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TOWERJAZZ Newsletter

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IC MANUFACTURING FOR A SMART WORLD

www.towerjazz.com/newsletters.html



"History is a Relentless Master"

Russell Ellwanger

"History is a relentless master. It has no present, only the past rushing into the future. To try to hold fast is to be swept aside."

-John F. Kennedy.

One cannot stand still and reside in the present. The present does not exist in our mind - we can think only of what is past or what is yet to come. If we focus on the past, history will indeed become our master. However, if we grow from experience - building upon successes and restarting/replacing/recreating models where we failed, we are in a position to be the master of our future.

Another Kennedy quote "Leadership and learning are indispensable to each other," also strikes a strong and beautiful chord of truth, both on an individual and on a corporate level.

At TowerJazz we have been on a journey, which a few years ago we called "Pursuit of Excellence." We have made much progress having moved from a \$299M revenue company in 2009 - the first full year post the Tower and Jazz merger - to a present annualized revenue run rate of over \$900M with a path to break \$1billion in the very short term. As we have gained analog leadership, we indeed learned much. We have duplicated and implemented throughout the company specific activities and procedures that have promoted customer partnership and created returns. Where we have fallen short, we continue to work to find root cause and implement solutions that do not "Band-Aid" problems, but endemically fix them.

At times this means going back to the beginning rather than adding further complexity to a core that is not sound. It takes courage to start fresh after investing time and energy, but it can be exactly what is required to attain excellence in all areas.

We recently completed a strong introspection, identifying several processes or activities that do not reach the highest levels of efficiency and affectivity needed to provide our customers with a one of a kind, seamless winning experience.

We staffed teams for resolution that are hierarchy blind. It is not a traditional consultant type external experiment, led by people with little content knowledge who consume undefined timelines, but rather a grass roots TowerJazz activity that from cradle to full implementation (no grave!) has a clear timeline of short duration with employee ownership and hence sustainability.

In such ways we plan and take action that will prevent being 'swept away by history,' but rather strive to be the master of our future. We are pleased to have a strong customer base comprised of many segment leaders who trust their futures to a supplier partnership with us. It is an exciting time with many market challenges and opportunities. It has been stated, "Great battles can make great heroes and heroines."* There is no greater reward for an employee than to receive acknowledgments from a customer for pristine efforts that helped enable success. We value your business and count on your continuous feedback to help us achieve and stay on a path of excellence. Thank you.

*Ezra Taft Benson



TowerJazz Global Symposium (TGS) 2014 to take place in China, Europe, the US and Japan

TGS to focus on extended technology, increased capacity and manufacturing solutions; New opportunities through TowerJazz Panasonic Semiconductor Company (TPSCo)

This year, we will be sharing our plans for strategic growth, technology leadership and capacity expansion as well as additional opportunities provided to customers through our new enterprise, TowerJazz Panasonic Semiconductor Company (TPSCo).

At each TGS event, our CEO, Mr. Russell Ellwanger will provide a keynote and TowerJazz executives will provide updates on our advanced specialty technologies. At select venues, invited speakers from leading semiconductor companies will share perspectives on industry trends and their engagements with TowerJazz. In addition, we look forward to discussing our

new capabilities through TPSCo at three fabs in Japan (two 200mm and one 300mm) to provide leading edge 45nm CMOS, 65nm RF CMOS and 65nm 1.12µm pixel technologies.

Also at TGS, we will present our sophisticated design kits and models as well as showcase our partners—the leading EDA vendors and tool providers—who will exhibit and demo their solutions to address the design needs of mutual customers. Sponsors at TGS events include: Cadence, FlipCip, Mentor, Photronics, Silvaco, SST-Novocell, Synopsys, and Tanner EDA, among others.

More details on TGS 2014 will be announced soon. For more information or to register for a TGS event, please visit: towerjazz.com/tgs/.

China
July 24

Grand Hyatt
Shanghai

Europe
Sep. 18

Hyatt Place Hotel
Amsterdam Airport

USA
Nov. 19

The Radisson Hotel
Newport Beach, CA

Japan
Dec. 16

InterContinental Hotel
Tokyo Bay

Upcoming Industry Events

NSREC
July 14–18, 2014
Paris, France

CDNLive Korea
July 15, 2014
Seoul, Korea

SNUG Boston
Sep 11, 2014
Boston, MA, USA

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Re-energizing the Japanese Semiconductor Industry

On April 1st, TowerJazz Panasonic Semiconductor Company ("TPSCo") launched its operation based in the Hokuriku region of Japan. The new company produces large scale integrated circuits (ICs) in its multiple fabrication facilities (in Uozu, Tonami and Arai, Japan). Areas of process technology focus include: high dynamic range image sensors, (CIS and CCD), integrated power devices, (BCD, SOI, LDMOS) and high frequency Silicon RFCMOS. With over 120 qualified Silicon process flows on 200mm and 300mm substrates from super micron to 45nm, as well as internal back end processing, assembly and test services, TPSCo enables both IDMs and fabless companies with unparalleled semiconductor manufacturing quality and technology at affordable prices, including in-house turnkey services.

This new company and partnership brings together two leaders in the semiconductor industry to create a company that will serve and grow the analog foundry space as no existing single foundry company can. With TowerJazz's innovation and foundry knowledge, coupled with Panasonic's technology and quality, we have created a winning combination that has the unique ability to serve a significant number of our customers' needs in the IP secure and business friendly environment that Japan is known for. In addition to wafer fabrication services using TPSCo flows or customer proprietary flows, TPSCo offers turnkey front end design services supported by either TowerJazz or Panasonic as well as back end wafer sort, assembly and test services both in-house, and through Panasonic's OSAT partnership with UTAC.

"I am very proud to lead this new venture; we are convinced that TPSCo represents one key component of the recent 'Semiconductor Renaissance' we are witnessing in Japan. The trend of consolidation and collaborations, as well as opening up Japanese IDMs to implementing foundry services, represents a major step in re-energizing the Japanese semiconductor industry. These moves will clearly have a profound effect on the worldwide semiconductor market," said Guy Eristoff, CEO of TPSCo. "Through our TowerJazz and Panasonic support teams, we have received multiple inquiries, tapeouts and even a significant volume supply arrangement from our customers in the first 50 days of existence. It is clear that the customer base is extremely interested in initiating wafer production at this new enterprise, which is quite exciting!"

Roundtable

Message from our Executives

In this issue, we feature a message from Dr. Avi Strum, Vice President and General Manager of CMOS Image Sensors Business Unit, and Vice President of Sales for Europe. He has served as the head of the CIS BU since its inception in 2005 and was appointed VP of Sales for Europe in June 2012. Dr. Strum joined TowerJazz in December 2004.

Below, Dr. Strum will discuss the CMOS Image Sensor Business Unit's focus, offerings and achievements.



TowerJazz has become in the recent years a worldwide well-known manufacturer of state of the art CMOS Image Sensor (CIS) technology. CIS wafers are a leading business for TowerJazz. In this market, customers expect the utmost

in technology excellence and best performance. I am very proud to have a team of excellent engineers who are considered top notch in our industry. The beauty of having such a strong R&D team is the ability to develop state of the art pixels for our customers that allow them to compete and provide better sensors than the giants in the industry. This creates very strong relationships with our customers and has brought us to the point where we are the sole source for all of the CIS products of many of our customers who rely on us completely for their current and future production success. We work very closely with our customers to maintain alignment with their technology roadmaps and support their business strategies.

The CMOS sensors market has grown immensely in the past 10 years, mainly due to the extremely fast growth of the cell phone camera market. Although we served this very

demanding and competitive market segment in the early days up until 2008, we took a calculated decision to concentrate in the high end market segments including: photography (mainly broadcasting and cinematography), large X-ray sensors for dental and medical applications, industrial high speed global shutter sensors, 3D gesture control and automotive and security sensors.

This focus allowed us to become the market leader in the majority of these segments. For example, three out of the five major suppliers of high end broadcasting and cinematography cameras are sole sourced with our sensors and we have shared long term and close relationships with these customers. Also, in the X-ray sensor market, due to our patented stitching technology, we have become the largest source for such sensors and our customers dominate around 70% of the worldwide market share in the intra oral dental sensor market.

Our latest enterprise, the forming of TowerJazz Panasonic Semiconductor Company, has given us a tremendous boost to our CMOS sensor capabilities. Panasonic's sensor technology is known to be one of the very best and thus

opens opportunities for our customers they did not have before, such as utilizing the best in the world 1.12um pixel CIS 65nm technology on 300mm wafers. This not only brings us new customers we just could not serve with our current 0.18um technology, but also allows our loyal customers to develop new businesses such as high end DSLR sensors for the most demanding Japanese camera makers.

While allowing these new customers and new markets, this opportunity also has a very positive effect on our current technology and service. Our customers now have a virtual "one stop shop" where the high volume products that require 65nm technology will go to TowerJazz Panasonic Semiconductor Company while the products that require high flexibility and customization will go to TowerJazz. Both companies can also enjoy the 110nm CIS technology of Panasonic that will be transferred to Israel and thus, provide our customers dual source for their products and a technology roadmap for their high end sensors. We are working very closely with our partners at TowerJazz Panasonic Semiconductor Company to make both companies extremely successful in the CIS market.

Financial Highlights: Q1 2014

Revenues of \$133M as compared with \$113M in the first quarter of 2013, an increase of 18%

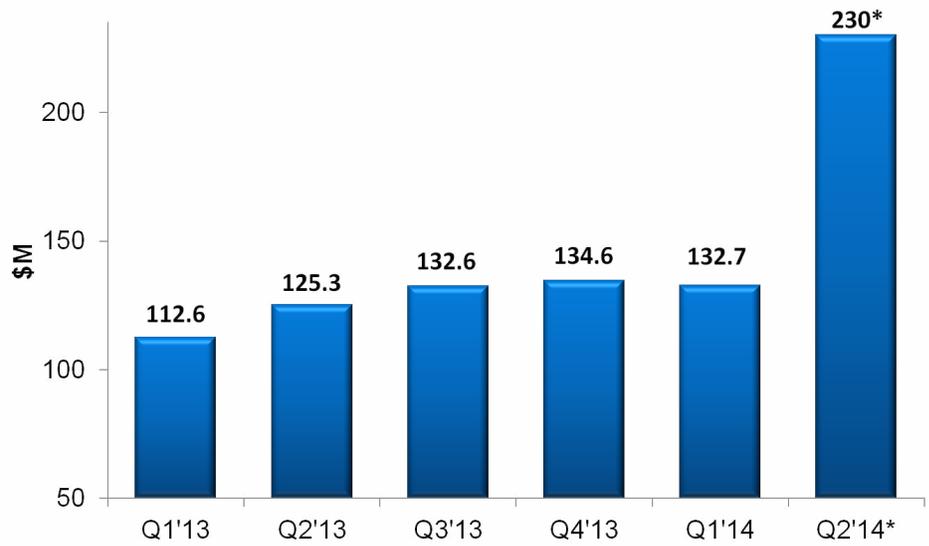
- Organic (non Micron) growth of 27%

EBITDA of \$28M in Q1'14, similar to Q4'13.

GAAP net profit of \$39M, representing \$0.81 per share

- Including gain from the high value of TowerJazz Panasonic Semiconductor ("TPSCo"), the new company established by Panasonic in Japan, as well as one-time restructuring costs and impairment of \$71M relating to the Nishiwaki (Japan) facility cessation of operations

Cash, short-term deposits and designated deposits as of March 31, 2014 were \$183M Vs \$123M as of December 31, 2013



Q1 Conferences

APEC

On March 17-19, 2014, TowerJazz exhibited at the IEEE Applied Power Electronics Conference (APEC), in Fort Worth, Texas. With hundreds of exhibitors and thousands of visitors, APEC is the leading power electronics conference and appeals to not only designers, but anyone involved in power electronics. TowerJazz has participated for several years to showcase our power management offerings.

At APEC, we announced the first 700V 8" 0.18um power platform; the most advanced power technology available which enables our customers to design high voltage ICs in a smaller node on 8" wafers for highly functional integration. This also allows integration of an external power device and is suitable for LED driver applications in general illumination and primary controllers in power supplies to meet the needs of the high growth LED lighting market -- expected to rise to \$5.9 billion in 2018, up from \$4.2 billion in 2013, according to IHS.

For more information on TowerJazz's integrated power platform, please contact: Marijana Vukicevic at marijana.vukicevic@towerjazz.com.



GOMAC Tech was held on March 31- April 3, 2014 in Charleston, SC. TowerJazz has participated in this conference for a number of years. GOMAC Tech was established primarily to review developments in microcircuit applications for government systems. GOMAC Tech is an

ideal showcase for TowerJazz Aerospace and Defense (A&D) technologies and solutions. There were over 10 customer/partner presentations on products and programs utilizing our technologies in the Newport Beach, CA fab. We enjoyed numerous customer "shout outs" for the TowerJazz A&D team for their support, partnership and quality. TowerJazz's Arjun Kar-Roy presented a paper on "SiGe BiCMOS for mmWave: Process Technology and Circuit Demonstrations from W-band to 330GHz" which generated a great deal of interest in our new features from current and potential customers.



TowerJazz exhibited at the HEART (Hardened Electronics and Radiation Technology) Conference this year, held on March 18-20 in Huntsville, Alabama. The city is nicknamed "The Rocket City" for its close association with U.S. space missions. Over the past few years, HEART has been one of the mainstay Aerospace and Defense (A&D) conferences and is one of the five foundation conferences attended by the key government agencies, all major Department of Defense (DoD) parties of interest, and a large number of TowerJazz A&D customers. It is typically the first A&D conference to kick of the year and can be an indicator of government and defense trends for the coming fiscal year. HEART is well attended by a good number of TowerJazz customers including government agencies and military attendance.



On March 18-20th, TowerJazz participated at the IS2014 annual conference held in London. This conference brings together leading suppliers of image sensors and related digital imaging technology from a full range of end users' applications.

TowerJazz has participated in this conference for several years. By having a dedicated booth, we were able to meet with our valued customers as well as potential customers, creating new business opportunities. IS2014 proved to be a good venue for TowerJazz to maintain and generate awareness of our specialty pure play foundry offerings. We received positive feedback and a great deal of interest from attendees.

SEMICON China 2014

On March 19, 2014, TowerJazz participated at SEMICON China 2014 held in Shanghai. Mr. Dani Ashkenazi, TowerJazz's VP of Sales for the Asia Pacific region, presented during the event at the "More than Moore Technology Forum" to discuss the role of the specialty foundry in the fast growing China market. Over 100 attendees joined his presentation. He provided an entire picture of TowerJazz's offerings and emphasized our RF and power management capabilities, while focusing on the SOI switches. We currently work with almost all the major players in China on SOI switches. There have been approximately 20 tape-ins and we are expecting a few more with a new customer. It was clear from our interactions at the conference that our presence in China is growing considerably.

M2V – Mountain to Valley Relay Race



The Mountain-to-Valley relay race is one of the most popular sports events in Israel, with about 7000 runners and 900 different teams covering approximately 215 km in less than 24 hours, running day and night in different field conditions. The race is divided into 24 sections of approximately 5-14km each, and participating are groups of four, six or eight runners. Every participant in turn runs a section. The race starts at Tel Hai in the upper Galilee through spectacular landscapes, including the Ahula Valley, the Sea of Galilee, Beit Netofa, the Menashe forest and ends at Yzra'el Valley.

One of the unique elements in the Mountain-to-Valley relay race is a remarkable mobilization of the local population and Arab communities along the route. The race track goes through the territories of the Arab local councils, through villages and farmland and makes the race a sporting experience for local residents that donate, operate and maintain the stations.



Two teams represented TowerJazz, a group of eight and a group of six people; they started the race on Wednesday night at 10:30pm and 11:30pm and finished the race at 9:00pm and 9:30pm Thursday. It was a great experience for the teams and further demonstrates our employees' ambition and high motivation. Many are involved in various community relations programs in Israel including youth programs, donating time for tutoring and other recreational

activities as well as donating money for computers, furniture and other items. TowerJazz employees in Israel also take part in community service including collaboration with nature and environmental organizations, volunteering with retirement institutions, renovating buildings, preparing food packages for families in need, and participating in blood drives, among other activities.



TowerJazz teams in Migdal Ha'emek (Israel) joined the relay race which combines personal athletic experience, group collaborating, running in open spaces along 215 Kilometers (day and night), from the Upper Galilee Mountains to the Yzra'el Valley.

Getting to Know Us

In each issue, we introduce one of our employees who works with our valued customers in some capacity. We delve into their professional roles and responsibilities as well as some details on their home life, hobbies and travels. At TowerJazz, we encourage work-life balance for our employees. We are a large, multi-cultural family and each employee is unique and brings different characteristics and experience. It is our goal to share a bit of our company and employee culture with you. In this issue, we feature Erez Sarig.



Erez Sarig

Director of TowerJazz Sales Europe

Q: Please tell us about your position, focus areas, etc.

A: I am currently working as the Director of Sales for Europe. The position requires me to handle all of the European market and its customers, both in pre-sales and post-sales. The key focus of my position is to build a fruitful relationship with our European customers and to reach new customers in this region, offering them solutions within TowerJazz to their IC design and manufacturing challenges.

Q: What do you enjoy about your position and what challenges you?

A: In the sales position, one of the most enjoyable things is the opportunity to meet

many intellectual people from all over Europe, including company CEOs, CTOs and senior engineers. It gives me the chance to know them personally and in the meanwhile, continually work with them to mitigate their complex issues by leveraging TowerJazz process offerings. The task of convincing a customer that we can truly offer them the best solution, after fully understanding what they really need, is very rewarding.

Q: What is your focus this year from a business standpoint?

A: The focus for me this year is divided into a couple of sections. First is to build productive relationships with as many accounts as I can in order to position TowerJazz as the main pure-play specialty foundry in Europe. Second is to drive our power management, RF and mixed-signal business with the help of the R&D team and NDC (design center) at TowerJazz.

Q: What are some of your hobbies?

A: My hobbies are:

- Windsurfing & Kite surfing - The Israeli coast is the best
- Yoga – To keep the spirit and the sole flexible
- Swimming – The best sport without sweating.
- Wooden model ship building – When I have time to sit quietly
- Cooking Italian food – From homemade ravioli to supper fast sauce.
- Gardening – There is nothing like sitting with a coffee and watching your own garden blooming

Q: What is your favorite travel destination?

A: In Israel, my favorite area to visit is Eilat which is a great place for relaxation and water sports with the best landscape of the sea and the mountains. Other than there, the place I enjoy the most is definitely New York City.

-  07/01 — TowerJazz to Establish New Sales and Support Office in Kyoto, Japan, [link to PR](#) | [download](#)
-  06/25 — TowerJazz Announces its 2014 Global Symposium (TGS) Roadmap focused on Expanded Technology Offerings and Increased Manufacturing Capacity, [link to PR](#) | [download](#)
-  06/19 — JA Mitsui and TowerJazz Panasonic Semiconductor Company Sign Definitive Five Year Term Loan Agreement to Provide 8.8 Billion Yen (approximately \$85 Million), [link to PR](#) | [download](#)
-  06/05 — TowerJazz and Genoray Announce Successful Development of Industry Changing CMOS Image Sensor for Medical Diagnostic Devices, [link to PR](#) | [download](#)
-  06/03 — Cavendish Kinetics' RF MEMS Tuner, Fabricated at TowerJazz, Sets New Industry Benchmark by Passing 50 Billion Cycle Testing, [link to PR](#) | [download](#)
-  06/03 — TowerJazz Releases Enhanced RF SOI CMOS and High Speed SiGe Process Design Kits for use with Agilent Technologies' Advanced Design System Software, [link to PR](#) | [download](#)
-  05/29 — ANSYS and TowerJazz Deliver Power Noise and Reliability Sign-off Design Kit, [link to PR](#) | [download](#)
-  04/29 — TowerJazz Presents its New, Record Breaking Ultra High Digital Density 700V Power Management Platform at ChipEx 2014, [link to PR](#) | [download](#)
-  04/10 — TowerJazz Receives Supplier Excellence Award from MACOM, [link to PR](#) | [download](#)
-  04/03 — Crocus Technology and TowerJazz qualify CTSX magnetic sensors; volume manufacturing launched, [link to PR](#) | [download](#)
-  04/01 — TowerJazz Announces Completion and Kick-off of its Joint Venture with Panasonic Corporation, [link to PR](#) | [download](#)

Featured TowerJazz News



TowerJazz to Establish New Sales and Support Office in Kyoto, Japan

New office to support local Japanese business & activities including venture with TowerJazz Panasonic Semiconductor Company (TPSCo), increased capacity & growing activity in APAC

The office in Kyoto will be the central base of Japanese sales, technical support and other services, including integrating some of the interface activities of the newly established TPSCo which enables increased capacity and offerings in advanced geometries including leading edge 45nm CMOS, 65nm RF CMOS and 65nm 1.12um pixel technologies.

<http://www.marketwatch.com/story/towerjazz-to-establish-new-sales-and-support-office-in-kyoto-japan-2014-07-01>



TowerJazz and Cavendish Kinetics Announce Collaboration to Bring MEMS Tunable RF Solutions to the Consumer Mobile Wireless Market

TowerJazz and Cavendish Kinetics announced their collaboration to bring MEMS tunable RF solutions to the consumer mobile wireless market. Designed specifically for radio frequency (RF) applications, the Cavendish NanoMech(TM) MEMS technology has passed rigorous reliability testing and enables products boasting advantages in size and performance compared to other technologies. NanoMech(TM) MEMS technology can be combined with other TowerJazz technologies such as SOI CMOS, SiGe BiCMOS and Through-Silicon Vias (TSVs) to service a wide variety of emerging applications.

<http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=2535655>



Crocus Technology and TowerJazz Qualify CTSX Magnetic Sensors; Volume Manufacturing Launched

Selected customers will be able to sample Crocus' family of CTSX magnetic sensors that enable high-performance low-cost solutions for multiple consumer and industrial applications

Crocus and TowerJazz announced that Crocus' CTSX magnetic field sensor family, based on Crocus' proprietary Magnetic Logic Unit™ (MLU) technology, has completed qualification using TowerJazz's 130nm CMOS process. TowerJazz will fabricate the CTSX product family and offer the new highly-advanced developed sensors to its customers.

The CTSX product family offers several important advantages for enabling high performance and low cost solutions. The CTSX product family is suitable for switching, current sensing, position sensing, as well as rotation and speed sensing; addressing the needs of multiple market segments including consumer, industrial and process control, energy and transportation segments.

<http://finance.yahoo.com/news/crocus-technology-towerjazz-qualify-ctsx-105600728.html>



TowerJazz and Genoray Announce 100um Pixel X-Ray Sensor

Selected customers will be able to sample Crocus' family of CTSX magnetic sensors that enable high-performance low-cost solutions for multiple consumer and industrial applications

TowerJazz and Genoray announced the successful development of a CIS for medical diagnostic devices such as X-ray equipment, fluoroscopy and radiography in TowerJazz's 0.18um CIS stitch process. This new device is a CIS detector whereas the existing market uses a silicon TFT type sensor. The advantage of CIS compared to TFT is that CIS uses active pixels so it obtains the image with less noise and helps minimize X-ray radiation exposure which is currently the biggest issue in the industry.

<http://image-sensors-world.blogspot.com/2014/06/towerjazz-and-genoray-announce-100um.html>



ANSYS and TowerJazz deliver power noise and reliability sign-off design kit

ANSYS and TowerJazz have announced a collaboration to deliver comprehensive power noise and reliability sign-off flow for mutual customers. With increased use of analog and RF ICs in a variety of electronic systems including consumer, automotive, medical and industrial applications, the ability to accurately predict the performance of these ICs prior to production has become a critical design challenge, say the firms.

http://www.semiconductor-today.com/news_items/2014/JUN/TOWERJAZZ-ANSYS_030614.shtml