

FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of December 2007 No. 3

TOWER SEMICONDUCTOR LTD.  
(Translation of registrant's name into English)

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  Form 40-F

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  No

On December 19, 2007, the Registrant announced that Tower Semiconductor and CMT Medical Technologies Form Partnership to Develop and Market Flat Panel X-ray Detectors for Medical Applications. Attached hereto is a copy of the press release.

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: December 19, 2007

By: /s/ Nati Somekh Gilboa

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Nati Somekh Gilboa  
Corporate Secretary

TOWER SEMICONDUCTOR AND CMT MEDICAL  
TECHNOLOGIES FORM PARTNERSHIP TO DEVELOP AND  
MARKET FLAT PANEL X-RAY DETECTORS FOR MEDICAL  
APPLICATIONS

PARTNERSHIP TARGETS A MARKET SIZE OF OVER \$500 MILLION A YEAR  
THROUGH INNOVATIVE TECHNOLOGIES

MIGDAL HA'EMEK AND YOQNEAM, ISRAEL (DECEMBER 19TH, 2007) - TOWER SEMICONDUCTOR, LTD. (NASDAQ: TSEM, TASE: TSEM), AN INDEPENDENT SPECIALTY WAFER FOUNDRY AND CMT MEDICAL TECHNOLOGIES LTD. (EURONEXT: CMD), A LEADING PROVIDER OF ADVANCED DIGITAL X-RAY IMAGING SYSTEMS FOR MEDICAL DIAGNOSIS, TODAY ANNOUNCED THE ESTABLISHMENT OF A PARTNERSHIP TO DEVELOP AND MARKET X-RAY DETECTORS FOR MEDICAL APPLICATIONS.

The detectors intended use is for Radiography/Fluoroscopy, Cardiology, Angiography, Mammography and similar large-size X-ray modalities. Large size detectors require the manufacturing of up to one die per eight-inch wafer, at high yields. Delivery of the first Flat Panel Detectors is expected to begin in 2009.

"We are very pleased and excited with this new partnership and the opportunities it will provide" said Mr. Yossi Katzav, President and CEO of CMT. "Tower's superb technology and its leadership in the CIS X-ray area, combined with CMT's leadership in digital X-ray imaging system allow both companies to target and expand into new markets. This new partnership is well aligned with CMT's strategy of continuous innovation that will enhance its ability to provide excellent cutting edge technologies to its strategic customers and strengthen its current partnerships".

"The partnership with CMT is an opportunity for Tower to transfer its technology innovation into strategic end product opportunities," said Dr. Avi Strum, general manager of CMOS Image Sensors and Non-Volatile Memories at Tower Semiconductor Ltd. "CMT is a perfect partner that fits to Tower's technology with their vast experience and excellent and well recognized technology of digital systems in the X-ray medical market. We believe that this combination will help us win the market successfully".

"CMT has proven its capability as a leading digital imaging system provider to one of the largest OEMs in the X-ray medical systems area. In combining their market knowledge and integration strength with Tower's device and wafer level technical know how and IP portfolio, we expect to gain a leading share of this \$500M plus market by 2010", stated Russell Ellwanger, CEO, Tower Semiconductor.

The CMOS image sensor technology, for these X-ray detectors, is superior to the currently existing technologies in all aspects providing significantly better performance (speed, resolution, power consumption and sensitivity) and a lower cost, due to higher yields and system on chip capabilities.

According to TriMark publications, a global leader in the biotechnology, healthcare and life sciences market research and intelligence, regarding the medical imaging market and according to FDA data, the number of new electronic X-ray detectors installed world wide exceeds 5,000 annually with a similar number of replacement and upgrade systems being delivered each year. At a price range of \$35,000 to \$80,000 per detector (based on dimensions), this represents an annual market opportunity of over \$500 million per year. Potential future customers for the partnership's products include the market leaders in medical X-ray systems, such as Toshiba, GE, Philips, Siemens and detectors market leaders.

#### ABOUT TOWER SEMICONDUCTOR LTD.

Tower Semiconductor Ltd. (Nasdaq: TSEM, TASE: TSEM) is an independent specialty foundry that delivers customized solutions in a variety of advanced CMOS technologies, including digital CMOS, mixed-signal and RF (radio frequency) CMOS, CMOS image sensors, power management devices, and embedded non-volatile memory solutions. Tower's customer orientation is complemented by its uncompromising attention to quality and service. Its specialized processes and engineering expertise provides highly flexible, customized manufacturing solutions to fulfill the increasing variety of customer needs worldwide. Boasting two world-class manufacturing facilities with standard and specialized process technologies ranging from 1.0- to 0.13-micron, Tower Semiconductor provides exceptional design support and technical services to help customers sustain long-term, reliable product performance, while delivering on-time and on-budget results. More information can be found at <http://www.towersemi.com>.

#### ABOUT CMT MEDICAL TECHNOLOGIES LTD.

CMT Medical Technologies (Euronext:CMD) is a leading provider of advanced digital X-ray imaging systems for medical diagnosis. Having been at the forefront of innovation for more than 25 years, CMT now has an installed base of over 5,000 systems worldwide. CMT designs, develops, manufactures and markets high-resolution digital imaging solutions for General Radiography, R&F rooms and Angiography special procedures suites. The Company is distinguished by its advanced technology, the flexibility of its solutions, and its responsiveness to individual customer needs. Through a unique combination of data acquisition and image-processing technology, CMT's systems virtually eliminate the use of cassette filming and 105mm spot cameras. Leading the market in quality, safety and ease of use, CMT's systems ensure a consistently high image quality, the lowest radiation dose, highly efficient workflow and seamless DICOM 3.0 connectivity.

More information can be found at <http://www.cmt-med.com/>.

SAFE HARBOR

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 our business is included under the heading "Risk Factors" in our most recent Annual Report on Form 20-F, Forms F-1, F-3 and 6-K, as were filed with the Securities and Exchange Commission and the Israel Securities Authority. We do not intend to update, and expressly disclaim any obligation to update, the information contained in this release.

TOWER CONTACT:

Tower Semiconductor USA  
Michael Axelrod, 408-330-6871  
pr@towersemi.com

CMT CONTACT:

Nadine Tomaschoff, +972-4-8566220  
nadine@cmt.co.il