
FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of February 2010 No. 5

TOWER SEMICONDUCTOR LTD.

(Translation of registrant's name into English)

Ramat Gavriel Industrial Park
P.O. Box 619, Migdal Haemek, Israel 23105
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F.

Form 20-F S

Form 40-F E

Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes E

No S

On February 16, 2010, the registrant announces that TowerJazz will expand its global capacity based on customer momentum.

This Form 6-K is being incorporated by reference into all effective registration statements filed by us under the Securities Act of 1933.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

TOWER SEMICONDUCTOR LTD.

Date: February 16, 2010

By: /s/ Nati Somekh Gilboa
Name: Nati Somekh Gilboa
Title: Corporate Secretary

TowerJazz to Expand Global Capacity Based on Customer Momentum

Further increases production in both Israeli and US manufacturing facilities

MIGDAL HAEMEK, Israel, and NEWPORT BEACH, Calif., February 16, 2010 – TowerJazz, the global specialty foundry leader, today announced it has accelerated plans for additional capacity expansion to meet customer demand, which is exceeding current capacity. In the company's Fab2 located in Israel, capacity will increase by approximately 30,000 wafers per year in order to meet the greatly expanding needs of customers for its wide range of specialty process technologies. In the company's manufacturing facility located in Newport Beach, CA, capacity will be increased by 36,000 wafers per year to enable the fab to accommodate the substantial increase in demand necessitating more than 100% utilization. The total payments to purchase the equipment by TowerJazz are expected to be approximately \$15 million, resulting in an increase of approximately 66,000 wafers per year. Based on customer forecasts, this cost-effective investment has a rate of return (ROR) of two quarters.

Ephie Koltin, Senior Vice President, Worldwide Operations, TowerJazz said, "By rapidly moving in and qualifying equipment to meet increasing demand, we will have an almost immediate return on our capital investment. This model of cost-effective, used tool purchase combined with accelerated qualification and fab ramp, allows us to align real time with our customers' forecasts with minimal idle tools. The increase in capacity has the obvious benefit of decreasing our fixed cost per wafer out, and combined with continual overall tool and supplier efficiency programs, is accretive to our already best-of-class specialty foundry operational metrics."

Russell Ellwanger, CEO of TowerJazz stated, "Our plans for capacity expansion are based upon customer forecasts and projections which support continued growth as we gear up for a strong 2010 and 2011. We are committed to our customers' success as demonstrated by our move to quickly expand capacity and we are excited to help enable their market growth and to increase our market share. The additional equipment will obviously increase our wafer output enabling a higher revenue base, but as well, some tools are specifically directed to continue to grow our competitiveness within high value segments of the specialty foundry arena. This mode of quick ramp based upon identified customer need is a win-win, demonstrating our dedication to enable customer success and foster long-term strategic relationships while keeping shareholder value strongly in mind."

About TowerJazz

Tower Semiconductor Ltd. (NASDAQ: TSEM, TASE: TSEM), the global specialty foundry leader and its fully owned U.S. subsidiary Jazz Semiconductor, operate collectively under the brand name TowerJazz, manufacturing integrated circuits with geometries ranging from 1.0 to 0.13-micron. TowerJazz provides industry leading design enablement tools to allow complex designs to be achieved quickly and more accurately and offers a broad range of customizable process technologies including SiGe, BiCMOS, Mixed-Signal and RFCMOS, CMOS Image Sensor, Power Management (BCD), and Non-Volatile Memory (NVM) as well as MEMS capabilities. To provide world-class customer service, TowerJazz maintains two manufacturing facilities in Israel and one in the U.S. with additional capacity available in China through manufacturing partnerships. For more information, please visit www.towerjazz.com.

Safe Harbor Regarding Forward-Looking Statements

This press release includes forward-looking statements, which are subject to risks and uncertainties. Actual results may vary from those projected or implied by such forward-looking statements. A complete discussion of risks and uncertainties that may affect the accuracy of forward-looking statements included in this press release or which may otherwise affect Tower and/or Jazz's business is included under the heading "Risk Factors" in Tower's most recent filings on Forms 20-F, F-3, F-4 and 6-K, as were filed with the Securities and Exchange Commission (the "SEC") and the Israel Securities Authority and Jazz's most recent filings on Forms 10-K and 10-Q, as were filed with the SEC, respectively. Tower and Jazz do not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

###

Company Contact:

Melinda Jarrell
949/435-8181
melinda.jarrell@towerjazz.com

Media Contact:

Lauri Julian
949/715-3049
lauri.julian@towerjazz.com

Investor Relations Contact:

Levi Noit
+972 4 604 7066
noit.levi@towerjazz.com
