

An overview of the Israeli semiconductor industry

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Very often I get astonished reactions when I tell someone that there are close to 150! Chip design centers in Israel. People expect there to be no more than 20 design houses, not realizing that the Israeli semiconductor industry is one of the most advanced in the world with the second or third highest concentration of design houses. In 2010, this industry represented 22 percent of Israeli exports of high technology products and had the highest average exports per company of any Israeli high-tech sector.

Israel's semiconductor industry consists mainly of three types of companies – fabless, multinational design centers and fabs. Fabless firms and design centers include multinationals such as Intel, Marvell, Freescale (Motorola), Texas Instruments and Broadcom, as well as established local firms Mellanox, DSP Group, EZchip and Broadlight and startups Siverge, Siano, Altair, and Anobit among others. Fabs are manufacturing facilities of which only five are located in Israel. Intel, Micron and Tower Semiconductor, an independent fab located in Migdal Ha'emek own these fabs. Related to fabs are companies that provide manufacturing tools. International tool manufacturers in Israel include Applied Materials, Kulicke & Soffa, and local companies such as Orbotech, Sela and Jordan Valley.

This article discusses fabless companies since they dominate Israel's semiconductor industry. Many of the most advanced chips in the semiconductor world were developed in Israel, including the Pentium MMX, Centrino and Sandy Bridge from Intel, Sandisk latest flash technologies, Texas Instruments' Bluetooth chip and Motorola chips for cellular phones. Nowadays, the Kinect chip is designed in Israel by Primesense for Microsoft's Xbox, as are many other successful designs. Israeli semiconductor companies are also very successful in other world markets. Mellanox leads the global market for end-to-end infiniband and Ethernet connectivity solutions; DSP Group is a world class leader in the answering machine and DECT markets; and Siano tops the receivers for mobile digital TV. Even Altair, while only a relative startup, is a foremost factor in 4th generation of mobile phones with the only commercially available solution for both FDD and TDD bands. Many car manufacturers have already licensed the Mobileye solution for car safety, and Celleno is the inventor of new breakthrough technology that enables a new vision in in-home wireless networking.

Lately, we've been hearing a lot about the "threat from the east" or, in other words, the problem of Israeli industry competing with the growing number of good engineers in China and India. The quality of the work produced by these engineers is at a very high level while the cost is significantly less than that of their Israeli counterparts. The first-rate experience of international semiconductor firms with their Israeli design centers reflects three major advantages:

On time delivery – The ability to schedule delivery of new products is a crucial asset for every company. The Israeli design centers have an excellent record of “on-time delivery” which is a mandatory requirement by any customers in today's competitive global markets.

Development of advanced products – The open mind and creativity of Israeli engineers, have helped overcome major development hurdles such as the achievement of aggressive specifications for low power, high frequency and minimum die size. For example, Israeli researchers at Intel Israel, have achieved a breakthrough in chip development that allowed the significant increase in communications speed and promises to change the world of computing and telecommunications within the next five to 10 years. And the world's first nano-wire (three times thinner than those used in microchips) was created at the Technion-Israel Institute of Technology.

Extensive experience – Many Israeli engineers have in-depth knowledge of wireless communications, data encryption, high-speed communications and homeland security as a result of experience gained during their army service. This experience gives Israeli engineers a major advantage over engineers from Asia or Eastern Europe who lack this background. In light of the above, Israeli firms still work hard to improve their capabilities and continue being creative.

These days, while global trends led to less investments in fabless companies, the Israeli fabless sector is alive and kicking. Last year, Israel's fabless sector was able to attract 13% of the total VC money invested in the Israeli high tech industry. A 62% increase from the semiconductor share in 2009 and is expected to maintain similar share in 2011.

And more good news. According to numbers published by market research company Gartner, the worldwide semiconductor industry generated revenues of \$299.4 billion in 2010, up 31 percent from 2009. In 2011, projected semiconductor industry revenues are expected to pass \$300 billion for the first time in history and reach record revenue of \$315 billion. I believe semiconductors will continue to drive growth in many markets including data and voice communications, wireless, IP and networking communications, medical, consumer, automotive, nanotechnology and defense and since Israel has long been recognized as a leading force in the semiconductor industry, local fabless companies will benefit greatly from the global expansion of the industry and expected to expand into new and exciting horizons.

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