

Tower Semiconductor

(NASDAQ: TSEM)

TSEM: Tower's Revenue Decline Continued in Q4, But Should End in the Second Half of 2024

Using the 2.2 times EV to Sales for 2024, we believe TSEM stock is worth at least \$37.80 per share despite declining revenues. The company is flush with \$1.2 billion in cash with which it is expanding capacity.

Current Price (2/14/2024) **\$31.88**
Valuation \$37.80

OUTLOOK

Tower is a pure-play analog semiconductor wafer foundry that manufactures SiGe, MEMS, RF, embedded flash-based memory, analog/mixed-signal, and CMOS image-sensor devices in the US, Israel, and Japan. It is serving markets in mobile such as RF High Position analog, as well as in CMOS image sensors, and power management. It also added a new fab in Italy in partnership with STMicro that has just started shipping product and whose capacity will continue to ramp over the next two years. Margins are expected to increase as volumes increase. The company is flush with \$1.2 billion in cash (or \$11.16 per share), is cash flow positive and sees improving demand through much of its customer base.

SUMMARY DATA

52-Week High **45.43**
 52-Week Low **21.91**
 One-Year Return (%) **-21.5**
 Beta **0.9**
 Average Daily Volume (sh) **761,992**

Shares Outstanding (mil) **110.8**
 Market Capitalization (\$mil) **\$3,532**
 Short Interest Ratio (days) **0.7**
 Institutional Ownership (%) **60**
 Insider Ownership (%) **1**

Annual Cash Dividend **\$0.00**
 Dividend Yield (%) **0.00**

5-Yr. Historical Growth Rates
 Sales (%) **6.8**
 Earnings Per Share (%) **18.2**
 Dividend (%) **N/A**

P/E using TTM EPS **14.7**
 P/E using 2024 Estimate **19.1**
 P/E using 2025 Estimate **17.7**

Risk Level **Below Average**
 Type of Stock **Mid Value**
 Industry **Elec Comp-Semis**

ZACKS ESTIMATES**Revenue**

(In millions of US\$)

	Q1	Q2	Q3	Q4	Year
	(Mar)	(Jun)	(Sep)	(Dec)	(Dec)
2022	\$421 A	\$426 A	\$427 A	\$403 A	\$1,678 A
2023	\$356 A	\$357 A	\$358 A	\$352 A	\$1,423 A
2024	\$325 E	\$335 E	\$360 A	\$390 E	\$1,410 E
2025					\$1,500 E

Earnings per Share

(non-GAAP)

	Q1	Q2	Q3	Q4	Year
	(Mar)	(Jun)	(Sep)	(Dec)	(Dec)
2022	\$0.55 A	\$0.58 A	\$0.72 A	\$0.69 A	\$2.52 A
2023	\$0.60 A	\$0.52 A	\$0.54 A	\$0.55 A	\$2.17 A
2024	\$0.36 E	\$0.38 E	\$0.43 E	\$0.50 E	\$1.67 E
2025					\$1.80 E

WHAT'S NEW

Tower Projects Another Revenue Decline in Q1, But Sees Demand Picking Up Across Most Product Lines

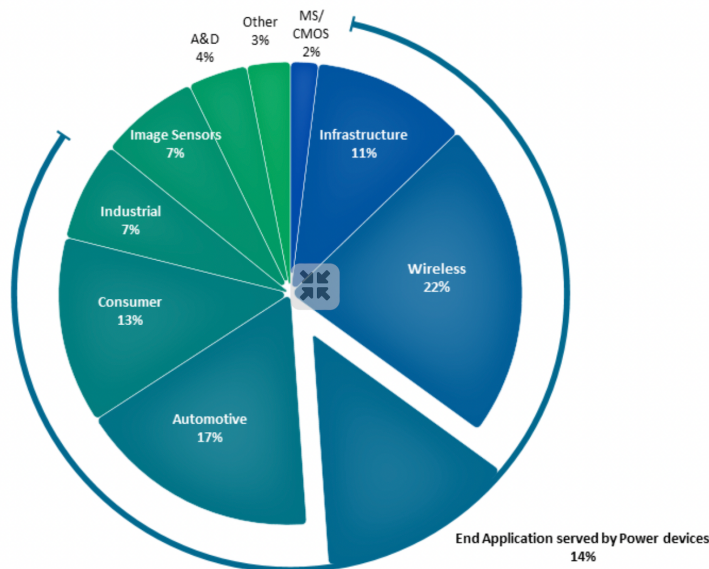
Tower reported another quarterly revenue decline in Q4 2023 but is seeing improving demand kicking in mostly in the second half of 2024. We could see revenue growth return by Q3 2024. It is seeing demand pick up across the board except for power ICs and 200mm. These products go into automotive-- where Tower sells mainly to EV manufacturers, consumer products, and the industrial sector.

There is strong demand for RF SOI including 200mm and 300mm and Agrate is adding capacity in that area. Customers are beginning to discuss 6G, and AI and VR should fuel a handset refresh cycle. There is continued demand for the company's Silicon Photonics platform which is used for LIDAR in the automotive market and for co-packaged optics. Satellite providers are interested in the company's Silicon Germanium ICs used for communications, defense, and internet access services. This could also be deployed into mobile handsets. Also, management expects a pick-up in data centers as the industry rapidly moves to 800G at a pace faster than industry analysts have forecasted.

The company continues to see weakness in 200mm power ICs used in automotive, but there is strong demand for 300 mm. The fab in Albuquerque is making progress and it will begin prototyping in the second half of 2024 for production in 2025. Machine vision is expected to get back to high demand levels this year driven by the Chinese market for factory automation and robotics.

As shown in the chart below, the biggest contributor to revenues remains RF mobile used in cellular handsets.

2023 Revenue Breakdown by End Market



Source: Tower Semiconductor

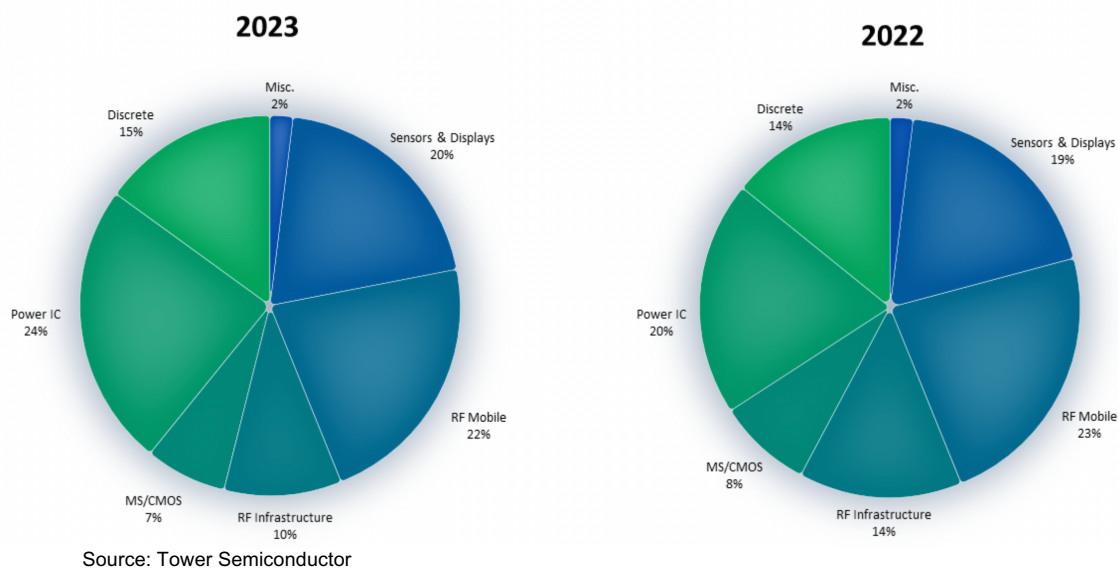
Fab utilization is still weak and below 2019 and 2020 levels. There is a gap in our table below as the company did not report numbers right before and during the acquisition attempt by Intel. During Q1 2024 the company began to move some production from its 40-year-old Fab 1 to Fab 2 to consolidate production and reduce expenses. It will also shut down some lines no longer needed and possibly sell off the equipment. Fab 1 itself is leased from the government and not owned. In addition, it started shipping small amounts of product from its new Agate fab which will continue to ramp for the next two years. It has not reported utilization. All its capacity there is already spoken for 2024 and 2025. Also, on January 1st there was an earthquake in Japan that disrupted production and caused damage to some products and equipment. All is back to normal now and the fab is functioning on plan.

Table. 1 Fab Capacity Utilization

	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2023	Q3 2023	Q4 2023
Fab1 Migdal Haemek, Israel 6"	84%	76%	60%	70%	60%	60%	50%	64%	70%	70%	55%	60%
Fab2 Migdal Haemek, Israel 8"	70%	80%	80%	70%	70%	70%	60%	76%	80%	75%	75%	75%
Fab3 Newport Beach, CA 8"	80%	70%	50%	50%	55%	70%	70%	75%	75%	40%	40%	40%
Three TPSCo factories	50%	50%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8 inch	NA	NA	50%	55%	55%	60%	60%	65%	70%	70%	60%	40%
12 inch	NA	NA	60%	70%	80%	85%	70%	90%	90%	75%	60%	70%
San Antonio, 8"	50%	50%	50%	55%	65%	70%	60%	67%	70%	65%	65%	70%
	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2020	Q2 2023	Q3 2023	Q4 2023
Quarterly Average Utilization	67%	65%	58%	62%	64%	69%	62%	73%	76%	66%	59%	59%

TSEM trades at an enterprise value of \$2.5 billion-, or 1.8 times EV to estimated sales for 2024. Its PE is 17.7 times 2025 EPS.

Annual Revenue Breakdown by Technology



Q4 2023 Results

Revenues in Q4 2023 were \$352 versus \$403 million in Q4 2022 and were down 13% year over year. Revenues declined sequentially as expected due to the softness in demand from customers almost across the board. The company guided to a sequentially down Q1 2024 of \$325 million plus or minus 5% which is typically for its seasonally weak Q1, but still down year over year.

Q4 2023 gross margin decreased to 24.0% from 30.9% a year ago and 24.3% in Q3 2023. Gross margin dollars decreased by \$40 million, or 32%. Operating expenses without last year's one-time gain were virtually

flat. The operating margin declined to 12.8%. Other income was \$17 million compared to an expense of \$55,000 mostly due to net interest on its \$1.2 billion in cash and marketable securities.

Pretax profit was \$61.8 million versus \$98.7 million a year ago including the one-time gains. Taxes were \$10.1 million in the quarter compared to \$12.8 million last year, or a tax rate of 16.4%. GAAP net income was \$53.8 million versus \$83.3 million last year, while non-GAAP net income was an estimated \$61.0 million versus \$76.7 million a year ago, down 21%.

Diluted GAAP EPS was \$0.48 per share versus \$0.75 last year. Adjusted non-GAAP diluted EPS decreased to \$0.55 versus \$0.69 a year ago. Average diluted shares for the quarter were 111.3 million, up from 110.9 million last year. EBITDA for the fourth quarter of 2023 was \$117 million compared to \$161.5 million a year ago and down sequentially from \$146.9 million in Q3 2023.

Balance Sheet

On December 31st, the company had cash, short-term deposits, and marketable securities of \$1.24 billion or \$11.16 in cash per share. We estimate it is earning between 5% and 5.5% on about \$800 million of that amount. Total debt increased by \$4 million to \$232 million from last quarter. It is only paying 2% interest on about \$200,000 of that debt. Its quick ratio decreased to 5.2xs and it has \$1.4 billion in working capital. Operating cash flow decreased sequentially as well as year over year to \$102 million. Free cash flow was a negative \$34 million after spending a net \$136 million on cap ex in the quarter. Cap ex expenditures are expected to be between \$100 million and \$150 million per quarter going forward for the next five quarters as the company continues to build out Agrate and New Mexico. While it typically spends \$180-\$200 million per year, it will spend a total of \$350 million on Agrate, and \$300 million for New Mexico. This heavy spending will put the company in negative free cash flow territory for the next year or so.

Target Business Model

During the Q3 conference call management showed a new business model reflecting investments in new capacity. In the past incremental revenues were coming in at above 50% gross margin, increased investment and current prices should result in incremental margins at 32% as shown in the following chart. Through operating leverage, this incremental gross margin should translate into 24% net margins. So as shown at 85% capacity utilization, revenues would increase by 86% and net income by 140%.

Financial Model (\$M)

	Q3 2023 Annualized Run Rate	Built-out capacity@85% utilization*	Incremental	
			\$M	% of Incremental Revenue
Revenue	1,432	1.9X	2,660	1,228
Gross Profit	347	2.1X	740	393
Operating Profit	195	2.9X	560	365
Net Profit	208 **	2.4X	500	292

* Including New Mexico capacity corridor and Agrate capacity based on previously announced Cap-Ex investments

** Excluding Intel merger contract termination fees received in Q3'2023, net of associated cost and taxes

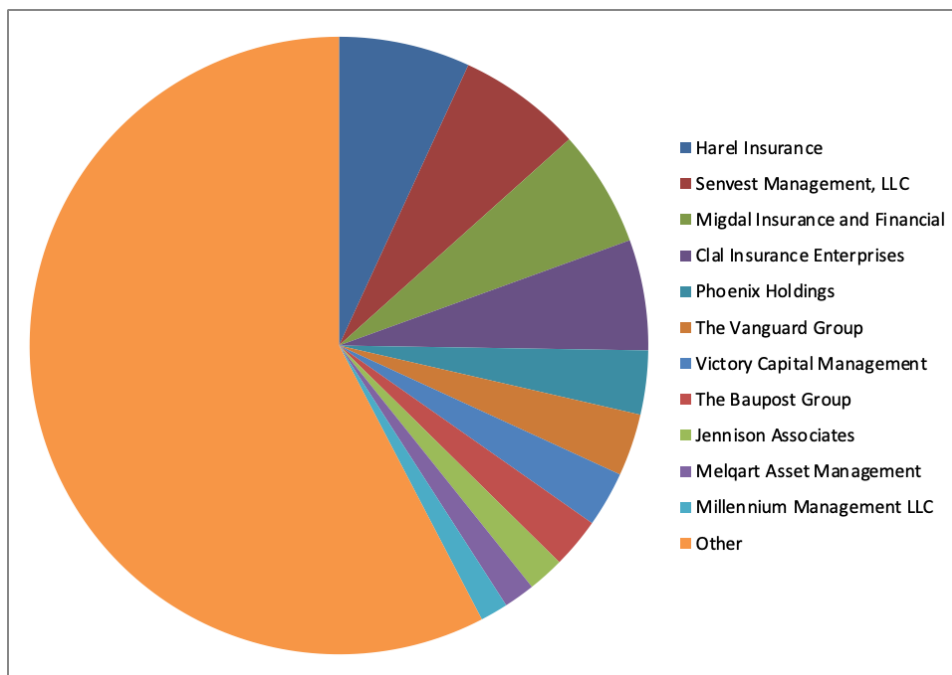
Source: Tower Semiconductor

VALUATION

TSEM trades at an enterprise value of \$2.5 billion, or 1.8 times EV to estimated sales for 2024 versus its peers who trade at 4.3 times. Even at the low end at 2.2 times sales, Tower's market cap would be \$4.2 billion or \$37.80 per share.

Foundry Companies										
Company	Ticker	EPS 24E	EPS 25E	Price	PE 2024E	PE 2025E	Growth Rate	PE/Growth	Sales 2024E	EV/Sales
Taiwan Semiconductor	TSM	5.72	7.00	129.12	22.6	18.4	22.4%	1.0	85.2	6.28
United Microelectronics	UMC	0.65	0.73	7.89	12.1	10.8	12.3%	1.0	7.7	2.24
Average					17.4	14.6				4.3

OWNERSHIP



INCOME STATEMENT

	March Q1 23	June Q2 23	Sept Q3 23	Dec Q4 23	March Q1 24E	June Q2 24E	Sept Q3 24E	Dec Q4 24E	2023	2024E	2025E
REVENUE	355.6	357.2	358.2	351.7	325.0	335.0	360.0	390.0	1,422.7	1,410.0	1,500.0
Yr-to-yr Gr.	-16%	-16%	-16%	-13%	-9%	-6%	1%	11%	-15%	-1%	6%
OPERATING EXPENSES											
Cost of goods sold	259.9	270.7	271.3	267.3	253.7	260.5	277.5	297.9	1,069.2	1,089.5	1,140.8
Gross Margin	95.7	86.5	86.9	84.4	71.3	74.5	82.5	92.1	353.5	320.5	359.2
% of Sales	26.9%	24.2%	24.3%	24.0%	21.9%	22.2%	22.9%	24.1%	24.8%	22.7%	23.9%
R&D	19.3	19.5	20.2	20.8	20.8	20.8	20.8	20.8	79.8	83.4	85.0
M, G&A	18.6	17.4	18.0	18.4	18.4	18.5	18.5	18.6	72.5	74.0	76.0
One-time charges	(31.7)	(0.9)	(313.5)	0.0	0.0	0.0	0.0	0.0	(346.0)	0.0	0.0
Tot Operating Exp.	6.3	36.0	(275.3)	39.3	39.3	39.3	39.3	39.4	(193.7)	157.4	161.0
Operating Income	89.4	50.5	362.2	45.2	32.1	35.2	43.2	52.7	547.3	163.1	198.2
Operating Margin	25.1%	14.1%	101.1%	12.8%	9.9%	10.5%	12.0%	13.5%	38%	12%	13%
Yr-to-yr Gr.	42%	-29%	357%	-54%	-61%	-26%	-88%	5%	107%	-70%	14%
Interest & other non-cash financing	7.0	3.9	10.0	16.7	8.5	7.3	6.5	5.9	37.6	28.1	16.5
Gain from acquisition	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Profit before tax	96.4	54.5	372.1	61.8	40.6	42.4	49.7	58.6	584.8	191.2	214.7
Profit margin	27.1%	15.2%	103.9%	17.6%	12.5%	12.7%	13.8%	15.0%	41.1%	13.6%	14.3%
Taxes	(15.0)	(5.7)	(34.4)	(10.1)	(5.7)	(5.9)	(7.0)	(8.2)	(65.3)	(26.8)	(30.1)
Tax Rate	15.6%	10.6%	9.2%	16.4%	14.0%	14.0%	14.0%	14.0%	11.2%	14.0%	14.0%
Profit before non-controlling	81.4	48.7	337.7	51.7	34.9	36.5	42.7	50.4	519.5	164.5	184.7
Minority Income	(10.0)	2.5	4.3	2.1	(2.0)	(2.0)	(2.0)	(2.0)	(1.0)	(8.0)	(8.0)
GAAP Net income	71.4	51.2	342.1	53.8	32.9	34.5	40.7	48.4	518.5	156.5	176.7
Yr-to-yr Gr.	32%	-12%	395%	-35%	-54%	-33%	-88%	-10%	96%	-70%	13%
Non-GAAP Net Income	62.0	57.9	60.5	61.0	40.3	41.9	48.1	55.8	241.3	186.1	200.7
Yr-to-yr Gr.	3%	-10%	-25%	-21%	-35%	-28%	-20%	-9%	-14%	-23%	8%
GAAP primary EPS	\$0.65	\$0.47	\$3.10	\$0.49	\$0.30	\$0.31	\$0.37	\$0.43	\$4.70	\$1.41	\$1.59
Fully diluted GAAP EPS	\$0.64	\$0.46	\$3.07	\$0.48	\$0.30	\$0.31	\$0.37	\$0.43	\$4.66	\$1.41	\$1.58
Adj Non-GAAP EPS-Fully dil.	\$0.60	\$0.52	\$0.54	\$0.55	\$0.36	\$0.38	\$0.43	\$0.50	\$2.17	\$1.67	\$1.80
Yr-to-yr Gr.	10%	-10%	-25%	-21%	-40%	-28%	-21%	-9%	-14%	-23%	8%
Primary Share Out	110.0	110.0	110.3	110.8	111.0	111.2	111.2	111.4	110.3	110.8	111.4
Fully Diluted GAAP	111.1	111.2	111.2	111.3	111.4	111.4	111.5	111.5	111.2	111.3	111.5

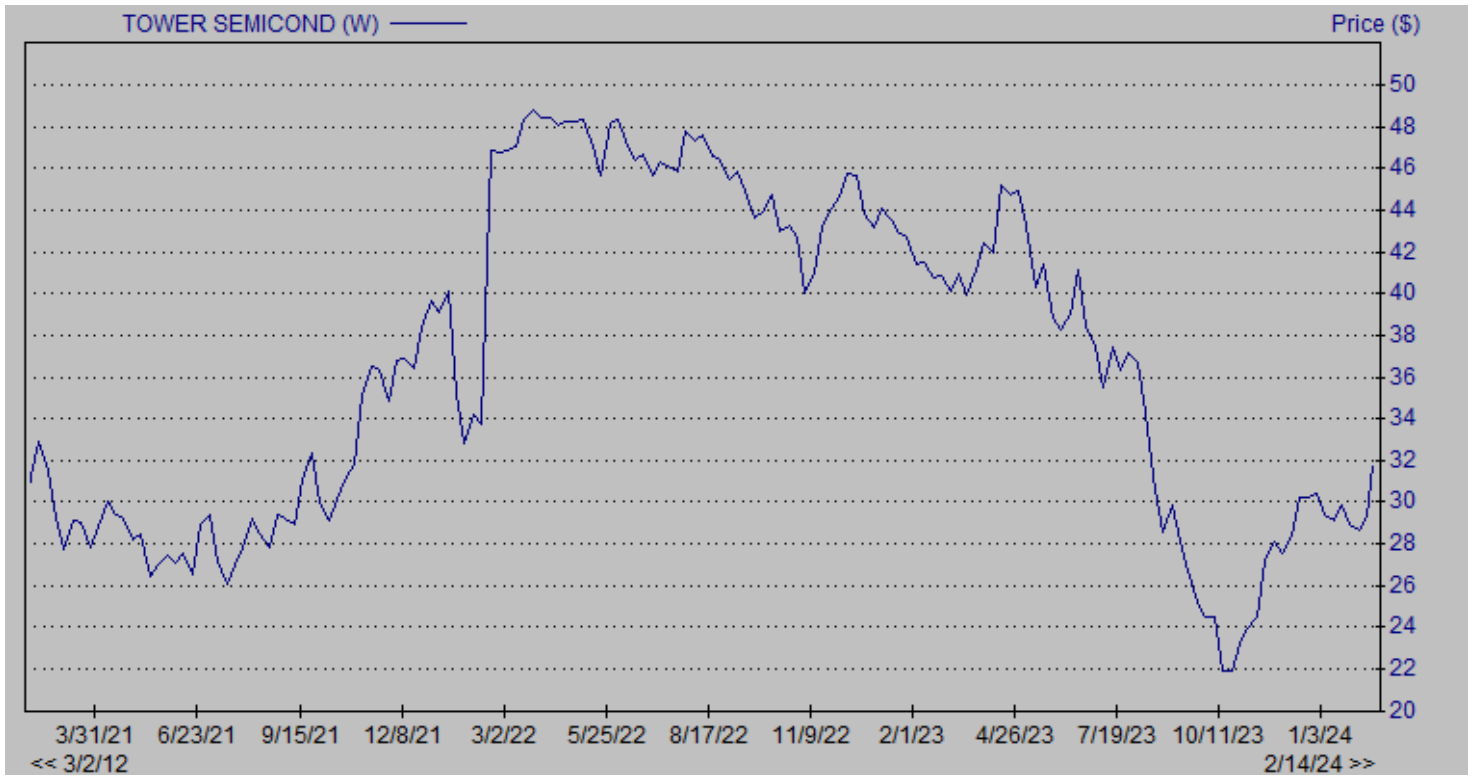
BALANCE SHEET

\$ in thousands	Dec 31, 2023	Sept 30, 2023	Qtr-Qtr % Change	Dec 31, 2022	Yr-Yr % Change
CURRENT ASSETS					
Cash and cash equivalents	\$260,664	\$314,816	-17.2%	\$340,759	-23.5%
Short term deposits	790,823	735,382	7.5%	495,359	59.6%
Marketable securities	184,960	179,381	3.1%	169,694	9.0%
Trade accounts receivable	154,067	150,162	2.6%	152,935	0.7%
Inventories	282,688	304,245	-7.1%	302,108	-6.4%
Other current assets	35,956	33,453	7.5%	34,319	4.8%
Total current assets	1,709,158	1,717,439	-0.5%	1,495,174	14.3%
PROPERTY AND EQUIPMENT, NET	1,155,929	1,062,456	8.8%	962,258	20.1%
GOODWILL & INTANGIBLE ASSETS, NET	12,115	12,557	-3.5%	14,031	-13.7%
DEFERRED TAX & OTHER ASSETS, NET	41,315	43,342	-4.7%	76,145	-45.7%
TOTAL ASSETS	2,918,517	2,835,794	2.9%	2,547,608	14.6%
CURRENT LIABILITIES					
Short term debt	58,952	47,671	23.7%	62,275	-5.3%
Trade accounts payable	139,128	106,362	30.8%	150,930	-7.8%
Deferred revenue	18,418	23,745	-22.4%	38,911	-52.7%
Other current liabilities	60,340	80,392	-24.9%	135,272	-55.4%
Total current liabilities	276,838	258,170	7.2%	387,388	-28.5%
LONG-TERM DEBT	172,611	179,901	-4.1%	210,069	-17.8%
LONG-TERM CUSTOMERS' ADVANCES	25,710	30,285	-15.1%	40,893	-37.1%
DEFERRED TAX LIABILITY	16,319	18,626	-12.4%	20,717	-21.2%
Total liabilities	491,478	486,982	0.9%	659,067	-25.4%
SHAREHOLDERS' EQUITY	2,427,039	2,348,812	3.3%	1,888,541	28.5%
TOTAL LIABILITIES AND EQUITY	\$2,918,517	\$2,835,794	2.9%	\$2,547,608	14.6%
Current Ratio	6.2	6.7	-7.2%	3.9	60.0%
Quick Ratio	5.2	5.5	-5.9%	3.1	67.3%
Working Capital	1,432,320	1,459,269	-1.8%	1,107,786	29.3%
Debt Percent of Assets	7.9%	8.0%	-1.1%	11%	-25.8%
Debt to Equity	0.1	0.1	-1.5%	0.1	-33.8%
Cash and equivalents	1,236,447	1,229,579	0.6%	1,005,812	22.9%
Cash and equivalents per share	\$11.16	\$11.15	0.1%	\$9.15	21.9%
Debt	231,563	227,572	1.8%	272,344	-15.0%
Change in cash	6,868	315,992	-97.8%	134,681	-94.9%
Change in debt	3,991	7,407	-46.1%	9,016	-55.7%

CASH FLOW

	Year	Year	3-Mo	3-Mo	3-Mo	3-Mo	Year	3-Mo	3-Mo	3-Mo	3-Mo	Year
	2020	2021	3/31/22	6/30/22	9/30/22	12/31/22	2022	3/31/23	6/30/23	9/30/23	12/31/23	2023
CASH FLOWS - OPERATING ACTIVITIES												
Net profit (loss)	\$ 83,289	\$ 154,075	\$ 55,774	\$ 58,173	\$ 66,682	\$ 85,842	\$ 266,471	\$ 81,368	\$ 48,706	\$ 337,737	\$ 51,719	\$ 519,530
Income and non-cash expense items:												
Depreciation and amortization	240,531	270,710	70,780	67,007	74,958	79,893	292,638	62,387	63,579	66,877	65,178	258,021
Effect of fair value measurement on debt	6,645	1,138	(1,330)	2,276	104	9,312	10,362	(926)	3,102	3,044	(6,852)	(1,632)
Other expense (income), net	5,215	(1,461)	1,347	560	7,950	(2,923)	6,934	815	(149)	(21)	(7,692)	(7,047)
Changes in assets and liabilities:												
Trade accounts receivable	(33,087)	14,335	(35,181)	3,578	3,991	12,380	(15,232)	7,413	(21,241)	12,529	(1,861)	(3,160)
Other assets	(7,999)	(26,731)	13,874	(3,355)	527	9,381	20,427	(1,138)	2,114	(4,099)	(6,418)	(9,541)
Inventories	(2,891)	(44,192)	(18,328)	(10,630)	(25,510)	(23,423)	(77,891)	(57,420)	16,315	22,477	27,310	8,682
Trade accounts payable	(18,576)	(25,004)	30,595	22,415	(15,951)	(57,952)	(20,893)	44,542	(24,712)	(58,107)	30,023	(8,254)
Deferred revenue and customers' advances	(3,072)	74,524	3,385	(14,031)	(16,906)	(2,517)	(30,069)	(15,470)	(10,723)	419	(9,902)	(35,676)
Other current liabilities	347	16,850	15,103	10,974	20,725	14,231	61,033	(45,053)	(5,479)	(3,885)	(15,746)	(70,163)
Employee related liabilities	3,936	(2,681)	331	26	(220)	2,819	2,956	371	267	191	(2,039)	(1,210)
Deferred tax liability, net	2,223	(10,270)	221	1,104	6,052	5,707	13,084	(4,162)	3,715	25,080	2,378	27,011
Net cash provided by operating activities	276,561	421,293	136,571	138,097	122,402	132,750	529,820	72,727	75,494	402,242	126,098	676,561
CASH FLOWS - INVESTING ACTIVITIES												
Investments in property and equipment, net	(256,539)	(279,260)	(80,840)	(49,377)	(45,134)	(38,186)	(213,537)	(105,245)	(89,433)	(101,080)	(136,426)	(432,184)
Interest bearing deposits, including designated deposits	(107,070)	(59,684)	(29,611)	(65,134)	129,257	(150,423)	(115,911)	24,194	42,615	(318,497)	(36,975)	(288,663)
Net cash provided by (used in) investing activities	(363,609)	(338,944)	(110,451)	(114,511)	84,123	(188,609)	(329,448)	(81,051)	(46,818)	(419,577)	(173,401)	(720,847)
CASH FLOWS - FINANCING ACTIVITIES												
Exercise of warrants and options	2,512	458	44	0	5,469	(5,469)	44	0	0	0	0	0
Debt repayment	(63,699)	(77,315)	(30,539)	(8,211)	(28,164)	(11,465)	(78,379)	(28,796)	(10,093)	15,493	(8,950)	(32,346)
Proceeds from investment in subsidiary	0	0	0	0	0	11,685	11,685	1,932	0	0	0	1,932
Net cash used in financing activities	(61,187)	(76,857)	(30,495)	(8,211)	(22,695)	(5,249)	(66,650)	(26,864)	(10,093)	15,493	(8,950)	(30,414)
Effect of foreign exchange rate change	4,357	(6,245)	(3,071)	(7,682)	(4,638)	11,498	(3,893)	(637)	(5,322)	(1,537)	2,101	(5,395)
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	(143,878)	(753)	(7,446)	7,693	179,192	(49,610)	129,829	(35,825)	13,261	(3,379)	(54,152)	(80,095)
CASH AND CASH EQUIVALENTS - BEGINNING OF PERIOD	355,561	211,683	210,930	203,484	211,177	390,369	210,930	340,759	304,934	318,195	314,816	340,759
CASH AND CASH EQUIVALENTS - END OF PERIOD	211,683	210,930	203,484	211,177	390,369	340,759	340,759	304,934	318,195	314,816	260,664	260,664
Operating Cash Flow	\$ 335,680	\$ 424,462	\$ 126,571	\$ 128,016	\$ 149,694	\$ 172,124	\$ 576,405	\$ 143,644	\$ 115,238	\$ 407,637	\$ 102,353	\$ 768,872
Free cash flow	\$ 79,141	\$ 145,202	\$ 45,731	\$ 78,639	\$ 104,560	\$ 133,938	\$ 362,868	\$ 38,399	\$ 25,805	\$ 306,557	\$ (34,073)	\$ 336,688

HISTORICAL STOCK PRICE



DISCLOSURES

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