

## **A View of the Loudspeaker Industry from SE Asia**

**By Steve Mowry**

In retrospect, it seemed to have all started with the consumer electronics giant Philips selling off the Philips Sound Solutions transducer/loudspeaker manufacturing facility in Malaysia to a local investor and subsequently selling the entire audio product development division of PSS headquartered in Belgium to D&M Holdings in late 2006. Unfortunately, now with the onset of the economic crisis, friends and colleagues have lost jobs. The landscape of the loudspeaker industry is changing rapidly.

### **JOB LOSSES**

For example, "Better Sound Through Research" doesn't have the same meaning anymore. That company [Bose] laid off 1,000 people including several of their top engineers and scientists from their R&D Center on the Mountain in Framingham, Mass. This came as a surprise to solid but well-seasoned middle-aged people, some of whom mentored me early in my career, such as John Bruss (whose experience dates back to HeathKit) and Dr. Roger Mark (formerly a Finite Element Analysis researcher at Brown University who was recruited as an acoustics expert from Raytheon more than a decade ago).

Harman-Becker, from Martinsville, Ind., has now closed. This was the facility where Don Keele and Dick Small shared an office and several other solid technical colleagues were employed. To maintain the value of their common stock, Harman is committed to massive cost-cutting, and, as a result, there have been reports of heavy firings.

The aggressiveness with which some companies took on debt to invest in expansion and vertical integration prior to the credit crisis aspect

of this economic downturn has now become problematic and forced these same companies to frantically search for ways to cut operating costs just to avoid large losses or even bankruptcy filings.

It is apparent that the larger companies such as Harman and Bose have a reduced interest in funding serious R&D, and the magnitude of the economic crisis has hastened the processes of downsizing and the merger of departments, companies, and brands. The focus will now shift from engineering and product development to cost-cutting and increased marketing, including increased use of the Internet.

There are also hidden job losses within the industry for temporary workers including independent workers and consultants. These jobs are typically the first to go, usually with no severance pay. The contract is just not renewed or extended. Companies in the US and Europe hired these people in the first place to reduce health care and benefit costs. Even those independents who are still working have typically been reduced to part-time. Are those employment opportunities gone forever? No, but they may move to Asia.

The outsourcing of critical new product development functions and tasks represents a significant potential cost saving for companies in the US and Europe. The challenge then becomes managing the logistics of that new product development, because resources are based on cost regardless of location. The environment of free trade and the expanded use of the Internet to share information facilitate this outsourcing as a future trend. This will present opportunities for individuals and small companies in SE Asia, where education and communications are good and improving.

The small-to-medium-size loudspeaker, transducer, and transducer component manufacturing facilities in SE Asia are essentially on hold, waiting to see what their customers, typically in the US or Europe,

will do to deal with the economic tsunami. There is an excess capacity; there have been layoffs and several facilities are operating on reduced workweeks. The escalating political unrest in Thailand and to a lesser extent in southern China will dampen interest in foreign investment; however, the short-term surplus of labor in SE Asia will help to stem the trend of wage increases for the area, especially in southern China.

The consumer electronics companies with headquarters in Japan are responding in a similar manner to their competitors in the US and Europe. Pioneer is discontinuing their plasma TVs and other select A/V products. Sony and JVC-Kenwood Holdings are also moving to consolidate or condense their product lines. Japanese companies are finding demand for exports down by 30% or more from 2007. There is strong downward pressure on prices of consumer electronic products throughout the world; however, companies that have built goodwill and quality product recognition must consider that reducing prices can reduce apparent value and, as General Motors found out, once you've discounted pricing, out of desperation, the public views your products as having always been worth less.

There's another concern of possible backlash in the supply of skilled resources. If companies within the loudspeaker industry will not commit to attract, keep, and reward young aspiring technicians, engineers, and scientists, talented resources will choose other industries on which to focus their contributions and career development. A short-term paradox is that independent consultants are typically trained and seasoned in the workplace within companies such as Bose, Harman, Philips, and Polk.

## **FUTURE BUSINESSES**

The dynamics and impact of the economic crisis will surely induce change within the loudspeaker and related industries. The following are ten topics of industry change.

1. Less than well-managed transducer/loudspeaker manufacturing companies have or will fail, leading to fewer companies operating but with future potential growth in specialized material, component, manufacturing, and support companies.
2. A trend toward smaller companies in the US and Europe with lean business models containing cost-driven outsourcing of some critical functions to Asia.
3. A decentralizing of the center of loudspeaker technology development moving away from the larger US companies to be distributed within Europe and Asia.
4. With the reduced demand in the US and Europe, companies—especially in Asia—are looking more to consumers within the more cost-sensitive Asian developing markets.
5. More active loudspeakers with DSP and networking capabilities as the PC and audio/video systems converge.
6. Increased online loudspeaker shopping by consumers worldwide.
7. Lower margins on commodity-like products in the short run, including but not limited to cost-down replacements (copies) of famous manufacturers' transducers and loudspeakers.
8. More loudspeaker technical people working independently, especially in the US and Europe.
9. Downsizing or some degree of vertical differentiation (outsourcing of critical resources) of the medium-large size vertically integrated transducer/loudspeaker companies.

10.A revived interest in loudspeaker kits as more companies offer kit products as a logistics related solution to distribution and as more discerning consumers look for value.

#### **OPPORTUNITIES**

There are opportunities that are indicated by these changes in the loudspeaker industry. When the turmoil resulting from restructuring and changing business models subsides, there will be an inevitable revival of R&D and innovation. As with other industries, companies riddled with debt that funded the acquisition of facilities or other companies that will now operate well below capacity will find it difficult to make the changes necessary to remain competitive. Large, political, and top-heavy companies have shown that they cannot or will not develop the products that the consumers want, be it automotive or consumer electronics. The small low-debt or debt-free knowledge-based company working within its core capabilities and with highly skilled independents "that can turn on a dime" is better suited for innovation and new product development than the larger vertically integrated company that tries to do it all.

The hope for new innovative products is in the hands of the small new wave companies. The R&D and innovation torch has been passed from the larger loudspeaker companies to these smaller, more specialized companies. This is already the case, as evidenced by the following companies and their respective specialized core competency:

1. KLIPPEL GmbH (Germany): signal processing, software and hardware transducer and loudspeaker measurement systems
2. KSC (US): DSP and active loudspeaker solutions
3. S. M. Audio Engineering (Thailand/US): transducer topology and soft-parts

4. LOUDSoft (Denmark): transducer and loudspeaker simulation software
5. Brush Wellman Electrofusion Products (US): *Truextent*<sup>™</sup> powdered metal acoustic grade beryllium and Be alloy foils technology and diaphragms
6. GENELEC (Finland): active (powered) professional loudspeakers with DSP
7. GEDLEE (US): wave guides
8. B&C (Italy): professional transducer manufacturing
9. Meridian (UK): active loudspeakers with DSP
10. Taiwan Bor Ying (Taiwan/China): Kevlar, carbon fiber, and sandwich composite cone and dome manufacturer

In addition, there are several small transducer part and assembly manufacturers within SE Asia supplying motor assemblies, spiders, surrounds, voice coils, cones, and domes with reasonably high and continuously improving core competencies within their respective manufacturing specialty.

This transition of R&D and new product development to small knowledge-based companies and independent technical people will present opportunities within a free market setting, rather than having most of the loudspeaker R&D concentrated within a few large companies and their accumulation of incremental patents, a process that can in effect stifle innovation. There are and will continue to be reasonably priced technical resources and manufacturing capabilities from within Asia, including China, India, and SE Asia, making outsourcing look even more attractive as companies formulate new business plans to move forward.

In closing, something I find quite amazing is that when searching the Internet for the key words "DSP speakers," I found that very few

loudspeaker companies have implemented DSP into their products. KSC has developed a DSP + amplifiers turnkey solution, Digmoda, for active loudspeaker implementations, and others will follow their lead. The high degree of flexibility with crossover filters and corrective EQ of magnitude and phase along with time adjustment delays utilizing the user-friendly software implementations of the D-PRO Windows software not only advances loudspeaker technology but also simplifies the design-implementation process. DSP allows software to correct and EQ the loudspeaker's response. There are also opportunities for adaptive filtering to correct nonlinearities. KLIPPEL GmbH is currently working on a chip to implement correction of nonlinearities by using the state variables of voltage and current only.

Steve Mowry ([www.s-m-audio.com](http://www.s-m-audio.com)) was significantly responsible for the design and development of the Bose 2¾" plastic-basket/enclosure-baffle multimedia AM5/Lifestyle "cube" transducer in 1997-1998, "Hotshot." This in raw quantity is one of the largest-selling electrodynamic audio transducers of all time and is still being manufactured today. Steve is currently an independent researcher, lecturer, and consultant in transducer/loudspeaker system design and new product development with open R&D projects concerning nonlinear FEA simulations, *KERONITE™* treatments, DSP, acrylic surrounds, sandwich composites, and *STEALLUS* transducer topologies along with being a frequent contributor to *Voice Coil* and *MultiMedia Manufacturer*.