FORM 6-K

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

For the month of May 2011 No. 4

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 May 31, 2011, the registrant announces New Design Center Partnership Incentive Program.

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: May 31, 2011 By: /s/ Nati Somekh Gilboa

Name: Nati Somekh Gilboa Title: Corporate Secretary

TowerJazz Announces New Design Center Partnership Incentive Program

MIGDAL HA'EMEK, Israel, and NEWPORT BEACH, Calif., May 31, 2011 —TowerJazz, the global specialty foundry leader, today announced its "Design Star Awards Program," a new design center partnership incentive program offered to independent design centers. The program will encourage design centers that enroll in this program to refer new customers and new products to TowerJazz. This will increase TowerJazz's IP portfolio, specifically increasing the number of specialty designs taped into TowerJazz, thereby strengthening TowerJazz's position as the leading specialty foundry. In turn, these design partners will receive benefits from TowerJazz on products and services ordered either by such design partners or their customers.

Aligned with TowerJazz's position as a specialty foundry, the independent design centers are encouraged under the incentive program to refer their customers to manufacture products using TowerJazz specialty technologies such as RF/high performance analog, power management, CMOS image sensor, mixed-signal and MEMS as their preferred platform.

The TowerJazz Design Star Awards Program offers three levels of partnership: platinum, gold and silver. For each TowerJazz product or service ordered under this program, points are accrued and criteria are defined regarding participation at each level. The design partners can redeem their points against mask-sets, proto-lots, MPW or other engineering services.

"Our Design Star Awards Program benefits TowerJazz design partners and is a two-way stream; they will encourage their customers to manufacture products at TowerJazz and we will recommend our customers to design their products with our design partners," said Ori Galzur, TowerJazz Vice President of Design Center and PDK Development. "This is a win-win program not only for our design partners and TowerJazz, but also for our mutual customers as they will benefit from best-in-class design and manufacturing services."

TowerJazz will be exhibiting (booth #2024) at the Design Automation Conference (DAC) June 6-8, 2011 at the Convention Center in San Diego, CA and will present its new Design Star Awards Program. For more information, please contact: Limor Levy-Kendler, Director of Design Services and IP, at +972-9-8636367 or limor.levykendler@towerjazz.com.

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.