The Bishop Report
Performance and Forecast of the World Connector Industry

Issue No. 358 | 3rd Quarter 2022 | September 2022

Sales Up +4.5% in August and Bookings Down -3.2%
Backlog Increased Slightly

Regional Performance:
World sales are up +8.4% YTD August.

In August, North America achieved the highest regional sales growth at +16.9% YTD.

ROW has the highest YTD growth in bookings at +10.6%.

Industry Outlook:
By our 12-year historical data average, industry sales could reach $84,027 million with +7.7% growth. Bishop's 2022 sales forecast, however, is for a more conservative $82,989 million, up +6.4%.

Industry Backlog:
August backlog was $26,641 million equaling 16.9 weeks. This is an increase of $283 million from July.

2022 Currency Impact:
The industry grew +8.4% YTD in August in USD and 0.8% in local currencies. Sales growth is 7.6 percentage points lower when stated in local currencies.

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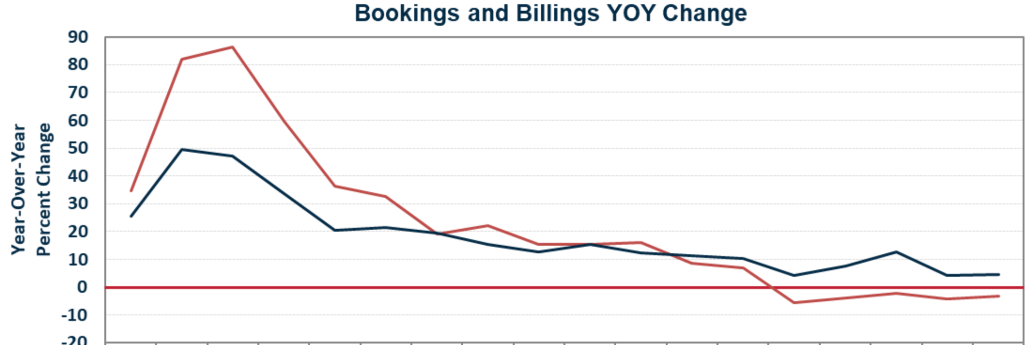
August bookings were down -3.2% and have now contracted for five consecutive months. Billings were up +4.5%, continuing a 24-month string of growth, that is now trending down. Backlog increased to $26,641 million in August, approximately 16.9 weeks.

Bookings and Billings YOY Change



	Mar 21	Apr 21	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
Bookings	34.5	81.9	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	-4.2	-3.2
Billings	25.5	49.5	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	4.1	4.5

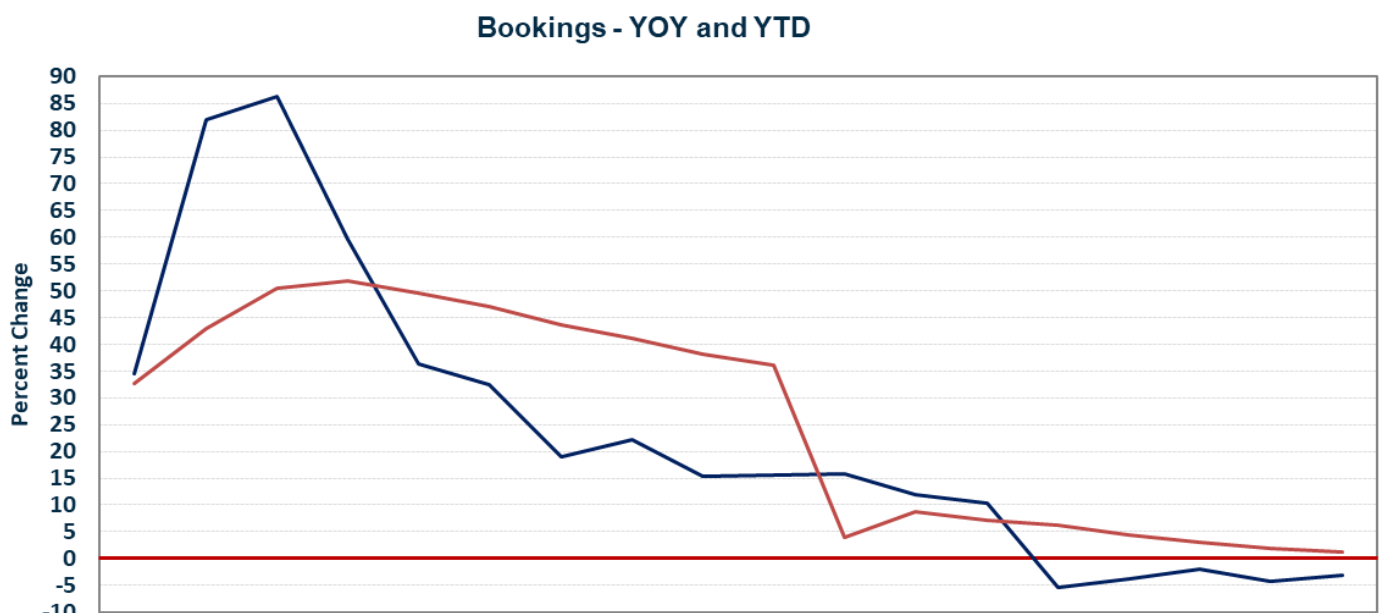
The book-to-bill ratio in August was 1.04 and YTD was 1.09.

Connector Industry Book-to-Bill

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%	-3.8%	-1.0%	36.4%	-4.2%	-7.0%	49.6%	1.9%
Aug	10.7%	6.6%	7.5%	1.8%	32.5%	-3.2%	-5.8%	47.1%	1.3%
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%	



	M 21	A 21	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
YOY	34.5	81.9	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	-4.2	-3.2
YTD	32.8	42.9	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	1.9	1.3

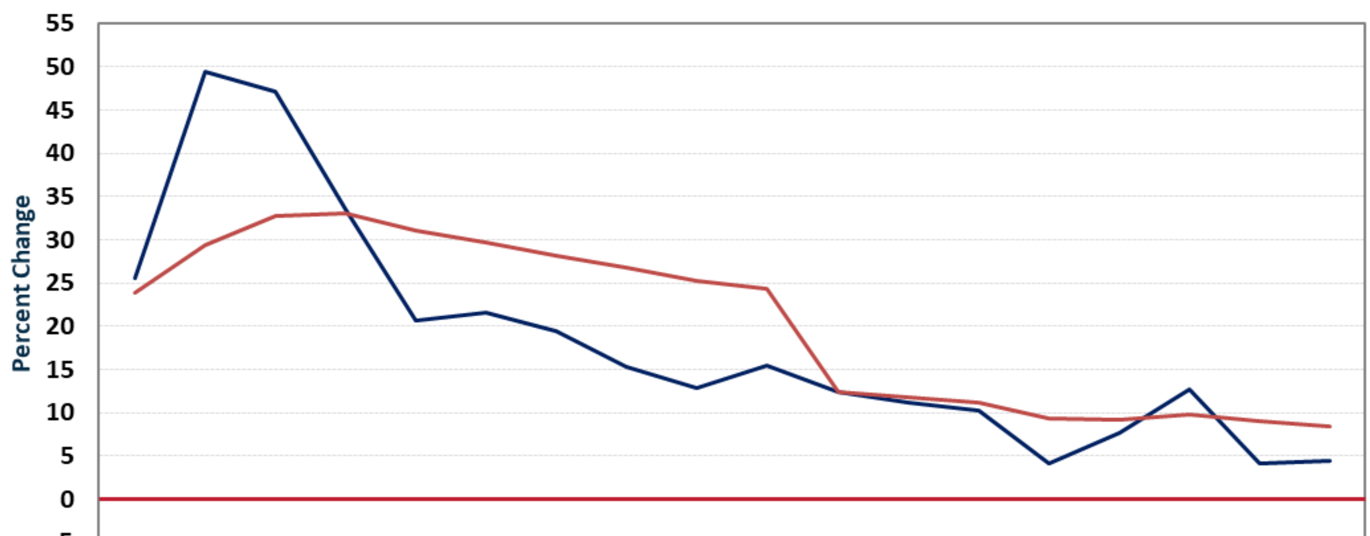
- August bookings declined -3.2% YOY. Bookings are up +1.3% YTD.
- Orders increased +7.5% sequentially.
- The book-to-bill ratio for August was 1.04. The YTD ratio is 1.09.

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%	9.6%	-1.6%	20.6%	4.1%	-9.0%	31.0%	9.0%
Aug	9.0%	8.7%	9.2%	-0.3%	21.5%	4.5%	-7.8%	29.7%	8.4%
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



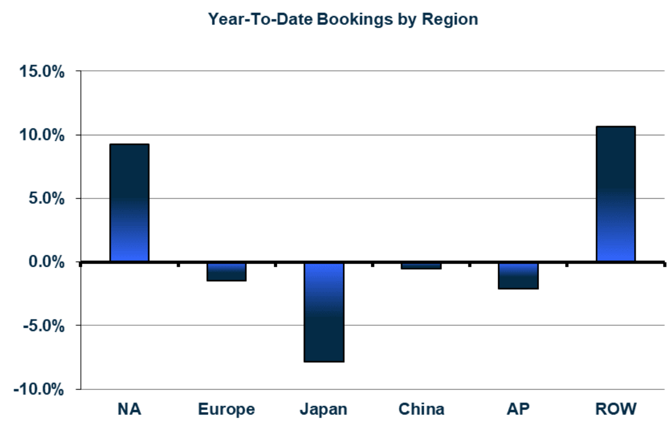
	M 21	A 21	M 21	J 21	J 21	A 21	S 21	O 21	N 21	D 21	J 22	F 22	M 22	A 22	M 22	J 22	J 22	A 22
YOY	25.5	49.5	47.1	33.5	20.6	21.5	19.4	15.3	12.8	15.5	12.4	11.2	10.2	4.1	7.7	12.7	4.1	4.5
YTD	23.8	29.4	32.8	33.0	31.0	29.7	28.2	26.8	25.2	24.3	12.4	11.8	11.2	9.4	9.1	9.8	9.0	8.4

- August billings increased +4.5% YOY. YTD, billings are up +8.4%.
- Sequentially, billings increased +9.2% in August.

Regional Performance: BOOKINGS

August 2022 Bookings

Region	Sequential	YOY	YTD
NA	12.7%	1.3%	9.3%
Europe	4.5%	-4.9%	-1.5%
Japan	-0.8%	-19.7%	-7.8%
China	10.9%	-2.7%	-0.5%
AP	3.1%	-11.5%	-2.1%
ROW	-7.8%	52.4%	10.6%
Total	7.5%	-3.2%	1.3%

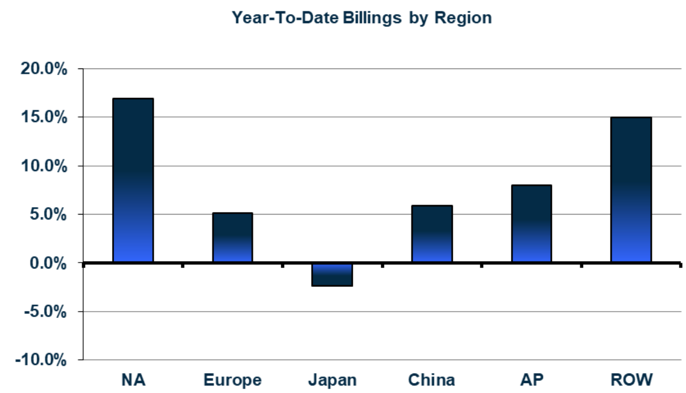


- August bookings decreased -3.2% YOY.
- North America was the only region that reported YOY growth in August.
- Japan’s growth was down the most at -19.7%.
- Backlog grew slightly but we anticipate it will decline over the remainder of the year.

Regional Performance: BILLINGS

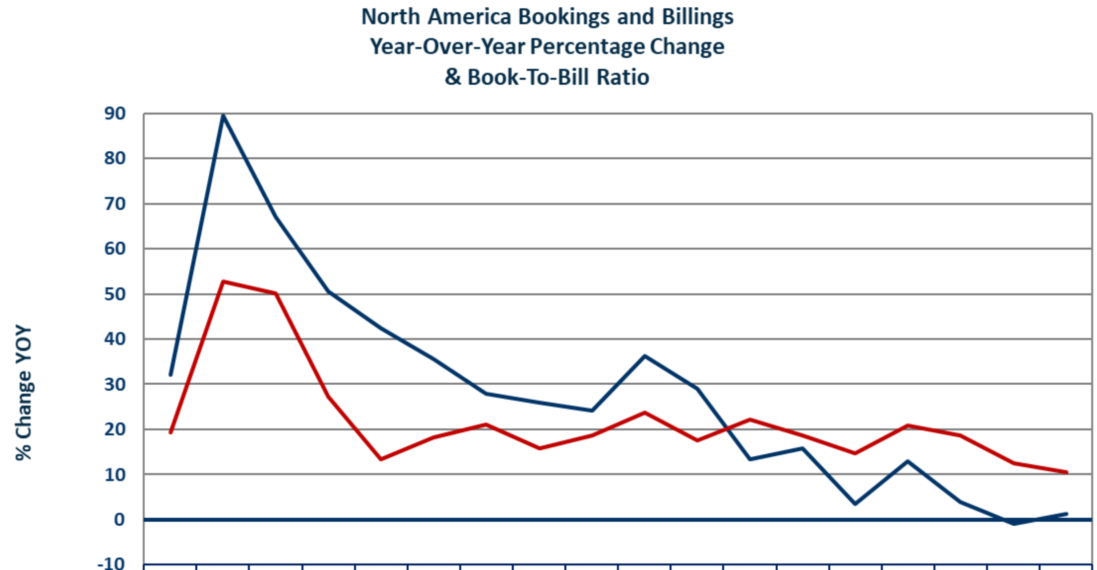
August 2022 Billings

Region	Sequential	YOY	YTD
NA	13.1%	10.6%	16.9%
Europe	12.1%	3.4%	5.1%
Japan	7.1%	-9.7%	-2.4%
China	5.3%	4.7%	5.9%
AP	3.4%	-0.2%	7.9%
ROW	10.0%	8.4%	15.0%
Total	9.2%	4.5%	8.4%



- August connector sales increased +4.5% YOY. The industry is up +8.4% YTD with all regions, except Japan, showing growth.
- All regions grew sequentially.
- All regions had YOY growth in August except Japan and Asia Pacific.
- Even though industry growth is +8.4% year-to-date, performance in local currencies is only +0.8%. Given the 8.5% average inflation rate in US dollars, this likely means that growth measured in units is flat to 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.



	Mar 21	Apr 21	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
Bookings	32.1	89.5	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	-1.0	1.3
Billings	19.4	52.7	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	12.6	10.6
Billing SEQ	-1.7	0.4	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	-6.7	13.1
BTB	1.18	1.23	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	1.02	1.04

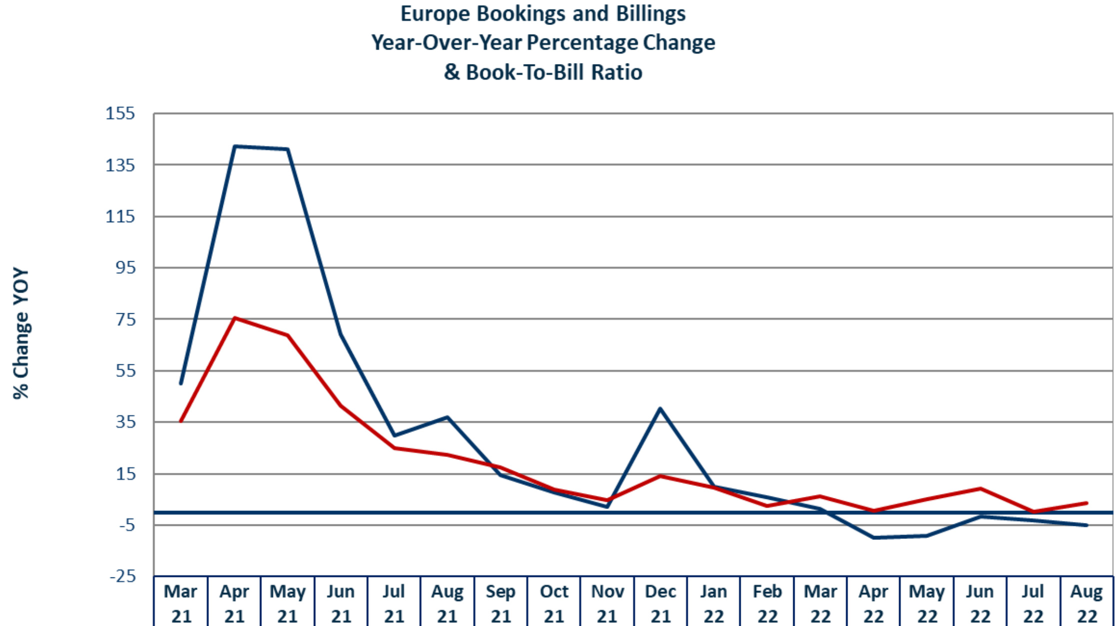
North America Performance

- Sales grew +10.6% and orders were up +1.3% YOY in August. North American billings were up sequentially +13.1%. The book-to-bill was 1.04.
- US inflation slowed to 8.3% in August primarily due to a slowdown in energy price increases. The rate has been above 5% for 15 months.
- Industrial production increased 3.7% YOY in August.
- Manufacturing PMI was revised up slightly to 51.5 in August.
- US unemployment was up to 3.7% in August.
- Retail sales were up 9.2% YOY in August.
- Housing starts were up 12.2% sequentially in August and existing home sales were down 0.4% sequentially and down 19.9% YOY.
- US automotive sales in August increased 4.2% YOY according to MarkLines.

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. The ports on the West Coast (and East Coast and Gulf) are still backed up. 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.



	Mar 21	Apr 21	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
Bookings	49.9	142.2	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	-3.0	-4.9
Billings	35.6	75.4	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	0.3	3.4
Billing SEQ	-3.6	-5.3	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	-13.5	12.1
BTB	1.20	1.23	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	1.10	1.03

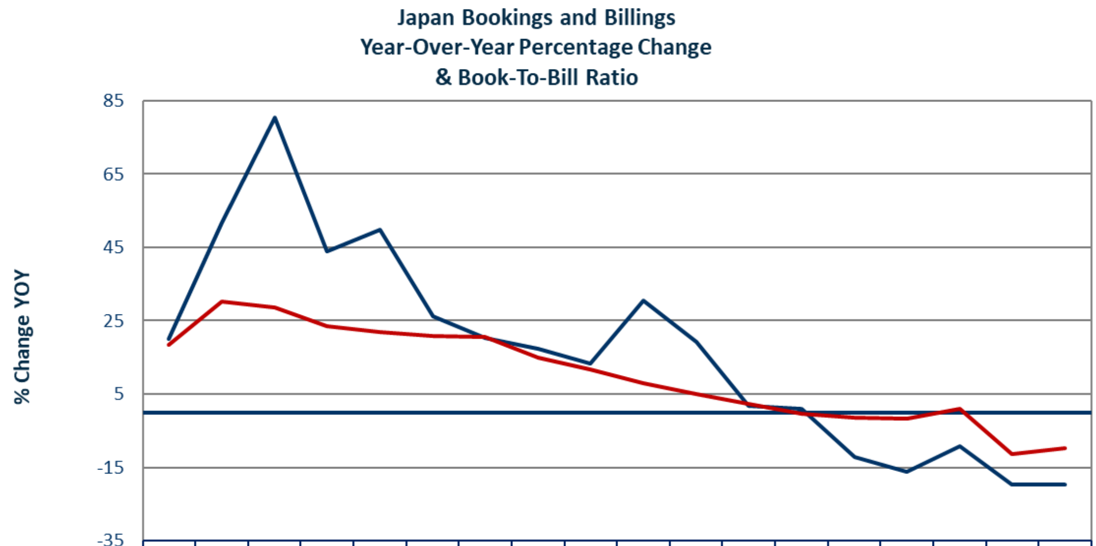
Europe Performance

- YOY billings were up +3.4% and orders were down -4.9%. The book-to-bill ratio was 1.05. Sequentially, sales were up +12.1%.
- Euro Area industrial production decreased -2.4% YOY in July.
- The August manufacturing PMI was revised lower to 49.6.
- Retail sales decreased 0.9% YOY in July.
- The inflation rate in August increased to a record high 9.1%. This is the ninth month where inflation registered over 5%. The highest contributor to the increase was energy. The UK inflation rate dropped slightly to 9.9%.
- Year-over-year, August new car registrations grew 4.4% YOY, ending 13 consecutive months of declines.
- The unemployment rate remained at 6.6% in July.

Conclusions

European new car registrations are down YTD due in large 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.



	Mar 21	Apr 21	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
Bookings	20.1	51.6	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	-19.6	-19.7
Billings	18.5	30.3	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	-11.3	-9.7
Billing SEQ	-4.3	-2.8	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	-10.7	7.1
BTB	1.06	1.22	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	1.06	0.98

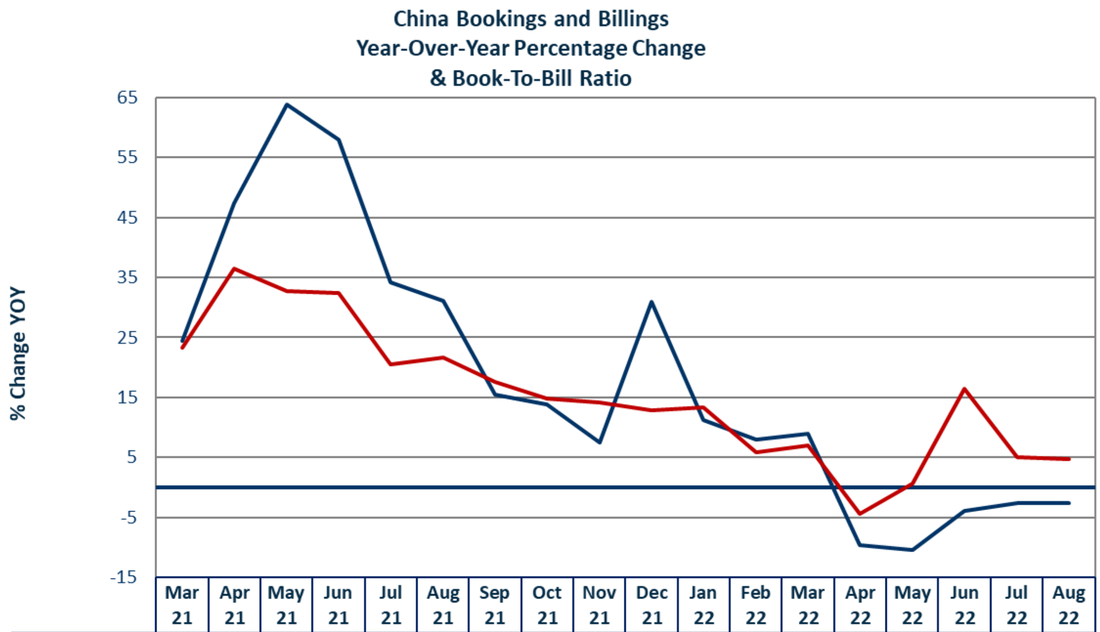
Japan Performance

- Bookings were down -19.7% in August. Sales declined -9.7%, and sequentially were up +7.1%. Japan's book-to-bill ratio was 0.98.
- The inflation rate in August was 3.0%.
- Japan's currency has devalued 23.2% against the US dollar thus far in 2022.
- Industrial production decreased 2.0% YOY in July.
- July retail sales grew 2.4% YOY.
- Exports contracted 7.9% sequentially in August.
- The August manufacturing PMI was 51.5.
- Housing starts declined 5.4% YOY in July.

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 six 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.



	Mar 21	Apr 21	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
Bookings	24.5	47.3	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	-2.6	-2.7
Billings	23.3	36.5	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	5.1	4.7
Billing SEQ	2.0	-0.4	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	-9.3	5.3
BTB	1.11	1.19	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	1.04	1.09

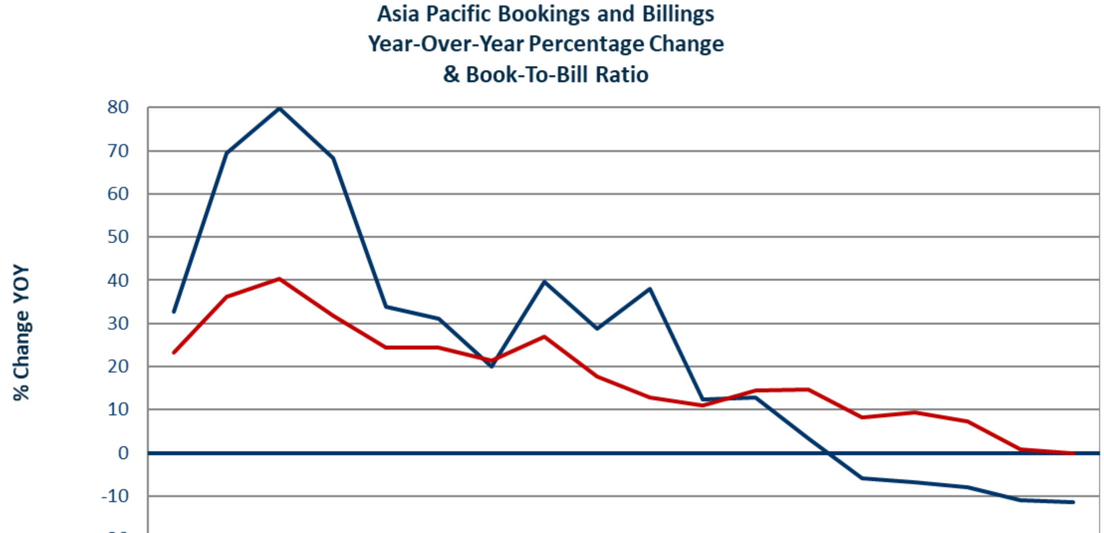
China Performance

- China's sales increased +4.7% YOY and orders decreased -2.7% YOY. The BTB was 1.09. Sequentially, sales increased +5.3% in July.
- Industrial production increased 4.2% YOY in August.
- China's manufacturing PMI declined to 49.5 in August.
- Retail sales increased 5.4% YOY in August.
- Exports from China were down 5.4% sequentially to $315 billion in August and up 7.1% YOY.
- China's total vehicle sales rose 32.1% in August. YTD sales are up 1.7% from prior year.
- The inflation rate declined to 2.5% in August.

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. This is likely to impact the growth in the Chinese connector industry for 2022.

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.



	Mar 21	Apr 21	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
Bookings	32.8	69.4	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	-11.0	-11.5
Billings	23.2	36.1	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	0.7	-0.2
Billing SEQ	0.7	5.6	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	-8.8	3.4
BTB	1.24	1.23	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	0.97	0.96

Asia Pacific Performance

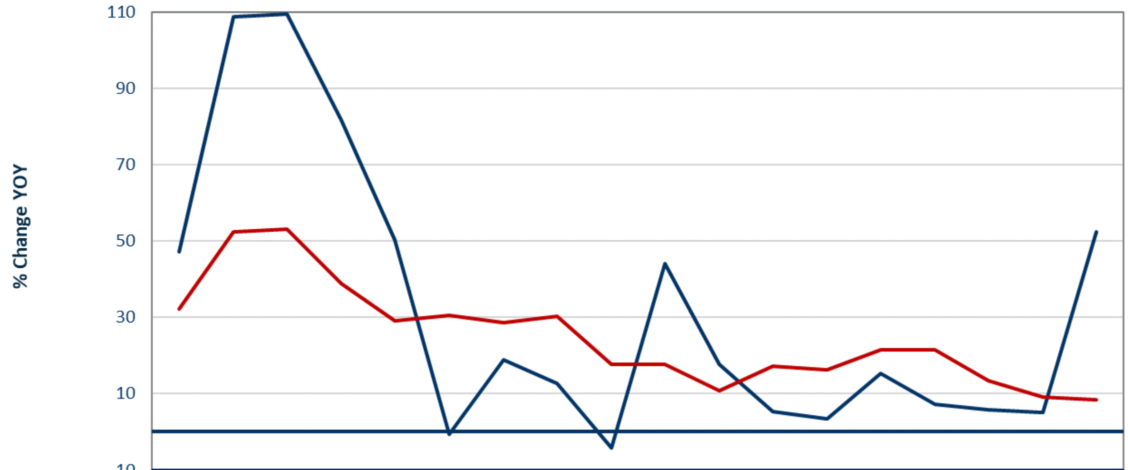
- Orders were down -11.5% in August and sales decreased -0.2% YOY. The book-to-bill ratio was 0.96. Sequentially, sales increased +3.4%.
- India's 2Q22 GDP grew 13.5% YOY and declined 1.4% sequentially. Industrial production grew 2.4% YOY in July. Exports decreased 6.5% sequentially and grew 1.6% YOY in August. Electrical and electronic equipment only represents 4.8% of the exports. The manufacturing PMI edged down to 56.2 in August. Inflation in August increased slightly to 7.0%.
- South Korea's industrial production rose 1.5% YOY in July. Exports decreased 6.6% sequentially in August. Electrical and electronic equipment comprise 31% of their exports. The manufacturing PMI dropped to 47.6 in August due to weaker worldwide economic conditions. Inflation decreased to 5.7% in August.

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.

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



	Mar 21	Apr 21	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
Bookings	47.1	108.7	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	5.0	52.4
Billings	32.3	52.5	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	9.1	8.4
Billing SEQ	-2.4	-4.0	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	-6.1	10.0
BTB	1.20	1.17	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	1.25	1.04

Rest of World Performance

- Orders increased +52.4% (due to weak comparisons) and sales increased +8.4% YOY in August. Sequentially, sales in the region increased +10.0%. The book-to-bill ratio was 1.04.
- Brazil's 2Q22 GDP grew 3.2% YOY and grew 1.2% sequentially. Industrial production decreased 0.5% YOY in July. The inflation rate decreased to 8.73% in August from 10.07% in the prior month. The manufacturing PMI dropped to 51.9 in August from 54.0 in the previous month. The unemployment rate declined to 9.1% in July.
- 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. This is the second time since September 2020 that sales have not grown in the double-digit range.

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 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 Increased Slightly

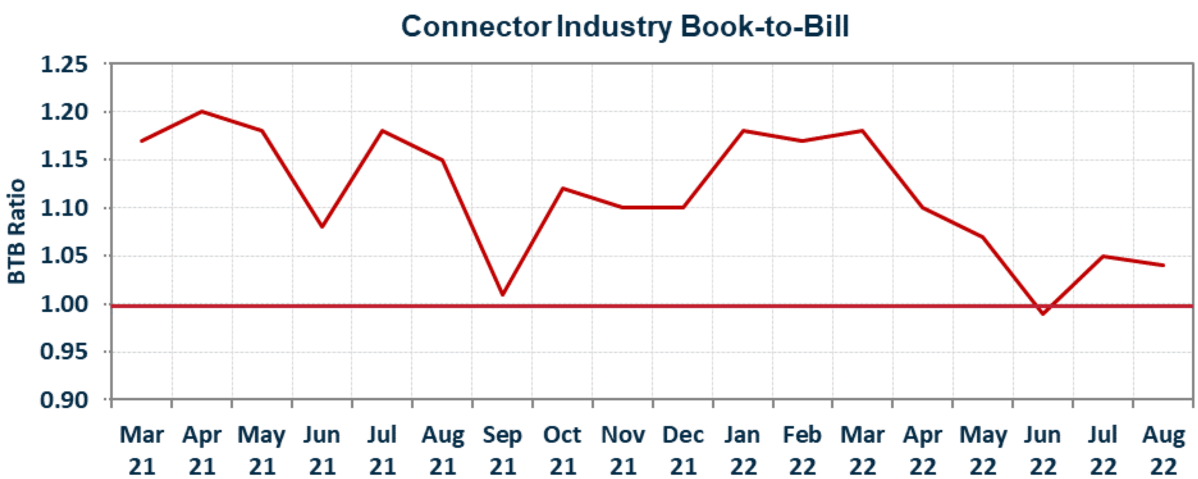
The industry backlog was $26,358 million in July or 16.4 weeks. August increased slightly to $26,641 million. Year-to-date August, the industry has shipped $55,290 million which is $1,580 million per week. Assuming the rate of weekly shipments remains the same, we have 16.9 weeks of backlog (26,641/1,580).

The following table displays the industry backlog year-to-date August 2022. To date, the industry has booked $60,432 million and achieved sales of $55,290 million.

Industry Backlog

	2021	YTD Aug 2022
BtB Ratio	1.14	1.09
Beginning Backlog	$10,530	$21,499
Bookings	$88,910	$60,432
Billings	$77,991	$55,290
Ending Backlog	$21,499	$26,641
Backlog in Weeks	14.3	16.9

$ Millions



As seen in the above chart, the book-to-bill ratio performance has been trending down in 2022. We expect the remainder of 2022 will result in lower demand and a shrinking backlog.

2022 Industry Outlook

Over the past 12 years (2010-2021), sales through August averaged 65.8% of full year sales. Year-to-date, sales were $55,290 million. Assuming the historical average repeats, the industry will ship $84,027 million. This is a +7.7% increase over 2021 sales of $77,991 million.

The following table identifies the range of full year 2022 sales based on the 12-year averages for January through August combined.

2022 Forecast Range

	Historical Range		
	High	**Avg**	**Low**
YTD Aug Sales %	61.9%	65.8%	68.5%
YTD Aug Actual Sales	$55,290	$55,290	$55,290
Full Year Forecast	$89,321	$84,027	$80,715
2021 Actual Sales	$77,991	$77,991	$77,991
% Increase	**14.5%**	**7.7%**	**3.5%**

$ Millions

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

Category	2022 Sales	% Growth
12 Year High	$89,321	14.5%
12 Year Average	$89,027	7.7%
Bishop Forecast	$82,989	6.4%
12 Year Low	$80,715	3.5%

$ Millions

The historical performance of the industry, noted in table above, suggests 2022 potential growth in the +3.5% to +14.5% range. The Bishop forecast is for growth of +6.4%. Actual year-to-date sales are up +8.4% which has been trending down since the beginning of the year.

Remember, we measure connector industry performance in US dollars and US inflation is averaging 8.5%. In response to higher material and overhead costs, the industry has been increasing connector prices. We believe the price increases have been in the range of 10% to 12%. In addition, the strength of the US dollar against the euro, yen and yuan results in a 7.6 percentage point reduction from the industry performance year-to-date so the actual results in units sold is most likely flat.

There are a lot of headwinds including rising interest rates, inflation, geopolitical issues and wars, slowing economies, and jittery financial markets. In the end, we will see how this affects the industry growth over the next four months.

The following table displays the 2022 and 2023 Bishop forecast by geographic region of the world:

Bishop Forecast by Region

	2021		2022		2023	
	Results	Change	Forecast	Change	Forecast	Change
North America	$16,484	22.2%	$17,999	9.2%	$18,436	2.4%
Europe	$16,278	26.8%	$17,109	5.1%	$17,502	2.3%
Japan	$5,276	19.1%	$5,355	1.5%	$5,456	1.9%
China	$24,978	23.8%	$26,443	5.9%	$27,686	4.7%
Asia Pacific	$11,384	25.9%	$12,195	7.1%	$12,637	3.6%
ROW	$3,590	31.2%	$3,888	8.3%	$3,983	2.4%
Total	**$77,991**	**24.3%**	**$82,989**	**6.4%**	**$85,700**	**3.3%**

$ Million, Bishop ©2022

Growth of +6.4% in 2022 is above the historical average for industry growth and would be a significant achievement after the outstanding performance of 2021, when sales were up +24.3%. This would be two of the best back-to-back years in industry's history.

You will note that we are less positive of 2023, projecting sales up only +3.3%.

Strong U.S. Dollar Reduces Growth from 8.4% in USD to 0.8% in Local Currencies

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

Local Currency to One USD
August 2021 versus August 2022

Currency	2021	2022	% Change
Euro	0.8495	0.9879	16.3%
Yuan	6.4786	6.7966	4.9%
Yen	109.8423	135.2898	23.2%

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

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

Region	U.S.$	Local Currency
North America	16.9%	16.9%
Europe	5.1%	-12.0%
Japan	-2.4%	-25.0%
China	5.9%	0.7%
Asia Pacific	7.9%	7.9%
ROW	15.0%	15.0%
World	**8.4%**	**0.8%**

Connector sales are 7.6 percentage points lower when stated in local currencies rather than in US dollars, putting industry performance at +0.8% in August (versus +8.4% in US dollars). This is the result of a stronger US dollar, on average, compared to these three currencies. This clearly shows no real growth in Europe and Japan in unit volume and anemic growth in China.

Significant Events

Nicomatic SA Acquires Distributor Accurate

Nicomatic SA acquired its Swedish distributor Accurate after a 20-year partnership. This external growth marks the beginning of a new model, using the Scandinavian company's existing consultancy expertise and accelerating the development of integrated electronic systems in partnership with a powerful local ecosystem. The merger will provide clients with solutions and help them with their integration through a more global approach involving data exploration, jobs transformation, change management and Industry 4.0. This approach encourages reindustrialization, incorporating local manufacturing and research with neighboring players, as part of an open innovation philosophy. If the strategy is successful in Sweden, it will be reproduced in France and in Nicomatic's ecosystem worldwide.

New Yorker Electronics Co. Inc. to Acquire Switches Unlimited

New Yorker Electronics Co. Inc. announced the acquisition of Switches Unlimited Inc., a specialty distributor of electromechanical and automation controls for a wide range of markets, including industrial, military, medical, food, and beverage. The newly formed, wholly owned subsidiary will continue to operate under the name Switches Unlimited. This is New Yorker Electronics' second acquisition in less than two years, according to Barry Slivka, company president. A long-established distributor of electronic components for new designs and replacements, Switches Unlimited specializes in panel design and automation controls, along with drop-in replacements for obsolete parts. The company maintains a deep, ready-to-ship inventory of switches, relays, timers, circuit breakers, enclosures, terminal blocks, and transformers. Also stocked are level, liquid, proximity, and photoelectric controls, and a comprehensive range of MIL-Spec parts from over 25 manufacturers, including IDEC, Turck, Carling, Hammond, nVent Hoffman, Schmersal, Carlo Gavazzi, WERMA, NKK, Leuze, Conta-Clip, CIT, Adalet, and Solico.

HEICO Acquires 80% of Ironwood Electronics Capital Stock

HEICO Corporation announced that its Electronic Technologies Group acquired approximately 80% of the capital stock of Ironwood Electronics Inc., a technology component company. The balance of Ironwood's shares will continue to be owned by Ironwood's Chief Executive Officer, David Struyk, and other key managers. A statement from HEICO indicates that the company expects the acquisition to be accretive to its earnings within the year following acquisition. Founded in 1986, Ironwood is a leading designer and manufacturer of high-performance test sockets and adapters for engineering and production use of semiconductor devices. Its products are utilized by, among others, semiconductor designers and manufacturers for critical validation and testing, as well as additional applications. Ironwood's sockets and adapters are also used by technology and electronics designers and producers for development and production purposes in their systems. Among the integrated circuit (IC) packages Ironwood's products cover are QFN, BGA, SOIC, QFP, LGA, WLCSP, and other surface-mount technology (SMT) packages. Ironwood's Gigahertz line of sockets with 6 different contact technologies supports up to 110 GHz bandwidth, up to 10,000 pins with a pitch as small as 0.2 mm, and up to 500,000 insertions with the smallest footprint in the industry. Ironwood will likely continue operating from its current location utilizing its existing name.

Foxconn Retakes Majority Stake in Sharp

Foxconn Electronics (Hon Hai) has returned as the majority stake owner of Sharp after an indirect investment in the Japanese firm recently made by the Taiwanese EMS giant's affiliate.

Hon Hai Mass Produced ICs for Use in EVs Scheduled for 2023
Taiwan-based manufacturing giant Hon Hai Precision Industry Co. said Wednesday that the company will mass produce semiconductors for use in electric vehicles (EV) next year. Hon Hai recently successfully rolled out self-developed silicon carbide (SiC) chips for the first time. The SiC ICs are currently being assessed for auto use certification and are scheduled to enter mass production next year. Hon Hai, also known as Foxconn on the global market, will officially unveil the new SiC chips on Hon Hai Tech Day Oct. 18. A six-inch wafer fab located in Hsinchu will be in charge of chip production based on the company's client plans.

Apple to Use Updated TSMC technology
Apple Inc is planning to use an updated version of Taiwan Semiconductor Manufacturing Co's latest chip production technology for iPhones and Macbooks next year. The A17 mobile processor, which is under development, would be mass produced using TSMC's 3-nanometer enhanced (N3E) process technology, expected to be available in the second half of next year.. The A17 would be used in the premium model of the iPhone lineup slated for release next year.

After Apple, Google Considers Manufacturing Phones In India
Alphabet Inc is considering moving production of some phones to India amid disruptions in China from Covid-19 lockdowns and Beijing's rising tensions with the United States. Google parent Alphabet Inc is considering moving some production of its flagship Pixel phones to India, Alphabet has also received bids from manufacturers in India to make between 500,000 and 1 million Pixel smartphones, equivalent to 10% to 20% of the estimated annual production for the device,

US, Mexico to Cooperate on Semiconductors, Electric Vehicles
Mexico and the United States plan to take advantage of the Biden administration's massive investment in semiconductor production to push the integration of their supply chains and cooperate on expanding the production of electric vehicles through Mexico's nationalized lithium industry. Both efforts seek to eat into Asia's advantage in semiconductors and batteries needed for electric vehicles and promote North American production. They were among the main topics discussed within and on the sidelines of the two countries' High-Level Economic Dialogue in Mexico's capital.

Apple Increases iPhone 14 Battery Replacement Cost by 43%
Apple has increased the cost of its battery replacement service with the introduction of the iPhone 14 family. The "Get an Estimate" tool on Apple's website shows the cost of a battery replacement as $99 for the iPhone 14, iPhone 14 Plus, iPhone 14 Pro or iPhone 14 Max. That's a 43 percent increase over the $69 that Apple charges to replace the battery in the iPhone 13 and earlier models.

Intel CEO Expects More Market Share Losses to AMD
Intel CEO Pat Gelsinger said he expects the company to continue to lose market share in data center equipment to rival chipmaker AMD. "Our competition has done a good job," Gelsinger said at the Evercore Technology Conference. "We haven't for a few years, and we're still on a process-technology deficit." The "embattled" Intel CEO paid rival AMD a compliment, citing strong market share gains over the previous 13 quarters to 20% of the server market.

Dell: PC Supply Chain Has Returned to Normal, But Chip Shortage is Still Impacting Server Market
Dell believes the personal computer supply chain is largely back to normal following a roller coaster ride over the past couple of years that was brought about by the pandemic. The server industry, however, is likely to suffer a bit longer due to lingering chip shortages. Dell CFO Tom Sweet said there's always going to be some issues affecting the consumer PC chain but added that from their perspective, it's now operating more like the historical norm. Indeed, it would seem the well-oiled machine is back on track. Heightened demand from the

pandemic is easing up, putting less stress on manufacturers to turn out more products than usual. As inventory improves, component costs also decrease.

Tesla Could Start Building a Lithium Refinery for EV batteries in Texas This Year

Electric car giant Tesla is evaluating the feasibility of a lithium hydroxide refining facility on the gulf coast of Texas. Tesla said the plant would be focused on the development of “battery-grade lithium hydroxide” and be “the first of its kind in North America,” according to a newly released letter to the Texas Comptroller’s Office. The company would process “raw ore material into a usable state for battery production” then ship the lithium hydroxide to various Tesla battery manufacturing factories, the application said.

In April, Tesla CEO Elon Musk said the company may need to get into lithium refining because the cost of the metal had “gone to insane levels.” The price of lithium is up 120% this year, according to a tracking index from Benchmark Mineral Intelligence. Tesla’s move is also likely a bid to diversify the supply of its lithium and battery production. China controls more than half of the world’s lithium processing and refining, and the United States just 1%.

As part of the application to Texas, the company said it is also considering “other battery materials processing, refining and manufacturing and ancillary manufacturing operations in support of Tesla’s sustainable product line.” If Tesla’s application is approved, construction could begin in the fourth quarter of 2022, the company said. The project will reach “commercial operations” by the fourth quarter of 2024. Tesla said that it is still “evaluating the feasibility of this project” and “only very preliminary development activities have begun.”

PC and Tablet Market Facing Negative Growth Until 2024

Global shipments of traditional PCs are expected to dip nearly 13 percent in 2022 thanks to a combination of a weakening economy, inflation and coming down from the surge in buying over the last two years. According to the latest forecast from International Data Corporation's Worldwide Quarterly Personal Computing Device Tracker, PC shipments will decline 12.8 percent this year to 305.3 million units. Shipments of tablets, meanwhile, are forecast to fall 6.8 percent to 156.8 million. Slowing consumer demand is expected to creep into 2023 as well, with the combined market for PCs and tablets to slide 2.6 percent over the course of next year before returning to growth in 2024.

China’s Export Growth Slows Sharply

China’s export growth slowed significantly last month, customs authorities said yesterday, as economic uncertainty is exacerbated by strict COVID-19 lockdowns across the nation. The weakness in trade comes as global demand for Chinese products weakens with energy prices soaring and the US facing the threat of recession. At the same time the domestic property sector — which accounts for about one-quarter of the world’s second-largest economy — continues to struggle, with firms staggering under vast amounts of debt. Overseas shipments in US dollar terms increased 7.1 percent year-on-year, the slowest pace since April when a lockdown in Shanghai disrupted shipping and far weaker than economists had predicted, China’s General Administration of Customs said, while imports were up only 0.3 percent, leaving a trade surplus of US$79.4 billion last month. Sporadic COVID-19 lockdowns around China have dampened consumer enthusiasm and business confidence, while searing temperatures across large parts of the country this summer prompted power rationing for factories. While officials have announced a range of measures aimed at bolstering the economy, commentators said that there would not likely be any concerted recovery until the tough COVID-19 measures are removed for good.

2022 World Cable Assembly Market

The ***2022 World Cable Assembly Market*** report offers an in-depth analysis of this growing and thriving industry. The worldwide cable assembly market will grow at a compound annual rate of 6.0% from 2022 to 2027. We are at the beginning of a period of high inflation, unstable world order, and slowing GDP growth unsettling the economies of the world. Regional GDP growth and regional market sector performance were primary drivers for the projections of the industry contraction/growth. Worldwide market share in the cable assembly market is beginning to stabilize and the shift overseas has slowed. The fastest growing market segment is Telecom/Datacom with a five-year CAGR of 7.5%. This market growth is primarily the result of the need for expanded network infrastructure and conversion to 5G. The automotive market, the largest cable assembly market sector, will also continue to grow as the semiconductor shortages being resolved, and will spur growth in the industrial sector during the forecast period. After two decades of strong growth, China's cable assembly industry is now the largest in the world holding a market share of 30.8% in 2021. Will China continue to grow, however?

This 17-chapter, 214-page report provides a detailed analysis in US dollars for the years 2021 through 2027, by region, end-use equipment sector and cable assembly type. Our analysis is provided numerically and graphically, allowing the reader to easily view and understand upcoming trends.

The ***2022 World Cable Assembly Market*** report includes analyses of important factors impacting the worldwide cable assembly market, as well as the economic trends and technology affecting each market sector within individual regions.

Benefits realized from this report include:

- A better understanding, in US dollars, of the size of the cable assembly market by region, market sector and product type.
- Insight into five-year growth rates by region, market sector and product type, allowing the reader to adjust, or realign, current business strategies to maximize future sales potential.
- A greater appreciation for the underlying economic elements that are driving and shaping the various market sectors.

The following tables and graph, with numbers redacted, show the type of analysis included in this report.

World Cable Assembly Market by Region
2021 to 2027

Region	2021	2022	2023	2024	2025	2026	2027	5 Year CAGR
North America	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%
Europe	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%
Japan	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%
China	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%
Asia Pacific	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%
Rest of World	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%
Total	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	0.0%

$ Millions

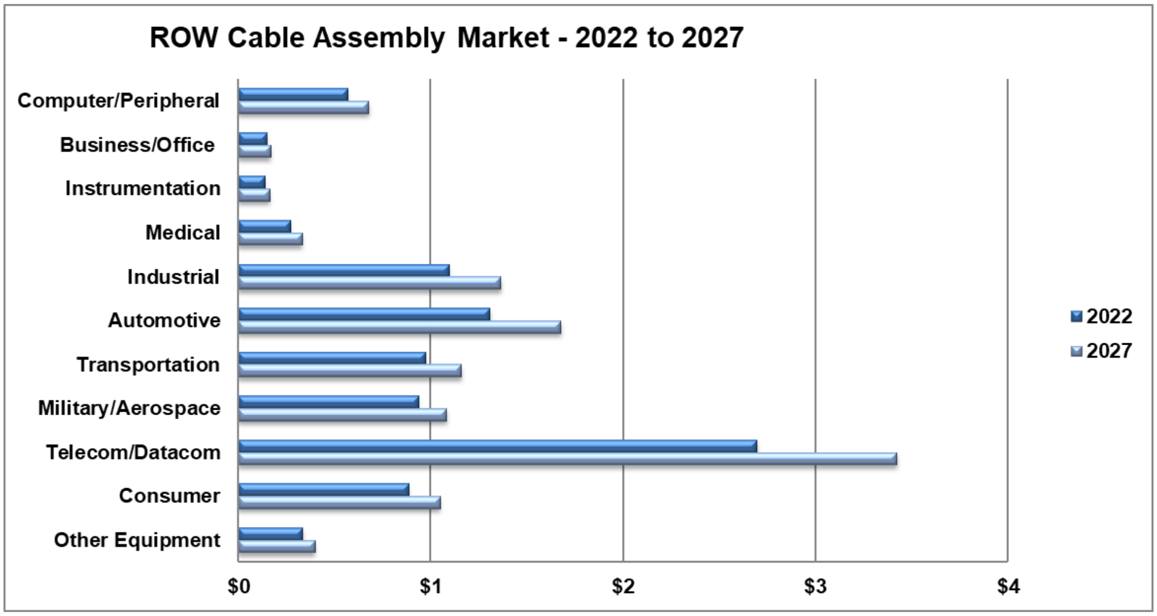
World Cable Assembly Market
Market Share by Region – 2021 to 2027

Region	2021	2022	2023	2024	2025	2026	2027	5 Year CAGR
North America	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Europe	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Japan	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
China	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Asia Pacific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rest of World	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

World Cable Assembly Market by Market Sector
2021 to 2027F

Total Market Market Sector	2021	2022	2023	2024	2025	2026	2027	5-Year CAGR
Computer/Peripheral	$0	$0	$0	$0	$0	$0	$0	0%
Business/Office Equipt	$0	$0	$0	$0	$0	$0	$0	0%
Instrumentation	$0	$0	$0	$0	$0	$0	$0	0%
Medical	$0	$0	$0	$0	$0	$0	$0	0%
Industial	$0	$0	$0	$0	$0	$0	$0	0%
Automotive	$0	$0	$0	$0	$0	$0	$0	0%
Transportation	$0	$0	$0	$0	$0	$0	$0	0%
Military/Aerospace	$0	$0	$0	$0	$0	$0	$0	0%
Telecom/Datacom	$0	$0	$0	$0	$0	$0	$0	0%
Consumer	$0	$0	$0	$0	$0	$0	$0	0%
Other Equipment	$0	$0	$0	$0	$0	$0	$0	0%
Total	$0	$0	$0	$0	$0	$0	$0	0%

$ Millions



World Cable Assembly Market by Product Type
2022

2022 Total Market Market Sector	PCB	Rect-angular	RF	Circular	Telephone	Fiber Optics	Heavy Duty	Power/Hi Voltage	Appl. Specific	Other	Total
Computer/Peripheral	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Business/Office Eqpt	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Instrumentation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Medical	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Industrial	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Automotive	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Military/Aerospace	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Telecom/Datacom	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Consumer	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

$ Millions

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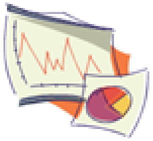
To Order 2022 World Cable Assembly Market



Research Report P-799-22, ***2022 World Cable Assembly Market*** is available for $5,135. If you would like additional information about this report, or would like to place an order, please complete the following information and e-mail, fax or mail it to Bishop & Associates, Inc. To place your order on our website: **https://store.bishopinc.com/**.

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2022 World Cable Assembly Market

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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 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 F-2022-01** **Connector Industry Forecast (June 2022) NEW**
- ☐ **Report T-800-22** **2022 North American Cable Assembly Manufacturers (May 2022) NEW**
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- ☐ **Report M-700-22** **World Connector Market Handbook (March 2022) NEW**
- ☐ **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) NEW**
- ☐ **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)**
- ☐ **Report M-1601-20** **Top 50 Medical Interconnect Solutions Companies (December 2020)**
- ☐ **Report M-980-20** **5G Infrastructure – How 5G is Impacting Infrastructure Hardware and Connector Buying Trends (September 2020)**
- ☐ **Report M-1501-20** **Medical Electronics Market for Interconnect Solutions (July 2020)**

THE BISHOP REPORT - CONNECTOR INDUSTRY YEARBOOK

An annual corporate subscription to *THE BISHOP REPORT* (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 ***Bishopinc.com***, to prior issues of The Bishop Report, 30-40 yearly News Briefs, Industry Financial Benchmarks, and various connector industry indices.

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