

A View of the Loudspeaker Industry

As Seen by Members of ALMA International's Board of Directors, Executive Committee, and Executive Director



Several members of the Association of Loudspeaker Manufacturing and Acoustics (ALMA) International to a moment to share their thoughts on the current state of the loudspeaker industry.

Dan Foley—President and Member of the Board of Directors and the Executive Committee

With a majority of the finished loudspeaker products sold today comprised of Class D amps, sophisticated digital signal processing, wireless chip sets, and microphone arrays, the days of simply testing acoustic performance using classic anechoic-based measurements is long gone.

Testing these highly advanced products requires measurement systems that incorporate a myriad of analog and digital signal paths. With regard to moving audio as ones and zeros on a network or via codecs with specific protocols, audio design engineers also need to know how to use non-audio measurement tools such as network/protocol analyzers.

There are many ways that audio quality can be diminished, which have nothing to do with the loudspeaker transducer itself. In addition to being competent in all the relevant technical disciplines required to design the transducer portion of a finished loudspeaker product, today's transducer engineers need to be cognizant of how each part of the audio signal path impacts sound quality.

Without at least a basic understanding of the entire audio signal path, non-optimal sound quality can easily be blamed on the transducer design when the root cause lies elsewhere.

Alan Babb—Vice President and Member of the Board of Directors and the Executive Committee

Lately when I am asked about the state of our industry, my first thought is that it is confusing. But maybe that is too strong a word.

I see our industry as becoming more and more flooded with possibilities and so it is not just the single file line progressing forward anymore. If you look at the last 30 years or so of history in any specialized area of audio you will see the huge strides we have made. From the old school "Wall of Sound" at a rock concert to the Pineapple clusters to modern line arrays with beam steering. Or how about from large can headphones connected to a battery powered reel-to-reel morphing into modern media players (e.g., the one in my smart watch) connected to Bluetooth multi-transducer in ear monitors (such as the ones I am wearing while I contemplate this).

So maybe the confusion is just because there are so many divergent paths being taken that it is hard to pick one. Is this a problem? Well, it can be. It can also be a great opportunity. Maybe the right attitude is that I look forward to taking the

occasional wrong turn as I explore this space we call Audio. The one thing that even my wife will agree I am not incorrect or confused about is that audio is here to stay. I look forward to seeing what people are saying about this field in another 20 years.

Mark Beach—Treasurer and Member of the Board of Directors and the Executive Committee

Smart speakers should represent the most robust activity continuing to benefit from DSP, voice recognition, thermally efficient amplifiers, and miniaturization. There should be room for more products with different features, available at higher and lower cost and so on, but expect to see the start of “last in, first out” as the market sorts itself out to find a balance. The wild card would be mergers and acquisitions of media, hardware, and technology suppliers much in the same way AT&T acquired DirecTV. If their merger is successful, expect a flurry of activity akin to musical chairs. Interconnectivity of multiple devices and getting them to “play nice together” is likely to remain a challenge. Although standardization should grow the market overall, it will remain to be seen if a global standard is adopted.

Personal audio is likely to remain strong benefitting from the some of the same technologies supporting smart speakers. The only paradigm shift, albeit minor overall, may come from Focal’s success with a voice-coil-driven membrane; nevertheless, expect balance armature to continue its widespread use anywhere size is a consideration.

Pro sound is interesting with an avalanche of cheap look-alike, knock-off speakers that exhibit huge differences in distortion, directivity, quality of materials, QC, frequency response, BL linearity, and thermal compression. While digital signal processing (DSP) can cover up some flaws, it is not a miracle cure and can further degrade some aspects if not thoughtfully implemented. In the end, the major players still know how to build a quality loudspeaker. If we are talking pro sound, we have to mention Harman/JBL Pro’s acquisition by Samsung to gain access to the automotive market. But, what will happen to JBL Pro, Revel, et al and their amazing talent pool?

Unfortunately, home audio and home theater will continue to struggle with one possible exception: Someone somehow will have to supply sound commensurate with large format (65” and larger) 4k OLED TVs. This need will be met by continued separate soundbar/box speakers vs.

onboard audio.

Improvements in automotive sound quality will be pushed hard and unfortunately, pushed even harder for cost reductions. In other words, business as usual for automotive. Conversely, this is the one market that suppliers are responding to the consumer’s demand for better sound quality and it’s working.

Overall, I’d say the loudspeaker business and its affiliated signal chain are strong but in a huge upheaval resulting from new innovations—but, that’s what engineers do, implement new and improved technologies.

Vanessa Rene—Vice President and Member of the Executive Committee

I would like to offer my view of the future of audio from the perspective of ferrofluid applications. Ferrofluids were first introduced into the audio market in the early 1970s as a means to transfer heat and stabilize off-center voice coil assemblies. Typically, these drivers possessed magnet bodies that had relatively low field strengths, and the aim was to produce high concentration fluids that would stay where you put them.

Those days passed quietly away with the introduction of high-field rare earth magnets, and as a side benefit, the sizes of driver units began to shrink. The efficiency and power of these units also increased, and thus, the era of high-performance home theater stereo and automotive audio had a chance to bloom and flourish. This evolution took place over a span of 20 to 30 years, and progressed so quietly that it was not seen as a revolution—but in many ways it truly was. Before this evolution, quality sound reproduction was something for movie theaters or the home systems of high-end audiophiles, but now, as if by magic, it became available to the masses. Ferrofluids played a large part in making this transition possible.

With the new surge in automotive audio systems brought on by this evolution, high temperature stability became extremely important, and new ferrofluids were developed and introduced to meet these demands. Many brands of high-end car audio depend on reliable ferrofluid cooling and signal stabilization, and this trend continues to this day.

There is an offshoot from the technologies used for this first type of mobile audio, though, and it is the driving force in today’s market: miniaturized mobile audio in the form of cell

phones, microspeaker units, headphones, earbuds, and other small portable audio devices. These devices see conditions that are not anticipated in other forms of audio systems. They are dropped. They are left in hot cars and on wet or dirty surfaces, and they are exposed to a number of environmental conditions that are totally foreign to fixed audio components. The sizes of the units that can utilize ferrofluids have gone from several centimeters in diameter to a few millimeters, and the power throughput and excursion have changed accordingly. “Good enough” fluid match to operating parameters is no longer acceptable, now we operate in a very tight range of tolerances in our parameters, and reproducibility is paramount.

Not only do we need to consider the possibilities of audio reproduction, but we also have to take into consideration the scope of haptic devices that are flourishing in the industry. Though just in the early stages of consideration, the potential of ferrofluid to contribute in a huge way to the success of a multitude of non-audio mini and micro-devices, incorporated into mobile audio platforms, is the obvious next step in the evolution of ferrofluid manufacturing for the mobile audio industry.”

Mark Glazer—Member of the Board of Directors

The 21st century has been challenging for the conventional high-fidelity loudspeaker. In the precious decade, high-definition video produced a demand for corresponding streamline loudspeakers such as soundbars. Next, small computer desk speakers surged in popularity, followed by portable speakers with docking stations.

The next phase of personal stereo saw the immense growth of headphones. And, since 2010, there has been a huge boom (no pun intended) of Bluetooth and Wi-Fi portable speakers, mostly inexpensive and available to the masses. Now, we are experiencing tremendous sales of voice-activated portables.

My prediction is that smaller than conventional, wireless speakers using such technologies as components from the Wireless Speaker & Audio Association (WiSA) will become the norm. This leaves the conventional high-fidelity loudspeaker as a niche market primarily reaching out to new customers in various countries.

Barry Vogel—ALMA International Executive Director

I would like to begin by stating the reports of loudspeakers’ demise has been highly exaggerated. Having worked in the audio industry for more than 40 years, I can safely say I have seen my fair share of change. From LP to four-track to eight-track to cassette to CD (and its impending demise), to MP3 to Hi-Res Audio, and so on. Tube amplifiers to solid state, to Class A to Class A/B to Class D, to Class T to hybrids, etc.

Loudspeakers seem to be the irreplaceable category. The materials change. The formulations change. They have become increasingly integrated into the overall signal chain design. No matter how often we hear about replacements for traditional loudspeakers, we always seem to end up back with “old faithful.” And yet I often hear how it is a mature category. No excitement here. I could not disagree more!

We have microspeakers that can reproduce voice in a lifelike manner that could not be imagined not so long ago. We have a vibrant premium headphone industry that has exceeded every projection of its expected market penetration and reproduces music with amazing accuracy. Thanks to all of the talk about Hi-Res audio, sound quality is back!

It wasn’t long ago that many industry veterans were predicting the demise of sound quality with the popularity of Apple’s now ubiquitous ear buds. Rather than electronics and technology stealing the thunder from the loudspeaker industry, I believe that the higher level of performance made possible through signal manipulation and predictive performance has refocused consumers and product development people to produce loudspeakers at an even higher level of performance.

The “cheap speaker” will always grab a lion’s share of the market. But any talk about a lack of excitement in the loudspeaker industry is just plain wrong. Your loudspeaker may have a DSP attached to the back of it, or somewhere in the signal chain, but the loudspeaker and its associated performance will continue to be the last, and perhaps the most vital link in the audio signal chain. **LIS**