The Bishop Report
Performance and Forecast of the World Connector Industry

Issue No. 369 | **3rd Quarter 2023** | **July 2023**

June Sales Down -6.2% YOY
Q2 Sales Down -2.8%
First Half down -1.5%

Regional Performance:
World sales declined -1.5% YTD in June but Europe achieved growth of +3.2%.

Worldwide, orders were down -12.5% YTD. Japan had the worst performance at -19.7%.

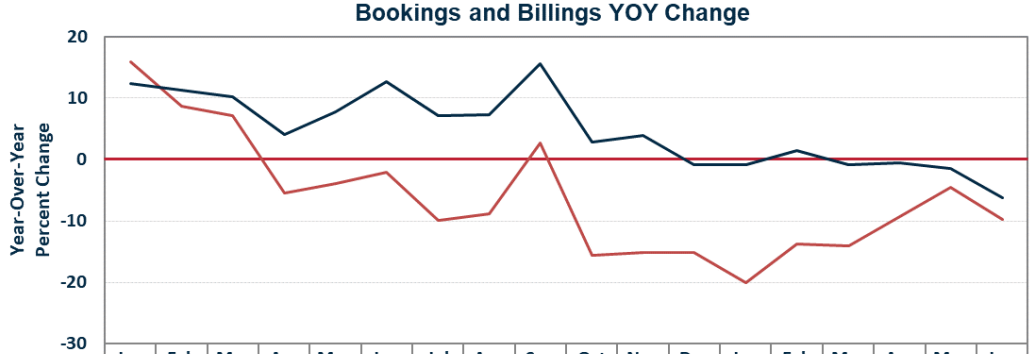
2023 Outlook:
World sales through June are $41,164 million, down -1.5% YTD. As a result of the weak market demand, we are now forecasting 2023 to be $83,616 million, down -0.6%.

Industry Backlog:
June's backlog was $22,102 million (14.0 weeks).

2023 Currency Impact:
The industry declined -1.5% YTD in June in USD and in local currencies.

June bookings were down -9.8% YOY. Billings were down -6.2% YOY. The backlog in June increased to $22,102 million or 14.0 weeks.

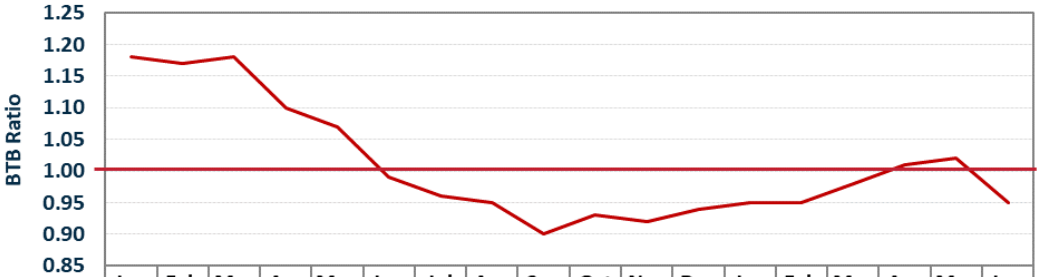
Bookings and Billings YOY Change



	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	15.9	8.7	7.1	-5.5	-3.9	-2.1	-9.9	-8.8	2.6	-15.6	-15.2	-15.1	-20.1	-13.8	-14.0	-9.3	-4.6	-9.8
Billings	12.4	11.2	10.2	4.1	7.7	12.7	7.1	7.3	15.5	2.8	3.9	-0.9	-0.8	1.40	-0.9	-0.6	-1.4	-6.2

The book-to-bill ratio in June was 0.95, ending two months of greater than 1.0 and YTD was 0.98.

Connector Industry Book-to-Bill

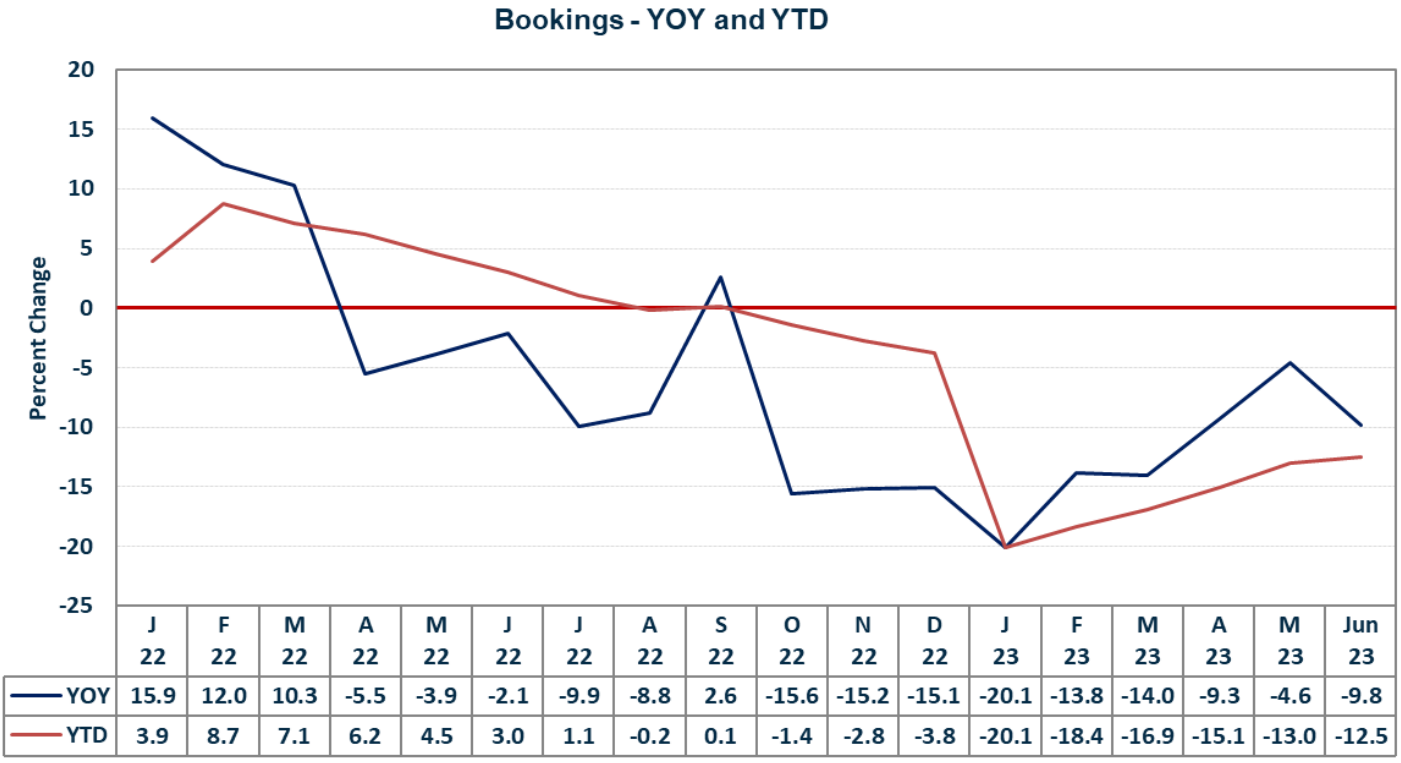


	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
BtB	1.18	1.17	1.18	1.10	1.07	0.99	0.96	0.95	0.90	0.93	0.92	0.94	0.95	0.95	0.98	1.01	1.02	0.95

Booking Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Bookings Percentage Change – 2021/2022/2023

	Sequential			Year-Over-Year			Year-To-Date		
Month	2021	2022	2023	2021	2022	2023	2021	2022	2023
Jan	2.3%	2.6%	-3.2%	24.7%	15.9%	-20.1%	24.7%	15.9%	-20.1%
Feb	17.7%	10.4%	14.4%	38.9%	8.7%	-13.8%	32.0%	12.0%	-18.4%
Mar	-3.5%	-5.3%	-1.8%	34.5%	7.1%	-14.0%	32.8%	10.3%	-16.9%
Apr	3.2%	-8.5%	-3.5%	81.9%	-5.5%	-9.3%	42.9%	6.2%	-15.1%
May	5.1%	7.0%	12.1%	86.4%	-3.9%	-4.6%	50.5%	4.5%	-13.0%
Jun	-8.3%	-6.7%	-11.6%	59.7%	-2.1%	-9.8%	51.9%	3.0%	-12.5%
Jul	-1.9%	-9.6%		36.4%	-9.9%		49.6%	1.1%	
Aug	6.6%	8.0%		32.5%	-8.8%		47.1%	-0.2%	
Sep	-11.9%	-1.0%		19.1%	2.6%		43.7%	0.1%	
Oct	6.8%	-12.1%		22.1%	-15.6%		41.2%	-1.4%	
Nov	9.3%	9.8%		15.3%	-15.2%		38.2%	-2.8%	
Dec	-7.0%	-6.8%		15.5%	-15.1%		36.0%	-3.8%	



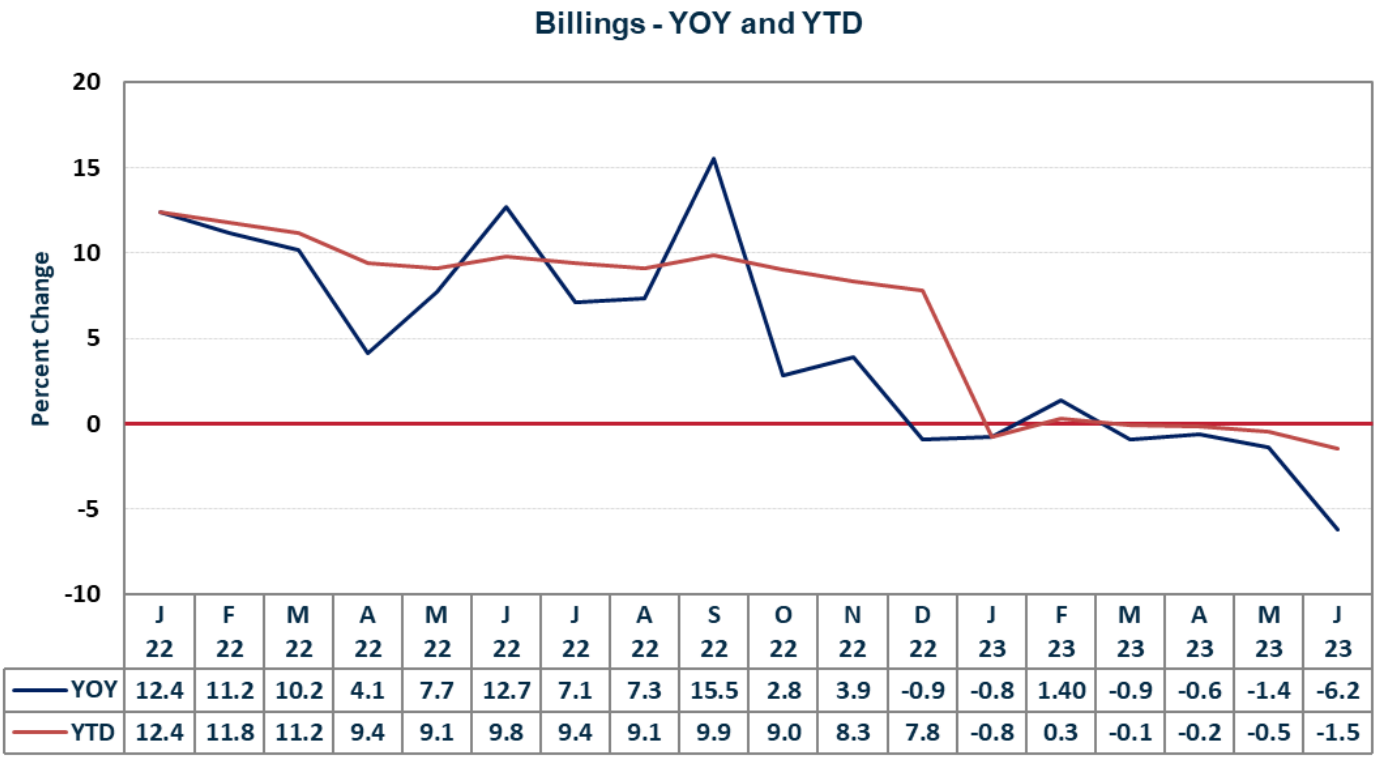
	J 22	F 22	M 22	A 22	M 22	J 22	J 22	A 22	S 22	O 22	N 22	D 22	J 23	F 23	M 23	A 23	M 23	Jun 23
YOY	15.9	12.0	10.3	-5.5	-3.9	-2.1	-9.9	-8.8	2.6	-15.6	-15.2	-15.1	-20.1	-13.8	-14.0	-9.3	-4.6	-9.8
YTD	3.9	8.7	7.1	6.2	4.5	3.0	1.1	-0.2	0.1	-1.4	-2.8	-3.8	-20.1	-18.4	-16.9	-15.1	-13.0	-12.5

- June bookings decreased -9.8% YOY and were down -12.5% YTD.
- Orders decreased -11.6% sequentially.
- The book-to-bill ratio for June was 0.95, ending two months of results at or above 1.0. This puts the YTD book-to-bill ratio at 0.98.

Billing Highlights and Conclusions

Sequential, Year-Over-Year, and Year-To-Date Billings Percentage Change – 2021/2022/2023

	Sequential			Year-Over-Year			Year-To-Date		
Month	2021	2022	2023	2021	2022	2023	2021	2022	2023
Jan	-1.6%	-4.3%	-4.4%	19.0%	12.4%	-0.8%	19.0%	12.4%	-0.8%
Feb	12.6%	11.4%	13.9%	26.7%	11.2%	1.4%	22.9%	11.8%	0.3%
Mar	-1.1%	-2.0%	-4.4%	25.5%	10.2%	-0.9%	23.8%	11.2%	-0.1%
Apr	-1.2%	-6.6%	-6.3%	49.5%	4.1%	-0.6%	29.4%	9.4%	-0.2%
May	7.0%	10.7%	10.7%	47.1%	7.7%	-1.4%	32.8%	9.1%	-0.5%
Jun	-3.8%	0.7%	-4.7%	33.5%	12.7%	-6.2%	33.0%	9.8%	-1.5%
Jul	-2.0%	-7.1%		20.6%	7.1%		31.0%	9.4%	
Aug	8.7%	8.9%		21.5%	7.3%		29.7%	9.1%	
Sep	-2.3%	5.1%		19.4%	15.5%		28.2%	9.9%	
Oct	-3.4%	-14.0%		15.3%	2.8%		26.8%	9.1%	
Nov	9.4%	10.6%		12.8%	3.9%		25.2%	8.6%	
Dec	-5.6%	-10.0%		15.5%	-0.9%		24.3%	7.8%	



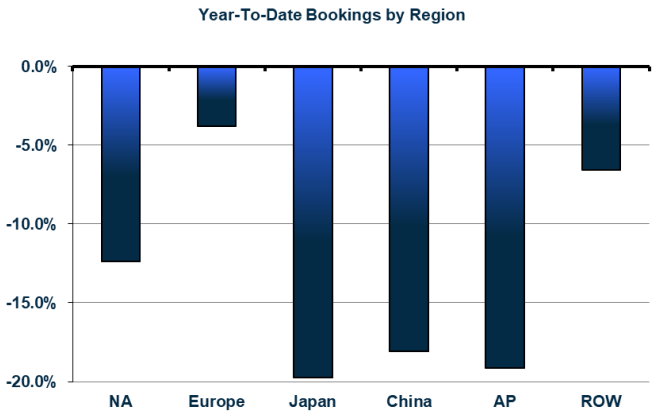
	J 22	F 22	M 22	A 22	M 22	J 22	J 22	A 22	S 22	O 22	N 22	D 22	J 23	F 23	M 23	A 23	M 23	J 23
YOY	12.4	11.2	10.2	4.1	7.7	12.7	7.1	7.3	15.5	2.8	3.9	-0.9	-0.8	1.40	-0.9	-0.6	-1.4	-6.2
YTD	12.4	11.8	11.2	9.4	9.1	9.8	9.4	9.1	9.9	9.0	8.3	7.8	-0.8	0.3	-0.1	-0.2	-0.5	-1.5

- June billings decreased -6.2% YOY and -1.5% YTD.
- Sequentially, billings decreased -4.7% in June.
- Billings declined -2.8% YOY in the second quarter.

Regional Performance: BOOKINGS

June 2023 Bookings

Region	Sequential	YOY	YTD
NA	-20.8%	-16.0%	-12.4%
Europe	-16.5%	-2.5%	-3.8%
Japan	5.7%	-10.4%	-19.7%
China	-0.9%	-9.8%	-18.1%
AP	-4.7%	-12.3%	-19.2%
ROW	-8.5%	-9.2%	-6.6%
Total	-11.6%	-9.8%	-12.5%



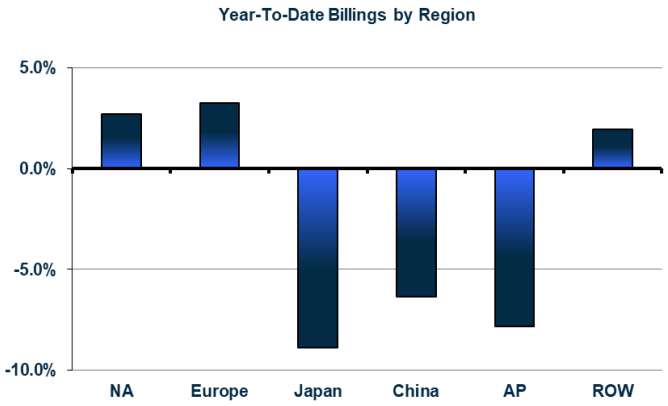
- June bookings decreased -9.8% YOY.
- YOY orders declined in all regions.
- All regions have negative YTD results.
- North America's YOY bookings decreased the most at -16.0%.
- All regions have negative sequential results except Japan.
- The book-to-bill ratio was 0.95, after two months above 1.00.

Note, orders have declined in 14 of the past 15 months, clear evidence of very soft demand for electronics.

Regional Performance: BILLINGS

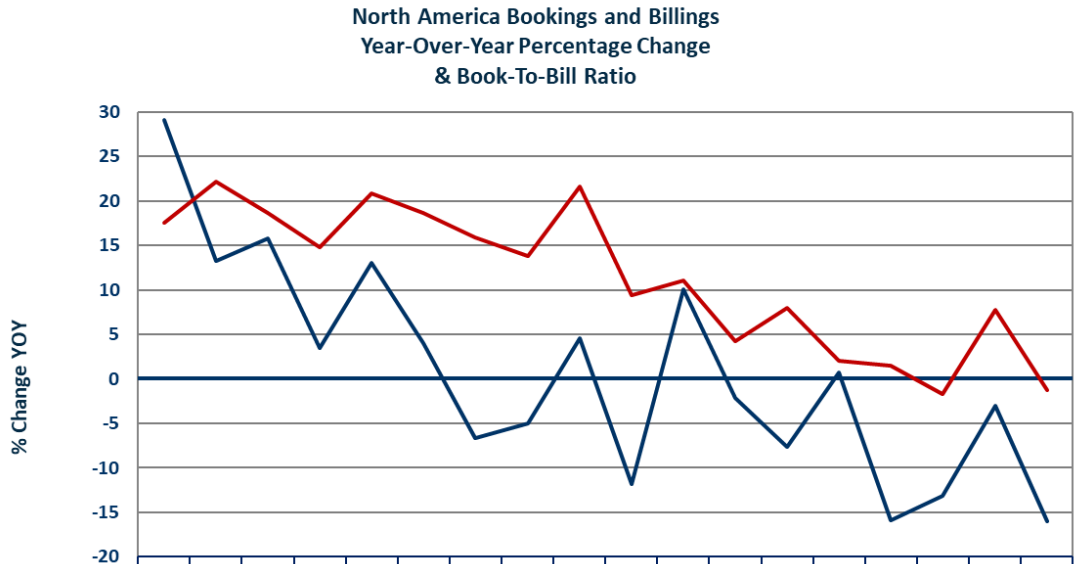
June 2023 Billings

Region	Sequential	YOY	YTD
NA	-14.1%	-1.3%	2.7%
Europe	1.5%	-0.1%	3.2%
Japan	-2.4%	-12.0%	-8.9%
China	-1.9%	-15.0%	-6.3%
AP	-1.7%	-9.7%	-7.8%
ROW	-2.6%	0.7%	1.9%
Total	-4.7%	-6.2%	-1.5%



- June connector sales decreased -6.2% YOY.
- Only Europe grew sequentially.
- All regions contracted YOY except ROW.
- YTD, North America, Europe, and ROW remain positive.
- We have had two consecutive quarters of declining sales.
- Industry growth is down -1.5% year-to-date in US dollars and in local currencies (see page 18).

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.

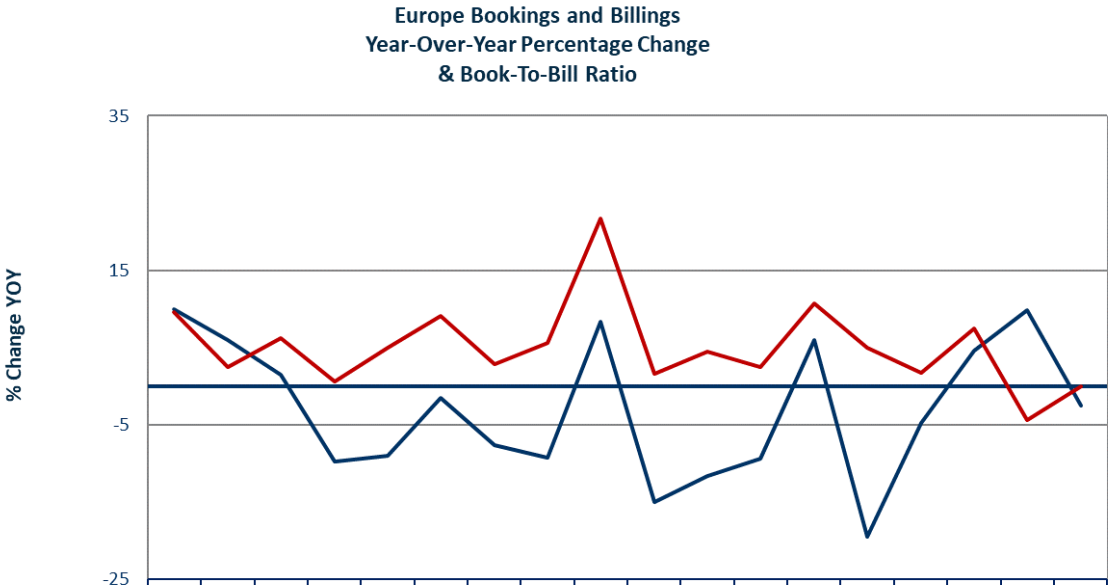


	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	29.1	13.3	15.8	3.5	13.0	4.0	-6.7	-5.0	4.6	-11.8	10.1	-2.2	-7.6	0.7	-15.9	-13.2	-3.0	-16.0
Billings	17.6	22.2	18.6	14.8	20.8	18.6	15.9	13.8	21.6	9.4	11.1	4.2	8.0	2.0	1.5	-1.7	7.8	-1.3
Billing SEQ	-6.9	19.1	-4.6	-7.2	14.5	-6.6	-3.9	12.7	1.2	-13.9	9.4	-8.0	-3.6	12.4	-5.1	-5.9	24.9	-14.1
BTB	1.25	1.10	1.16	1.11	1.06	1.04	0.94	0.95	0.87	0.94	0.91	1.00	0.96	0.98	0.95	0.95	0.94	0.87

North America Performance

- Sales contracted -1.3% and orders were down -16.0% YOY in June. North American billings were down sequentially -14.1%. The book-to-bill was 0.87.
- 2Q23 GPD grew 2.6% YOY and 2.4% from the first quarter on strong business investments.
- US inflation slowed to 3.0% in June, the lowest since March 2021. Core inflation decreased to 4.8%.
- Industrial production contracted -0.4% YOY in June.
- Manufacturing PMI increased to 49.0 in July after only two months of factory growth out of the last 10.
- US unemployment decreased to 3.6% in June.
- Retail sales were up 1.5% YOY in June.
- Housing starts decreased 8.0% sequentially in June.
- US vehicle sales in June increased 20.8% YOY according to MarkLines. YTD sales are up 12.4%
- Consumer confidence increased to 72.6 in July from 64.4 in June.
- The trade deficit decreased to $69 billion in May from $74.6 billion in April.

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.

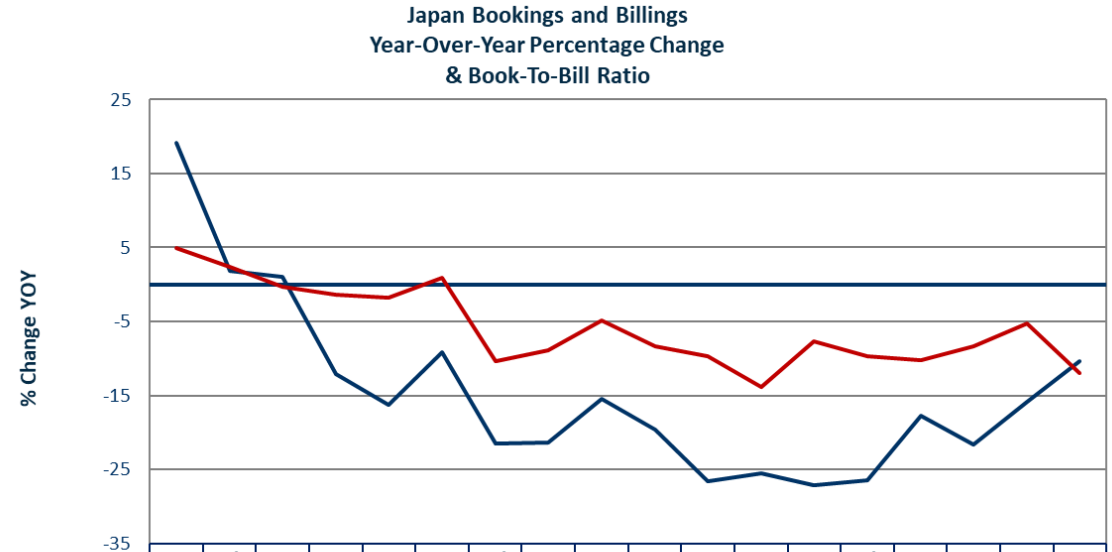


	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	9.9	6.0	1.5	-9.8	-9.0	-1.5	-7.7	-9.3	8.3	-15.0	-11.7	-9.4	6.0	-19.6	-4.8	4.6	9.8	-2.5
Billings	9.6	2.4	6.2	0.6	5.0	9.1	2.8	5.6	21.7	1.6	4.5	2.4	10.7	5.0	1.7	7.4	-4.4	-0.1
Billing SEQ	-2.3	21.7	-4.5	-13.1	15.9	-2.9	-11.3	11.9	13.1	-22.8	16.0	-10.9	5.6	14.5	-8.0	-5.1	3.1	1.5
BTB	1.18	1.27	1.14	1.10	1.06	1.02	1.02	0.96	0.87	0.97	0.97	1.00	0.99	0.96	1.06	1.07	1.21	0.99

Europe Performance

- YOY bookings were down -2.5% and billings were down -0.1%. The book-to-bill ratio was 0.99. Sequentially, sales were up +1.5%.
- Euro Area industrial production decreased 2.2% YOY in May.
- The manufacturing PMI was 42.7 in July and represented the 13th consecutive month of declining factory activity.
- Retail sales decreased 2.9% YOY in May, the eighth straight month of declining sales.
- The inflation rate decreased to 5.5% in June from 6.1% in May. Core inflation, which excludes energy and food, increased to 5.5% in June.
- The unemployment rate remained at 6.5% in May.
- New car sales increased 18% in June according to MarketWatch.
- Consumer confidence was -15.1 in May. The index ranges from -100 which is extreme lack of confidence, 0 is neutral, +100 is extreme confidence.

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.

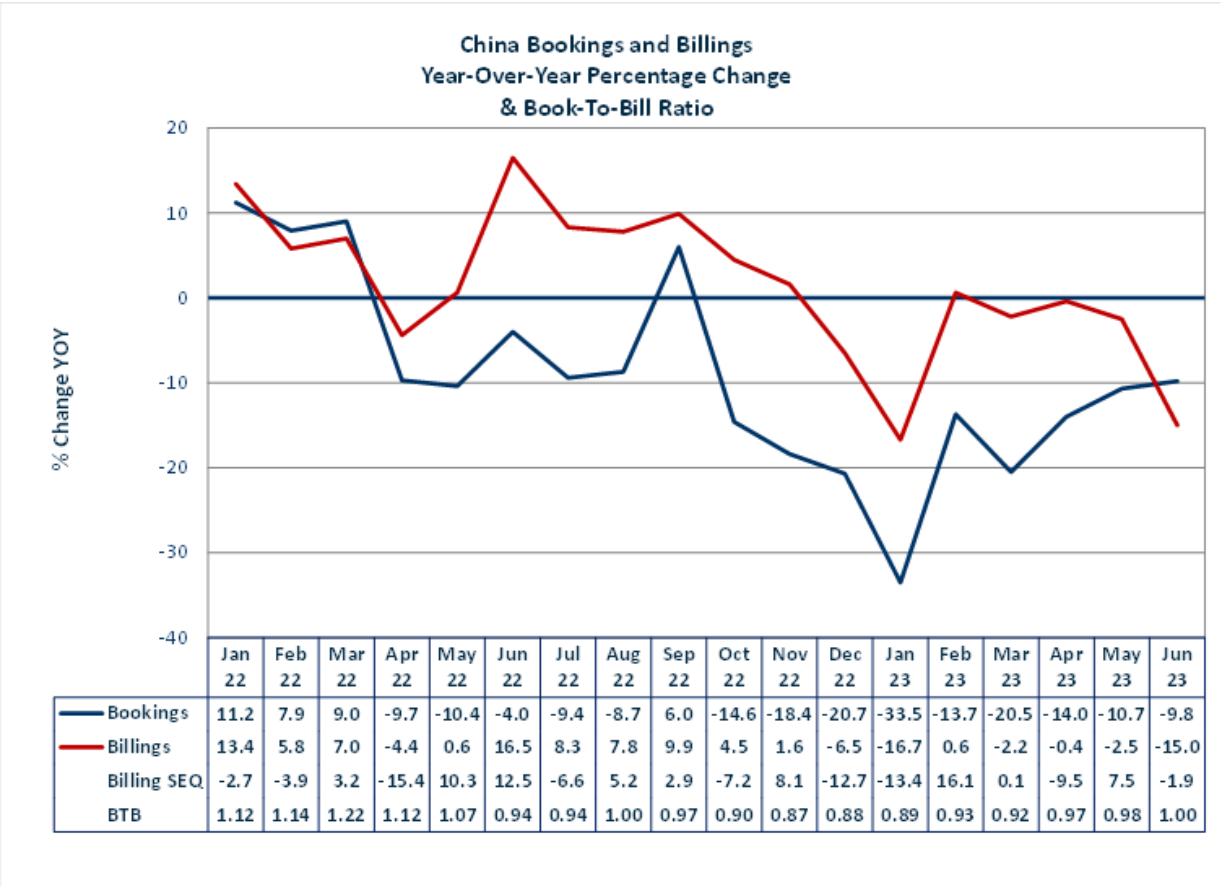


	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	19.2	1.8	1.0	-12.1	-16.3	-9.1	-21.5	-21.3	-15.5	-19.6	-26.6	-25.5	-27.1	-26.4	-17.8	-21.7	-15.8	-10.4
Billings	4.9	2.4	-0.3	-1.4	-1.8	0.9	-10.3	-8.9	-4.9	-8.3	-9.7	-13.9	-7.7	-9.7	-10.2	-8.4	-5.3	-12.0
Billing SEQ	-11.1	15.1	-5.0	-5.0	-0.2	4.9	-9.7	7.0	0.9	-7.2	8.1	-8.9	-4.7	12.6	-5.5	-2.5	2.7	-2.4
BTB	1.17	1.12	1.38	1.09	1.05	0.99	1.02	0.95	0.96	1.01	0.94	0.99	0.92	0.94	0.99	0.93	0.93	1.01

Japan Performance

- Bookings were down -10.4% in June. Sales declined -12.0% YOY, and sequentially were down 2.4%. Japan's book-to-bill ratio was 1.01.
- The inflation rate in June increased to 3.3%.
- YTD, Japan's currency devalued 3.6% against the US dollar in June..
- The industrial production rate increased 4.2% YOY in May, the first increase in six months.
- May retail sales grew 5.8% YOY.
- Exports were up 19.9% sequentially and up 1.5% YOY in June.
- The July manufacturing PMI was 49.4, leaving their factory activity in contraction.
- Housing starts were up 3.5% YOY in May.
- Consumer confidence was up to 36.2 in June, the highest reading since January 2022.
- The unemployment rate was 2.6% in May.

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.

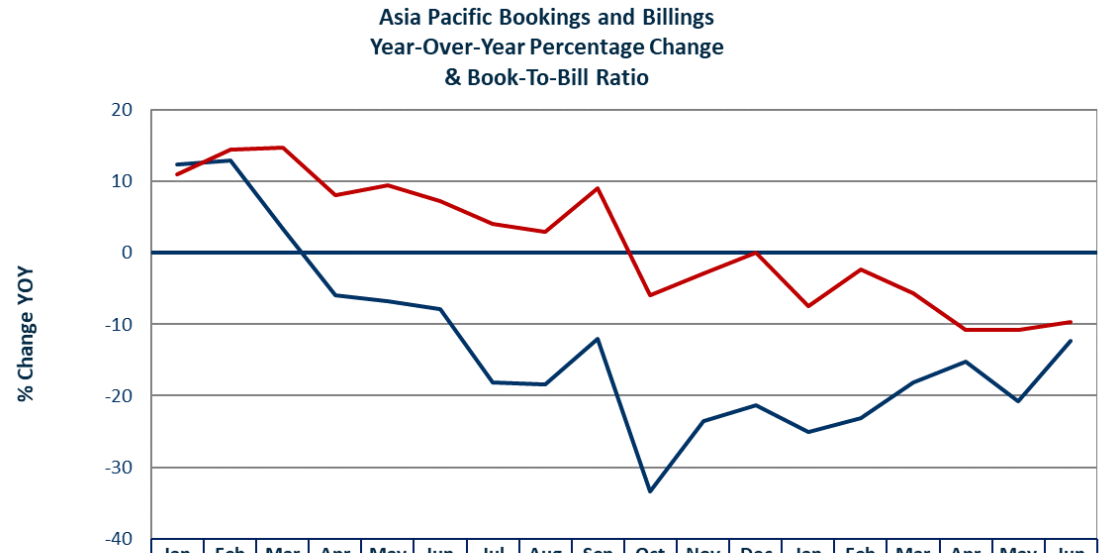


	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	11.2	7.9	9.0	-9.7	-10.4	-4.0	-9.4	-8.7	6.0	-14.6	-18.4	-20.7	-33.5	-13.7	-20.5	-14.0	-10.7	-9.8
Billings	13.4	5.8	7.0	-4.4	0.6	16.5	8.3	7.8	9.9	4.5	1.6	-6.5	-16.7	0.6	-2.2	-0.4	-2.5	-15.0
Billing SEQ	-2.7	-3.9	3.2	-15.4	10.3	12.5	-6.6	5.2	2.9	-7.2	8.1	-12.7	-13.4	16.1	0.1	-9.5	7.5	-1.9
BTB	1.12	1.14	1.22	1.12	1.07	0.94	0.94	1.00	0.97	0.90	0.87	0.88	0.89	0.93	0.92	0.97	0.98	1.00

China Performance

- China's sales decreased -15.0% YOY and orders decreased -9.8% YOY. The BTB was 1.00. Sequentially, sales decreased -1.9% in June.
- 1Q23 GDP grew 6.3% YOY and 0.8% sequentially.
- Industrial production grew 4.4% YOY in June.
- China's manufacturing PMI decreased to 50.5 in June.
- Retail sales rose 3.1% YOY in June.
- Exports from China decreased 12.1% YOY and increased 0.7% sequentially.
- China's total vehicle sales increased 4.8% YOY in June and was up 9.8% YTD.
- The inflation rate in June was 0%. Core inflation was at 0.4%.
- The unemployment rate remained at 5.2% in June.

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.

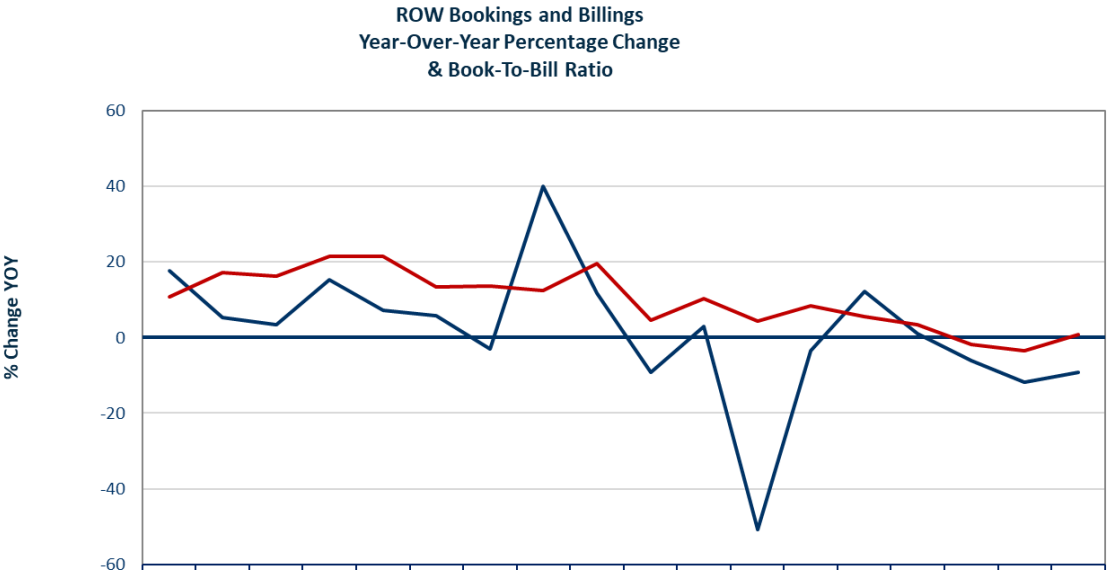


	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	12.4	12.9	3.4	-5.9	-6.7	-7.9	-18.2	-18.4	-12.1	-33.4	-23.5	-21.3	-25.1	-23.1	-18.2	-15.2	-20.8	-12.3
Billings	11.0	14.5	14.7	8.1	9.4	7.3	4.1	3.0	9.0	-6.0	-2.9	0.0	-7.5	-2.3	-5.7	-10.8	-10.8	-9.7
Billing SEQ	-2.2	5.2	0.9	-5.0	7.3	-2.9	-5.7	3.3	10.8	-11.2	9.9	-6.0	-9.9	11.3	-2.9	-5.6	7.1	-1.7
BTB	1.16	1.15	1.21	1.07	1.06	0.94	0.86	0.96	0.84	0.89	0.97	0.82	0.93	0.92	0.96	1.02	0.94	0.91

Asia Pacific Performance

- Orders were down -12.3% in June and sales were down -9.7% YOY. The book-to-bill ratio was 0.91. Sequentially, sales decreased -1.7%.
- India's industrial production grew 5.2% YOY in May. Exports decreased 22.0% YOY in June to $33 billion. Electrical and electronic equipment only represents 4.8% of total exports. The manufacturing PMI dropped to 57.8 in June. There have been 24 straight months of factory expansion. Inflation in June increased to 4.8%.
- South Korea's 2Q23 GDP grew 0.9% YOY and 0.6% sequentially. Industrial production fell 7.3% YOY in May for the eighth straight month of declines. Exports increased 4.0% sequentially in June. Electrical and electronic equipment comprise 31% of their exports. The manufacturing PMI was 47.8 in June for the 12th consecutive month of contracting factory activity. Inflation decreased to 2.7% in June.

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.



	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23
Bookings	17.6	5.3	3.5	15.2	7.2	5.9	-3.1	40.1	11.8	-9.3	3.0	-50.9	-3.5	12.1	1.1	-6.2	-11.9	-9.2
Billings	10.7	17.2	16.2	21.5	21.6	13.3	13.7	12.4	19.7	4.7	10.2	4.4	8.3	5.6	3.5	-1.7	-3.4	0.7
Billing SEQ	-5.8	18.5	-3.3	-5.3	13.1	-8.2	-2.2	9.6	2.0	-11.5	7.3	-12.0	-3.1	15.9	-5.2	-4.7	10.8	-2.6
BTB	1.16	1.20	1.07	1.11	1.06	1.02	1.10	0.92	0.86	0.90	0.97	0.89	1.04	1.04	1.04	1.06	0.97	0.91

Rest of World Performance

- Orders decreased -9.2% and sales increased +0.7% YOY in June. Sequentially, sales in the region decreased -2.6%. The book-to-bill ratio was 0.91.
- Brazil's industrial production grew 1.9% YOY in May. The inflation rate decreased to 3.16% in June. The manufacturing PMI was 46.6 in June, the eighth consecutive month of factory contraction. The unemployment rate decreased to 8.3% in April. Exports decreased by 8.1% YOY in June to $30.1 billion. Retail sales contracted 1.0% YOY in May.
- Russia’s economic data is still questionable but here are a few data points. Their industrial production grew 6.5% in June, the fourth period of growth this year. YOY, retail sales increased 9.3% in May, the second increase in the last year.

Regional Summary Snapshot

The following table shows a snapshot of the performance of each region. The table displays the latest metric available, and the trend of the metric compared to prior months/quarters.

	North America	Europe	Japan	China	Asia Pacific	ROW
GDP Growth YOY	1.6% Slowing	1.3% Slowing	1.3% Flat	6.3% Slowing	N/A	N/A
Industrial Production Growth	-0.4% Down	-2.2% Down	4.2% Up	4.4% Up	N/A	N/A
Manufacturing PMI*	49.0 Up	42.7 Down	49.4 Down	50.5 Down	N/A	N/A
Inflation Rate	3.0% Slowing	5.5% Slowing	3.3% Steady	0% Slowing	N/A	N/A
Unemployment Rate	3.6% Steady	6.5% Steady	2.6% Steady	5.2% Steady	N/A	N/A
Retail Sale Growth YOY	1.5% Down	-2.9% Down	5.8% Steady	4.8% Up	N/A	N/A
YTD Connector Sales Performance	2.7% Down	3.2% Flat	-8.9% Down	-6.3% Down	-7.8% Down	1.9% Down
YTD Connector Orders Performance	-12.4% Down	-3.8% Up Slightly	-19.7% Down	-18.1% Down	-19.2% Down	-6.6% Down

* Purchasing Manager Index - Below 50 is contracting factory activity

Second Quarter 2023 Industry Results

The connector industry achieved sales in 2Q23 of $19,985 million, down -2.8% in US dollars compared to 2Q22, and down -5.6% sequentially.

The following table shows industry sales by quarter for 2021, 2022, and 2023.

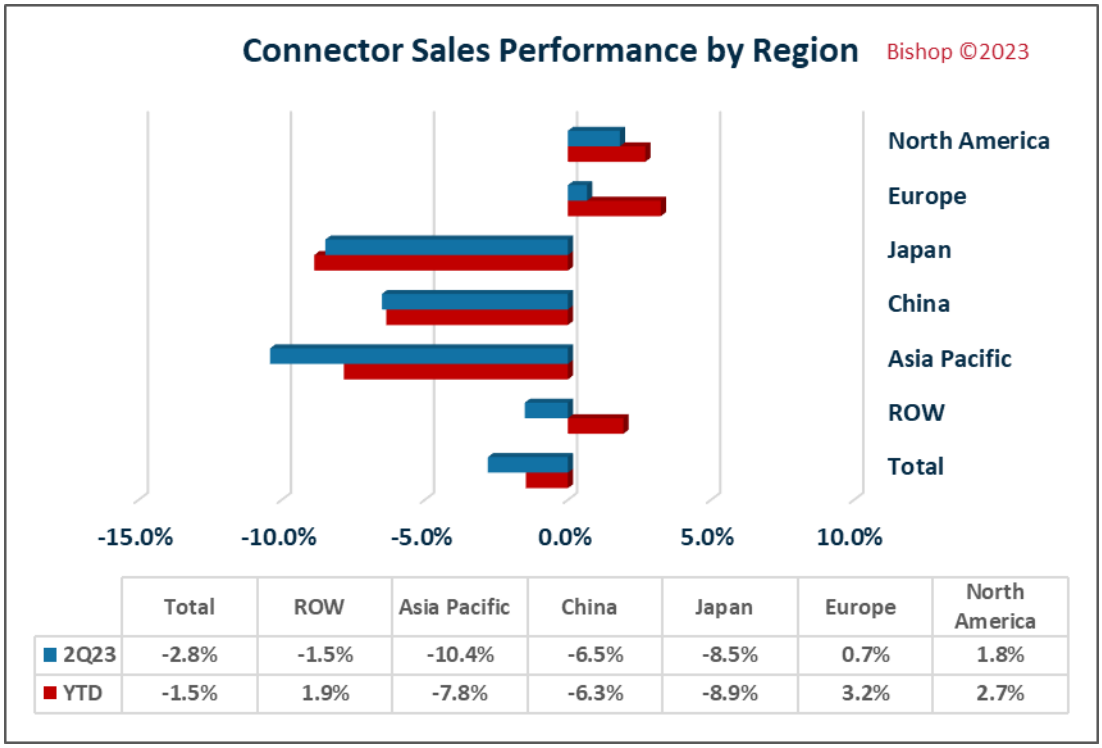
Connector Industry Quarterly Sales Results/Forecast

2021, 2022, and 2023

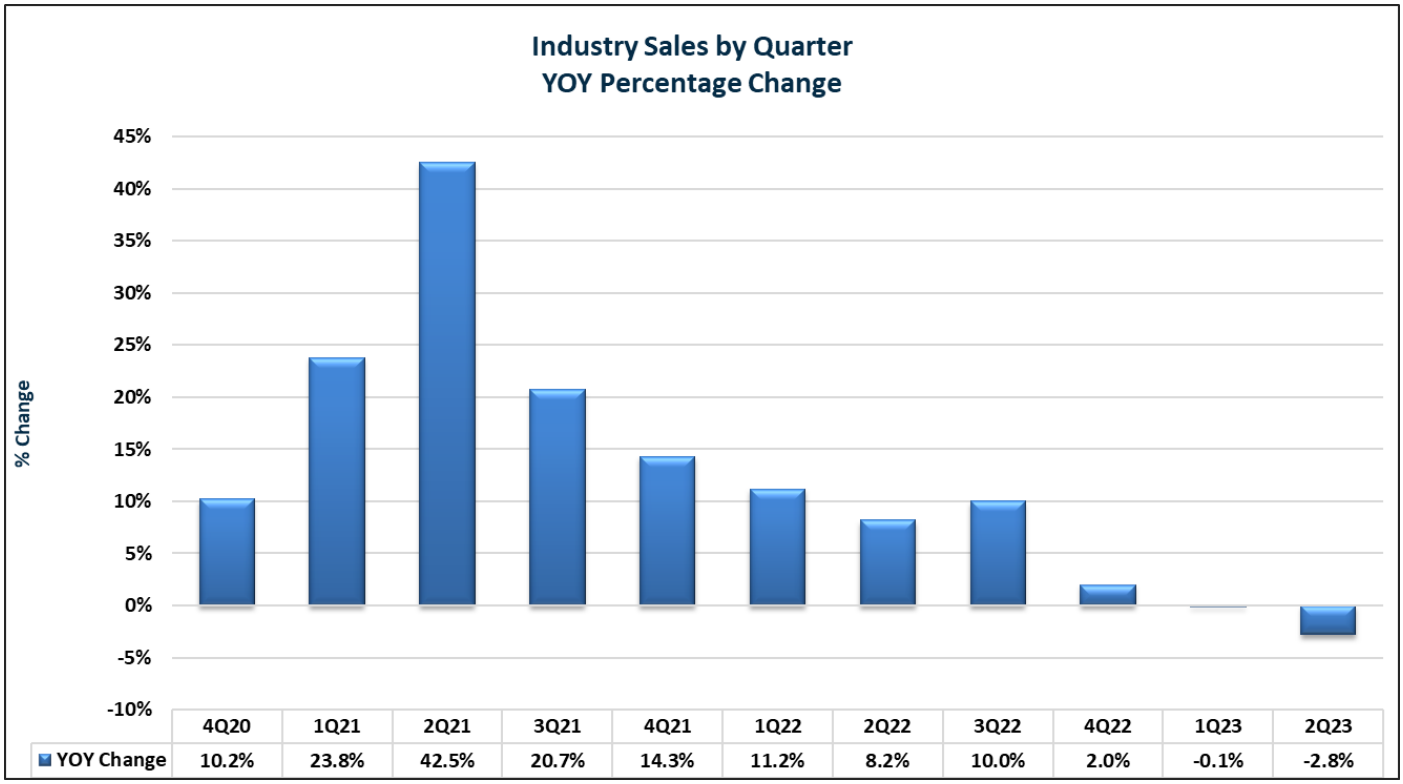
Quarter	2021 Actual	2022 Actual	YOY Change	2023 Forecast	YOY Change
1Q	$19,061	$21,200	11.2%	$21,179	-0.1%
2Q	$19,000	$20,560	8.2%	$19,985	-2.8%
3Q	$20,150	$22,160	10.0%	$20,752	-6.4%
4Q	$19,780	$20,171	2.0%	$21,700	7.6%
Total	$77,991	$84,091	7.8%	$83,616	-0.6%

$ Million, Bishop ©2023, Forecast in Red

Year-to-date sales growth and second quarter sales growth by region can be seen in the following chart.



Connector industry sales growth by quarter can be seen in the following chart. In the last contraction, the industry contracted for seven consecutive quarters. Prior to that, the industry achieved 11 consecutive quarters of growth. We had achieved 10 consecutive quarters of growth prior to sales contracting in 1Q23.



	4Q20	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23
YOY Change	10.2%	23.8%	42.5%	20.7%	14.3%	11.2%	8.2%	10.0%	2.0%	-0.1%	-2.8%

We are at the beginning of a down business cycle. Connector orders have declined in 11 of the last 13 months. Semiconductor sales have declined in the past nine months. These are not good signs for future connector demand in 2023.

Industry Backlog Is 14.0 Weeks

The industry has been shipping $1,583 million on average per week since January of 2023. The June ending balance is $22,102 million which equates to 14.0 weeks of backlog.

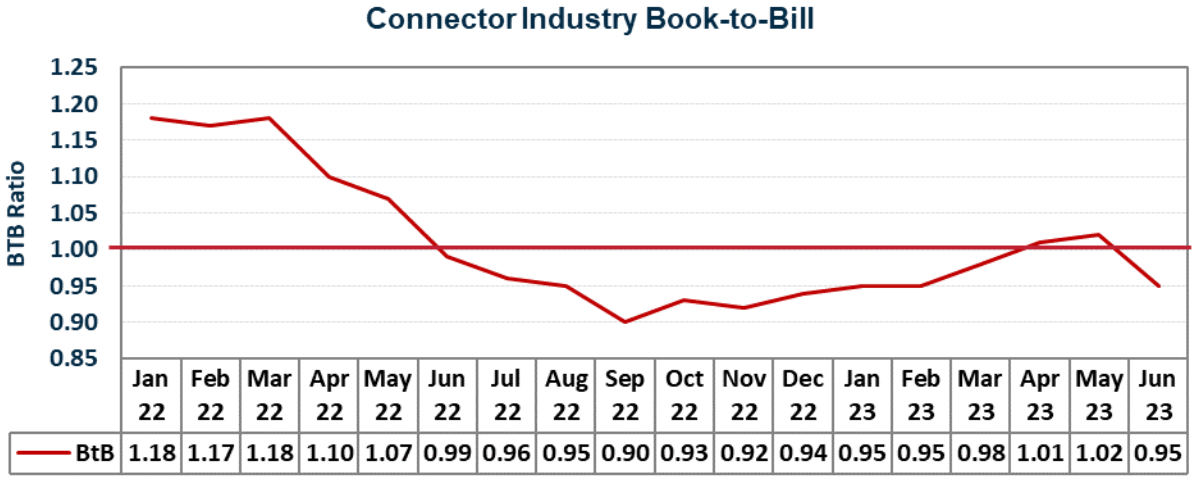
The following table compares 2022 industry backlog to the current backlog.

Industry Backlog

	2022	YTD June 2023
BtB Ratio	1.01	0.98
Beginning Backlog	$21,499	$22,983
Bookings	$85,575	$40,283
Billings	$84,091	$41,164
Ending Backlog	$22,983	$22,102
Backlog in Weeks	14.2	14.0

$ Millions

The book-to-bill ratio has been below 1.00 in 11 of the past 13 months. This is shown in the following graph.



As previously noted, the June 2023 book-to-bill ratio is 0.95. However, you will note in the following table, the backlog has remained in the $21 to $22 billion level since November 2022.

The following table shows the declining backlog.

Ending Backlog Since May 2022

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
November	$21,828	0.92
December	$22,983	0.94
January	$22,725	0.95
February	$21,422	0.95
March	$22,233	0.98
April	$22,170	1.01
May	$22,033	1.02
June	$22,102	0.95

$ Millions

We shipped $41,164 million in the first half of 2023. This equates to $1,583 million in sales per week.

2023 & 2024 Forecast

Through June 2023, world sales are $41,164 million, down -1.5% year-to-date from 2022. Orders have declined year-over-year in 14 of the last 15 months. The book-to-bill ratio has been below 1.0 in 11 of the last 13 months.

All of this makes it clear that global connector demand is soft. Additionally, we are not seeing encouraging signs that stronger connector demand is on the near horizon. As a result, we are forecasting 2023 connector sales at $83,616 million, down -0.6% from 2022 sales of $84,091 million.

The following table shows our forecast by geographic region for 2023 and 2024.

2023 & 2024 Forecast

	2023		2024	
	Forecast	Change	Forecast	Change
North America	$19,104	1.1%	$20,227	5.9%
Europe	$17,859	3.1%	$18,752	5.0%
Japan	$4,868	-5.9%	$5,020	3.1%
China	$25,847	-2.4%	$27,726	7.3%
Asia Pacific	$11,832	-3.0%	$12,506	5.7%
ROW	$4,106	2.3%	$4,355	6.1%
Total	**$83,616**	**-0.6%**	**$88,586**	**5.9%**

$ Million, Bishop ©2023

We are more optimistic about 2024, forecasting modest growth of +5.9%. There are several reasons for this forecast.

- Growth of 5 to 6% is the historical norm for the connector industry.
- Demand historically rebounds after a down year.
- GDP growth in North America is generally slightly higher in an election year.
- The job market is still strong in many parts of the world. Although layoffs have occured, particularly in the tech and media industries, people are finding new opportunities quickly.
- The rate of inflation has slowed but raw materials and labor costs have remained high. As a result, connector prices will probably increase in 2024 which will add to the top line.

Two Months in a Row -
Currency Flucuations Do Not Change Performance between USD and Local Currency

The dollar has been fluctuating against the euro, the yen, and the yuan. The following table measures the impact for June 2022 versus June 2023 and shows results for these three currencies.

Local Currency to One USD
June 2022 versus June 2023

Currency	2022	2023	% Change
Euro	0.9801	0.9045	-7.7%
Yuan	6.7308	7.2042	7.0%
Yen	136.4631	141.3858	3.6%

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

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

Industry Sales Performance
YTD June 2023
USD-vs-Local Currencies

Region	U.S.$	Local Currency
North America	2.7%	2.7%
Europe	3.2%	-4.7%
Japan	-8.9%	-2.5%
China	-6.3%	-3.0%
Asia Pacific	-7.8%	-7.8%
ROW	1.9%	1.9%
World	**-1.5%**	**-1.5%**

Connector sales are the same when stated in local currencies or US dollars, leaving the industry performance at -1.5% contraction in June. This is the second month in a row. Although it may seem unusual that the results are the same by a matter of chance, one can see in the tables that the individual region's rates vary significantly.

Significant News

Wieland Expands North American Footprint With the Acquisition of Farmers Copper

• Strong commitment to support growing customer requirements in North America through industry-leading service center network
• Focus on attractive growth markets, including aerospace, marine, defense, and oil & gas industries

Wieland has acquired Farmers Copper Ltd., a leading copper, brass, and bronze alloys supplier in North America. Founded in 1980, the company has a strong and long-standing customer base across aerospace, marine, defense, oil & gas, and electrical market segments. Farmers Copper distinguishes itself with its excellent service levels, custom processing capabilities, and outstanding delivery performance. The company has two sites in Texas, with headquarters located in Texas City and another facility located in San Antonio.
"With the acquisition of Farmers Copper Ltd., we further strengthen Wieland's large footprint and broad market participation in North America. Our growing customer base will benefit from an enlarged portfolio of high-end product solutions and excellent service offerings," said Dr. Erwin Mayr, CEO of the Wieland Group.

The company will be integrated into the industry-leading service center network of the business unit Wieland Metal Services. "Our goal is to continuously deliver unparalleled value to our customers. We are excited about the opportunities presented by this strategic union and look forward to welcoming their talented and highly skilled team into our organization as well as being able to offer our combined customer base additional enhanced products and services," stated Greg Keown, President Business Unit Wieland Metal Services.

FIT (Foxconn Interconnect Technology) Hon Teng (HK.6088) Completes Acquisition of SWH Group and Introduces the New Name and Logo of Voltaira, Aligning with the Company's Strategic Development Direction in the EV Industry

FIT (Foxconn Interconnect Technology) Hon Teng Limited (HK.6088) ("FIT", together with its subsidiaries, the "Group"), part of the world's largest electronics manufacturer and leading technological solution provider, today announced that it has successfully completed the acquisition of Prettl SWH GmbH and its subsidiaries (the "SWH Group"), one of the leading developers and manufacturers of sensor, connectivity and electrification solutions, which will become a core pillar of FIT's mobility division. The new company name FIT Voltaira Group GmbH ("FIT Voltaira") fully aligns with FIT's strategic development direction in the EV mobility business and is expected to create new growth engines for the Group. With this acquisition, FIT remains committed to enhance global technology and service capabilities, expands its global talent pool in the automotive and EV mobility business, to effectively meet customer demands.

As a result of the acquisition, the new company will become a subsidiary of FIT under the name FIT Voltaira, maintaining its operational independence while preserving its forward-looking and innovative mindset. Ulrich Eichler will remain as CEO of FIT Voltaira. FIT Voltaira is positioned to grow and benefit from strategic drivers transforming the mobility industry and will continue to operate in the market with its three business segments, Sense, Connect and Electrify, delivering its technology solutions in these key areas to third party customers. Its vision for the future is to enable creative mobility solutions for a connected world. FIT Voltaira will spearhead FIT's activities in Mobility applications and will closely collaborate with FIT and its customers to create operational synergies and sustainable value for the benefit of all stakeholders and in the best interest of the company.

Gartner Says Worldwide PC Shipments Declined 16.6% in Second Quarter of 2023

Worldwide PC shipments totaled 59.7 million units in the second quarter of 2023, a 16.6% decrease from the second quarter of 2022, according to preliminary results by Gartner, Inc. After seven consecutive quarters of year-over-year decline, the PC market is showing initial signs of stabilization, including sequential growth from the previous quarter.

"The rate of decline in the PC market has slowed, indicating that shipment volumes may have reached their lowest point," said Mikako Kitagawa, Director Analyst at Gartner. "There has been progress in reducing PC inventory after more than a year of issues, supported by a gradual increase in business PC demand. Gartner expects that PC inventory will normalize by the end of 2023, and PC demand will return to growth starting in 2024."

PEI-Genesis Announced the Opening of a New Production Site in Philadelphia

This new facility will support the increasing demand for D-Subminiature connectors. It will be utilized to supplement PEI's largest facility in South Bend, Indiana, to enable quick turn value-add D-Sub products to customers worldwide.

"By localizing PEI's manufacturing capabilities around the world, we can get closer to our customers, allowing us to support their needs more quickly than ever," says Steven Fisher, chairman and CEO of PEI-Genesis.

Currently, ITT Cannon commercial D-Sub products are certified and approved for sale. In the coming months, PEI-Genesis will obtain the certification and approval of ITT Cannon's MIL-Spec D-Sub products and the facility will become AS9100D certified. Later in the year, PEI-Genesis will onboard other industry leading D-Sub connector manufacturers, such as Amphenol PCD, Positronic, and Cinch Connectivity Solutions, to expand and broaden its product offerings.

The D-Sub facility is connected directly to PEI-Genesis's headquarters and stocks roughly $6 million worth of ITT Cannon connector components and finished goods.

Samsung and Apple Top Global Smartphone Market in Second Quarter

Samsung Electronics and Apple continued to dominate the global smartphone market in the three months ended June 30, while leading the premium handset segment, as the industry saw worldwide sales decline for the eighth consecutive quarter, according to the latest report from Counterpoint Research.

The world's No 3 smartphone vendor Xiaomi, by contrast, faced headwinds in its two biggest markets, China and India, during the same period, Counterpoint said in its report published on Tuesday.

Global smartphone sales decreased 8 per cent year on year and 5 per cent quarter on quarter in the three months ended June, it said.

Samsung topped overall industry sales in the second quarter with a 22 per cent share, driven by the strong global performance of its Galaxy A-series smartphones. The South Korean giant, however, saw total sales last quarter fall 12 per cent from the same period last year.

Apple – the world's most valuable company, with a market capitalization of US$3 trillion as of Tuesday – recorded its highest-ever second-quarter market share at 17 per cent, according to Counterpoint.

Although Apple's overall worldwide sales declined 2 per cent last quarter compared to the same period last year, the Cupertino, California-based company's strength in the premium segment enabled its sales in India, the world's second-biggest smartphone market behind China, to grow a record 50 per cent in the three months ended June.

The strong sales performance of Samsung and Apple underscored how the global smartphone market's premium segment, where handsets cost more than US$600 each, has become immune to broader constraints across the industry.

More than one out of five smartphones sold globally during the second quarter belonged to the premium segment, according to Counterpoint. It said the segment was the only one that grew during that period, reaching its highest ever second-quarter contribution to the overall market.

Beijing-based Xiaomi, meanwhile, kept its No 3 ranking in global smartphone sales in the second quarter with a 12 per cent market share, but saw a 12 per cent overall decrease in sales worldwide during the period, according to Counterpoint.

Apple's Mac Market Share Jumped Even Though PC Sales Fell for the Sixth Consecutive Quarter

Apple saw a sharp uptick in global PC market share for the second quarter of 2023, recovering from weak delivery numbers in the preceding period, according to data from IDC. The news comes amid a broadly weakening PC market.

Apple saw year-over-year growth of 10.3%, the only PC maker out of the top five globally to return to positive results. Apple's Mac computers now account for 8.6% of global market share, as the company shipped 5.3 million Mac units in the second quarter alone.

That number is still markedly down relative to the quarter a year ago, which had 4.8 million Mac shipments total. It's a decline mirrored by the broader market, which experienced a total fall of 13.4% in PC shipments year over year, from 71.1 million units to 61.6 million units, according to IDC.

Apple's higher-priced PCs command loyalty from many users, and the company has continued to iterate on its chipset and functionality since it first began its shift away from Intel's chipsets.

In June, the company announced its flagship Mac Pro computer would ship with a new M2 Ultra chipset. The Mac Pro was once powered by top-shelf Intel processors.

Lenovo, HP, Dell and Acer, the other top four PC manufacturers by rank, all had declines in growth, according to IDC. Acer had the most significant lag, with declines of 19.2% year over year, while HP managed to stay relatively flat, shipping 13.4 million units in the second quarter of 2023, compared with 13.5 million units in the period a year ago.

June Electronic Components Sales Rebound Modestly

The June sales sentiment for electronic components recovered slightly from a significant drop experienced in May, the ECIA reported, but the sales index, at 76.3, remains below the growth threshold of 100.0.

Global Smartphone Shipments Continue Slipping in 2Q23

Entering 2023, most countries worldwide, especially emerging markets, are still struggling from high inflation and see weakening consumer demand as a result. DIGITIMES Research estimates that global smartphone shipments slipped 13.2% on year to come to only 264 million in the first quarter of 2023 and will witness an on-year decline of 6.4% to reach volumes of 257 million units in the second quarter, according to DIGITIMES Research's latest report covering the global smartphone industry.

DIGITIMES Research adjusted the forecast on whole-year 2023 global smartphone shipments downward from the projection given in March by 23 million units to 1.1 billion units.

Smartphone shipments to China in the first quarter of 2023, compared to the forecast made in March, were raised by DIGITIMES Research to 62 million units, down 7.2% from a year ago, while combined volumes to non-China markets in the first quarter were reduced to 202 million units, down 14.9% on year, the report's figures show.

DIGITIMES Research also cut its forecast on global 5G smartphone shipments in 2023 significantly from the original expectation of 679 million units to only 577 million units, down 1.9% on year.

Taiwan's Foxconn to Invest NT$7.78 billion in 2 Vietnam Factories

Foxconn will invest around US$250 million (NT$7.78 billion) to build two new factories in northern Vietnam. The facilities will be built at an industrial park in Quang Ninh province, the Nikkei cited local officials as saying. "After 16 years of development and investment in Vietnam, we've chosen Quang Ninh," said Chau Nghia Van, an executive for Foxconn's Vietnam operations, at a ceremony to allow the investment registration certificate, per the Nikkei.

One of the factories will be a US$200 million facility that will make electric vehicle charging equipment and other electronic components, which is slated to be finished in January 2025 and will have around 1,200 employees, according to the Nikkei.

The other facility will be a US$46 million factory that will manufacture electronics and telecommunication components, with production set to start in October 2024, according to Reuters. It is expected to employ over 700 people, the Nikkei said. The new factories will bring Foxconn's total Vietnam investments to around US$3 billion since it first facility there, Reuters said.

Addressing the Raw Material Shortage for Electric Car Batteries

There are simply not enough critical raw materials for the batteries needed if everyone is to have an electric car. And even if there was, charging them would take way too long for many applications. So, if new car sales are going to shift to battery-powered electric vehicles, they'll need to overcome two major drawbacks: slow recharge and large battery size.

New research published in Nature describes a new 10-minute, fast charging technology which works with most energy-dense batteries. By being fast to charge, this technology opens the possibility of downsizing electric vehicle batteries from 150 kWh to 50 kWh without causing drivers to feel "range anxiety." To commercialize this solution, Penn State researchers are working with a startup called EC Power to develop the technology.

These smaller, faster-charging batteries will dramatically cut down battery cost per car. This will reduce the usage of critical raw materials such as cobalt, graphite and lithium, enabling mass adoption of affordable electric cars. The approach relies on internal thermal modulation, an active method of temperature control to achieve the best performance possible from the battery.

Batteries operate most efficiently when they are hot, but not too hot. Keeping batteries consistently at just the right temperature has been a major challenge for battery engineers. Historically, they have relied on bulky external heating and cooling systems to regulate battery temperature. These respond slowly and waste a lot of energy.

The Penn State approach regulates the temperature from inside the battery. The researchers developed a new battery structure which adds an ultrathin nickel foil as the fourth component in addition to the anode, electrolyte and cathode. Acting as a stimulus, the nickel foil self-regulates the battery's temperature and reactivity which allows for 10-minute fast charging on just about any EV battery. EC Power is working to manufacture and commercialize the fast-charging battery to ensure a more an affordable and sustainable future for vehicle electrification.

Apple iPhone 15 Could Ship with Significantly Larger Batteries

The latest internet rumor suggests Apple's next-generation iPhones will have significantly larger batteries than their predecessors, giving the Cupertino-based company options when it comes to how it wants to use the extra headroom.

According to a Weibo user citing a Foxconn source, Apple's iPhone 15 will ship with bigger batteries across the board. The bulked-up battery capacities are reportedly as follows:

iPhone 15: 3877mAh (18 percent increase)
iPhone 15 Plus: 4912mAh (13.6 percent increase)
iPhone 15 Pro: 3650mAh (14.1 percent increase)
iPhone 15 Pro Max: 4852mAh (10.9 percent increase)

The increases are meaningful but it's important to remember that capacity is only part of the overall battery life equation. Hardware and software (and how the two interact) are equally as important, and Apple turns out to be arguably the most efficient examples in the mobile industry.

Apple's upcoming iPhone 15 line is expected to ship with two different processors depending on the model. The lower-end iPhone 15 and iPhone 15 Plus will likely be powered by the A16 Bionic SoC, the same chip found inside the existing iPhone 14 Pro and iPhone 14 Pro Max. This chip is built on a 5nm (N4P) manufacturing process from TSMC.

The iPhone 15 Pro and iPhone 15 Pro Max, meanwhile, are expected to ship with a new A17 Bionic on a smaller 3nm manufacturing process.

Apple has a couple of options on how it could exploit the additional headroom. The company could maintain a similar level of performance and focus strictly on improving battery life. Conversely, Apple could use the added battery capacity to crank up performance and maintain a similar rated battery life. A blend of better performance and improved battery life could also be in the cards.

Apple historically announces new iPhones in early September, and there's no reason to believe this year will be any different. In addition to larger batteries, Apple is reportedly looking to upgrade the Ultra-Wideband chipset in its phones to boost Apple Vision Pro integration. Earlier rumors pointed to the Pro Max tier shipping with a periscope camera system that would extend the optical range of the camera's telephoto lens.

Europe and Japan Working Together to "de-risk" Tech Reliance on China

The COVID-19 pandemic and Russia's war against Ukraine have clearly shown that the Western world cannot trust China anymore. The richest countries in the world have already started to "de-escalate" over-reliance on China's manufacturing machine, and now Europe is joining forces with Japan for technology research and production.

This week, the European Union sent Commissioner Thierry Breton to Tokyo for a high-profile meeting with the Japanese government. The EU's Commissioner for Internal Market met with both government officials and representatives from private companies, discussing advanced technology such as semiconductors and supply chain issues.

Europe and Japan appear to have agreed to deepen their technology cooperation, Reuters reported, with Breton highlighting the "extreme importance of securing the semiconductor supply chain." Both Europe and Japan, as well as the United States, have clearly shown that they plan to reduce the world's reliance on China, an autocratic country with too much power over the economy and countless technology markets.

Like the US, Europe has invested an unprecedented amount of money to strengthen its technology capabilities in semiconductors and the entire microchip supply chain, and Japan is doing the same. Tokyo is spending big dollars (or yen) on government subsidies for the local chip industry, with a recent $6.4 billion investment to buy photoresist maker JSR Corp to promote industry consolidation.

Tokyo is also investing in a Rapidus-led foundry initiative conceived to boost Japan's ambitions in the chip manufacturing industry, a venture with which Breton has had direct discussions. The EU commissioner said that this is an important initiative "going in the right direction," echoing Europe's similar ambitions to build new and advanced chip manufacturing capabilities in the Old Continent.

While in Tokyo, Breton met with Japan's Minister for Digital Affairs Taro Kono, Minister of Internal Affairs and Communications Takeaki Matsumoto, and State Minister for Economy Trade and Industry Fusae Ota. It was the first EU-Japan Digital Partnership ministerial talks ever, and the Commissioner promised a second round of talks to be held in Brussels in the first half of next year.

Chip manufacturing aside, Europe and Japan also discussed a renewed partnership in other advanced technology fields such as undersea cable connectivity – which is yet another cause of friction with China – cyber-security, and more. AI, of course, was a "very high" entry in Breton's agenda for the EU-Japan meeting.

Samsung Electronics Expects 96% drop in Q2 profit, a 14-year Low

Samsung Electronics reported a likely 96% plunge in second-quarter operating profit on Friday, largely in line with forecasts, as an ongoing chip glut drives large losses in the tech giant's key business despite a supply cut.

The world's largest maker of memory chips and smartphones estimated its operating profit fell to 600 billion won ($459 million) in the quarter from April to June, from 14.1 trillion won a year earlier, in a short preliminary earnings statement.

It would be Samsung's lowest profit for any quarter since the 590 billion won in the first quarter of 2009, according to company data.

How Samsung and Texas Instruments Made the Lone Star State the Hub of U.S. Chip Manufacturing

On a 1,200-acre plot of land in a small town 30 miles north of Austin, Texas, South Korean giant Samsung is spending $17 billion to build a semiconductor fabrication plant.

Four hours north by car, in the city of Sherman, Texas Instruments is at the early stages of a $30 billion project, the largest new chip investment in Texas.

It’s not by accident.

As geopolitical tension between China and Taiwan drives chipmakers to turn to the U.S. for manufacturing, Texas has emerged as the place to do business, thanks to a combination of low taxes and new subsidies.

Since the $52 billion CHIPS and Science Act was first introduced in 2020, more than 50 new U.S. semiconductor projects have been announced totaling over $210 billion. More than $61 billion of that’s in Texas, with six projects expected to create more than 8,000 jobs.

“Because we have ports, because we have access to materials, because of our low cost of doing business, we are best situated to lead this next generation of chip manufacturing,” Republican Texas Gov. Greg Abbott told CNBC in an interview in April.

In June, Abbott signed the Texas CHIPS Act into law. It set aside $1.4 billion for chip companies to manufacture in the Lone Star State and for universities willing to build related research and development centers.

Samsung, Texas Instruments, Infineon, GlobalWafers, NXP, X-FAB and Applied Materials have all ramped up Texas operations in recent months. Apple and Amazon are also designing some of their custom chips in Texas.

When it comes to new chip investments, Arizona leads with a $20 billion fab coming from Intel and a $40 billion site from Taiwan Semiconductor Manufacturing Co., the world's top advanced chipmaker. However, Texas has the highest number of total fabs and is a close second for new investments.

Samsung's new plant in the town of Taylor is scheduled to come online next year. It will be the location of Samsung's first advanced chips produced in the U.S, but it's not the company's first foray in the state.

Samsung came to Texas in 1996, breaking ground on a big fab in Austin that's now used entirely for foundry, making logic chips for outside customers. The company opened a second fab there in 2007.

Texas Instruments' fab in Sherman, a town of 45,000 people 60 miles north of Dallas, is an even bigger investment. And it adds to the company's legacy in Sherman, which dates back to a separate facility in 1966.

Texas is one of only a handful of states with no income tax. Combine that with sales tax exemptions on manufacturing machinery and a variety of other tax waivers, and it's understandable why Caterpillar, Charles Schwab, Hewlett-Packard and Oracle have all relocated their headquarters to Texas in recent years.

Germany's Infineon, one of the world's biggest providers of automotive chips, has been in the U.S. for 25 years and makes many of its semiconductors in Austin. In 2020, Infineon expanded manufacturing in Texas, buying Cypress Semiconductor for about $10 billion.

NXP Semiconductors, which is based in the Netherlands, also has two fabs in Austin and recently made plans for a $2.6 billion expansion that would add an additional four-story fab.X-FAB, a chip company that's been in Texas for more than two decades, recently announced a $200 million expansion of its silicon carbide fab in north Texas.

Connector Industry Forecast

Bishop & Associates has just released the 2023 ***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 – Better than Anyone Expected!

After a year of strong double-digit growth, no one expected the connector industry to perform as well as it did in 2022. Although not in the double-digit range, growth in 2022 was a solid 7.8%. Entering 2022 with a robust backlog allowed for all regions, except for Japan, and market sectors to show growth, albeit at different levels.

A year marked by challenges, changes, and opportunities, 2022 was for many a year that showed us just how resilient we could be. We climbed our way out of one of the worst health pandemics ever faced. We were faced with flooding in all parts of the world and the worst drought in over 40 years in other parts. Wildfires that burned for weeks and heatwaves, earthquakes, and hurricanes that killed thousands and caused billions of dollars in damages. Yet, after each incident we picked ourselves up, kept a positive attitude, and tended to business! Just like the way the connector industry responded after a devasting 2020.

Industry Sales Performance by Region

As indicated by the chart below, growth and decline were not equal across all regions in 2022 nor will they be in 2023. The North American region saw the greatest growth in 2022, growing 14.6%. With growth of 11.7%, the ROW region followed North America. This region includes Central and South America, Brazil, and South Africa. Asia Pacific, which includes Taiwan, South Korea, India, and Singapore as well as a list of others, followed ROW with growth of 7.1%, followed by Europe with growth of 6.5%. China, the largest region for electronic connector sales increased 6.1%. Japan, who continues to struggle to bring sales back to their high of $6.4 billion in 2012, showed the least growth in 2022, with sales declining -2.0%.

2021 and 2022 Connector Sales by Region
With Percent Change

Region	2021	2022	Percent Change
North America	$16,484.0	$18,889.0	14.6%
Europe	$16,278.4	$17,328.5	6.5%
Japan	$5,275.7	$5,172.8	-2.0%
China	$24,978.3	$26,494.3	6.1%
Asia-Pacific	$11,383.9	$12,194.7	7.1%
ROW	$3,590.3	$4,011.7	11.7%
Total World	**$77,990.6**	**$84,091.0**	**7.8%**

$ Millions

Like 2022, where the region with the greatest percentage increase in sales was the same region that exhibited the greatest increase in total dollars, in 2023, Europe will also represent the region with the greatest overall growth in sales dollars. Europe will see sales dollars increase $XXX million, followed by North America, where sales dollars will increase $XXX million, and ROW where sales dollars will increase $XX.X million. All other regions will see a decrease in sales dollars. Although not the greatest decrease in sales from a percentage standpoint, China will have the greatest decrease in sales from a US dollars point, declining $XXX million. For Japan this will be the second consecutive year of sales decline.

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

In addition to connector sales results varying by region in 2023, electronic connector sales will also vary remarkably by market sector. As the table below and on the following page show, in 2022, the telecom/datacom market, which encompasses a variety of equipment types including carrier network, enterprise network, wireless infrastructure, subscriber equipment (cell phones), and cable equipment saw the greatest percentage growth, at 9.4%. Naturally this growth was driven by the increase in internet activity and the continuing drive towards 5G. In 2023, although nowhere near the growth in 2022, the telecom/datacom market will once again show the greatest growth, expanding by 0.8%. In 2022, the telecom/datacom market was followed by the automotive, transportation, industrial and military/aerospace market, all growing 8.1%. It is important to note that although the percentage increase for all four market sectors is the same, because the value of each market is so different, the change in sales dollars varied tremendously. In 2023, the telecom/datacom market will be followed by the military/aerospace market, with growth of 0.6%. It has not been since 2019, that the military/aerospace market out preformed key markets like automotive and industrial, but unfortunately worldwide turmoil has put military/aerospace expenditures in the spotlight.

2022 and 2023F Connector Sales by Market Sector
With Percent Change

Equipment Sector	2022	2023F	YOY Change
Computers & Peripherals	$10,758.2	XX,XXX	Y.Y%
Business/Office Equipment	$922.3	X,XXX	Y.Y%
Instrumentation	$2,424.8	X,XXX	Y.Y%
Medical	$2,690.7	X,XXX	Y.Y%
Industrial	$10,788.1	XX,XXX	Y.Y%
Automotive	$18,435.4	XX,XXX	Y.Y%
Transportation	$5,873.4	X,XXX	Y.Y%
Military/Aerospace	$5,050.0	X,XXX	Y.Y%
Telecom/Datacom	$20,022.8	XX,XXX	Y.Y%
Consumer	$3,967.0	X,XXX	Y.Y%
Other Equipment	$3,158.3	X,XXX	Y.Y%
Total World	**$84,091.0**	**XX,XXX**	**Y.Y**

$ Millions

2023 Outlook

With industry backlog declining steadily, Bishop is forecasting 2023 sales to decline -Y.Y% to $XX,X16 million. We anticipate the greatest percentage decrease will occur in Japan, where sales will decrease -Y.Y%, followed by the Asia Pacific region where sales are anticipated to decline -X.X%. When looking at growth in US dollars, although not the greatest decline percentage wise, the smallest growth will be seen in the Chinese region, where connector sales will decrease by $XXX million. The Chinese region will be followed by the Asia Pacific region, where sales in US dollars will decline $XXX million.

2022 and 2023F Sales by Region
With Percent Change

Region	2022	2023F	Percent Change
North America	$18,889.0	$XX,XXX.X	Y.Y%
Europe	$17,328.5	$XX,XXX.X	Y.Y%
Japan	$5,172.8	$XX,XXX.X	Y.Y%
China	$26,494.3	$XX,XXX.X	Y.Y%
Asia-Pacific	$12,194.7	$XX,XXX.X	Y.Y%
ROW	$4,011.7	$XX,XXX.X	Y.Y%
Total World	**$84,091.0**	**$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. On May 5th, the World Health Organization (WHO) announcement that COVID-19 is no longer an international public health emergency and on May 11, 2023, in the US, President Biden declared the public health emergency and the national state of emergency for COVID-19 were over. This means the WHO and officials in the US will now transition to making recommendations for the long-term management of the pandemic, acknowledging that risks remain high and that there are uncertainties for its evolution. Unfortunately, this indicates life is not back to the way it was prior to the pandemic. There are continued outbreaks of both old and new variants of COVID, as well as greater attention being given to other diseases including Monkey Pox, VEXAS Syndrome, Khosta-2, and RSV (Respiratory Syncytial Virus). And, not just in the US, but worldwide.

- Uncertainties in the financial markets. Even though since borrowing costs have tightened, officials at 20 of the world's largest economies have raised their interest rates an average of 3.5% points, inflation is still on the rise. This increase not only leaves consumers with less discretionary income for non-necessary items, especially things like recreational vehicles, second homes, and personal watercraft, it also dampens their ability to afford the everyday expenses like food, rent, and utilities.

- World GDPs are slowing in all economies. According to The Conference Board, "global real GDP is forecasted to grow by 2.6% in 2023, down from 3.3% in 2022. Most of the weakness is concentrated in Europe, Latin America, and the US."

- We still have a semiconductor shortage. Even though shipments have improved, we are still experiencing shortages. Many regions have pledged to start manufacturing their own chips to avoid something like this happening in the future, but it takes time to build a factory and get it up and producing. We also still have a shortage of employees. According to a study by the German Economic Institute in 2022, "in occupations key to the chip industry, there's a current shortage of 62,000 skilled workers."

- We still 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) that are not expected to end, until well into 2024. This supply chain backlog is causing extended lead times and material shortages.

- Continued high petroleum prices, sparking shortages and record high prices (although down significantly from last year (2022), diesel on average is still significantly higher than it was in 2020 and 2019). Continued high raw material and labor costs, indicative of a probable increase in connector prices in 2024. Supply chain issues created from labor disputes and a shortage of materials, including many of the raw materials needed to manufacture connectors. Areas affected by these shortages in addition to connectors include construction materials, such as circuit breakers, wiring devices and wall plates, fuses, wire and cable, gas regulators and pipe, and PE fittings, line stopers and tap tees, ground rods, and automation products controls.

- An ongoing labor shortage, with studies showing that by 2030, we will be an estimated 85 million workers short globally! Continued low unemployment rates worldwide, driving a continued and prolonged shortage of workers in key areas like transportation and service industries. Through June 2023, unemployment in the US stood at 3.6%. In the Euro area through May, it was 5.9% and 5.2% in China.

- Increasing political tensions: Continued war in Ukraine, deepening friction between China and Taiwan, possible repeated confrontation between Armenia and Azerbaijan, stalled nuclear talks with Iran, political gridlock and rampant gang violence in Haiti, 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.

- 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.

- Drop in new and existing home sales. According to the National Association of Realtors (NAR) "The Pending Home Sales Index (PHSI)* – a forward-looking indicator of home sales based on contract signings – dropped 2.7% to 76.5 in May. Year-over-year, pending transactions fell by 22.2%. An index of 100 is equal to the level of contract activity in 2001." On the positive side, according to a joint report by the US department of Housing and Urban Development and the US Census Bureau, sales of new single-family houses in the US jumped 12.1% month-over-month to a seasonally adjusted annualized rate of 763,000 in May of 2023, the highest level since February of 2022 and 12.2% above the forecasted number.

There are also some interesting projections as to why we will see connector growth in 2024 and what that growth will be. See the markets where Bishop anticipates growth and which subsectors will drive that growth. Look at projections over the next five years. Will we continue to grow, or will some years not be as strong as others? All this and more revealed in The July 2023 Connector Industry Forecast.

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

Table of Contents

To Order *Connector Industry Forecast*

Research Report F-2023-01, ***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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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-2023-01	Connector Industry Forecast (July 2023) NEW
☐ Report M-720-23	European Connector Market 2021, 2022, 2023F and 2028F (June 2023) NEW
☐ Report C-122-23	2023 Connector Industry Yearbook (June 2023) NEW
☐ Report P-430-23	World Circular Connector Market 2023 (May 2023) NEW
☐ Report M-700-23	World Connector Market Handbook (March 2023) NEW
☐ Report P-780-23	World RF Coax Connector Market (January 2023) 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
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☐ Report M-1010-22	World Automotive Connector Market (April 2022)
☐ Report P-420-22	IC Sockets – Systems & Connector Forecast 2020-2030 (January 2022)
☐ Report P-520-21	The World I/O Rectangular Connector Market 2021 (October 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)

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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