



Rampant increase in number of 'end of life' (EOL) notifications challenges sustaining engineering

By Mark Tayles, president, Enabler Tech Inc., Toronto

"As if it isn't tough enough designing cutting-edge products. Today, we're fighting on another front, keeping these same products economically feasible to manufacture, and squeezing every last month of viability out of them." So says, Geoff Beyer, vice-president of R&D at Smiths Detection in Mississauga ON. This other "battlefront" that Beyer refers to could be described as "sustaining engineering," and it's become almost as important to the existence of an original equipment manufacturer (OEM) as the innovative initial design.

One of the biggest culprits in this battle of sustaining engineering is the increased number of notifications from semiconductor companies announcing the discontinuation of products. This notification event is referred to as an end of life (EOL) notification (or simply as an EOL). At the same time, the number of part change notifications (PCNs) is also increasing rapidly. According to PCNAAlert (a component event management company), there were approximately 1.5 million EOLs and PCNs issued by parent companies in 2007, which equates to a compounded growth rate of nearly 20 percent since the year 2000.

• So what factors are driving this steep increase in EOLs and PCNs?

Ironically, the predominant factor is that microchips are 'victims of their own success.' This success is illustrated by the shift in the demographics of electronics products – or, simply put, the birth of consumer electronics. During the early high growth years of the semiconductor industry (1970s and '80s), the unit volume of devices was consumed mainly by military/aerospace and industrial applications. Consumer electronic successes like cell phones, MP3 players, digital cameras and personal global positional system (GPS) had not been invented yet, and their overwhelming appetites for microchips had not yet weighed in on the semiconductor marketplace.

Now fast forward to today. The Semiconductor Industry Association, in their annual industry forecast, approximates that nearly 80% of the worldwide market of US\$256-billion in semiconductors finds its way into consumer electronic applications. All estimates are that this percentage will continue to rise, fuelled by the offspring of these same consumer products as well some new products that still haven't been invented but that will be equally ubiquitous.

As they related to semiconductor device obsolescence, these consumer products introduce a few dynamics that are very different than the military/aerospace and industrial markets that gave birth to the industry.

One dynamic is product life cycle. We can all relate to how fast iPods and other MP3 players have advanced in features and performance. Last year's – or even last month's – model just isn't good enough. The current 'half-life' of a typical MP3 model is four months or less. Contrast this to the typical life cycle of an industrial product like a CNC (computer numerically controlled) machine, which is closer to three to four years. The short life cycle of consumer products drives product advancement faster than we see in any other industry sector. And, at the core of these product features, are the 'latest' semiconductors. Of course, the next to latest' semiconductors are soon destined to be EOL'ed.

"The short life cycle of consumer products drives product advancement faster than we see in any other industry sector"

migrate offerings to the latest process technology in order to squeeze out additional speed, capacity and profit. This migration leaves a trail littered with EOLs.

• "There were approximately
• 1.5-million EOLs and PCNs issued
• by parent companies in 2007,
• which equates to a compounded
• growth rate of nearly 20%
• since the year 2000"

• Another dynamic is the sheer unit volume of product going into consumer applications. In an industry renowned for products 'eating their young,' semiconductor manufacturers are forced to

Additionally, an unrelated cause of increased EOLs has been the rollout of the European RoHS Directive (restriction of the use of certain hazardous substances in electrical and electronic equipment), which came into force on July 1, 2006. Leading up to this deadline (and still having lagging effects), device manufacturers were forced to EOL many device families in favour of RoHS compliant, lead-free packages.

The net result is that, once again, as is so often the case within the high tech industry, two diametrically opposed forces – device obsolescence and sustaining engineering – have OEMs caught between a rock and a hard place, where the shrinking life cycle of the most populous components works against the mission-critical need to extend product life cycles. A Canadian OEM recently admitted that fully 15% or more of their annual semiconductor purchases are for obsolete devices or for last time buys (LTBs) – the final opportunity OEMs are given to order parts from suppliers.

Clearly this is a global problem, but there are some common themes on how Canada's OEMs are coping with this challenge.

Apart from encouraging solid electronic design practices like reusing proven blocks of circuit intellectual property (IP), discouraging the design-in and use of devices from suspect suppliers and fully researching a device's pedigree, I do see that there are some common strategies and tactics that can be implemented to aid this sustaining engineering effort.

By far, given the rapidly changing dynamics in the industry, it is clear to me that the two most important strategies are planning and speed. Based on the increase in the number of conversations I have with customers about tackling obsolescence, I believe the industry has started to fully appreciate the time-critical, positive impact that executing a plan, with speed, can bring to a company's balance sheet.

• "Given the rapidly changing
• dynamics in the industry, it is
• clear to me that the two
• most important strategies
• are planning and speed"

One prevalent strategy involves leveraging the power of information technology (IT). Companies of all sizes are increasingly subscribing to one of a proliferation of database companies that efficiently track EOL events. Companies like PCNAAlert, Partminer, and Total Parts Plus provide various levels of services, from comprehensive obsolescence management services to bill of material (BOM) scrubbing (identifying where devices are in their life-cycle).

Another strategy may even delve into the structure and operations of the company itself. Depending on their size, many companies are compartmentalizing this critical responsibility for obsolescence management. A graphic illustration is that job titles with words like 'obsolescence' and 'life cycle' have crept into the industry lexicon and continue to evolve. For instance, Stephane Joannis of Curtiss Wright in Kanata, is one such professional. As a life cycle engineering specialist, Joannis's role is to manage part obsolescence. Roles such as this are typically tasked to capture and rationalize EOL events; for instance, "how many of our products will this device EOL affect and/or is there a fit-form-function equivalent from another supplier?" Routinely, Joannis and his industry peers painstakingly analyze the fit-form-function details with their hardware designer colleagues to arrive at a sustained solution.

• "One large OEM has initiated
• a Six-Sigma team to streamline
• both their proactive and
• reactive activities as they relates
• to device obsolescence"

Another interesting tactic I've seen illustrates the increased criticality of obsolescence-related business processes. By deploying a host of lean tools to simplify these very processes, one large OEM has initiated a Six-Sigma team to streamline both their proactive and reactive activities as they relates to device obsolescence. (Six-Sigma refers to the ability of processes to produce specified output.)

Worldwide Corporate Headquarters

Rochester Electronics, LLC - 16 Malcolm Hoyt Drive - Newburyport, MA 01950 USA
phone 978.462.9332 - fax 978.462.9512 - web www.rocelec.com

.....

Rampant increase

continued from page 12

One such activity is described as a bridge-buy (which could be considered a subset of a last-time buy). After an OEM fully considers the impact of a device EOL on their product line, they calculate the total volume of devices required until their own product modifications are complete. These product modifications, in essence, 'design-out' the EOL device in favor of devices that are assumed to have many months or years of life still left.

Key to the success of bridge-buys and last-time buys, however, is the forecast. It is critical to accurately forecast required volumes of a particular component before the last-time buy. Even though it's been said that "there are lies, damn lies, and forecasts," the forecast generated to support the last-time buy is crucial to a product's success. Guess too low a volume, and you could potentially impact the product's overall profit picture (as you scramble with engineering work-arounds or deal with held-up product shipments). Guess too high a volume, and you're stuck with residual/excess inventory after the product is retired.

Rochester Electronics (www.rocelec.com) is one company that has developed a suite of services that aid OEMs and contract manufacturers with this delicate balancing act. The impetus behind Rochester's success has been their franchise relationships with nearly 60 (and growing) semiconductor suppliers, together with their core-competency of being able to store devices indefinitely. For instance, Rochester has semiconductors (in both finished goods and die format) from the late 1970s securely stored in nitrogen dry boxes within the world's largest die bank (8-billion and growing). Rochester's broad coverage across such a plethora of semiconductor manufacturers can also be a valuable supply chain tool as OEM's develop planning and speed strategies for success in a rapidly changing industry.

This discussion of the strategies and tactics that are being implemented by electronics OEMs today is, by no means, an exhaustive list. What is clear to me, however, is that more of a company's scarce resources are being deployed in this area under the guise of sustaining engineering. The stakes are very high, with products' viability and profitability at stake. With the increasing rate of device obsolescence, clearly the challenge of sustaining engineering requires support from the entire enterprise, not just engineering.

For more information on aftermarket solutions for semiconductors from Rochester Electronics, go to <http://ept.hotims.com/16416-98>. Enabler Tech is the Canadian-based manufacturer's representative of Rochester Electronics.



Worldwide Corporate Headquarters

Rochester Electronics, LLC - 16 Malcolm Hoyt Drive - Newburyport, MA 01950 USA
phone 978.462.9332 - fax 978.462.9512 - web www.rocelec.com