brand vendors sold a combined 57.65 million handsets in China in the first quarter of 2022, down 34% from a year ago, according to CAICT. According to Canalys, worldwide smartphone shipments dropped 11% on year to 311.2 million units in the first quarter of 2022.

China's Smartphone Market Dropped 14.1% in 1Q22 Under Soft Demand and Lack of Product Upgrades, IDC Reports

According to the IDC Worldwide Quarterly Mobile Phone Tracker, 74.2 million smartphones shipped in China in 1Q22, down 14.1% year-on-year (YoY). The decline was not only the result of a high comparison base year but also due to a continued soft demand caused by the lack of product upgrades and the surge of the COVID-19 cases. Looking into the full-year 2022, the market has a downside risk of shipping less than 300 million smartphones if it continues to see an absence of a fresh stimulus.

Foxconn Marches into Global EV Market with Lordstown, Fisker

Hon Hai Technology Group (Foxconn) has taken another significant step into the electric vehicle (EV) market by signing a contract manufacturing agreement and a joint venture agreement with Lordstown Motors (LMC). After the two parties entered into an asset purchase agreement (APA) on Nov 11 last year regarding LMC's production plant in Lordstown, Ohio, Foxconn on May 12 said it has completed the facility purchase and that Ohio will be its important EV manufacturing hub in North America. LMC is an OEM of electric light-duty trucks focused on the commercial fleet market. With LMC's production lines, Foxconn can start to promote wholly assembled EVs. It does not need to worry about orders because LMC's Endurance, an eletric truck model, can be its starting point.

On the heel of the LMC announcement, Fisker announced that it will produce its second vehicle, the Fisker PEAR, at Foxconn's factory in Ohio, according to its statement. "The Fisker PEAR will enter production in 2024. Both the Fisker and Foxconn teams are fully engaged and expect to build a minimum of 250,000 Fisker PEAR units a year at the plant after a ramp up period," Fisker said.

What is lucrative for Foxconn is its JV agreement with LMC. Through the agreement, Foxconn will invest US\$55 million and hold 55% of the JV. The two parties will jointly design and develop commercial EVs for the global market. Most importantly, the new models will be built through the Foxconn-led Mobility in Harmony (MIH).



Some Factories Might Leave China, but in the grand scheme of things it doesn't matter much

China still holds the cards for global supply chains, whether or not Covid lockdowns frustrate businesses in the near term. Companies and analysts have discussed moving factories out of China for years, especially since labor costs have climbed and U.S.-China trade tensions worsened.

The pandemic has reignited those conversations. Foreign businesses talk about how executives can easily travel to Southeast Asia factories, but not China. Some point to surging exports from Vietnam as an indicator that supply chains are leaving China. "Supply chain diversification is quite tricky because people always talk about it, and boardrooms love to discuss it, but often at the end of the day people find it's difficult to implement," said Nick Marro, global trade leader at The Economist Intelligence Unit.

When businesses had those discussions in 2020, it turned out that "China was able to remain open, while Malaysia, Vietnam were going offline," Marro said. "Really, the critical factor right now is how China plans on maintaining these [Covid] controls as the rest of the world opens up."

China's so-called zero-Covid strategy of swift lockdowns helped the country quickly return to growth in 2020. However, implementation of those measures has since tightened, especially this year as China faces a resurgence of Covid in Shanghai and other parts of the country.

'Significant' Interest in Vietnam

By the numbers, China's exports rose by 3.9% in April from a year earlier, the slowest pace since a 0.18% increase in June 2020. Vietnam in contrast saw exports jump by 30.4% in April from a year ago, following a nearly 19.1% year-on-year increase in March, Wind showed. The level of manufacturing interest in Vietnam is "very significant," Vishrut Rana, Singapore-based economist at S&P Global Ratings, said in a phone interview. "Vietnam has emerged as a very key supply chain node for consumer electronics." Vietnam's exports totaled \$33.26 billion in April, or about one-eighth of China's \$273.62 billion in global exports that month, according to Wind.

"From China's perspective, the movement out of local manufacturing is not going to be significant enough to really alter the nature of China's role in the overall supply chain," Rana said. "China still remains at the very center of the electronics network in APAC."

For the first four months of the year, foreign direct investment into China rose by 26.1% year-on-year to \$74.47 billion, China's Ministry of Commerce said Thursday. During that time, investment from Germany jumped by 80.4%, while that from the U.S. rose by 53.2%.

In contrast, Vietnam saw a 56% year-on-year drop in foreign direct investment to \$3.7 billion in the first four months of the year, Wind data showed. Foreign direct investment from the U.S. fell by 14%.

"It is very difficult to match the scale and scope of China's supply chains outside China at the moment," Rana said. Only supply chains for very specific products — like semiconductors or electric vehicle parts —might be moving to Vietnam, Malaysia or other countries, he added.

Autonomous Driving Tech Falters in Latest AAA Safety Tests

AAA recently conducted tests involving three vehicles equipped with an active driving assistance (Level 2) system: a 2021 Hyundai Santa Fe, a 2021 Subaru Forester and a 2020 Tesla Model 3, and the results aren't very encouraging as it relates to safety. Each vehicle was able to detect a slow-moving dummy vehicle traveling in the same direction as the test vehicle. In each test (five runs per vehicle), the test vehicle applied the brakes and matched the speed of the stand-in to avoid an impact. Similarly, all test vehicles were able to detect a simulated cyclist traveling in the same direction and slow their speed to prevent an impact. When the dummy vehicle was placed in the same lane to simulate a head-on collision resulting from an impaired or distracted driver, the test vehicles impacted it each and every time. AAA's advice to automakers is simple: listen to consumers and improve currently available systems before trying to focus on the future. "You can't sell consumers on the future if they don't trust the present," Brannon added.



Google Announces its First Smartwatch, a New Budget Phone and EarBuds

Google announced several new gadgets during its I/O developer conference, including its long-awaited Pixel Watch, a new budget Pixel 6a phone and headphones. It also teased its flagship Pixel 7 phone, which is coming this fall, and said it's working on a new tablet. Hardware isn't a key part of Google's business, but that seems to be changing as it continues to launch new products. Google generated \$61.24 billion in advertising revenue last quarter while its "other revenue" segment, which includes hardware sales, apps and non-advertising revenue, generated \$8.16 billion. But that increased from \$6.67 billion in the year-ago quarter, and CEO Sundar Pichai said the Pixel smartphone hit an all-time sales record despite supply constraints.

The Google Pixel Watch offers features similar to the Apple Watch's and sports a refined and sleek look that could appeal to customers who use Android instead of the iPhone, which it doesn't work with. It will integrate Fitbit's technology, allowing it to pull on years of research and development from the fitness startup it acquired last year. The Fitbit tech will let users track their sleep, heart rate and workouts. The watch runs Google's Wear OS software that lets users do things such as check messages and download music. Users can also get directions with Google Maps or connect it with their smart home devices, so they can, for example, change their thermostat temperature or make sure the lights are turned off. It will be available in the fall.

Google also announced its new Pixel Buds Pro earbuds. The Pixel Buds Pro will be available for preorder July 21 and on the shelves July 28 for \$199. The Buds Pro finally offer active noise cancellation, which helps block out background noise and means they'll compete more directly with Apple's AirPods Pro. The earbuds have beamforming mics, a voice accelerometer and wind-blocking mesh covers to allow for clearer calls. They'll also support spatial audio, which makes it sound as if music is coming from all around you. That's a feature also offered by Apple's AirPods.

Thailand to Build Zinc-ion Battery Plant

Thailand plans to utilize its large zinc reserves to mass produce zinc-ion battery for EV, according to the Bangkok Post. According to the report, the Thai government is setting aside THB192 million (US\$ 5.68 million) for the National Science and Technology Development Agency (NSTDA) to build a pilot zinc battery factory with 1MWh capacity this year. The Thai government plans to leverage its large zinc reserves to promote local EV development instead of importing lithium or other materials.

China Orders Government to Dump Foreign Computers

China has ordered central government agencies and state-backed corporations to replace foreign-branded personal computers with domestic alternatives within two years, marking one of Beijing's most aggressive efforts to eradicate key overseas technology from within sensitive institutions.

Staff were asked after the week-long International Workers' Day break, from last Saturday to Wednesday, to turn in foreign PCs for local alternatives that use operating software developed domestically, people familiar

with the plan said. The exercise, which was mandated by central government authorities, is eventually to replace about 50 million computers within the government, and more in state-connected firms, the sources said. The decision advances China's decade-long campaign to replace imported technology with local alternatives, a sweeping effort to reduce its dependence on geopolitical rivals such as the US for everything from semiconductors to servers and phones. It is likely to affect sales by HP Inc and Dell Technologies Inc, the country's largest PC brands after local champion Lenovo Group Ltd. Lenovo is likely to gain the most from Beijing's move. The nation's No. 1 PC maker relies on US chips but has set up its own chipmaking unit and has invested in at least 15 semiconductor design firms.



India Smartphone Shipments Declined for The Third Consecutive Quarter in 1Q22, says IDC

According to the International Data Corporation's (IDC) Worldwide Quarterly Mobile Phone Tracker, India smartphone shipments declined for the third consecutive quarter, shipping 37 million smartphone units in 1Q22, a drop of 5% YoY. The opening of the year was relatively slower as compared with 1Q21, due to the impact of the third wave of COVID, tight supplies especially for the low-end price segments, and rising inflation leading to increasing end consumer prices.

Amazon has Bold Ambitions to Take on SpaceX in the Satellite Internet Business

Amazon has a plan to deliver internet from space using 3,236 small satellites in low Earth orbit. It's called Project Kuiper. In April, the company signed a multibillion-dollar contract — the largest rocket deal in the history of the commercial space industry — for launches of its Kuiper satellites with three different entities: Jeff Bezos's Blue Origin, United Launch Alliance (a joint venture of Boeing and Lockheed Martin) and Europe's Arianespace. "In many ways, it's a response and a competition to Elon Musk and SpaceX with its Starlink network," said CNBC space reporter Michael Sheetz. SpaceX's Starlink already has about 2,000 satellites in orbit, serving about 250,000 total subscribers. The Federal Communications Commission has approved SpaceX to launch a total of 12,000 satellites. An estimated 37% of the world's population has still never used the internet, with 96% of those people living in developing countries, according to data from the International Telecommunication Union, a United Nations organization. And Amazon joins a list of tech giants, along with Facebook and Google, that have invested in developing digital infrastructure to support their own core services.

Worldwide Smart Home Devices Market Grew 11.7% in 2021 with Double-Digit Growth Forecast Through 2026, According to IDC

The worldwide market for smart home devices grew 11.7% in 2021 compared to 2020 with more than 895 million devices shipped, according to the International Data Corporation (IDC) Worldwide Quarterly Smart Home Device Tracker. Notwithstanding the market volatility due to the coronavirus pandemic and its impact on supply chains as well as demand-side shocks, IDC anticipates that the worldwide smart home device market will see steady growth over the next five years as smart home users expand their smart home ecosystems and seek more sophisticated connected experiences. The market's growth will also be driven by high broadband penetration and increasing numbers of wireless home networks, although consumer concerns around privacy, security, costs, and interoperability will constrain the market's development for the foreseeable future. North America held the largest share of unit shipments in 2021 and grew 11.4% year-over-year. The Asia/Pacific region was the second largest segment by shipment volume with 31% of shipments and had a year-over-year growth rate of 10.8%. Western Europe and Latin America posted solid growth of 14.8% and 11.2% respectively.

Networked video entertainment devices – such as smart TVs, streaming sticks, and internet-connected settop boxes – held the largest volume of shipments with 34.7% share and grew 4.8% year-over-year in 2021. Smart lighting devices are forecast to be the fastest growing category of devices with a five-year compound annual growth rate (CAGR) of 23.6%. Driving the market's growth at a global level is rising broadband penetration, rising disposable incomes, and rising consumer awareness of smart home devices and the cost savings, convenience, and energy efficiencies that they can deliver.

2022 North American Cable Assembly Manufacturers

The 2022 North American Cable Assembly Manufacturers report is a 1,088-page report, in PDF format, containing profiles on 1,040 companies in the United States, Canada, and Mexico that manufacture cable assemblies for resale. The profiles include company name, address, phone number, business manager, website, estimated 2019 worldwide revenues, facility size, manufacturing locations by region of the world, markets served, product types manufactured, agency approvals/certifications, minority business designations, and a brief description of the business.



Who can benefit from the report:

- Companies seeking potential subcontractors for the outsourcing of their cable assembly requirements.
- Companies that want to identify potential customers for their products and services, including connector and component suppliers, equipment/tooling suppliers, material suppliers, and distributors.
- Organizations seeking to acquire cable assembly companies can find a comprehensive list of potential targets in the report.

Included with the report is a sortable Excel database of the 1,040 manufacturers.

Highlights from the report:

- The worldwide cable assembly industry had a value of \$165.3 billion in 2019.
- In North America, there are at least 1,040 companies participating in the cable assembly industry with combined, worldwide revenues of over \$42 billion.
 - The state/province with the most cable assembly manufacturers is California.

The following page is an example of a company profile.

2022 North American Cable Assembly Manufacturers

A & A Electronics Assembly, Inc

915 Kiowa Avenue		2019 Cable Assembly Revenue: Estimated (\$ Millions)	\$3.6		
Lake Havasu City AZ	86403-2838	Estimated (\$ Willions)			
Phone:	(928) 453-7717	Date Established:	1982		
Fax:	(928) 855-3818				
https://www.aaelect.c	<u>om</u>	Legal Status:	Private		
carole@aaelect.com		Total Employees:	70		
Owner, President	Carol Kee	Facility (Square Feet):	30,000		
Product Specialties:	Industrial	Gross Revenue (\$ Millions)	\$14.4		
Quality Certifications:	ISO 9001:2015	☐ Minority Status			
Manufacturing Locat					
✓ United States	🗆 Canada 🗆 Mexico 🗀 Europe 🗀 Ja	pan 🗆 China 🗀 Asia Pacific 🗀 ROW			
Markets Sectors Serv	ved:				
☐ Automotive	□ Automotive □ Medical □ Mil/Aero ☑ Industrial □ Comp/Periph □ Business Eqp. □ Consumer				
☐ Transportation (Non-auto) ☐ Instrumentation ☐ Telecom/Datacom ☐ Other					
Products Manufactured:					
☑ Wire Harness ☐ Coax Assy ☑ Wire Leads ☐ Fiber Optic ☐ Flat Ribbon ☐ Coil ☑ Multi Conduct					
□Over Mold □ Other Assy					

Business Description

Established in 1982, A & A Electronics Assembly is headquartered in Lake Havasu City, AZ. The company deals with cable harness, box/chassis assembly, component programming, hardware assembly, conformal coating, lead free assembly. The company also offers wave soldering, press fit assembly custom fixture soldering, flex circuit, single sided reflow, radial lead, axial lead, multi layered PCB.

2022 North American Cable Assembly Manufacturers

The following table of contents shows the detail provided in this new report.

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Scope, Objectives, and Methodology

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To Order 2022 North American Cable Assembly Manufacturers



Research Report T-800-22, **2022 North American Cable Assembly Manufacturers** is available for \$5,745. This price includes a sortable excel spreadsheet. If you would like additional information about this report, or would like to place an order, please complete the following information, and e-mail or mail it to Bishop & Associates, Inc. To place your order on our website: https://store.bishopinc.com/.

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E-Mail Address:			
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	Illinois Customers Add 8.0%	% Sales Tax	
Credit Card No.			
	Expiration Date Mo.	Yr.	
	Performance and Forecast of the World Co	ciates, inc.	
	1209 Fox Glen Drive - St. Cha Phone: 630.443.27 E-mail: <u>bishop@bishopi</u> Website: <u>www.connectorin</u> Online Store: <u>https://store.bis</u>	702 inc.com dustry.com	

For Questions in **Europe:**Mr. Arthur Visser
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What's New ?

Bishop & Associates has recently completed several new research reports about the worldwide connector industry. A table of contents for each report can be found at https://store.bishopinc.com.

Report T-800-22	2022 North American Cable Assembly Manufacturers (May 2022) NEW
Report M-1010-22	World Automotive Connector Market (April 2022) NEW
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Report M-121-21	2021 Top 100 Connector Manufacturers (August 2021) NEW
Report C-122-21	2021 Connector Industry Yearbook (July 2021) NEW
Report M-310-21	Instrumentation Market for Connectors (June 2021) NEW
Report P-799-21	World Cable Assembly Market (May 2021)
Report P-410-21	Computer Server Market Trends and Connector Use 2020 – 2030 (May 2021)
Report M-607-21	World Industrial Market for Connectors (April 2021)
Report M-510-21	World Telecom Connector Market 2020-2025 (January 2021)
Report M-1601-20	Top 50 Medical Interconnect Solutions Companies (December 2020)
Report P-675-20	High-Speed Copper & Fiber Optic Connectors (November 2020)
Report M-980-20	5G Infrastructure – How 5G is Impacting Infrastructure Hardware and Connector Buying Trends (September 2020)

THE BISHOP REPORT - CONNECTOR INDUSTRY YEARBOOK

An annual corporate subscription to <u>THE BISHOP REPORT</u> (12 issues) is available for \$2,950, which includes an unlimited number of subscribers and one PDF version of the *Connector Industry Yearbook* report (normally \$1,500). *The Bishop Report* subscription includes access, through <u>Bishopinc.com</u>, to prior issues of The Bishop Report, 30-40 yearly News Briefs, Industry Financial Benchmarks, and various connector industry indices.

<u>Click here</u> to view an expanded report description, and a complete table of contents, for all Bishop & Associates' research reports.



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