FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of August 2009 No. 8

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 x Form 40-F o

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 o No x

On August 20, 2009, the registrant announces that Tower and Jazz Semiconductor Join Forces with SVTC to Expand MEMS Aerospace and Defense Customer Base.

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: August 20, 2009

By: /s/ Nati Somekh Gilboa

Nati Somekh Gilboa
Corporate Secretary

Tower and Jazz Semiconductor Join Forces with SVTC to Expand MEMS Aerospace and Defense Customer Base

Collaboration enables SVTC customers to gain access to Jazz technology and design enablement providing fast path to production

Overall MEMS market predicted to be $12.5 Billion in 2010, an average annual growth rate (AAGR) of more than 20%

NEWPORT BEACH, Calif., August 20, 2009 –Tower Semiconductor, Ltd. (NASDAQ: TSEM, TASE: TSEM), and its fully owned U.S. subsidiary Jazz Semiconductor, Inc., today announced they have signed a Memorandum of Understanding (MOU) with SVTC Technologies that will expand Tower and Jazz's Aerospace and Defense (A&D) MEMS customer base while providing SVTC's A&D customers with access to select Jazz technology and U.S. manufacturing facilities. The collaboration will make possible the integration of advanced CMOS with existing RF and mixed-signal devices, enabling multiple functions on a single piece of silicon in A&D applications such as aircraft radar and communications devices, among others.

Under the agreement, elements of Jazz's MEMS friendly CMOS baseline will be made available to SVTC A&D customers to facilitate the insertion of new modules into a proven CMOS flow. In addition, Jazz will make available components of its design enablement infrastructure to facilitate SVTC customers early design activity. In addition, the companies will implement a fast transfer methodology to allow Jazz customers to perform R&D at SVTC and provide SVTC customers a fast path to production at Jazz.

MEMS (Micro-electro-mechanical systems) devices are one of the fastest growing technology areas, integrating mechanical elements, sensors, actuators, and electronics on a common silicon substrate. They have proven to be a key enabling technology in A&D applications in markets such as transportation and telecommunications. According to a global forecast of the overall MEMS market by the Electronics Industry Market Research and Knowledge Network, the worldwide market for MEMS devices and production equipment was worth an estimated $5 billion in 2005, and will increase to $12.5 billion through 2010, an average annual growth rate (AAGR) of more than 20%.

“This partnership brings a strong synergy between the companies in developing and expanding our MEMS capabilities,” said Joe Bronson, Chief Executive Officer of SVTC. “Jazz already has a very strong footprint in the Aerospace and Defense industry and this collaboration will enable us to bring together their advanced CMOS with our combined MEMS expertise to develop tools and processes to meet the needs of our customers’ next-generation applications.”

“We are pleased to form this alliance with SVTC to enable their A&D customers to gain access to our U.S. manufacturing capability for MEMS technology while offering our customers a wider breadth of development options through SVTC helping both companies gain even more traction in this strong growth market. This is an important step in becoming a world leader in full flow MEMS manufacturing,” said Russell Ellwanger, Tower’s Chief Executive Officer. “I am additionally thrilled to again partner with Joe Bronson, a long time friend and mentor, and hence to grow our respective companies to the benefit of our customers.”

Jazz was one of the first pure-play foundries with MEMS manufacturing capability allowing for the industrial scaling of MEMS products in an advanced CMOS foundry environment. Tower and Jazz continue to augment their portfolio of specialty silicon technology including MEMS manufacturing along with their suite of analog and RF CMOS, high speed SiGe, and high voltage processes enhancing the ability of their customers to create and bring to market more highly integrated analog products.

About SVTC Technologies
SVTC accelerates the development and commercialization of innovative silicon-based technologies and products, cost-effectively and in an IP-secure manner. Through facilities in San Jose, California, and Austin, Texas, SVTC serves customers in rapidly growing markets such as novel memory, novel transistors, logic, MEMS, biotechnology, image sensors and high-voltage applications. SVTC offers a suite of leading-edge equipment and services, including full-scale 8-inch and 12-inch process capabilities, advanced CMOS equipment, analytical services, development support tools and commercialization services. SVTC is co-owned by Oak Hill Capital Partners and Tallwood Venture Capital along with management. SVTC Technologies is an Equal Opportunity Employer. More information can be found at www.svtc.com.

About Tower Semiconductor, Ltd. and Jazz Semiconductor, Inc.
Tower Semiconductor Ltd. (NASDAQ: TSEM, TASE: TSEM) is a global specialty foundry leader and its fully owned subsidiary Jazz Semiconductor, a Tower Group Company is a leader in Analog-Intensive Mixed-Signal (AIMS) foundry solutions. Tower and Jazz manufacture integrated circuits with geometries ranging from 1.0 to 0.13-micron and provide industry leading design enablement tools to allow complex designs to be achieved quickly and more accurately. Tower and Jazz offer a broad range of process technologies including Digital, Mixed-Signal and RFCMOS, HV CMOS, BCD, Non-Volatile Memory (NVM), Embedded NVM, MEMS, and CMOS Image Sensors. To provide world-class customer service, Tower and Jazz maintain two manufacturing facilities in Israel and one in the U.S. with additional manufacturing capacity available in China through partnerships with ASMC and HHNEC. For more information, please visit www.towersemi.com and www.jazzsemi.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’s and 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. Tower and Jazz do not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

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