The Bishop Report

Performance and Forecast of the World Connector Industry

Issue No. 368 | 2nd Quarter 2023 | June 2023

May Orders Down -7.0% YOY
Sales Down -2.9%

Regional Performance:
World sales declined -1.1% YTD in May but Europe achieved growth of +3.4%.

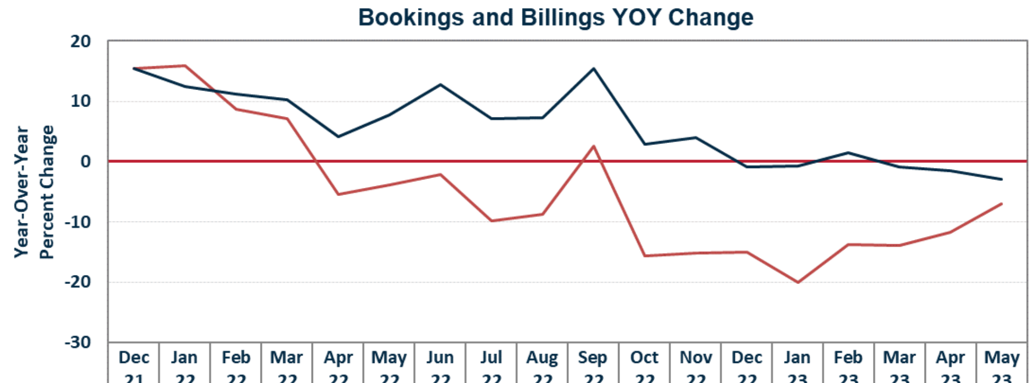
Worldwide, orders were down -14.0% YTD. Japan had the worst performance at -21.7, followed by Asia Pacific at -21.5%.

2023 Outlook:
World sales through May are $34,315 million, down -1.1% YTD. As a result of the weak market demand, we are now forecasting 2023 to be $83,616 million, down -0.6%.

Industry Backlog:
May's backlog was $22,033 million (12.8 weeks).

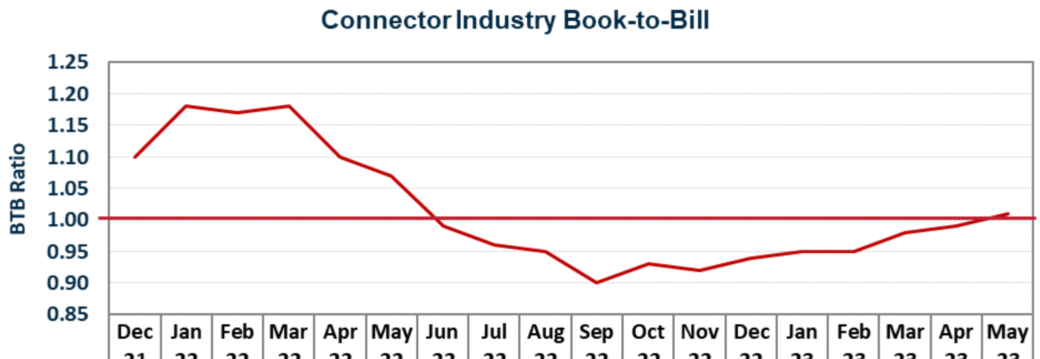
2023 Currency Impact:
The industry declined -1.1% YTD in May in USD and in local currencies.

May bookings were down only -7.0%, which ended seven consecutive months of double-digit declines. Billings were down -2.9%. The backlog in May decreased to $22,033 million or 12.8 weeks.



	Dec 21	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
Bookings	15.5	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	-11.8	-7.0
Billings	15.5	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	-1.6	-2.9

The book-to-bill ratio in May was 1.01, the first time greater than 1.0 since May of 2022, and YTD was 0.98.

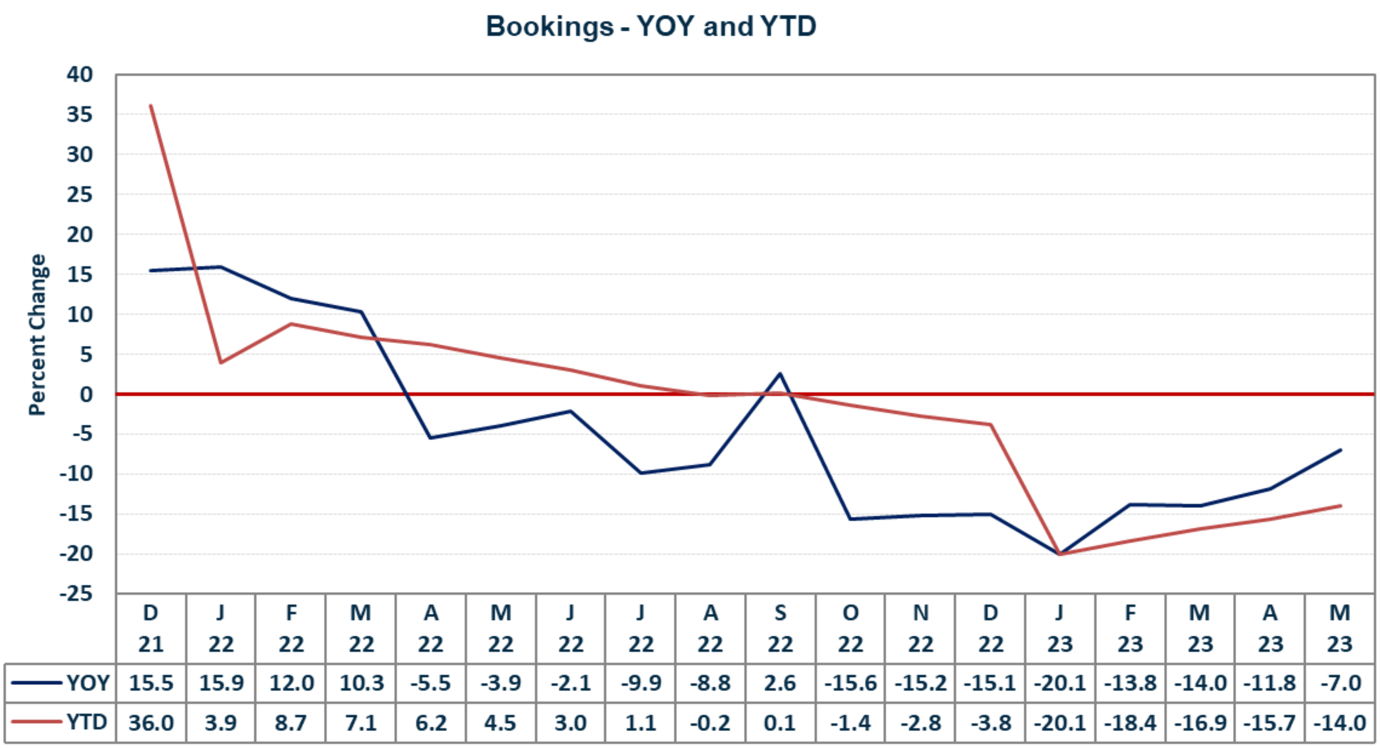


	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
BtB	1.10	1.18	1.17	1.18	1.10	1.07	0.99	0.96	0.95	0.90	0.93	0.92	0.94	0.95	0.95	0.98	0.99	1.01

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%	-6.1%	81.9%	-5.5%	-11.8%	42.9%	6.2%	-15.7%
May	5.1%	7.0%	12.5%	86.4%	-3.9%	-7.0%	50.5%	4.5%	-14.0%
Jun	-8.3%	-6.7%		59.7%	-2.1%		51.9%	3.0%	
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%	

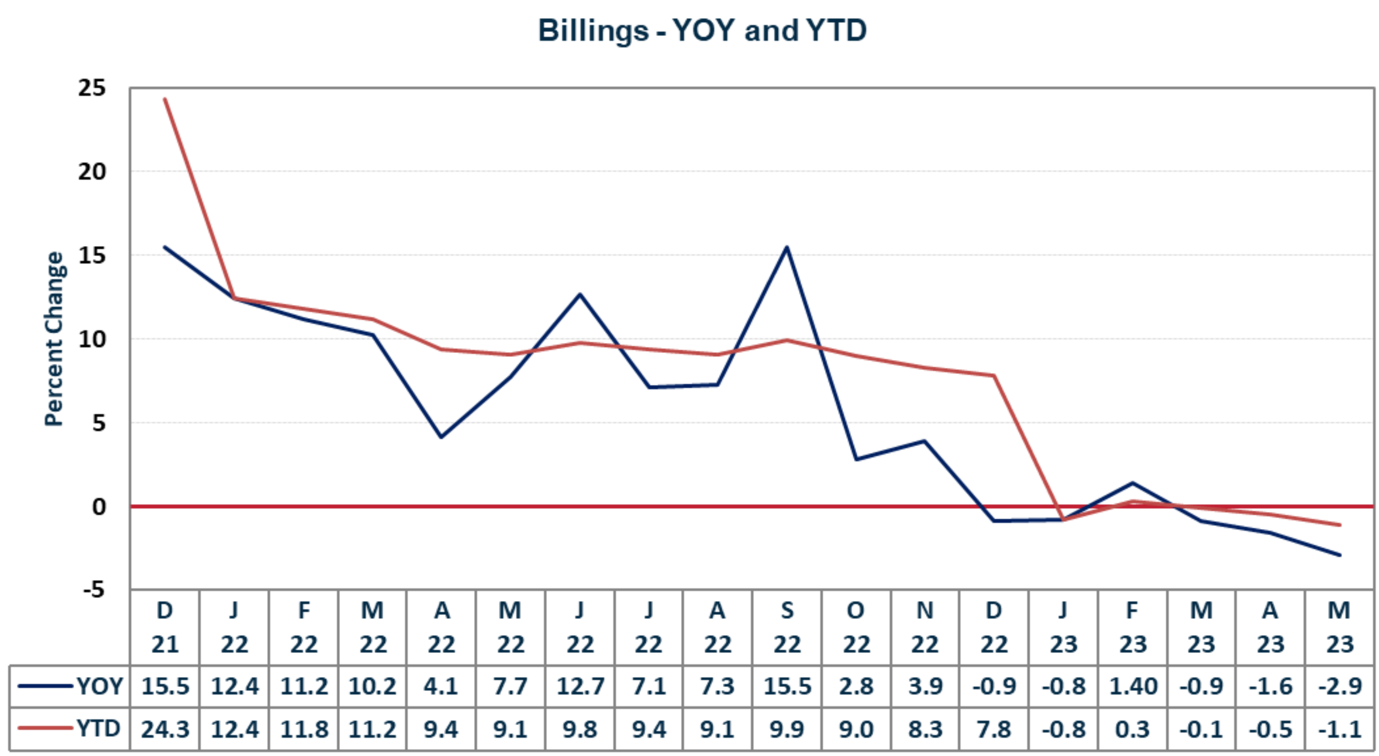


- May bookings decreased -7.0% YOY and were down -14.0% YTD.
- Orders increased +12.5% sequentially.
- The book-to-bill ratio for May was 1.01, ending 11 months of results at or below 1.0, and YTD was 0.98.

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%	-7.3%	49.5%	4.1%	-1.6%	29.4%	9.4%	-0.5%
May	7.0%	10.7%	10.9%	47.1%	7.7%	-2.9%	32.8%	9.1%	-1.1%
Jun	-3.8%	0.7%		33.5%	12.7%		33.0%	9.8%	
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%	



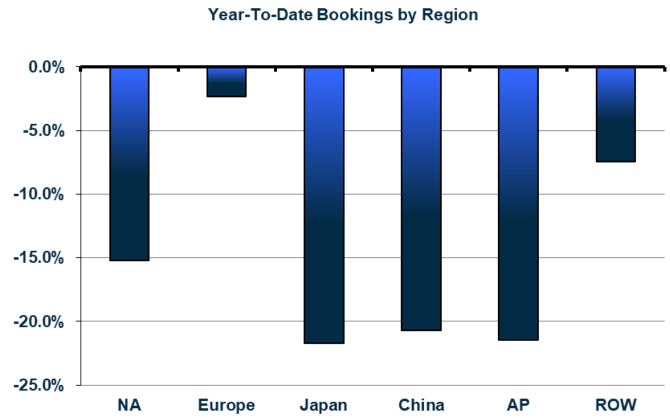
- May billings decreased -2.9% YOY and -1.1% YTD.
- Sequentially, billings increased +10.9% in May.

Regional Performance: BOOKINGS

May 2023 Bookings

Book

Region	Sequential	YOY	YTD
NA	20.3%	-5.6%	-12.7%
Europe	16.5%	8.0%	-4.8%
Japan	3.2%	-16.5%	-21.7%
China	9.3%	-13.6%	-20.7%
AP	-1.6%	-23.5%	-21.5%
ROW	1.3%	-15.1%	-7.4%
Total	12.5%	-7.0%	-14.0%



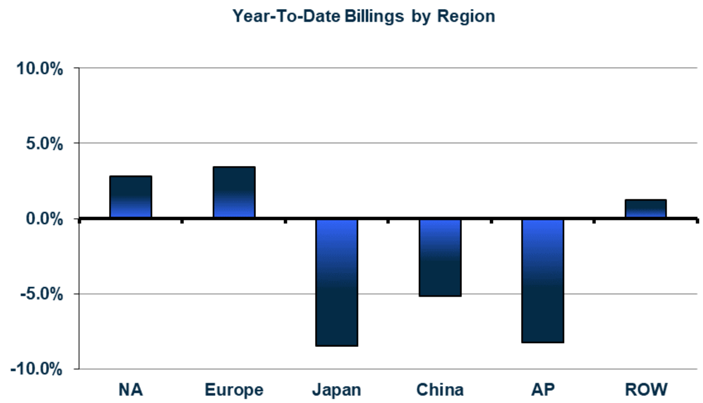
- May bookings decreased -7.0% YOY.
- YOY orders declined in all regions except Europe.
- All regions have negative YTD results.
- Asia Pacific's YOY bookings decreased the most at -23.5%.
- All regions have positive sequential results except Asia Pacific.
- The book-to-bill ratio was 1.01, after 11 consecutive months below 1.00.

Note, orders have declined in 13 of the past 14 months, strongly suggesting that we are moving toward a recession in the industry.

Regional Performance: BILLINGS

May 2023 Billings

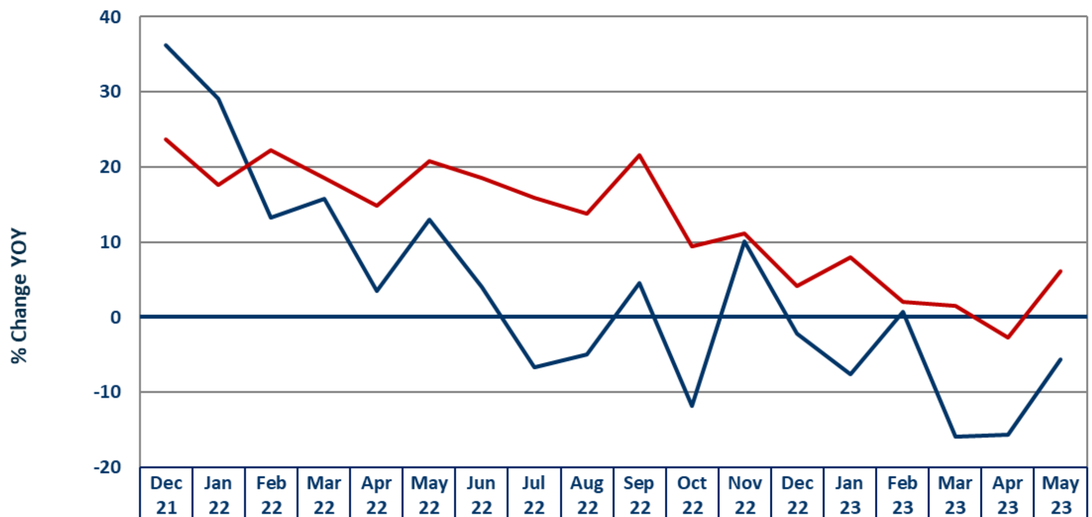
Region	Sequential	YOY	YTD
NA	25.4%	6.1%	2.8%
Europe	3.2%	-5.7%	3.4%
Japan	2.7%	-5.9%	-8.4%
China	7.7%	-4.4%	-5.2%
AP	7.2%	-12.6%	-8.2%
ROW	11.1%	-5.5%	1.2%
Total	10.9%	-2.9%	-1.1%



- May connector sales decreased -2.9% YOY.
- All regions grew sequentially.
- All regions contracted YOY except North America.
- YTD, North America, Europe, and ROW remain positive.
- Industry growth is down -1.1% year-to-date in US dollars and in local currencies (see page 17).

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

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



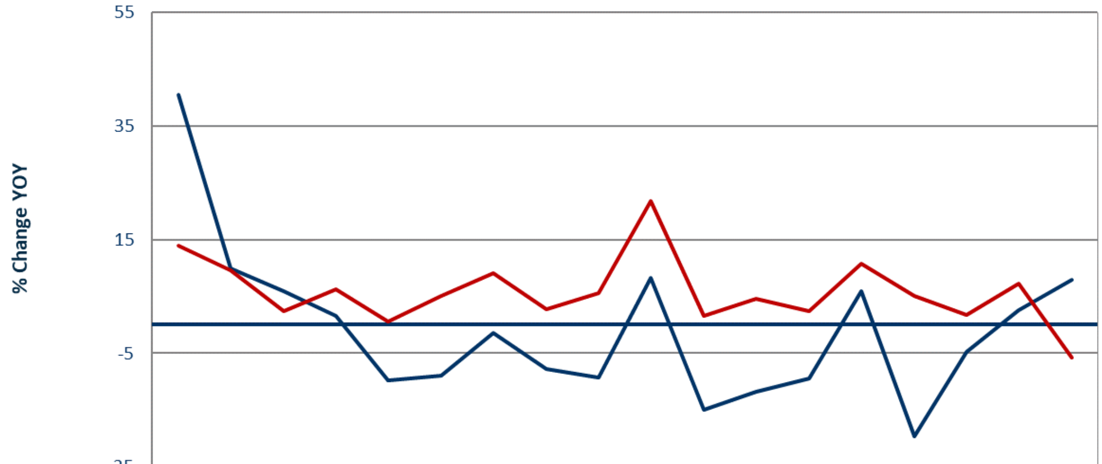
	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
Bookings	36.2	29.1	13.3	15.8	3.5	13.0	4.0	-6.7	-5.0	4.6	-11.8	10.1	-2.2	-7.6	0.7	-15.9	-15.7	-5.6
Billings	23.7	17.6	22.2	18.6	14.8	20.8	18.6	15.9	13.8	21.6	9.4	11.1	4.2	8.0	2.0	1.5	-2.7	6.1
Billing SEQ	-1.9	-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	-6.9	25.4
BTB	1.07	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	0.96	0.93

North America Performance

- Sales grew +6.1% and orders were down -5.6% YOY in May. North American billings were up sequentially +25.4%. The book-to-bill was 0.93.
- US inflation slowed to 4.0% in May, the lowest since March 2021. Core inflation decreased to 5.3%.
- Industrial production decreased slightly to 0.2% YOY in May.
- Manufacturing PMI decreased to 48.4 in May after only two months of factory growth out of the last eight.
- US unemployment increased to 3.7% in May.
- Retail sales were up 1.6% YOY in May.
- Housing starts were up an unexpected 21.7% sequentially in May.
- US vehicle sales in May increased 22.8% YOY according to MarkLines.
- Consumer confidence increased to 63.9 in June from 59.2 in May.
- The trade deficit increased to $74.6 billion in April.
- The debt ceiling showdown did not cause the US to default as it was resolved.

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

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



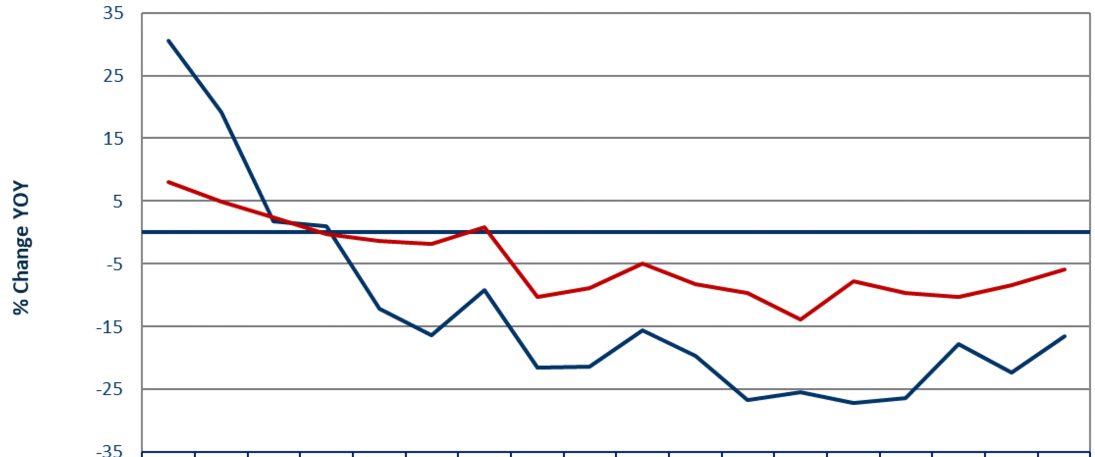
	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
Bookings	40.4	9.9	6.0	1.5	-9.8	-9.0	-1.5	-7.7	-9.3	8.3	-15.0	-11.7	-9.4	6.0	-19.6	-4.8	2.5	8.0
Billings	13.9	9.6	2.4	6.2	0.6	5.0	9.1	2.8	5.6	21.7	1.6	4.5	2.4	10.7	5.0	1.7	7.2	-5.7
Billing SEQ	-9.0	-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	-5.2	3.2
BTB	1.13	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	1.05	1.20

Europe Performance

- YOY bookings were up +8.0% and billings were down -5.7%. The book-to-bill ratio was 1.20. Sequentially, sales were up +3.2%.
- Euro Area industrial production increased 0.2% YOY in April.
- The manufacturing PMI was 44.8 in May and represented the 11th consecutive month of declining factory activity.
- Retail sales decreased 2.6% YOY in April, the seventh straight month of declining sales.
- The inflation rate decreased to 6.1% in May from 7.0% in April. Core inflation, which excludes energy and food, eased to 5.3% in May.
- The unemployment rate was 6.5% in April.
- Consumer confidence was -17.4 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.

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

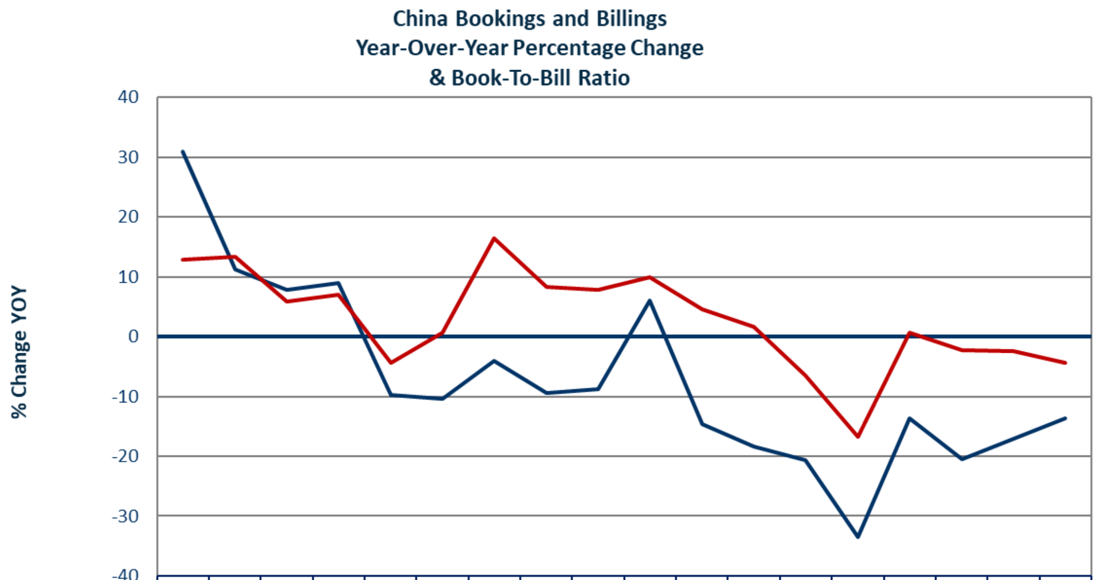


	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
Bookings	30.5	19.2	1.8	1.0	-12.1	-16.3	-9.1	-21.5	-21.3	-15.5	-19.6	-26.6	-25.5	-27.1	-26.4	-17.8	-22.3	-16.5
Billings	8.0	4.9	2.4	-0.3	-1.4	-1.8	0.9	-10.3	-8.9	-4.9	-8.3	-9.7	-13.9	-7.7	-9.7	-10.2	-8.4	-5.9
Billing SEQ	-4.5	-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
BTB	1.14	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

Japan Performance

- Bookings were down -16.5% in May. Sales declined -5.9% YOY, and sequentially were up +2.7%. Japan's book-to-bill ratio was 0.93.
- The inflation rate in May decreased to 3.2%.
- Japan's currency devalued 4.5% against the US dollar in May YTD (far below the rates in 2022).
- The industrial production rate decreased 0.7% YOY in April. This is six consecutive months of decline.
- April retail sales grew 5.0% YOY.
- Exports were down 12.0% sequentially and up 0.6% YOY in May.
- The June manufacturing PMI was 49.8, putting their factory activity back into contraction.
- Housing starts were down 11.9% YOY in April.
- Consumer confidence was up to 36.0 in May, the highest reading since January 2022.

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.



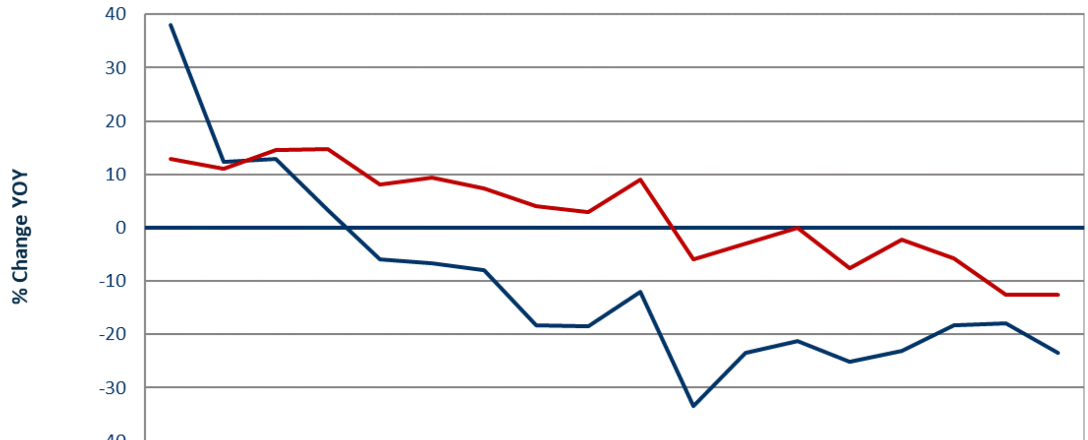
	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
Bookings	30.9	11.2	7.9	9.0	-9.7	-10.4	-4.0	-9.4	-8.7	6.0	-14.6	-18.4	-20.7	-33.5	-13.7	-20.5	-17.0	-13.6
Billings	12.8	13.4	5.8	7.0	-4.4	0.6	16.5	8.3	7.8	9.9	4.5	1.6	-6.5	-16.7	0.6	-2.2	-2.4	-4.4
Billing SEQ	-5.2	-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	-11.4	7.7
BTB	1.03	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	0.96	0.97

China Performance

- China's sales decreased -4.4% YOY and orders decreased -13.6% YOY. The BTB was 0.97. Sequentially, sales increased +7.7% in May.
- Industrial production grew 3.5% YOY in May.
- China's manufacturing PMI unexpectedly increased to 50.9 in May.
- Retail sales rose 12.7% YOY in May.
- Exports from China decreased 7.5% YOY.
- China's total vehicle sales increased 27.9% YOY in May.
- The inflation rate increased to 0.2% in May. Core inflation was at 0.6%.
- The unemployment rate remained at 5.2% in May.

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

**Asia Pacific Bookings and Billings
Year-Over-Year Percentage Change
& Book-To-Bill Ratio**

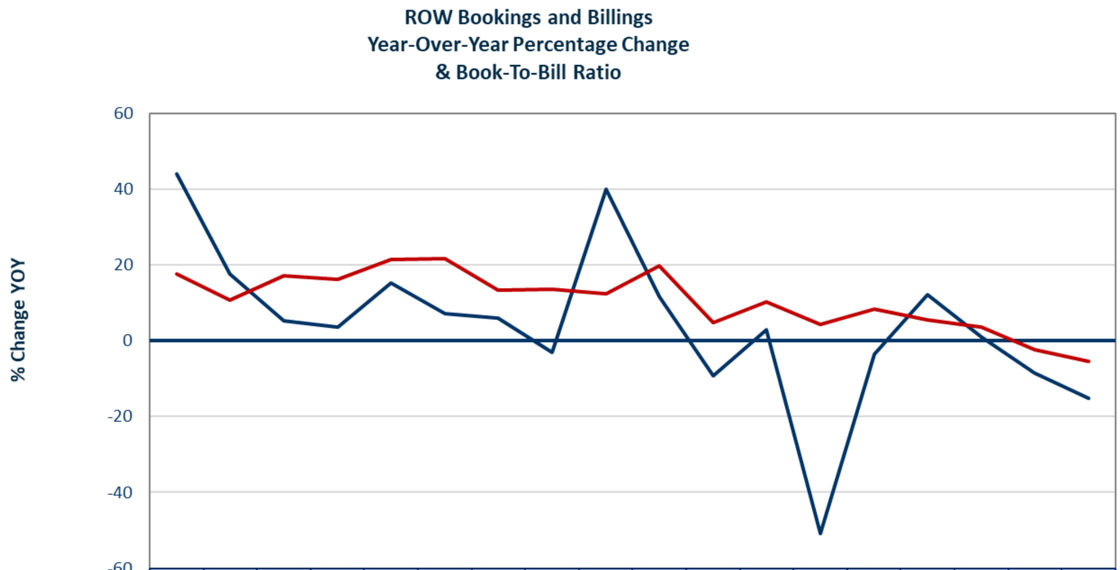


	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
Bookings	38.1	12.4	12.9	3.4	-5.9	-6.7	-7.9	-18.2	-18.4	-12.1	-33.4	-23.5	-21.3	-25.1	-23.1	-18.2	-17.9	-23.5
Billings	12.9	11.0	14.5	14.7	8.1	9.4	7.3	4.1	3.0	9.0	-6.0	-2.9	0.0	-7.5	-2.3	-5.7	-12.5	-12.6
Billing SEQ	-7.1	-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	-7.4	7.2
BTB	1.04	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	1.01	0.92

Asia Pacific Performance

- Orders were down -23.5% in May and sales were down -12.6% YOY. The book-to-bill ratio was 0.92. Sequentially, sales increased +7.2%.
- India's industrial production grew 4.2% YOY in April. Exports decreased 10.3% YOY in May to $35.0 billion. Electrical and electronic equipment only represents 4.8% of total exports. The manufacturing PMI increased to 58.7 in May. There have been 23 straight months of factory expansion. Inflation in May decreased to 4.25%.
- South Korea's industrial production fell 8.9% YOY in April for the seventh straight month of declines. Exports decreased 15.2% YOY in May after a 14.2% drop in the prior month. Electrical and electronic equipment comprise 31% of their exports. The manufacturing PMI was 48.4 in May for the 11th consecutive month of contracting factory activity. Inflation decreased to 3.3% in March.

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.



	Dec 21	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
Bookings	44.0	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	-8.5	-15.1
Billings	17.6	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	-2.3	-5.5
Billing SEQ	-7.1	-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	-5.3	11.1
BTB	1.89	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	1.04	0.95

Rest of World Performance

- Orders decreased -15.1% and sales decreased -5.5% YOY in May. Sequentially, sales in the region increased +11.1%. The book-to-bill ratio was 0.95.
- Brazil's industrial production contracted -2.7% YOY in April. The inflation rate decreased to 3.94% in May. The manufacturing PMI was 47.1 in May, the seventh consecutive month of factory contraction. The unemployment rate decreased to 8.5% in April. Exports increased 11.6% YOY in May to $33.1 billion. Retail sales grew 0.5% YOY in April.
- Russia’s economic data is still questionable but here are a few data points. The GDP for 1Q23 is reported at a contraction of 1.8% YOY. Their industrial production grew 5.2% in April, the second period of growth this year. YOY, retail sales increased 7.4% in April, the first 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	4.5% Slowing	N/A	N/A
Industrial Production Growth	0.2% Down	0.2% Down	-0.7% Down	3.5% Up	N/A	N/A
Manufacturing PMI*	48.4 Down	44.8 Down	49.8 Down	50.9 Down	N/A	N/A
Inflation Rate	4.0% Slowing	6.1% Slowing	3.2% Decreasing	0.2% Slowing	N/A	N/A
Unemployment Rate	3.7% Steady	6.5% Steady	2.6% Decreasing	5.2% Steady	N/A	N/A
Retail Sale Growth YOY	1.6% Down	-6.1% Down	5.0% Steady	12.7% Up	N/A	N/A
YTD Connector Sales Performance	2.8% Down	3.4% Flat	-8.4% Down	-5.2% Down	-8.2% Down	1.2% Down
YTD Connector Orders Performance	-12.7% Down	-4.8% Up Slightly	-21.7% Down	-20.7% Down	-21.5% Down	-7.4% Down

* Purchasing Manager Index - Below 50 is contracting factory activity

Industry Backlog Is 12.8 Weeks

The industry has been shipping $6,863 million on average per month since January of 2023. The May ending balance is $22,033 million which equates to 12.8 weeks of backlog.

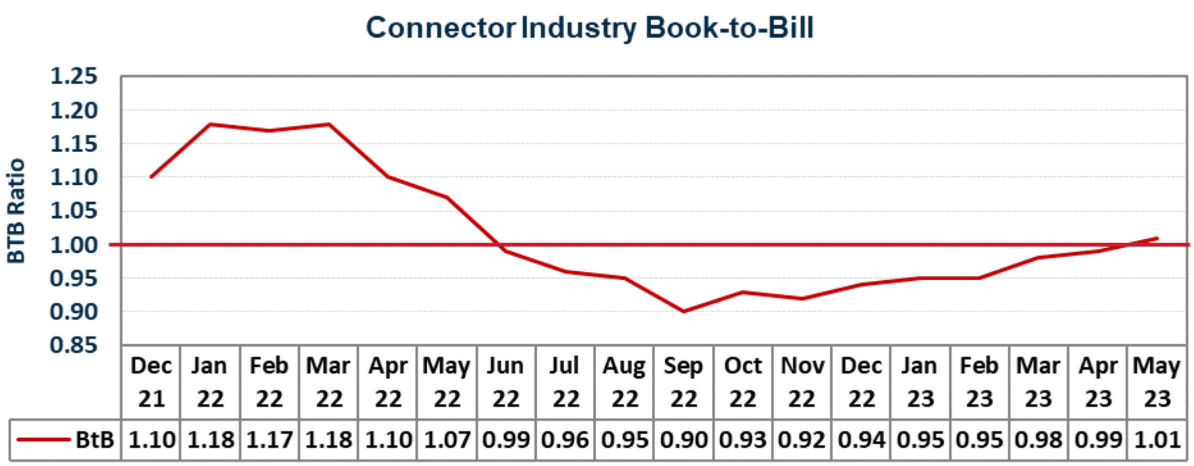
The following table compares 2022 industry backlog to the current backlog.

Industry Backlog

	2022	**YTD May 2023**
BtB Ratio	1.01	0.98
Beginning Backlog	$21,499	$22,983
Bookings	$85,575	$33,365
Billings	$84,091	$34,315
Ending Backlog	$22,983	$22,033
Backlog in Weeks	14.2	12.8

$ Millions

The industry has reported 11 consecutive months of a below 1.00 book-to-bill ratio. In May, this trend reversed and for the first time in a year, the book-to-bill ratio was 1.0 or better. This is shown in the following graph.



As previously noted, the May 2023 book-to-bill ratio is 1.01 which ends 11 consecutive months in which the industry shipped more than it booked. 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	0.99
May	$22,033	1.01

$ Millions

Industry Orders – May 2023

Sales are down a modest -1.1% through May, but orders are down a whopping -14.0% YTD. In fact, orders have declined in 13 of the past 14 months, however, May orders were down only -7.0%, ending seven consecutive months of double-digit declines.

Double Digit Order Declines

	% Decline
October 22	-15.6%
November 22	-15.2%
December 22	-15.1%
January 23	-20.1%
February 23	-13.8%
March 23	-14.0%
April 23	-11.8%

The slowdown in order demand is a function of a slowing global economy caused by high inflation, rising interest rates, and overall economic uncertainty. Deteriorating relations with China and the Ukrainian War add uncertainty to global markets.

2023 & 2024 Forecast

Through May 2023, world sales are $34,315 million, down -1.1% 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 12 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.

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 May 2022 versus May 2023 and shows results for these three currencies.

Local Currency to One USD
May 2022 versus May 2023

Currency	2022	2023	% Change
Euro	0.9457	0.9271	-2.0%
Yuan	6.6940	7.1216	6.4%
Yen	133.8910	139.9638	4.5%

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

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

Region	U.S.$	Local Currency
North America	2.8%	2.8%
Europe	3.4%	1.3%
Japan	-8.4%	-4.3%
China	-5.2%	0.9%
Asia Pacific	-8.2%	-8.2%
ROW	1.2%	1.2%
World	**-1.1%**	**-1.1%**

Connector sales are the same when stated in local currencies or US dollars, leaving the industry performance at -1.1% contraction in May. This is the result of a fluctuating US dollar, on average, compared to the other three primary currencies. Although it may seem unusual that the results are the same, this is by a matter of chance. One can see in the tables that the individual region rates vary significantly.

Significant News

Maury Microwave to Acquire the Wireless Telecom Group
Maury Microwave, a provider of RF calibration, measurement, emulation, and modeling solutions backed by Artemis Capital Partners ("Artemis"), has entered into a definitive agreement to acquire the Wireless Telecom Group in a transaction that is expected to close in the third quarter of 2023, subject to the approval of Wireless Telecom Group Shareholders and the satisfaction of other customary closing conditions.

Since its founding in 1985, Wireless Telecom Group, ("WTT")'s test and measurement business – comprised of Boonton, Holzworth, and Noisecom - has served as a trusted technology solutions partner to many of the world's leading manufacturers in the wireless technology chain. Across aerospace, defense, satellite communications, semiconductor, quantum and directed energy applications, WTT's technology portfolio enables its customers to push the boundary of radio frequency ("RF") and microwave technology.

The Boonton, Holzworth and Noisecom brands expand Maury's test and measurement technology portfolio into high performance phase noise analysis, RF synthesis, signal generation, noise generation and RF power measurement. WTT's customer base and technologies complement and strengthen Maury's heritage in mission-critical defense and satellite communications programs of record as well as increased access to high growth applications including radar, electronic warfare, quantum computing, and directed energy systems. WTT will continue to operate from its headquarters in New Jersey as a division of Maury and continue to be led by its current general manager, Daniel Monopoli and his senior leadership team.

Bill Pezza, Executive Chairman of the Board at Maury Microwave, said, "This proposed transaction represents a significant step forward in our strategic plan. The combination of Maury and WTT, including its prominent test and measurement divisions Boonton, Holzworth, and Noisecom, will enable us to provide even more comprehensive solutions and superior service to our customers. We are excited to welcome the talented team from WTT to the Maury organization and look forward to a future of innovative growth together."

Michael Howo, CEO at Maury Microwave, expressed his enthusiasm for the deal, "We have long appreciated the leadership position of the Boonton, Holzworth and Noisecom brands, high-performance solutions and long-term customer relationships and we have always been interested in finding market opportunities where we could partner. We look forward to contributing additional engineering and sales resources and technical value to the Company's core capabilities and help drive the next phase of growth."

ITT Acquires Micro-Mode Products, Leading Provider of Highly Engineered Connectors for Harsh Environment Defense and Space
ITT Inc. announced the acquisition of privately held Micro-Mode Products, Inc. (Micro-Mode) for approximately $80 million, which closed on May 2. Micro-Mode is a specialty designer and manufacturer of high-bandwidth Radio Frequency (RF) connectors for harsh environment defense and space applications.

Micro-Mode, a leading provider of RF and Hermetic connectors for radar, satellite and smart defense systems, has been qualified on numerous U.S. space and defense programs for more than 30 years. Micro-Mode's differentiated miniature and high-frequency design capabilities will enhance ITT's product portfolio and customer base, specifically for long-term defense programs. Micro-Mode holds leading positions in the defense and space connector industries and its high-reliability connectors are the product of choice for many mission-critical applications.

The acquisition of Micro-Mode grows ITT's existing North America connectors platform, which is part of its Connect & Control Technologies (CCT) segment. Micro-Mode also provides ITT further access to attractive segments and applications in space and defense, with a total addressable market of more than $4 billion.

With its proven engineering and quality capabilities, the company maintains a highly defensible niche with sole source positions on attractive U.S. defense programs.

“Micro-Mode has a proven business model that delivers value to customers in very demanding applications,” said ITT’s Chief Executive Officer and President Luca Savi. “The company’s expertise is a great addition to our connectors business and strengthens our presence in defense systems, military aircraft, and space applications. Micro-Mode customer sentiment is overwhelmingly positive, and we are excited to have the Micro-Mode team join ITT.”
Micro-Mode employs approximately 170 highly skilled professionals at a single manufacturing site near San Diego, California. It generated approximately $26 million in sales during 2022.
There is no change to ITT’s 2023 guidance as a result of the transaction.

PEI-Genesis acquires Bel Stewart s.r.o.
PEI-Genesis announced that the company has acquired Czech Republic-based Bel Stewart s.r.o., a manufacturer and supplier of passive systems in the field of data and telecommunication interconnection technologies.

The purchase allows the company to better serve a broader range of customers’ needs for passive systems interconnect solutions.

“We consider ourselves to be the industry’s Trusted Advisors focused on solving our customers’ interconnect problems,” says Fisher. “This acquisition enhances that capability, further encouraging our customers to partner with us for a broader range of products and services,” says Steven Fisher, President & CEO of PEI-Genesis in a press release.

Bel Stewart s.r.o. – which will now be known as PEI-Genesis – consists of two divisions where one operates as a distributor of other connectivity products and the other a manufacturer of copper and fiber cable assemblies serving end markets including telecommunications, networking, banking, and public administration.

PEI-Genesis s.r.o. division will now be championed by Jonathan Parry, Senior Vice President & MD Europe. PEI-Genesis s.r.o.’s, Catherine Deswarte, will remain as Managing Director to help grow and integrate its operations into PEI-Genesis.

Delta Electronics Targets E-mobility Sector as it Agrees to Buy TB&C for €142m
The power and thermal management specialist says a bigger presence in the EV market could help it to achieve double-digit growth over the next five years.

Taiwan's Delta Electronics is to acquire the complete shareholdings of Germany's HY&T Investments – and its subsidiaries – from Cooperatief H2 Equity Partners.

It says the key driver of the purchase is the TB&C subsidiary, which builds automotive high-voltage hybrid components. Delta supplies switching power supplies and thermal management products for multiple verticals. With this deal it expects to boost its presence in the fast-growing EV space.

Ping Cheng, CEO of Delta Electronics, said: "The accelerated growth of the global EV market is expected to help Delta's overall business achieve its two-digit growth target over the next five years. Delta has successfully developed EV powertrain solutions for global major automotive companies, as well as automotive magnetic components, passive components, and thermal management solutions. With the addition of TB&C, Delta will be able to expand its EV product portfolio, while the collaboration between both companies will make our EV business scope even more comprehensive."

TB&C has R&D and sales teams as well as manufacturing facilities in its operational headquarters in Germany. It also has manufacturing bases in Mexico and Romania.

Hon Hai Sales Rise on Phone Demand

Hon Hai Precision Industry Co, a major iPhone assembler, yesterday posted a second straight monthly growth in revenue to NT$45.07 billion (US$1.47 billion) last month, thanks to a pickup in smartphone demand. Last month's revenue marked its best performance since January. On an annual basis, sales dipped 9.45 percent, the smallest annual decline since February, compared with NT$49.78 billion in May last year.

Revenue from smart consumer electronics products, primarily iPhones and smartphones for other brands, delivered a "strong" double-digit, month-on-month growth in May because of customers' pull-in, Hon Hai said in a company statement. That was the only business category that enjoyed a robust rebound last month.

Sales from computing products, components and other products were flat on a sequential basis as customers were digesting excessive inventory, it said, adding that revenue from cloud and networking products was virtually unchanged.

It is forecast that revenue will drop quarter-on-quarter and year-on-year during the April-June period, as demand usually softens during production transitions, it said. Another factor is the relatively high base of comparison in the same period last year, as constraints on key component supply eased. For the full year, the company is conservative about prospects, with revenue expected to be stable compared with last year.

Hon Hai expects the PC industry's inventory correction cycle to end by the end of this quarter, but it would take longer for the server sector to see inventory touch bottom, likely between the second and third quarters, Liu said at the time. Server demand from the enterprise side was weak, but cloud-service providers such as Google and Amazon.com continued to show resilient demand, Liu said.

Artificial intelligence (AI) servers also performed well, as gaming companies joined cloud-service providers in adopting AI-related applications, he said. Hon Hai expects demand for its consumer electronics to decline sequentially this quarter, he added.

Demand for its cloud, networking and computing products would be flat on a quarterly basis, whereas demand for components and other products would grow sequentially, he added.

During the first five months, Hon Hai accumulated NT$2.34 trillion in revenue, falling 2.08 percent from NT$2.39 trillion during the same period last year.

Manufacturing is Sputtering in the World's Largest Economies

Manufacturers around the world are contending with weakening demand as the economic outlook for the industry darkens. Factories in the United States and across the eurozone reported a decline in new orders for manufactured goods in May as they worked through their backlog of orders, according to recent business surveys released by data firm S&P Global. It's unclear for how long those backlogs, which swelled in the early days of the pandemic, will sustain the industry globally. S&P Global data showed that the US manufacturing sector fell into contraction territory in May. A similar survey released by the Institute for Supply Management showed the industry contracted for the seventh consecutive month in May, at a faster pace than in the prior month.

US government data also show what could be the beginning of a consistent slowdown. The Commerce Department reported on Monday that factory orders excluding transportation, a volatile category, fell for the

third consecutive month in April. Excluding defense, factory orders were down in four of the past six months through April.

Among manufacturers in the eurozone, production, new orders and backlogs all fell in May as the sector contracted at a faster pace that month, according to S&P Global figures. The 20-nation currency area's industrial production fell sharply in March, mostly due to a plunge in Ireland. The indicator measures the output of manufacturers, miners, and utility companies.

The situation isn't a whole lot better in China. Business conditions in China's manufacturing industry, the largest in the world, improved in May, according to the Caixin manufacturing Purchasing Managers' Index. That was a temporary sigh of relief for investors fearing that growth is stalling in the world's second-largest economy, but recent data showed that exports from China fell 7.5% in May from a year earlier, the biggest decline since January, as imports contracted further that month.

China's shaky trade figures reflect weak demand for Chinese goods, and that's on top of other economic troubles the country faces such as rising unemployment and a deep slump in its property sector. Globally, manufacturers' optimism fell to its lowest level since December, according to the JPMorgan Global Manufacturing PMI.

What's driving weakness?

Consumers around the globe were forced to cut back their spending on services in 2020 because of the pandemic, resulting in a boom in goods purchases. That also rapidly grew manufacturers' backlogs of orders.

Consumers have since shifted their spending back toward services since countries around the globe rescinded pandemic-era restrictions. Both in the United States and Europe, hospitality businesses are gearing up for a record-breaking summer of travel. That ongoing shift toward services spending, coupled with tighter financial conditions because of central banks raising interest rates, spells trouble for goods producers, economists say.

China's recent reopening, after years of draconian pandemic restrictions, was expected to provide the global economy "fresh momentum," according to an International Monetary Fund forecast. But the country's rebound has been underwhelming. The possibility of China reinvigorating global economic growth is slipping.

Durable goods are often bought on credit

Central banks are continuing their war on inflation. Rising interest rates tame inflation by cooling demand, eventually prompting banks to toughen their lending standards. In the United States, that has been the case, especially after the failures of three regional banks in the past few months. Credit conditions have also been tightening in the eurozone, more so after the forced merger of Swiss banks Credit Suisse and UBS.

The Federal Reserve, America's powerful central bank, has raised interest rates 10 times in a row to a level that's "sufficiently restrictive," according to Fed Chair Jerome Powell. The European Central Bank has also raised interest rates aggressively to combat inflation in the eurozone and hasn't signaled it's willing to stop just yet.

Durable goods, which are defined as products that last at least three years — such as cars and appliances — are often bought on credit, so tightening credit conditions are inevitably bound to weigh on manufacturers.

That could eventually lead to global manufacturers trimming their workforces if demand for goods continues to weaken and their backlogs shrink further.

Slowing economic momentum

A recession is defined as a broad economic downturn that includes weakness in consumption. Purchases of discretionary goods are among the first consumers cut back on when they retrench, so broader signs of economic weakness won't bode well for manufacturers.

Economists at the Fed reaffirmed their forecast of a mild US recession later in the year, though the country's labor market has been holding steady. Revised data this week showed that the 20-nation eurozone tilted into a recession around the turn of the year. The bloc's gross domestic product dropped 0.1% in the first quarter from the previous three-month period, following a 0.1% decline in the fourth quarter. Though economic output of the broader European Union inched up 0.1% in the first three months of the year.

Germany, Europe's largest economy, experienced a sharper decline in economic output than the eurozone around the turn of the year, also pushing into a recession. The German economy shrank 0.3% in the first quarter from the previous one, following a 0.5% contraction in the fourth quarter.

Rising interest rates and high inflation weighed on consumers and businesses in both regions, though price increases have eased in the past several months.

Meanwhile, China's economy expanded 2.2% in the first quarter from the previous three months, mostly because of the country's reopening as Chinese consumers began eating out and traveling again. Compared to the same period a year ago, China's GDP grew a robust 4.5% in the first three months of the year. All eyes will be on May data gauging China's economic performance.

The US PC Market has Crashed, but a Rebound is Expected Later This Year

The US PC market hit a bump in the first quarter of the year as shipments fell 28% to 14 million units. But it's not all bad news. Analyst company Canalys believes that the industry will start to recover later in 2023.

The US saw over 25 million PC shipments in the second quarter of 2021 as the stay-at-home orders pushed demand through the roof. That figure has been slowly declining since then, reaching a low point of 14 million in Q1 2023.

Breaking down that figure, desktop shipments were down 28% to 2.7 million, while notebooks experienced an even larger decline, down 31% to 11.4 million. All top-five PC vendors experienced negative growth in Q1 2023. Second-place HP fared best with a 13.2% decline. Dell stayed on top despite a 26.2% fall in shipments.

PC shipments in Q1 mirror the GPU market, which fell 43% year-on-year to 54.8 million units. However, a slight upturn is expected in the second half of the year and early 2024 for the graphics solutions industry, too.

The one area that performed slightly better – as in, its shipments didn't fall by as much – was tablets, which dropped just 7% to 10.8 million. As usual, it was Apple's iPad line that drove sales. The 5.4 million shipments of Apple's slates in the quarter represented a 20.5% year-on-year increase from the 4.4 million units shipped a year earlier.

PC and Tablet Market Face Further Decline Before a Rebound in 2024

After a rough start to the year, International Data Corporation (IDC) has lowered its forecast for global PC and Tablet shipments with volumes expected to reach 384.8 million in 2023, down 15.2% compared to last year,

according to the Worldwide Quarterly Personal Computing Device Tracker. Demand has continued to cool as many macroeconomic indicators have worsened or remain unchanged in the past few months, contributing to the lowered outlook. However, IDC expects the market to rebound in 2024 with global volumes reaching 403.1 million during the year and growing to 425 million by the end of 2027.

"As the global economy has continued to struggle, consumers have tightened spending and commercial buyers are delaying purchases," said Jitesh Ubrani, research manager for IDC Mobility and Consumer Device Trackers. "Consumer demand is at risk of perishing as they revert to pre-pandemic habits where the PC wasn't at the center of their daily computing needs, However, commercial buying is expected to ramp up during 2024 and will help the PC market grow beyond pre-pandemic levels."

"In the last two years, average selling prices (ASPs) have risen dramatically as a result of component shortages, inflation, logistics disruptions, and rapid product mix shifts," added IDC research vice president of devices and displays Linn Huang. "With the shortage abruptly turning into surplus, we've seen prices come down due to liquidation and mix regression. We expect this to continue throughout the year with ASPs projected to decline 2.8% to $700. This would mark the first ASP decline for a full year since 2015."

Foxconn Plans to Pivot from iPhones to EVs Amid Rising US-China Tensions

When people hear the name Foxconn, they often think of factories in mainland China producing US-designed iPhones. However, as tensions between the two countries become increasingly volatile, the company is plotting a course to manufacture electric vehicles in facilities outside China.

Foxconn chairman and CEO Young Liu recently detailed the company's plans to expand its electric vehicle business. The market could be an escape hatch for the iPhone manufacturer if rising US-China tensions threaten its current primary revenue stream.

The company has only made a few EV models but wants to capture around five percent of the global market over the next few years. It plans to produce EVs using US, Thailand, Indonesia, and possibly India factories.

Foxconn is primarily known for its plants in China that assemble iPhones. Headquartered in Taiwan, the company depends on China for its workforce, and its most important client is an American tech giant. However, geopolitical currents could endanger this delicate balance.

China sees Taiwan as a rogue province, while the US wants to preserve the island's self-governance. Many worry that disagreements between the two superpowers could turn violent. The world's leading manufacturer of the transistors that power most computers, TSMC, is similarly caught between US tech companies and Chinese manufacturing capacity.

In an extensive interview with the BBC, Liu said EVs are a reasonable prospect of expansion for Foxconn because they have some fundamental similarities with smartphones. The company is trying to transfer its expertise with electronic iPhone parts toward the batteries and motors that power EVs instead. Liu also referred to an EV's dashboard panel as essentially a big iPhone.

Intel Drops as Apple Moves to its Own Silicon on all Computers

Intel shares fell Monday as Apple said an upcoming Mac Pro computer will include a new homemade chip, representing the completion of the company's effort to bring its own processors to its entire PC lineup.

The M2 Ultra, which will power the new computer, is up to three times faster than the speediest Intel-based Mac Pro. At Apple's Worldwide Developer Conference on Monday, Jennifer Munn, director of engineering program management, called the M2 Ultra "a monster of a chip."

Apple launched its initial computer chip, the M1, in 2020. Apple silicon is "a different kind of competition," former Intel executive Gregory Bryant said at a 2021 Evercore conference. "It really wasn't as much about the silicon as it was about the developer ecosystem and unifying this base of developers and applications that they have on the iPhone and the iPad and bring it to the Mac. So, I think that was inevitable."

The Mac Pro containing the new chip will come with 192 GB of memory, Apple said. The computer will start at $6,999.

In addition to Apple, Intel is facing heightened competition from AMD, which has been gaining market share in PC and data center chips, and Nvidia, whose processors are becoming more popular for running artificial-intelligence models.

Apple had about 9% market share of global PC shipments in the first quarter, technology industry researcher Gartner said in April. But the PC industry has been shrinking, with total shipments falling 30% year over year. Apple's Mac revenue in the latest quarter fell 31% to $7.17 billion.

iPhone Exports from India Continue to Surge

Thanks to India's incentive scheme to develop a local ecosystem for mobile phone manufacturing, India's smartphone exports more than doubled in the first two months of the current fiscal year. The Economic Times reported that according to data from the Indian Cellular and Electronics Association, in the first two months of fiscal 2023 (April 2023 to March 2024), smartphones worth INR200 billion (US$2.4 billion) were exported, up from INR90.66 billion from a year earlier.

iPhones accounted for 80% of the smartphone exports, followed by Samsung Electronics and other Indian brands. In May alone, INR100 billion of INR120 billion smartphones exported were iPhones, reported The Economic Times.

According to the Department of Commerce of India, India's primary mobile phone export destinations in April, the latest official data available, were the US, UAE, Netherlands, UK, and Italy, which constituted 75% of India's mobile phone exports for the period.

Thanks to the success of the Production Linked Incentive (PLI) scheme for large-scale electronics manufacturing, India managed to first reach import substitution before exporting mobile phones. Business Standard reported that more than 99% of mobile phones sold in India are made in India. Although the beneficiaries of the PLI scheme have only 20% of India's mobile phone market, they accounted for more than 80% of India's mobile phone exports in fiscal 2023.

Currently, Wistron, Foxconn, and Pegatron are making iPhones in India. Except for Wistron, which reportedly plans to sell its iPhone manufacturing plant to Tata, Foxconn is looking to expand its production capacity for iPhones, even EVs, in India. Reuters reported that Foxconn set a target of manufacturing 20 million iPhones a year at a new plant in Karnataka. According to JP Morgan, India's share of global iPhone production stood at a mere 7%, but it is anticipated to surge to 25% by the end of 2025.

Innovation in Patient Monitoring and Wearables

Wear time for patient monitoring and wearables continue to dominate the conversation of innovation in the space. OEMs are coming to suppliers to help lengthen the wear time of their devices through adhesive design and choice of web material, as well as having conversations about conformability and deformation resistance for flexible components.

"By far the biggest request we see is long term wear," Steve Schroff, business development chemist at Mactac, told MD+DI. "OEMs are constantly seeking longer wear times for devices. Other requests we see are conformability and comfort related."

Adhesive Longevity and Conformability Innovation

3M is one company pushing boundaries in adhesive innovation for health monitors, sensors, and long-term medical wearables. In February, the company launched its new adhesive offering with a wear time up to 28 days. The 3M Medical Tape, 4578 consists of a white spun lace polyester nonwoven backing coated with a pressure sensitive acrylic adhesive used for longer wear applications. The 28-day wear time is double what was available prior to 2022, according to 3M, when the standard wear time for extended medical adhesives was up to 14 days.

4578's liner free stability also means that it can be stored for up to one year, "giving device makers more flexibility in the design process," according to the company.

Among new adhesives wear times, a push to create devices with the ability to withstand stretching, deformation, and conformation has resulted in products like Toray Industries Reactis stretchable film. The film, which has a plastic wiring circuit printed on it, can be subjected to repetitive deformation such as "linear pulling and twisting, and can easily accommodate expansions, contractions, and torsional deformations of circuits and 3D curved surfaces," according to the company. It can recover its shape up to 97% between -4°F and 176°F while also maintaining heat resistance even after treatment at 392°F.

The device has characteristics the company said are ideal for smart wear, medical monitoring hear, biometric exercise device, and robotic systems, and is made with a proprietary polymer structure design and film forming technique which combines cross-linked and stretchable components.

Loomia is one company betting on flexible circuitry that can be used for these devices. Its Loomia Electronic Layer (LEL) is an e-textile circuit that is scalable with multi-axis flex. It consists of five main components: the soft layer, the interconnect, integrated components, adapter cable, and power source that do not break from stress. Additionally, the LEL is "more drapable than flex PCBs, wires on mesh, or most other flexible electronic options. We have a similar flexibility to printed ink on TPU. However, because our technology is not printed, it allows us to design low-resistance conductors that do not easily change resistance when stretched," according to the company.

From a manufacturing standpoint, the technology can cost as little as $0.05 per square inch and is scalable up to 20,000 units a week in an ISO 9001 and ISO 13485-certified facility. The circuitry can also be patterned to be 4.15 to 340 times lighter than a hard wire equivalent for power and data buses.

A Wearable Robotic Assistant That's All Over You

Researchers at the Small Artifacts Lab (SMART LAB) at the University of Maryland have been working on a small wearable robot called Calico. Weighing just 18 grams, the robot attaches to a special track sewn on top of your clothing and is ready for work by traversing your garments, which allows it to do all kinds of things, including acting as a stethoscope to listen to your heart and lungs and coaching you through a fitness class.

One of the biggest challenges for Calico is localization: GPS, of course, isn't precise enough to help you determine where the robot is on your clothing. The researchers solved this problem by embedding neodymium magnets into the clothing track at even intervals, which can be used as markers. With onboard sensors, Calico can detect these magnets, and use them to estimate where the robot is currently located and allowing it to effectively plan a path across your body. It's a very effective system, as the robot never missed a single marker throughout the development cycle.

The Calico robot can carry a 20-gram payload. Depending on the direction of travel, the robot can achieve speeds between 115 millimeters per second and 227 mm/s. Thanks to the low-power design, the little rover's

100 milliampere-hour battery will last more than 8 hours in an idle state or 30 minutes with continuous movement. Wireless charging could further extend the operating time of the robot.

When describing their research, the SMART LAB members came up with many applications for their wearable. A microphone and a stethoscope add-on enable the robot to sense vital signs, for example. The robot could travel to a predefined location to listen to your organs, or a doctor could teleoperate it in real time. And because the system already has an accelerometer, it could be used to detect falls.

If you want to learn how to dance or be guided through a workout routine, the system can guide you through some moves, track your form, and provide haptic feedback on your performance. Extending that general idea to medical applications, your little buddy could be used for rehabilitation as a motivator to perform exercises and as a progress monitor.

A wearable assistant with no display makes it challenging to provide meaningful feedback to the user. To overcome this issue, the researchers came up with data physicalization. For example, the device can show your progress on specific tasks by turning your arm into a physical progress bar. As you get closer to hitting your daily goals, the device will move further up your arm.

And of course, a purely "show-off" application exists for this wearable. With the addition of some fur and googly eyes, having a fluffy friend wandering around you at all times would get you some reactions. If you add sound, LEDs, or even displays, you have a guaranteed conversation starter on yourself.

For more information about Calico, check out the Small Artifacts Lab website and the paper describing this work in more detail published 7 September 2022 in the Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies.

Chinese Tesla rival Xpeng gets Approval to Roll Out Driver-assist Tech in Beijing

Chinese electric car brand Xpeng announced Thursday it received approval to start rolling out assisted driving tech to users in the nation's capital city of Beijing. The initial coverage only includes the "ring-road" highways that run in concentric circles around the city center and "main high-speed roads," according to a CNBC translation of the Chinese-language release. The announcement follows Xpeng's release of urban scenario driver-assist tech for users in Shanghai in March, after an earlier rollout in Shenzhen and Guangzhou.

Xpeng has said it plans to roll out the tech, called XNGP, to other Chinese cities this year. The system, available to drivers of certain models for a fee, claims to make driving easier with software that assists with smooth braking at traffic lights, turning at intersections and other tasks on city streets.

Xpeng is the only automaker in China to offer a similar level of driver-assist technology as Tesla. While Tesla offers assisted driving technology for use on highways, its "Full Self Driving" function for driver-assist on city streets isn't yet available in China.

Apple is Determined to Make Headsets Cool

When Apple unveiled its ambitious and very pricey new mixed reality headset earlier this week, executives ticked through a long list of impressive specs, teased big name partnerships, and showed off a perfectly produced promo video.

But there was one thing Apple's execs did not do during the keynote presentation: wear the device. Even reporters who got early access to try on the device were asked by the company not to take pictures of the experience.

The omission has not gone unnoticed. Some industry watchers have suggested that Apple CEO Tim Cook and others may have made a conscious choice to avoid seeing silly pictures of themselves with headsets turned into memes online. But behind this speculation is a more serious potential problem: even Apple may struggle to make VR headsets look cool.

Over the past decade, headsets have developed a reputation for being bulky and strange looking. Palmer Luckey, the founder of Oculus (later acquired by Facebook), was widely mocked and memed in 2015 after being shown on a Time Magazine cover wearing a black headset with his legs bent, arms raised and head tilted up. He looked as though he would fly away at any moment.

It's not just headsets. Silicon Valley has struggled with the optics of other gadgets people wear on their face, too. An image of tech evangelist Robert Scoble wearing Google Glass in the shower had such a profound impact on the discourse around the product that then-Google CEO Larry Page once joked to him: "Robert, I really didn't appreciate the shower photo."

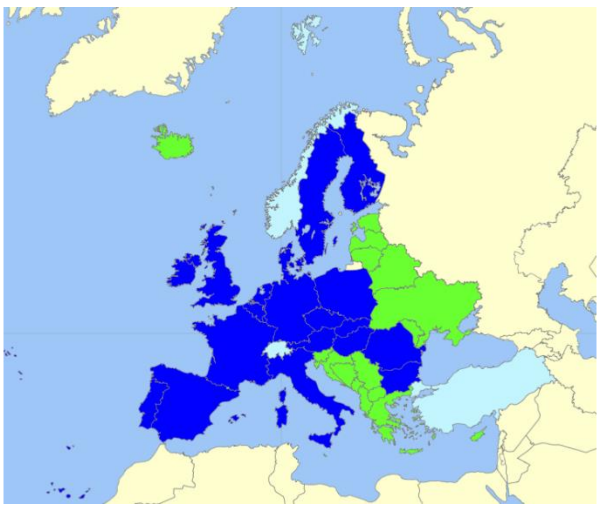
For Apple, the stakes are high to avoid similarly embarrassing visuals. The new headset, which blends both virtual reality and augmented reality, is Apple's most ambitious – and riskiest – new hardware product in years. And there is already a long list of challenges the company must overcome, including a high price tag ($3,500) and an unproven market littered with rivals who have so far failed to achieve mainstream success.

In keeping with its usual playbook, Apple is leaning on its design, hardware, and marketing chops to convince people to spend thousands on the device. As many viewers were quick to point out during Monday's event, the headset looks like a pair of designer ski goggles. In one early marketing image, a woman is shown wearing the headset while dressed in very chic clothing and lounging in an upscale living room.

2023 European Connector Market

Bishop & Associates, a leader in electronic connector research, has just released a new **2023 European Connector Market** research report. This comprehensive, three-chapter, 256-page, report analyzes all aspects of the $17.3 billion European electronic connector market.

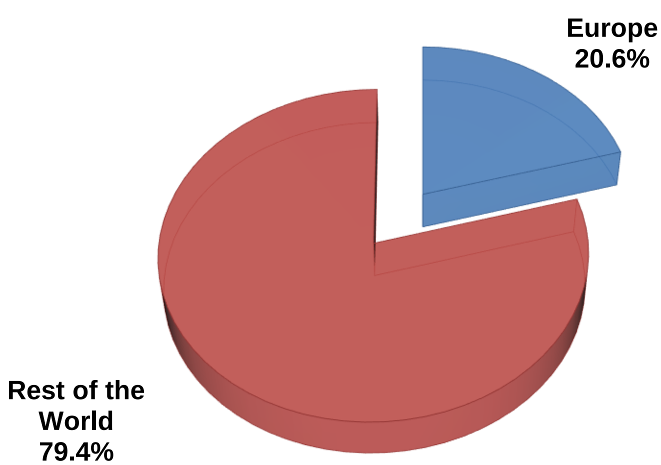
The report provides detailed connector statistics by end-use equipment/market sector and product category for 19 countries/regions. Included is an overview chapter of the European region. Data is provided for the years 2021, 2022, 2023F, and a forecast for 2028 (including five-year CAGRs).



The countries and regions covered within the report include Austria, Benelux, Bulgaria, Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Poland, Romania, Slovakia, Iberian Peninsula, Switzerland, Turkey, United Kingdom, Scandinavia, and the group Other Countries.

An introduction to the European connector market is provided in chapter 1, putting it in context with the world connector market, and showing the relative importance of the European connector market. This chapter also highlights the impact of currency exchange and provides some insight into the different speed at which the connector market in Western Europe is growing when compared to the Central and Eastern regions. Also examined are the top 10 connector manufacturers whose base of origin is Europe.

European Connector Sales as a Percentage of the Total World



Chapter 2 provides an overview of the European market by end-use equipment/market sector and product type for the designated years. An overview of the European market by country, including a 5-year CAGR and a listing of the top five countries by market sector is also provided.

Equipment/Year	2022	2023F	% Change	2028F	5-Year CAGR
Computers & Peripherals	$X.X	$0.0	Y.Y%	$0.0	Y.Y%
Business/Retail/Education	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Instrumentation	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Medical Equipment	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Industrial	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Automotive	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Transportation (non-auto)	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Military/Aerospace	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Telecom/Datacom	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Consumer	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Other	$X.X	$X.X	Y.Y%	$0.0	Y.Y%
Total	**$X.X**	**$X.X**	**Y.Y%**	**$0.0**	**Y.Y%**

$ Million

	2023F	2028F	5-Year CAGR
Austria	$X.X	$X.X	Y.Y%
Benelux	$X.X	$X.X	Y.Y%
Bulgaria	$X.X	$X.X	Y.Y%
Czech Republic	$X.X	$X.X	Y.Y%
Finland	$X.X	$X.X	Y.Y%
France	$X.X	$X.X	Y.Y%
Germany	$X.X	$X.X	Y.Y%
Hungary	$X.X	$X.X	Y.Y%
Ireland	$X.X	$X.X	Y.Y%
Italy	$X.X	$X.X	Y.Y%
Iberian Peninsula	$X.X	$X.X	Y.Y%
Poland	$X.X	$X.X	Y.Y%
Romania	$X.X	$X.X	Y.Y%
Slovakia	$X.X	$X.X	Y.Y%
Scandinavia	$X.X	$X.X	Y.Y%
Switzerland	$X.X	$X.X	Y.Y%
Turkey	$X.X	$X.X	Y.Y%
United Kingdom	$X.X	$X.X	Y.Y%
Other Countries	$X.X	$X.X	Y.Y%
Total Europe	**$X.X**	**$X.X**	**Y.Y%**

$ Millions

In chapter 3, each of the countries/regions previously mentioned is analyzed. Detailed charts and tables provide information on the individual country in terms of market sectors and product categories for 2021, 2022, and 2023F, with a forecast for 2028.

France 2022	Computers and Peripherals	Business Office Equipment	Instruments	Medical Equipment	Industrial Equipment	Automotive Equipment
PCB	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Rectangular I/O	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
IC Sockets	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
RF Coax	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Circular	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Telephone/Telecom	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Fiber Optic	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Terminal Blocks	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Heavy Duty	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Power/High Voltage	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Application Specific	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Other Connectors	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Total	**$X.X**	**$X.X**	**$X.X**	**$X.X**	**$X.X**	**$X.X**

$ Millions

France 2022	Transportation Equipment	Military Electronics	Data/Telecom Equipment	Consumer Electronics	Other Electronics Equipment	Total
PCB	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Rectangular I/O	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
IC Sockets	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
RF Coax	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Circular	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Telephone/Telecom	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Fiber Optic	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Terminal Blocks	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Heavy Duty	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Power/High Voltage	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Application Specific	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Other Connectors	$X.X	$X.X	$X.X	$X.X	$X.X	$X.X
Total	**$X.X**	**$X.X**	**$X.X**	**$X.X**	**$X.X**	**$X.X**

$ Millions

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