

India emerging as a design hub

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While robust growth in the local consumer electronics market and the global trend towards outsourcing are fuelling India's engineering design industry, the entry of electronics manufacturing services (EMS) companies such as Jabil Design Services-Asia and Flextronics is spurring renewed growth in hardware design activities.

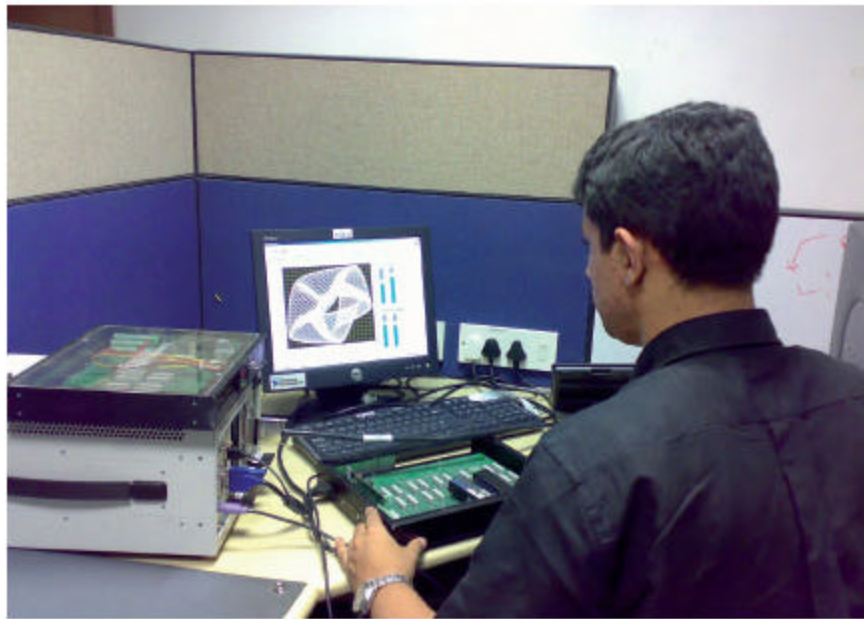
"We will see OEMs relying on localized design to better serve the burgeoning domestic market - initially for mobile phones, set top boxes and telecom infrastructure," observes A. Gururaj, general manager & director, Flextronics India. Flextronics is currently setting up an eight million square foot facility in Chennai (South India) to offer vertically integrated services like design, assembly, and distribution to its global customers. The company has augmented its offerings by acquiring five local companies providing hardware/ board design and software development services, and has partnered with inSilica to deliver high performance SoC solutions to its customers.

Already a strong contender in the global electronics design services industry, India is also increasingly being considered as a hub for global product design and development. "We are very attracted to the vibrancy of India as a design destination, and have identified Pune as our IT hub in Asia. We want to engage with leading design houses and universities," explains Ralph Leimann, vice-president for Jabil Design Services-Asia. Jabil is planning to invest up to \$100 million in India over the next few years. The company acquired Philips India's manufacturing operations and Celetronix last year.

DEVELOPMENT POTENTIAL

Although there is a great potential for India to undertake full development cycle of high-end designs, "not many companies in India have product design knowledge," notes Jayaram Pillai, managing director, National Instruments, India. Jailendra Kumar, general manager, System LSI Division, Samsung India Software Operations (SISO) seconds this view, and adds that Indian companies need to do a lot of catching up when it comes to end product design.

To overcome this limitation, companies like HCL Technologies, a \$1 billion Indian IT services company, are aligning with international majors to augment their service capabilities. For instance, HCL has extended an existing three-year relationship with Celestica to form a joint venture that will handle both design and manufacturing. "Our customers want a single stop shop to handle everything from concept to design, implementation, prototyping, compliance, and volume manufacturing," says G.H. Rao, corporate vice-president for embedded technology at HCL. Last year, Celestica acquired Ramnish Electronics, an EMS company in Hyderabad to jumpstart its manufacturing services in India.



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Another critical aspect of concept-to-manufacturing is compliance engineering. Rao believes that there is an opportunity in this area, and HCL has invested \$4.5 million in setting up a compliance lab. This will enable the company test its designs before they are shipped to customers - thereby reducing cycle times and rework.

In addition to manufacturing, the Indian semiconductor ecosystem continues to evolve as growing numbers of integrated device manufacturers, fabless design services firms and IP providers establish and increase their Indian footprint. "An increasing number of design decisions are now made in India," confirms Ishrat Hakim, vice president of Asia sales for Freescale Semiconductor, (India) Private Limited, and a longtime industry watcher.

GROWING DESIGN STARTS

A report by the India Semiconductor Association (ISA) and Frost and Sullivan indicate that the number of hardware/board design starts in the country is growing significantly, notably in the consumer electronics space. The report predicts that the total number of design starts in the Indian VLSI design market will reach 630 by 2010 (up from 320 in 2005)â€”that's two starts every working day. While the density and complexity of these designs can run from simple to very complex, many of the designs tend to be on the very complex side. Currently, designs range from 1 to 10 million gates, according to the report.

"Miniaturization, convergence, high performance, and low power are some of the key trends driving electronics design today," says Ganesh Guruswamy, country manager and director, Freescale Semiconductor (India) Private Limited. "At Freescale we are focusing on lower process geometries like 90 and 65nm nodes."

And it is not just design complexity that is increasing. More and more companies are focusing on specialty areas like automotive, medical, and aerospace electronic applications. "We have assembled a very good team in analog, digital, and backend design including IC-test activities," says Peter Grosshans group manager of electronic engineering service, Robert Bosch India Limited. Bosch India does complete semiconductor solutions for its customers, while HCL operates a power pc design center for IBMâ€”the only one outside IBM.

There is also an emerging demand for full lifecycle management of IP in high-growth areas like embedded processing and high-speed connectivity - with activities ranging from design, verification, acquisition, integration, and technical support. Companies like Wipro, Sasken, MindTree, and HCL are helping international customers bring new products to market rapidly and economically by taking over the entire spectrum of design activities.

Gururaj of Flextronics thinks that reverse logistics (i.e. providing repair and refurbishment) for global tech companies that sell their products into India also have big market potential. But, in order to take advantage of these opportunities, he feels that India will need to make greater investment in R&D as well as in training institutes to develop the talent pool. But the biggest challenge India will encounter is in switching from service industry to product industry, as well as developing a robust infrastructure to support high velocity manufacturing, says Leimann of Jabil.

INDUSTRY CHANGES

However, Gururaj is optimistic that that the rapid change in the electronics industry will lead to progressive improvements. "The growth of the domestic semiconductor industry and investment announcements by global majors like Motorola and Texas Instruments are paving the way for strong ecosystems to support electronics industry," he observes. To address the growing shortage of skilled manpower, industry leaders like Flextronics are in talks with local universities to create an EMSready talent base, and improve awareness about careers in the EMS industry.

"India's emergence as an electronics hub will lead to more investment. Strong ecosystems will develop, and centers of electronics manufacturing excellence will emerge," says an upbeat Gururaj. And as Indian government functionaries overcome teething problems, it's a matter of time before India enjoys enhanced and improved conditions, concludes Bill Muir, regional president, Asia, Jabil Circuit.

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