The Bishop Report
Performance and Forecast of the World Connector Industry

Issue No. 360 | 4th Quarter 2022 | November 2022

Sales Up +1.3% in October
But Order Demand is Soft

360th Issue of the Bishop Report
This is the 360th issue of the Bishop Report, marking 30 years of publication. The report started with 12 subscriptions in 1992. Thirty years later, 150 companies subscribe, and thousands receive the Bishop Report through corporate subscriptions. Thank you for your continuing support of our work!

Regional Performance:
World sales are up +9.0% YTD in October, with North America achieving the highest growth at +17.2%.

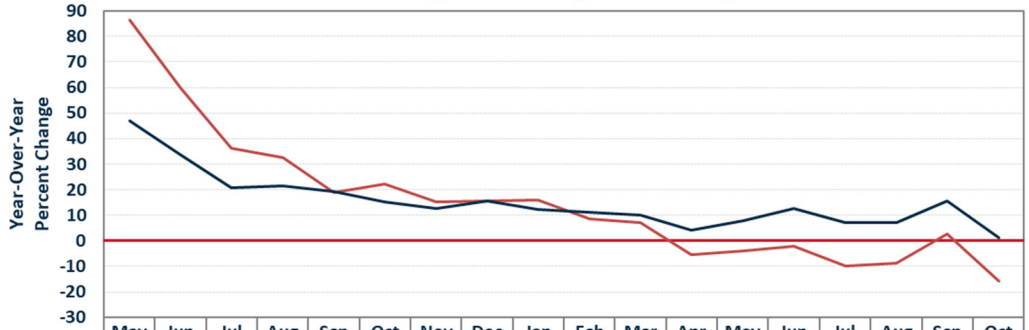
Industry Outlook:
With soft order demand, Bishop's 2022 sales forecast is for $83,822 million, up +7.5% over 2021 sales.

Industry Backlog:
October backlog was down $450 million from September.

2022 Currency Impact:
The industry grew +9.0% YTD in October in USD and -1.3% in local currencies.

October bookings were down -15.9%. Billings were up +1.3%, continuing a 26-month string of growth. Bookings, however, have been generally trending down. The backlog decreased by $450 million in October to approximately 15.2 weeks due to declining shipments in the quarter.

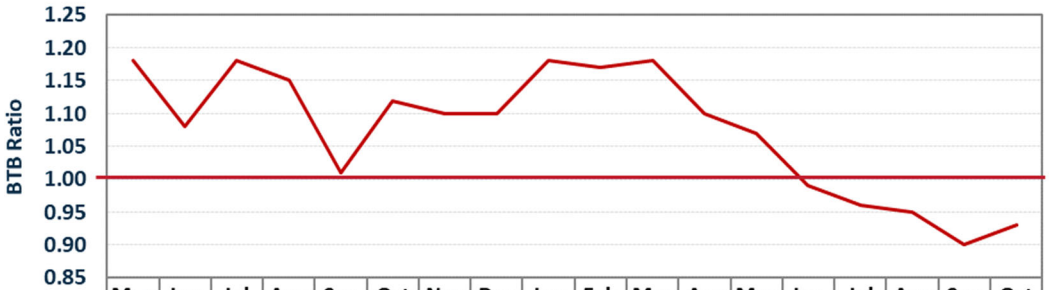
Bookings and Billings YOY Change



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	86.4	59.7	36.4	32.5	19.1	22.1	15.3	15.5	15.9	8.7	7.1	-5.5	-3.9	-2.1	-9.9	-8.8	2.6	-15.9
Billings	47.1	33.5	20.6	21.5	19.4	15.3	12.8	15.5	12.4	11.2	10.2	4.1	7.7	12.7	7.1	7.3	15.5	1.3

The book-to-bill ratio in October was 0.93 and YTD was 1.04.

Connector Industry Book-to-Bill

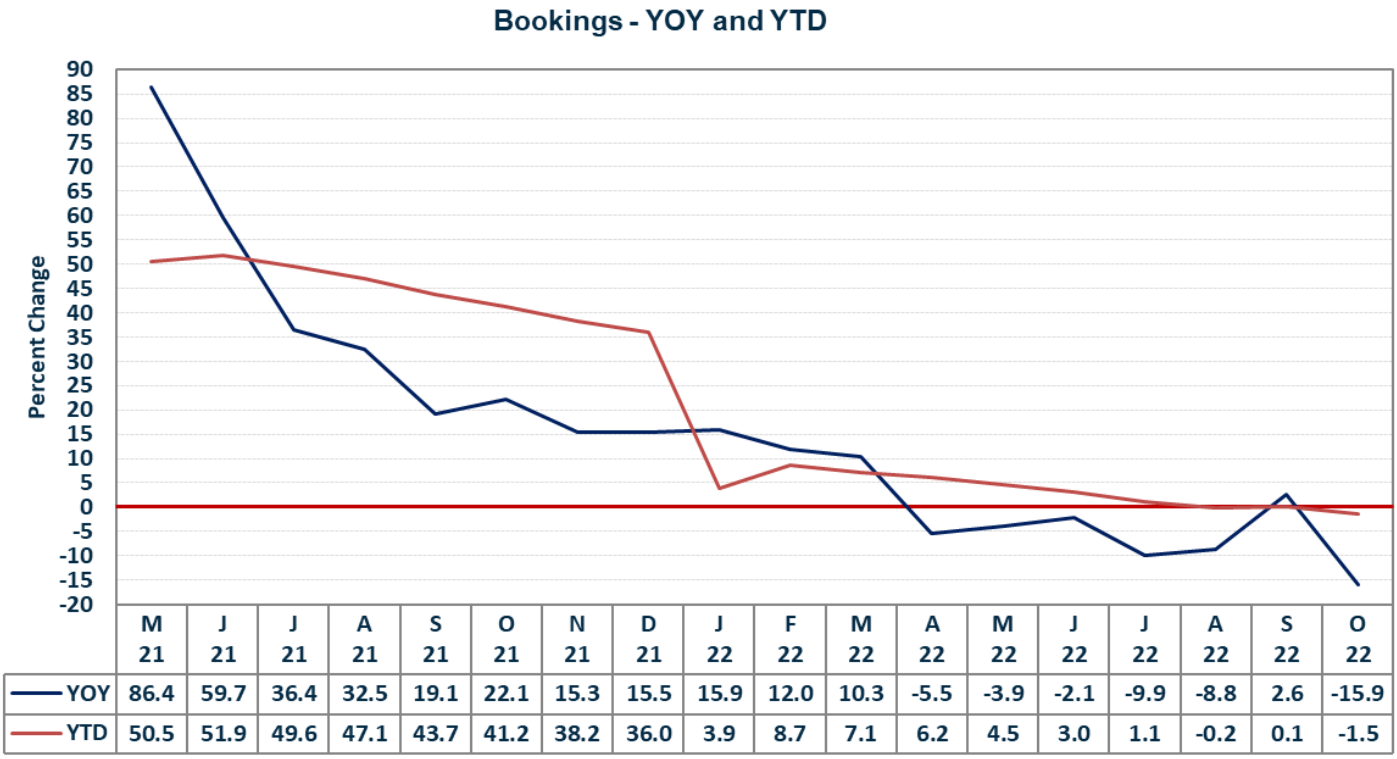


	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
BtB	1.18	1.08	1.18	1.15	1.01	1.12	1.10	1.10	1.18	1.17	1.18	1.10	1.07	0.99	0.96	0.95	0.90	0.93

Booking Highlights and Conclusions

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

	Sequential			Year-Over-Year			Year-To-Date		
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%	-8.5%	-21.8%	81.9%	-5.5%	-2.7%	42.9%	6.2%
May	2.9%	5.1%	7.0%	-24.8%	86.4%	-3.9%	-7.3%	50.5%	4.5%
Jun	7.0%	-8.3%	-6.7%	-11.6%	59.7%	-2.1%	-8.0%	51.9%	3.0%
Jul	15.2%	-1.9%	-9.6%	-1.0%	36.4%	-9.9%	-7.0%	49.6%	1.1%
Aug	10.7%	6.6%	8.0%	1.8%	32.5%	-8.8%	-5.8%	47.1%	-0.2%
Sep	-0.9%	-11.9%	-1.0%	8.4%	19.1%	2.6%	-4.3%	43.7%	0.1%
Oct	4.7%	6.8%	-12.4%	13.0%	22.1%	-15.9%	-2.6%	41.2%	-1.5%
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%	



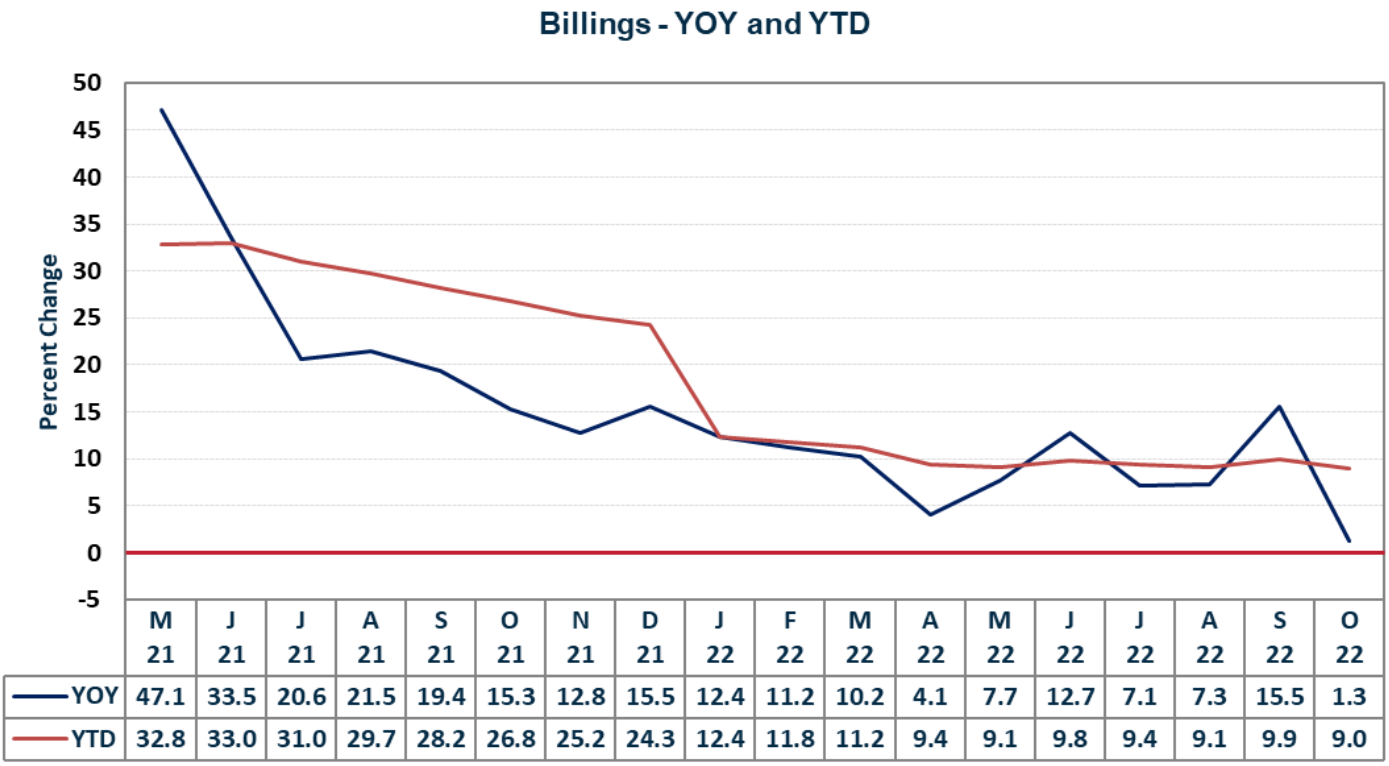
	M 21	J 21	J 21	A 21	S 21	O 21	N 21	D 21	J 22	F 22	M 22	A 22	M 22	J 22	J 22	A 22	S 22	O 22
YOY	86.4	59.7	36.4	32.5	19.1	22.1	15.3	15.5	15.9	12.0	10.3	-5.5	-3.9	-2.1	-9.9	-8.8	2.6	-15.9
YTD	50.5	51.9	49.6	47.1	43.7	41.2	38.2	36.0	3.9	8.7	7.1	6.2	4.5	3.0	1.1	-0.2	0.1	-1.5

- October bookings decreased -15.9% YOY. Bookings are down -1.5% YTD.
- Orders decreased -12.4% sequentially.
- The book-to-bill ratio for October was 0.93. The YTD ratio is 1.04.

Billing Highlights and Conclusions

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

	Sequential			Year-Over-Year			Year-To-Date		
Month	2020	2021	2022	2020	2021	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%	-6.6%	-19.9%	49.5%	4.1%	-7.2%	29.4%	9.4%
May	8.8%	7.0%	10.7%	-20.0%	47.1%	7.7%	-9.9%	32.8%	9.1%
Jun	5.8%	-3.8%	0.7%	-11.6%	33.5%	12.7%	-10.2%	33.0%	9.8%
Jul	9.0%	-2.0%	-7.1%	-1.6%	20.6%	7.1%	-9.0%	31.0%	9.4%
Aug	9.0%	8.7%	8.9%	-0.3%	21.5%	7.3%	-7.8%	29.7%	9.1%
Sep	1.7%	-2.3%	5.1%	5.0%	19.4%	15.5%	-6.3%	28.2%	9.9%
Oct	-1.0%	-3.4%	-15.3%	7.6%	15.3%	1.3%	-4.9%	26.8%	9.0%
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%	

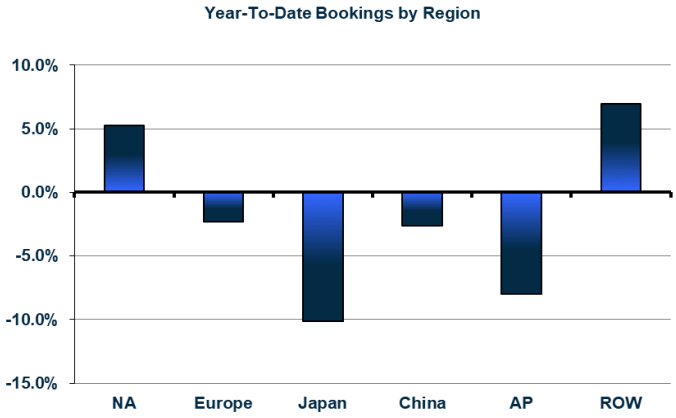


- October billings increased +1.3% YOY. YTD, billings are up +9.0%.
- Sequentially, billings decreased -15.3% in October.

Regional Performance: BOOKINGS

October 2022 Bookings

Region	Sequential	YOY	YTD
NA	-9.7%	-12.2%	5.2%
Europe	-15.2%	-10.3%	-2.3%
Japan	-4.0%	-19.7%	-10.1%
China	-15.9%	-14.9%	-2.6%
AP	-8.3%	-33.7%	-8.0%
ROW	-10.4%	-9.3%	7.0%
Total	-12.4%	-15.9%	-1.5%

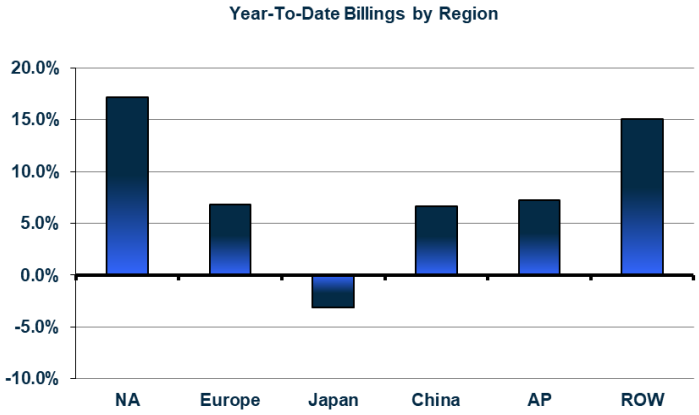


- October bookings decreased -15.9% YOY.
- All regions had double-digit YOY declines except ROW.
- Asia Pacific's YOY growth was down the most at -33.7%.
- The book-to-bill ratio was 0.93.

Regional Performance: BILLINGS

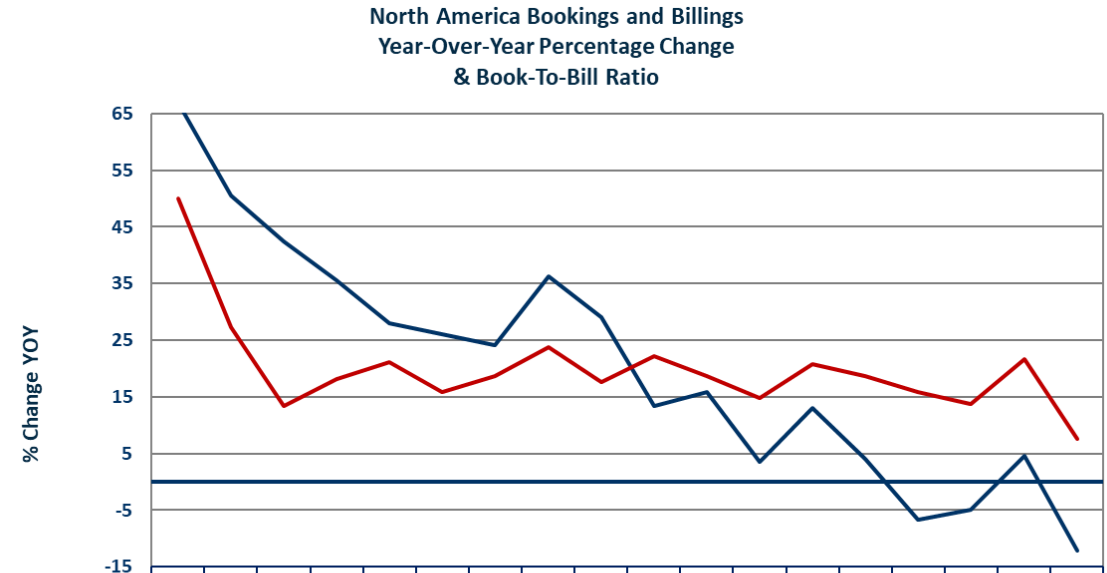
October 2022 Billings

Region	Sequential	YOY	YTD
NA	-15.3%	7.6%	17.2%
Europe	-23.8%	0.3%	6.8%
Japan	-8.4%	-8.8%	-3.1%
China	-8.7%	2.8%	6.7%
AP	-12.8%	-7.7%	7.3%
ROW	-13.3%	2.5%	15.0%
Total	-15.3%	1.3%	9.0%



- October connector sales increased +1.3% YOY, making this the 26th consectutive month of sales growth.
- Sales are up 9.0% through October but we expect slower demand in November and December. Full year 2022 will probably result in growth around +7.5%.
- All regions contracted sequentially.
- Even though industry growth is +9.0% year-to-date, performance in local currencies is only -1.3% (see page 15). Given the 8.5% average inflation rate in US dollars, this means that growth measured in units is likely negative.

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.



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	67.0	50.5	42.4	35.5	28.0	26.0	24.2	36.2	29.1	13.3	15.8	3.5	13.0	4.0	-6.7	-5.0	4.6	-12.2
Billings	50.1	27.2	13.4	18.2	21.1	15.8	18.7	23.7	17.6	22.2	18.6	14.8	20.8	18.6	15.9	13.8	21.6	7.6
Billing SEQ	8.2	23.7	-1.2	14.9	-5.3	-4.4	7.8	-1.9	-6.9	19.1	-4.6	-7.2	14.5	-6.6	-3.9	12.7	1.2	-15.3
BTB	1.13	1.18	1.16	1.13	1.01	1.14	1.11	1.07	1.25	1.10	1.16	1.11	1.06	1.04	0.94	0.95	0.87	0.93

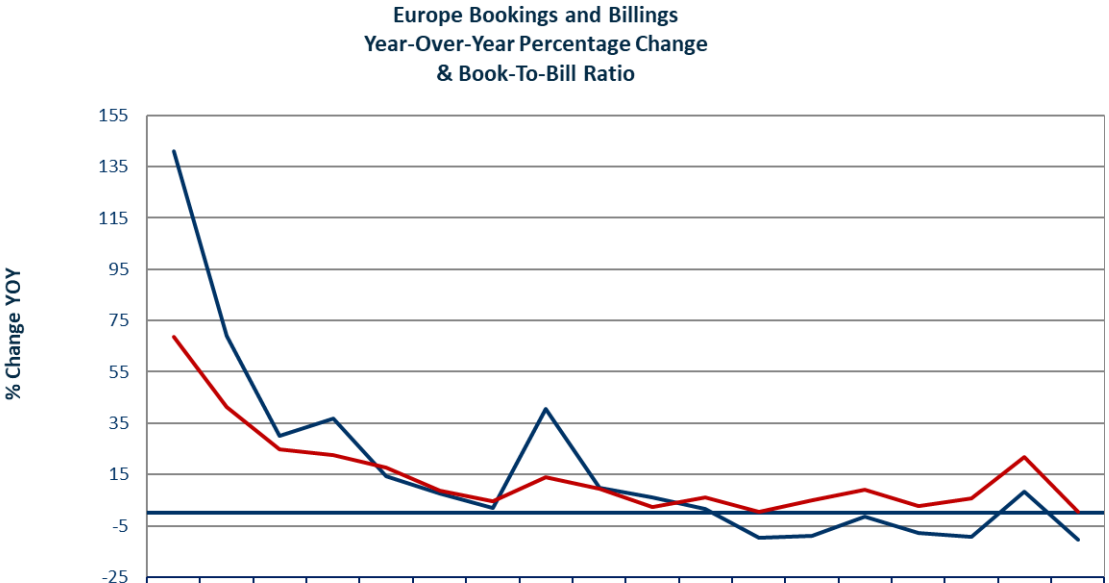
North America Performance

- Sales grew +7.6% and orders were down -12.2% YOY in October. North American billings were down sequentially -15.3%. The book-to-bill was 0.93.
- US inflation slowed to 7.7% in October, the smallest increase since January 2022. Core inflation at 6.3% in October was down from a four-decade record of 6.6% in September. The overall inflation rate has been above 5% for 17 months.
- Industrial production increased 3.3% YOY in October.
- Manufacturing PMI was revised up to 50.4 in October.
- US unemployment was up to 3.7% in October.
- Retail sales were up 8.3% YOY in October.
- Housing starts were down 4.2% sequentially in October and existing home sales were down 5.9% YOY.
- US automotive sales in October increased 9.5% YOY according to TD Economics.

Conclusions

Higher prices/inflation, continuing supply chain issues, rising interest rates, an unstable financial market, 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 "zero COVID" initiative is continuing to hamper manufacturing and logistics worldwide. These issues are negatively impacting the connector industry worldwide.

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.



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	141.2	69.2	29.9	36.8	14.5	7.6	2.1	40.4	9.9	6.0	1.5	-9.8	-9.0	-1.5	-7.7	-9.3	8.3	-10.3
Billings	68.7	41.4	25.0	22.5	17.6	8.8	4.6	13.9	9.6	2.4	6.2	0.6	5.0	9.1	2.8	5.6	21.7	0.3
Billing SEQ	10.3	45.7	-5.5	8.6	-1.8	-7.4	12.5	-9.0	-2.3	21.7	-4.5	-13.1	15.9	-2.9	-11.3	11.9	13.1	-23.8
BTB	1.22	1.13	1.14	1.12	0.98	1.08	1.06	1.13	1.18	1.27	1.14	1.10	1.06	1.02	1.02	0.96	0.87	0.97

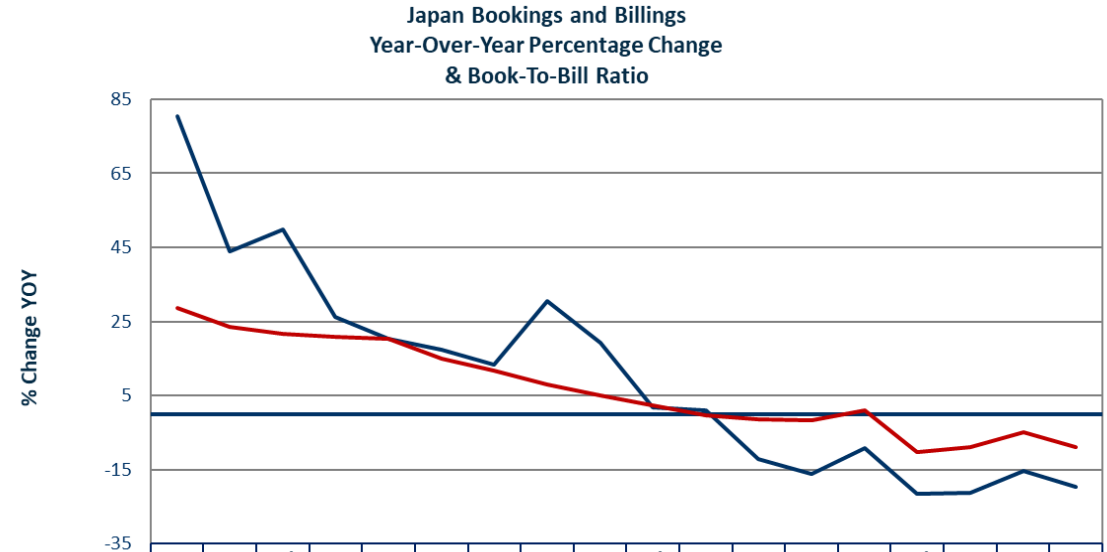
Europe Performance

- YOY billings were up +0.3% and orders were down -10.3%. The book-to-bill ratio was 0.97. Sequentially, sales were down -23.8%.
- Euro Area industrial production increased 4.9% YOY in September.
- The October manufacturing PMI was down to 46.4 from 48.4 in the prior month.
- Retail sales decreased 0.6% YOY in September.
- The inflation rate in October revised to a record high 10.6%. The largest contributor to the increase was energy. The UK inflation rate was 11.1%.
- Year-over-year in October, new car registrations grew 12.2%.
- The unemployment rate decreased to a revised 6.6% in September.

Conclusions

Although new car registrations grew in October, YTD they are down, largely in part to the war in Ukraine disrupting the supply chain. Automotive is the largest connector market in Europe. The connector industry appears to be headed for a difficult year in Europe given the ongoing semiconductor shortages, possible energy rationing, 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.



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	80.4	43.9	49.7	26.3	20.4	17.4	13.3	30.5	19.2	1.8	1.0	-12.1	-16.3	-9.1	-21.5	-21.3	-15.5	-19.7
Billings	28.7	23.6	21.8	20.8	20.4	15.0	11.6	8.0	4.9	2.4	-0.3	-1.4	-1.8	0.9	-10.3	-8.9	-4.9	-8.8
Billing SEQ	0.3	28.6	1.0	5.4	-3.4	-4.5	9.7	-4.5	-11.1	15.1	-5.0	-5.0	-0.2	4.9	-9.7	7.0	0.9	-8.4
BTB	1.23	1.10	1.17	1.10	1.08	1.14	1.13	1.14	1.17	1.12	1.38	1.09	1.05	0.99	1.02	0.95	0.96	1.01

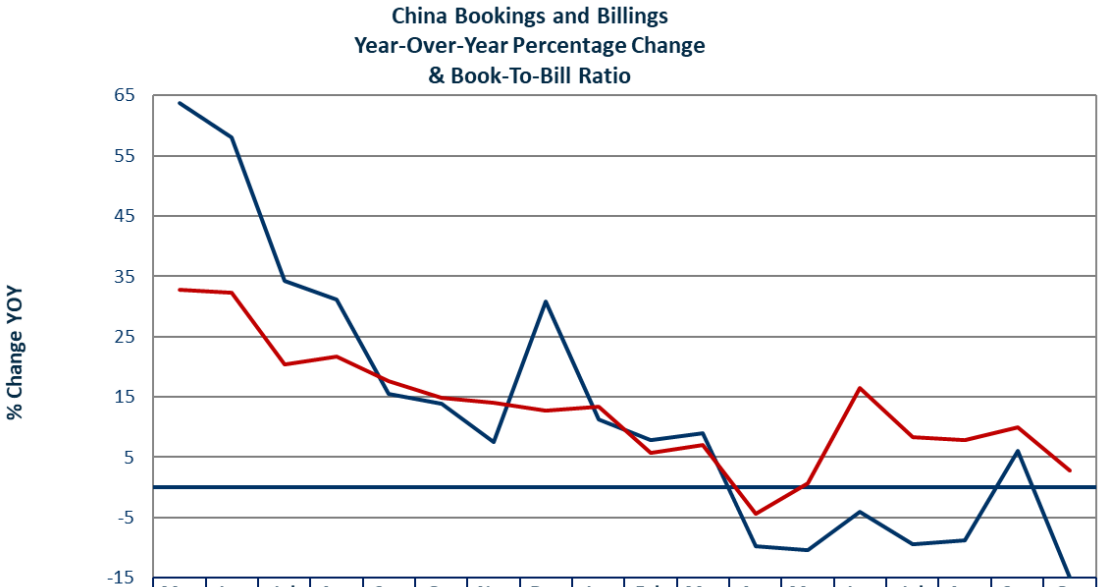
Japan Performance

- Bookings were down -19.7% in October. Sales declined -8.8%, and sequentially were down -8.4%. Japan's book-to-bill ratio was 1.01.
- The inflation rate in October increased to 3.7%.
- Japan's currency has devalued 29.9% against the US dollar thus far in 2022.
- The revised industrial production rate increased 9.6% YOY in September.
- September retail sales grew 4.5% YOY.
- Exports were up 2.1% sequentially in October.
- The October manufacturing PMI was 50.7.
- Housing starts increased 1.0% YOY in September.

Conclusions

Until April, Japan's bookings performance primarily was reflecting easy comparisons to 2021 results. The shortage of semiconductors is holding back growth in automotive industry sales in 2022. Billings have been weak for the last eight months primarily due to the devaluation of the yen to the US dollar.

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.



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	63.8	58.0	34.2	31.1	15.5	13.9	7.5	30.9	11.2	7.9	9.0	-9.7	-10.4	-4.0	-9.4	-8.7	6.0	-14.9
Billings	32.7	32.3	20.4	21.7	17.6	14.8	14.1	12.8	13.4	5.8	7.0	-4.4	0.6	16.5	8.3	7.8	9.9	2.8
Billing SEQ	4.2	28.6	0.3	5.6	0.9	-2.4	11.1	-5.2	-2.7	-3.9	3.2	-15.4	10.3	12.5	-6.6	5.2	2.9	-8.7
BTB	1.21	1.14	1.12	1.18	1.00	1.08	1.00	1.03	1.12	1.14	1.22	1.12	1.07	0.94	0.94	1.00	0.97	0.89

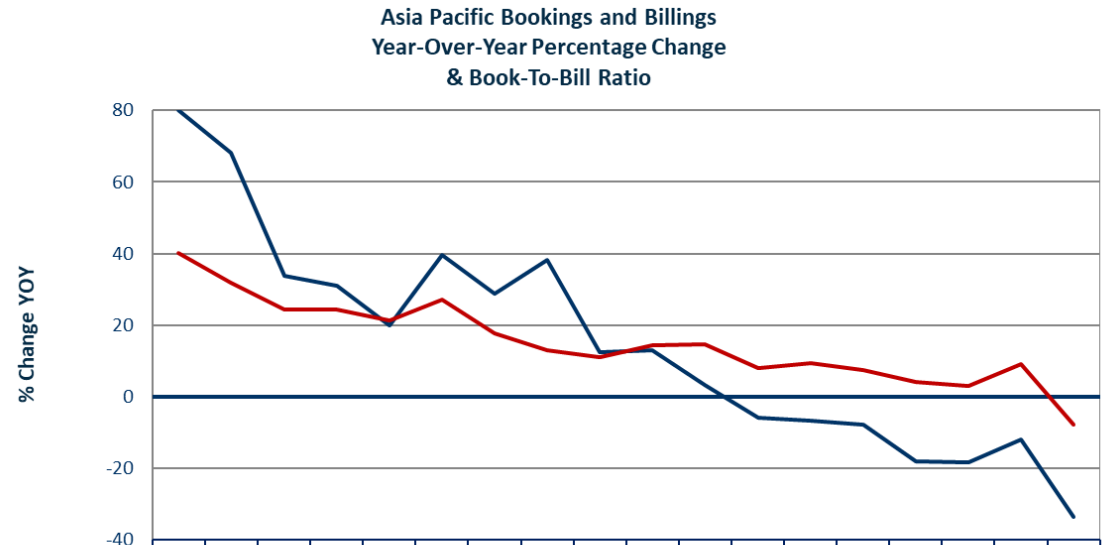
China Performance

- China's sales increased +2.8% YOY and orders decreased -14.9% YOY. The BTB was 0.89, which ties with the Asia Pacific and ROW regions for lowest BTB in a month. Sequentially, sales decreased -8.7% in October.
- Industrial production increased 5.0% YOY in October.
- China's manufacturing PMI increased to 49.2 in October.
- Retail sales decreased 0.5% YOY in October.
- Exports from China decreased 7.6% sequentially to $298 billion in October, down 0.3% YOY.
- China's total vehicle sales rose 6.9% YOY in October. YTD sales are up 4.6% from prior year.
- The inflation rate declined to 2.1% in October.

Conclusions

As has been noted in the past, China’s economy is slowing. Their headwinds include slowing sales domestically and internationally; recurring outbreaks of COVID variants (and strict lockdowns); supply chain issues; material shortages; power shortages; and political disagreements within the CCP. They have already stated that they do not believe they will achieve their GDP goals for 2022. These headwinds are already effecting the growth of the Chinese connector industry in 2022 and will likely affect them in 2023.

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.



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	80.0	68.3	33.9	31.1	20.0	39.7	28.7	38.1	12.4	12.9	3.4	-5.9	-6.7	-7.9	-18.2	-18.4	-12.1	-33.7
Billings	40.3	31.8	24.3	24.3	21.4	27.0	17.6	12.9	11.0	14.5	14.7	8.1	9.4	7.3	4.1	3.0	9.0	-7.7
Billing SEQ	5.7	40.6	-2.6	4.4	-3.1	4.7	4.4	-7.1	-2.2	5.2	0.9	-5.0	7.3	-2.9	-5.7	3.3	10.8	-12.8
BTB	1.24	1.09	1.09	1.09	1.06	1.23	1.50	1.04	1.16	1.15	1.21	1.07	1.06	0.94	0.86	0.96	0.84	0.89

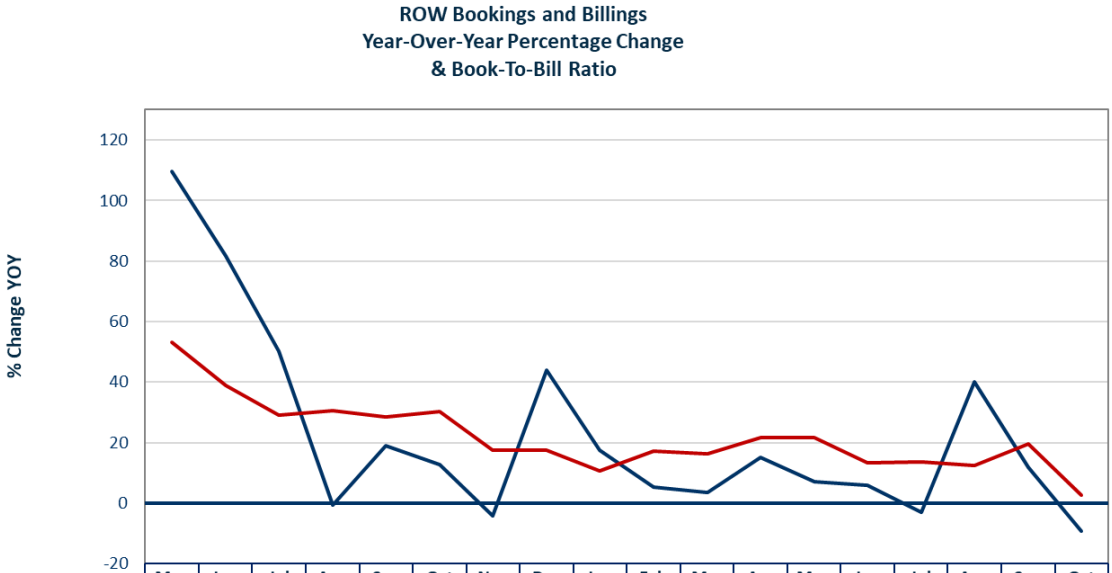
Asia Pacific Performance

- Orders were down -33.7% in October and sales decreased -7.7% YOY. The book-to-bill ratio was 0.89. Sequentially, sales decreased -12.8%.
- India's industrial production grew 3.1% YOY in September. Exports decreased 16.1% sequentially in October. Electrical and electronic equipment only represents 4.8% of total exports. The manufacturing PMI increased to 55.3 in October. Inflation in September decreased to 6.77%.
- South Korea's industrial production rose 0.8% YOY in September. Exports decreased 8.6% sequentially in October and declined 5.7% YOY. Electrical and electronic equipment comprise 31% of their exports. The manufacturing PMI rose to 48.2 in October contracting for the fourth straight month. Inflation increased to 5.7% in October.

Conclusions

India's and South Korea's economies continue to grow YOY but not robustly. South Korea's connector sales have a positive outlook with 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.



	May 21	Jun 21	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
Bookings	109.6	81.6	50.2	-0.6	18.9	12.7	-4.3	44.0	17.6	5.3	3.5	15.2	7.2	5.9	-3.1	40.1	11.8	-9.3
Billings	53.1	38.9	29.1	30.6	28.6	30.2	17.6	17.6	10.7	17.2	16.2	21.5	21.6	13.3	13.7	12.4	19.7	2.5
Billing SEQ	12.2	41.5	-0.5	10.9	-4.3	1.3	1.9	-7.1	-5.8	18.5	-3.3	-5.3	13.1	-8.2	-2.2	9.6	2.0	-13.3
BTB	1.20	1.23	1.29	0.74	0.93	1.01	0.85	1.89	1.16	1.20	1.07	1.11	1.06	1.02	1.10	0.92	0.86	0.89

Rest of World Performance

- Orders decreased -9.3% and sales increased +2.5% YOY in October. Sequentially, sales in the region decreased -13.3%. The book-to-bill ratio was 0.89.
- Brazil's industrial production increased 0.4% YOY in September. The inflation rate decreased to 6.47% in October from 7.17% in the prior month. The manufacturing PMI dropped to 50.8 in October from 51.1 in the previous month. The unemployment rate declined to 8.7% in September.
- Russia's economic data is still reported as unreliable at this point in time.

Conclusions

The region continues to experience growth within their connector industries. For the first time since November of 2020, YOY sales did not exhibit double-digit growth.

We anticipate that slowing economic growth in both countries will adversely affect connector growth in 2023. 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 continued 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 Shrinks

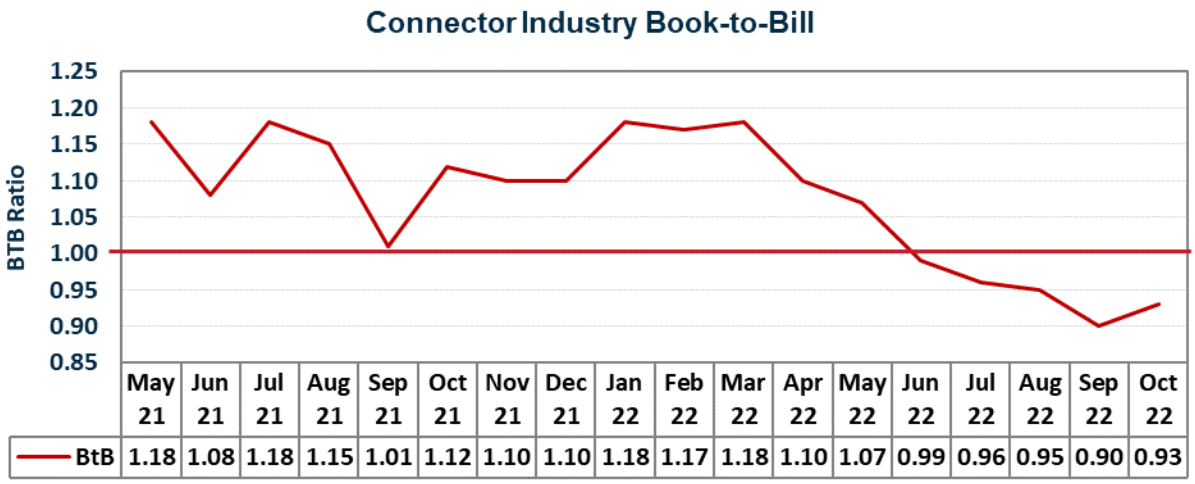
The industry backlog was $24,396 million at the end of October. This is down $450 million from the September backlog of $24,846 million. Based on the industry average weekly sales of $1,607 million, we have 15.2 weeks of backlog.

The following table displays the industry backlog year-to-date October 2022. To date, the industry has booked $73,260 million and achieved sales of $70,363 million in 2022.

Industry Backlog

	2021	YTD Oct 2022
BtB Ratio	1.14	1.04
Beginning Backlog	$10,530	$21,499
Bookings	$88,910	$73,260
Billings	$77,991	$70,363
Ending Backlog	$21,499	$24,396
Backlog in Weeks	14.3	15.2

The industry has reported five consecutive months of below 1.0 book-to-bill ratios. This is shown in the following graph. October's BTB ratio is 0.93 to 1.0. Note that the backlog declined by $450 million but the weeks of backlog increased from 14.8 to 15.2. This is because weekly shipments are also declining.



Since the end of May, the backlog has declined $1,977 million.

Ending Backlog Since May

Month	Ending Backlog	BTB Ratio
May	$26,373	1.07
June	$26,302	0.99
July	$26,036	0.96
August	$25,673	0.95
September	$24,846	0.90
October	$24,396	0.93

$ Millions

Connector demand is slowing down, and November and December will probably continue this trend.

2022 Industry Outlook

Connector sales were up +1.3% in October, making this the 26th consecutive month of monthly sales increases. However, October's sales growth was the lowest year-over-year monthly increase in the 26-month streak.

Other signs of slowing connector demand include:

- The book-to-bill ratio has been below 1.0 for five consecutive months erasing $2.0 billion from the backlog. (May's backlog of $26,373 million to October's backlog of $24,396 million).
- All geographic regions except ROW reported double-digit year-over-year decline in October orders. Asia was down -33.7%, Japan -19.7%, China -19.7%, North America -12.2% and Europe -10.3%.

Year-to-date world connector sales, however, are up 9.0%, ensuring that the industry will report a year with positive sales growth.

The following table displays our forecast for the full year 2022 growth of +7.5%. North America will have the best performance with growth of +13.6%.

Bishop Forecast by Region

Region	2021	2022	Percent Change
North America	$16,484	$18,719	13.6%
Europe	$16,278	$17,249	6.0%
Japan	$5,276	$5,173	-2.0%
China	$24,978	$26,494	6.1%
Asia Pacific	$11,384	$12,195	7.1%
ROW	$3,590	$3,993	11.2%
Total World	**$77,990.6**	**$83,821.7**	**7.5%**

$ Millions

We will publish our five-year forecast report in the next thirty days. You will receive an email announcing the publication.

Strong U.S. Dollar Reduces Growth from 9.0% in USD to -1.3% in Local Currencies

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

Local Currency to One USD
October 2021 versus October 2022

Currency	2021	2022	% Change
Euro	0.8622	1.0171	18.0%
Yuan	6.4578	7.1823	11.2%
Yen	113.0601	146.8989	29.9%

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 October YTD sales performance by region in US dollars and local currencies.

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

Region	U.S.$	Local Currency
North America	17.2%	17.2%
Europe	6.8%	-12.4%
Japan	-3.1%	-32.1%
China	6.7%	-5.3%
Asia Pacific	7.3%	7.3%
ROW	15.0%	15.0%
World	**9.0%**	**-1.3%**

Connector sales are 10.3 percentage points lower when stated in local currencies rather than in US dollars, putting industry performance at -1.3% in October (versus +9.0% in US dollars). This is the result of a stronger US dollar, on average, compared to the three primary currencies. This clearly shows no real growth in Europe, China, and Japan in unit volume.

Significant Events

Infinite Electronics to Acquire Cable Connectivity Group

Infinite Electronics Inc. signed a definitive agreement to acquire Cable Connectivity Group (CCG) from Torqx Capital Partners and TKH Group NV. The transaction is subject to customary regulatory approval and is expected to close in Q1 2023. CCG is a leader in the production, distribution and assembly of specialty cables and cable connectivity solutions. The company operates across Europe with offices and production and distribution facilities in the Netherlands, Belgium, Germany, Poland, Italy, and China. CCG is comprised of the following brands: Jobarco, Pantaflex, Capable, TKD, ConCab, Schrade Kabeltechnik, and KC Industrie. CCG has a global customer base across industrial and electronics end-markets.

Molex Opens New Factory in Guadalajara

Molex has nearly doubled manufacturing capabilities in Guadalajara with the opening of a 60,000-square-meter factory. The facility will focus on advanced engineering efforts and large-scale production for automotive, transportation, and industrial customers throughout North America and the world. The company, which has had a presence in Mexico for more than a half-century, invested $130 million in factory-of-the-future automation, robotics, and production processes—all to meet the surge in demand for electric vehicles. Planned with the potential to add another 100,000 square meters, the facility will take on the most complex challenges in the fast-evolving automotive space, including battery management, connectivity, vehicle safety and zonal architectures.

AMD 3Q22 Result Shows Server, Gaming Biz Growth Offsets PC Weakness

AMD announced 3Q22 revenue of US$5.6 billion on November 1, up 29% year-on-year. Analysts remain optimistic about its ability to continue growing market shares in the server market. Thanks to growth across the Data Center, Gaming and Embedded segments offset the 40% fall of the client segment, which bore the brunt of the personal computer market slump. Its 3Q inventory ballooned to US$3.37 billion from US$2 billion reported in December 2021.

Recession is Coming, Electronics Execs Agree

Most electronics manufacturing industry executives see a recession as inevitable, according to electronics trade group IPC. That echoes sentiments by analysts who presented at the ECIA Executive Conference in late October. IPC's October economic surveys found that 27 percent of industry executives believe the economy is already in a recession; 45 percent believe the economy will enter a recession in 2023; and 13 percent believe the economy will enter a recession in the fourth quarter of 2023. Industry executives expecting a recession are bracing for a longer one. ECIA's electronics component sales trend index fell below its baseline of 100 in October.

Bottlenecks Ease

At the same time, surveys show a decrease in the supply chain bottlenecks that have been plaguing the industry and employment has remained stable. Prices paid by manufacturers fell 5.1 percent in October, according to the Institute for Supply Management, from 51.7 in September to 46.6 percent in October. Supplier deliveries are in "faster" territory for the first time since February 2016, with the deliveries index decreasing by 5.6 percent in October to 46.8 percent. Production increased by 1.7 percent, to 52.3, compared with the September reading of 50.6. Manufacturing employment edged up slightly – 1.3 percent – to reach 50

last month. ISM survey panelists indicate their companies are continuing to manage head counts through hiring freezes and attrition to lower levels, with medium- and long-term demand still uncertain.

Global Inflation
Inflation continues to dominate the global narrative, experts say. The U.S. is likely past peak inflation while the situation worsens in Europe. Europe is expected soon to reach peak inflation, but prices continue to rise. Projections for economic growth in Europe in 2023 have been lowered, and now show a decline for the first time for the entire year. Slower growth in China, combined with U.S. sanctions, will impact the Chinese market for many multinationals. The economy remains below the targeted 5.5 percent growth expected for the year and will likely be closer to 3 percent. The yuan has fallen to its lowest level in 14 years.

Apple Warns Covid Restrictions in China are Hurting iPhone Production
Apple has temporarily reduced iPhone 14 production because of Covid-19 restrictions at its primary iPhone 14 Pro and iPhone 14 Pro Max assembly plant in Zhengzhou, China. The factory, operated by Foxconn, is operating at "significantly reduced capacity," Apple said. It warned that it would ship fewer units and that customers would experience longer wait times when ordering devices. Apple's warning brings up the possibility that it may sell fewer iPhones in the December quarter because it is having trouble making enough to meet demand. It previously signaled slowing growth in the December quarter last month. It currently takes 31 days to receive an iPhone 14 Pro if ordered from Apple's website, longer than the average 2-day lead time for less-expensive iPhone models.

Hon Hai Sets Up EV Joint Venture with Saudi Arabian Wealth Fund
Taiwan-based manufacturing giant Hon Hai Precision Industry Co. has set up an electric vehicle joint venture with a Saudi Arabian sovereign wealth fund chaired by Crown Prince Mohammed bin Salman bin Abdulaziz. The joint venture called Ceer, the first EV brand in Saudi Arabia, is scheduled to roll out its cars in 2025, and will target its home market as well as the Middle East and North Africa (MENA) region. Hon Hai will design, manufacture, and sell a range of vehicles for consumers, including sedans and sports utility vehicles. Ceer will license component technology from BMW for use in the vehicle development process, while Hon Hai will develop the electrical architecture of the vehicles. The Taiwanese company is expecting to produce a portfolio of products that will take the lead in the areas of infotainment, connectivity, and autonomous driving technologies. The fund said each vehicle will be designed and manufactured in Saudi Arabia and tested to the highest global automotive quality control and safety standards.

Hon Hai Lowers Business Outlook on China Issues
Hon Hai Precision Industry Co., the main assembler of Apple Inc's iPhones, yesterday said it plans to lower its business outlook for this quarter as the COVID-19 pandemic reduced factory utilization at its largest iPhone manufacturing site, in Zhengzhou, China. "The company's visibility for the fourth quarter is cautiously optimistic, but due to the pandemic affecting some of our operations in Zhengzhou, the company will revise the outlook downward for the fourth quarter," Hon Hai said in a statement yesterday.

Hon Hai in August told investors that revenue in the second half of this year would be flat compared with NT$2.7 trillion (US$84.16 billion) earned in the corresponding period last year. Gross margin in the third and fourth quarters would be higher than the 5.92 percent delivered in the first two quarters of this year, it said. Before the latest COVID-19 outbreak in Zhengzhou, Hon Hai had been reporting resilient revenue growth. The company yesterday posted NT$776.58 billion in revenue last month, marking the strongest October revenue in its history. Last month's revenue surged 40.39 percent from a year earlier, benefiting from its customers' product launches and strong server demand, but declined 5.56 percent from September, it said. Hon Hai said computing products, smart consumer electronics, and networking products all delivered double-digit percentage sales growth last month. From January to the end of last month, revenue expanded 16.89 percent to NT$5.44 trillion from NT$4.65 trillion a year earlier.

Lordstown Motors to Sell 18.3% Stake to Foxconn
Lordstown Motors Corp agreed to sell a substantial stake and give two board seats to manufacturing partner Foxconn Technology Group, replacing a previous arrangement for electric vehicle (EV) production with a new deal. Foxconn is to invest as much as US$170 million in the company through the purchase of preferred stock and 18.3 percent of common shares.

Germany Blocks Sale of Chip Factory to China Over Security Fears
The German government has blocked the sale of one of its semiconductor factories to a Chinese-owned tech company because of security concerns. Germany's economic ministry said in a statement that it had prohibited Elmos Semiconductor, which makes chips for the automotive industry, from selling its factory in Dortmund to Silex, a Swedish subsidiary of China's Sai Microelectronics. The decision had been taken "because the acquisition would have endangered the public order and safety of Germany," the ministry said in a statement. The planned deal had rattled German authorities concerned that Chinese investment in its critical infrastructure could compromise its intellectual property and leave it exposed to political pressure from Beijing.
Germany not 'naive'.

Electronics Industry Shows Mixed Results as Near-term Slowdown Looms
The momentum that permeated the electronics industry throughout a good part of the last few years has shown signs of cooling off recently. Overall, September quarter earnings were a mixed bag. Companies addressing markets as automotive and high-end computing seem to have held their own, but those that address the PC and server markets, such as Intel and AMD, have seen their fortunes tumble amidst a downturn in PC demand. The PC market, which saw robust demand during the midst of the COVID-19 crisis that led to a surge of PC purchases for remote work, has done an about-face as demand has fallen off the cliff and many workers are returning to offices. The other problem over the past few years has been shortages of many semiconductors and other electronics parts. While this remains an issue in industries such as automotive, there is evidence some inventory corrections are starting to occur and that may eventually bring the supply and demand balance into more of an equilibrium.

India Smartphone Market Declined By 10% YoY in 3Q22, Recording the Lowest Third Quarter Shipments Since 2019
India smartphone market declined 10% year-over-year (YoY) shipping 43 million units in 3Q22 (July-September), according to IDC Worldwide Quarterly Mobile Phone Tracker. This was the lowest third-quarter shipment since 2019 despite an earlier onset of the Diwali festivities. Weakening demand and increasing device prices negatively impacted festive buying.

India's PC Market Declined by 11.7% YoY in Q322 After Eight Consecutive Quarters of Growth
The India traditional PC market, inclusive of desktops, notebooks, and workstations declined by 11.7% year-over-year (YoY) in Q32022 (Jul-Sep) after eight consecutive quarters of growth despite strong shipments of 3.9 million units, according to new data from IDC. All segments declined except the government, which grew by 91.5% YoY as government orders materialized, leading to strong growth for the third consecutive quarter. While the desktop and workstation categories grew by 23.4% and 17.6% YoY respectively, the notebook category declined by 19.5% YoY. The demand for notebooks has softened across segments, forcing vendors to clear inventory.

Report No.: F-2022-02
November 2022

Bishop & Associates has just released the 2022 ***Connector Industry Forecast*** update. This eight-chapter report provides an in-depth, and detailed forecast of the worldwide connector industry. In addition to the detailed forecasts for each region of the world (North America, Europe, Japan, China, Asia Pacific, and ROW), an industry overview is included which provides current market trends, currency fluctuation effects, and industry sales performance, as well as an outlook narrative.

Worldwide and each regional forecast includes:

Computers & Peripherals
- Mobile Computers
- Desktops
- Servers
- Storage Equipment
- Input/Output Equipment
- Communication LAN Devices
- Other Computer Equipment

Business/Office Equipment
- Retail/POS Equipment
- Imaging Systems
- Other Business/Office Equipment

Instrumentation
- Automatic Test Equipment
- Analytical/Scientific Instruments
- Other Instrumentation

Medical Equipment
- Diagnostic & Imaging Equipment
- Therapeutic Equipment
- Other Medical Equipment

Industrial
- Factory Automation and Machinery
- Construction and Civil Engineering
- Energy Markets
- Other Industrial Equipment

Automotive
- Body Wiring & Power Distribution
- Powertrain
- Comfort, Convenience & Entertainment
- Navigation & Instrumentation
- Safety & Security

Transportation (non-auto)
- Commercial Vehicles
- RVs & Power Sports
- Commercial Air
- Marine
- Rail
- Construction
- Farm & Garden

Military/Aerospace

Telecom/Datacom
- Carrier Network
- Enterprise Network
- Wireless Infrastructure
- Subscriber Equipment
- Other Telecommunications

Consumer
- Personal/Portable Consumer
- Home Video Equipment
- Home Audio Equipment
- Consumer White Goods

Other Consumer

2022 – A Year of Challenges and Rewards!

After what we thought would be one of the most interesting years ever, 2022 has shaped up to be full of even more challenges and rewards than 2021. The connector industry entered 2022 with strong bookings and sales, following a year, where sales grew an astonishing 24.3%. Although, there have been a few hiccups and road bumps along the way, the industry has maintained a positive outcome year-to-date in 2022.

Bookings, although still very high, started to decline in April, dropping from double digit growth to a single-digit decline. Year-over-year bookings remained in negative territory through September, where they once again returned to low single-digit growth, only to experience a double-digit decline in October. On a year-to-date basis, bookings dropped from double-digit growth in 2021 to low and even negative single-digit growth in late 2022.

Industry Sales Performance by Region

As indicated by the chart below, growth was not equal across all regions in 2021 nor will it be in 2022. The ROW region, which includes Central and South America, South Africa, and Russia saw the greatest growth at 31.2%. The ROW region was followed by Europe with growth of 26.8% and the Asia-Pacific region with growth of 25.9%. China, the largest region for electronic connector sales increased 23.8%. Japan, which has struggled for the past several years to bring sales back to their high of $6.4 billion in 2012, showed the least growth, with sales only increasing 19.1%. North America, who had previously proved to the world that they could rapidly divert manufacturing capacity from one industry to another, saw connector sales increase a healthy 22.2%.

2020 and 2021 Connector Sales by Region
With Percent Change

Region	2020	2021	Percent Change
North America	$13,491.5	$16,484.0	22.2%
Europe	$12,837.5	$16,278.4	26.8%
Japan	$4,430.9	$5,275.7	19.1%
China	$20,184.3	$24,978.3	23.8%
Asia-Pacific	$9,045.0	$11,383.9	25.9%
ROW	$2,737.5	$3,590.3	31.2%
Total World	**$62,726.7**	**$77,990.6**	**24.3%**

$ Millions

Reviewing 2022, you see quickly that North America, which was ranked fifth out of six regions for percentage growth in 2021, is ranked number one in 2022 with double-digit growth of YY.6%. North America is followed by the ROW region, who drops from number one to number two in percentage growth, and who is anticipated to finish 2022 with double-digit growth of YY.2%. Japan, who as we previously mentioned, has struggled to bring sales past the $5 billion mark, will show the lowest percentage increase, with sales declining -2.0%.

Unlike 2021, where the region with the greatest percentage increase in sales was not the same region that exhibited the greatest increase in total dollars, North America will also represent the region with the greatest overall growth in sales dollars. North America will see sales dollars increase $X,XXX million, followed by China, where sales dollars will increase $X,XXX million. As in 2021, Japan will show the least increase in sales dollars, increasing only $XX million.

Please note currently we still are classifying economic information coming out of Russia as unreliable.

2021 and 2022F Sales by Region
With Percent Change

Region	2021	2022F	Percent Change
North America	$16,484.0	$XX,XXX.X	X.X%
Europe	$16,278.4	$XX,XXX.X	X.X%
Japan	$5,275.7	$X,XXX.X	X.X%
China	$24,978.3	$XX,XXX.X	X.X%
Asia-Pacific	$11,383.9	$X,XXX.X	X.X%
ROW	$3,590.3	$X,XXX.X	X.X%
Total World	**$77,990.6**	**$8X,XXX.X**	**X.X%**

$ Millions

In addition to connector sales results varying by region in 2021, electronic connector sales will also vary remarkably by market sector in 2022. As the table on the following page shows, in 2021, the industrial market, which encompasses a variety of equipment, including industrial automation and process control equipment, robotics, machine tools, and machinery, energy generation and distribution, and building and civil engineering saw the greatest percentage growth, at 29.3%. The industrial market was followed by the telecom/datacom market where sales grew a strong 26.4%. Naturally this growth was driven by the increase in internet activity and the continuing drive towards 5G. These two market sectors were followed by the medical equipment sector, where not only the need to increase or replace therapeutic equipment drove sales, but also the increase in diagnostic equipment. Surprisingly enough, these two market sectors were followed by the transportation sector, where increases in rail and commercial vehicles continued to drive the market.

2020 and 2021 Connector Sales by Market Sector
With Percent Change

Equipment Sector	2020	2021	Percent Change
Computers & Peripherals	$8,355.0	$10,239.2	22.6%
Business/Office Equipment	$724.2	$879.2	21.4%
Instrumentation	$1,811.7	$2,257.3	24.6%
Medical	$1,966.6	$2,476.4	25.9%
Industrial	$7,721.8	$9,980.7	29.3%
Automotive	$14,145.8	$17,047.1	20.5%
Transportation	$4,344.6	$5,431.2	25.0%
Military/Aerospace	$3,770.6	$4,671.0	23.9%
Telecom/Datacom	$14,479.4	$18,301.3	26.4%
Consumer	$3,038.4	$3,757.8	23.7%
Other Equipment	$2,368.6	$2,949.4	24.5%
Total World	**$62,726.7**	**$77,990.6**	**24.3%**

$ Millions

2022 Outlook

With industry backlog still exceedingly high, Bishop is forecasting 2022 sales to grow by Y.Y% to $XX,821.7 million. We anticipate the greatest percentage increase will occur in North America, where sales will increase YY.Y%, followed by ROW where sales will increase YY.Y%. As seen in the past few years, in US dollars, the smallest growth will be seen in the Japanese region, where connector sales will decrease by $XXX.9 million or 2.0%. The Japanese region will be followed by ROW, where although percentage wise sales will show low double-digit growth, sales in US dollars will only equate to growth of $XXX.8 million.

2022F Connector Forecast by Geographic Region
With Percent Change

Region	2021	2022F	Percent Change
North America	$16,484.0	$XX,XXX.X	Y.Y%
Europe	$16,278.4	$XX,XXX.X	Y.Y%
Japan	$5,275.7	$XX,XXX.X	Y.Y%
China	$24,978.3	$XX,XXX.X	Y.Y%
Asia-Pacific	$11,383.9	$XX,XXX.X	Y.Y%
ROW	$3,590.3	$XX,XXX.X	Y.Y%
Total World	**$77,990.6**	**$XX,XXX.X**	**Y.Y%**

$ Millions

Forecast Assumptions

Forecasting is always difficult, especially during challenging times. Projecting future business conditions in this environment is almost impossible. Consider the following economic headwinds, political challenges, and uncertainties.

- We have still not totally come out of a global pandemic. Although great strides have been made to bring things back to previous conditions, continued outbreaks of both old and new variants of COVID, have made that extremely difficult. In addition to COVID, greater attention is also being given to other diseases including Monkey Pox and RSV (Respiratory Syncytial Virus).

- Inflation is increasing, as are interest rates, leaving less discretionary income for consumers to use on non-necessary items, especially things like recreational vehicles, second homes, and personal watercraft.

- World GDPs are slowing in all economies.

- We have a semiconductor shortage that is predicted to last through the balance of 2022 and the beginning of 2023. This is affecting the automotive, computer, and consumer electronics/appliances industry extensively.

- We have a global supply chain backlog, with shipping containers gridlocked, a global shortage of truck and crane operators, and rising transportation costs (fuel and maintenance)

- Record high petroleum prices, sparking shortages and record high prices.

- An ongoing labor shortage, with studies showing that by 2030, we will be an estimated 85 million workers short globally!

- Increasing political tensions: War in Ukraine, deepening friction between China and Taiwan, North Korea's launching of eight ballistic missiles into the waters east of the Korean peninsula and China's announcement that they have equipped on their six nuclear -powered submarines, JL-3 intercontinental ballistic missiles capable of hitting the continental US.

- Iran is ramping up its nuclear program, after discussions with the Biden administration to rejoin the JCPOA stalled due to Russia's demand for more exemptions from sanctions.

- Although the Department of Homeland Security (DHS) announced that the secretary of Homeland Security designated Afghanistan Temporary Protected Status (TPS) for 18 months, effective May 20, 2022, through November 20, 2023, they are still being led by the Taliban, an organization that is notorious for cruelty and aggression.

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

Table of Contents

To Order *Connector Industry Forecast*

Research Report F-2022-02, ***Connector Industry Forecast*** is available for $5,285. 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: **http://store.bishopinc.com/**.

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Connector Industry Forecast

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Phone: 630.443.2702
E-mail: bishop@bishopinc.com
Website: www.connectorindustry.com
Online Store: http://store.bishopinc.com/

For Questions in **Europe:**
Mr. Arthur Visser
Bishop & Associates, Inc.
Phone: (32) 2.660.3696
Email Arthur Visser

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 F-2022-02**	**Connector Industry Forecast (November 2022) NEW**
☐	**Report M-1200-22**	**Military Ground Vehicle Market for Connectors (October 2022) NEW**
☐	**Report P-799-22**	**World Cable Assembly Market (September 2022) NEW**
☐	**Report M-121-22**	**2022 Top 100 Connector Manufacturers (August 2022) NEW**
☐	**Report P-675-22**	**Copper and Fiber Connectivity in the Data Center (July 2022) NEW**
☐	**Report C-122-22**	**2022 Connector Industry Yearbook (July 2022) NEW**
☐	**Report T-800-22**	**2022 North American Cable Assembly Manufacturers (May 2022) NEW**
☐	**Report M-1010-22**	**World Automotive Connector Market (April 2022) NEW**
☐	**Report M-700-22**	**World Connector Market Handbook (March 2022)**
☐	**Report P-420-22**	**IC Sockets – Systems & Connector Forecast 2020-2030 (January 2022) NEW**
☐	**Report P-520-21**	**The World I/O Rectangular Connector Market 2021 (October 2021)**
☐	**Report P-430-21**	**World Circular Connector Market 2021 (September 2021)**
☐	**Report M-310-21**	**Instrumentation Market for Connectors (June 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)**
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Bishop & Associates Inc.
1209 Fox Glen Drive • St. Charles, IL 60174
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