



By Harry J. Abramson

A Perfectly Logical Concern for Reps: The Diminishing Number of U.S. EE's

When the electronics industry was flourishing in the United States, EE's were in great demand, just as were graduates with degrees in math and science. Now the bad news! IEEE-USA, has documented that EE unemployment has steadily increased from 2002 through today and they attribute the biggest factor to outsourcing the engineering function, especially to China and India. Here is the perfect \$64 billion question, "If the trend continues, who will North American reps and their distribution partners call on to win designs for their share of the commission dollar?" After all, isn't that what they do for a livelihood?

In a recent edition of *The Economy* magazine there was an article entitled "EE Unemployment on the Rise in the United States." It stated that graduating engineers and computer scientists face rough sledding. This should come as no surprise to those of you who are calling on OEM accounts and observing of the outsourcing trend.

First it was simply manufacturing and now engineering. Also beware of the economic storm raging in the technology sector – your engineering pal may be on shaky ground. Simply put, engineering unemployment is on the rise. Not long ago, it was considered a safe and secure profession. Last year, the IEEE's *Spectrum* magazine published the article "Unemployment Hits Home". Not good!

Recently let go engineers find themselves competing against fresh young grads and non-U.S. guest workers who can afford to work for less. Many veteran engineers consider the situation to be grim.

IT'S ALL ABOUT ODM

If you are not familiar with the acronym ODM it's time to learn. ODM

stands for Original Design and Manufacturing, and we have already experienced a gradual transition. It's a combination of CEM/EMS plus cost effective engineering. This model is being tested by large OEM's and many Asian CEM's are offering the ODM service as well. The more our country exports CEM and OEM contract work, the greater the expertise in Asia.

A recent Duke University and Archstone Consulting survey concluded that American companies plan to outsource 81% of their R&D and 55% of the engineering to Asia. The loss of these jobs, coupled with early retirements, lay-offs and company closures, further impacts engineering unemployment. Make no mistake about the off-shore design shop capabilities – they are state-of-the-art. Language issues are no more a problem than transcending borders. Besides, aren't math and engineering a universal language?

A SAD COMPARISON

The U.S. graduates between 50,000 and 60,000 engineers a year, but India and China now graduate ten times as many. With that number, there is an

over-supply who will work for less. If it comes down to simply who has the most engineers in the world, the U.S. is going to lose the battle. Our only hope is to produce the very best engineers on the planet. However, our problem is exacerbated by the fact that we have fewer young people enrolling in our colleges and universities in pursuit of engineering degrees. Do you think they could be lining up for law school?

IS THERE AN ANSWER?

George McClure, of IEEE – USA, proposed that the government provide tax credits and incentives to keep U.S. companies from sending their engineering positions to countries like India and China. Others suggest that the best way to save jobs is to ensure that our EE's are the best educated in the world. If our guys are no better, then cost becomes the differentiator.

WHERE ARE THE BRIGHT SPOTS?

The war and the associated military budget bring tremendous opportunities to the electronics industry. So do the

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latest diagnostic and therapeutic medical advances. Be it our national security or health, both sectors present a silver lining for our country's EE's. It is also projected that biotechnology and nanotechnology will create mega bucks. This author hopes that the mega bucks stay at home.

DISCONCERTING FACTS

- The U.S. Bureau of Labor Statistics reports that overseas outsourcing is definitely having an adverse affect on the engineering profession's employment levels.

- IEEE reports that EE employment has fallen by as much as 40,000 jobs at quarter, i.e., Q4 '03.

- The migration of the consumer electronics industry to China is virtually 100% – that includes manufacturing and engineering.

- Asian quality is now found acceptable to excellent.

- Large U.S. CEM's have taken their technology to Asia and they are quick learners.

- American high-tech firms shed 560,000 jobs between 2001 and 2003. The projections for 2004 were another 234,000 according to John W. Steadman, President of IEEE – USA and Dean of Engineering at the University of South Alabama in Mobile.

- China has a reputation for stealing intellectual property and total disregard of patent rights.

THE CHALLENGE

A major question revolves around the BOM (Bill of Material) or sometimes referred to as the AVL (Approved Vendor List). Many OEM's allow the ODM to source components for cost savings and/or performance enhancements, but let's face it – it's mostly cost

driven. Accordingly, there is no guarantee that a rep or distributor will see their design win "credit" come to fruition unless the device is labeled "critical component" or "no substitutes". It's reported that many ODM's are requesting the ability to test and qualify their own sources. The reasons are obvious: lower costs means increased profits.

SUMMARY

The perennial debate over job creation, job destruction and globalization will continue ad infinitum. The question is, has this created or destroyed EE employment in America? Our country's highly skilled engineers were once thought impossible to outsource. How far up the food chain can American corporations push the export of knowledge? The answer will undoubtedly be found as globalization matures. In the meantime, millions of American technology jobs hang in the balance. ■