

SCHEDULE OF EVENTS

Wednesday, January 8, 1997

10:00 a.m. — 5:00 p.m.

Riviera Hotel, Las Vegas

10:00 a.m. Registration & Exhibits Open

Standards Committee Meetings

10:00 - 12:00 Component Loudspeaker Standards

Lunch on your own.

1:00 p.m. General Assembly Meeting

- President's Address
- Executive Director's Report
- Treasurer's Report
- Standards Committee Reports
- Board Elections
- Board Emeritus Awards Ceremony

1:15 **Keynote presentation: Dimensioning and Tolerancing of Soft Parts** — Coordinator: Bob True, International Jensen; Featuring Tom Heed, Applied Research Engineer, Oxford International; Myra Stout, R & D Engineer, Nuway Speaker Products, Inc.; George Pope, Director of Engineering and Technical Services, Fujicone Inc.

2:45 **Symposium** — Dan Digre, Coordinator

4:00 - 5:00 Exhibits and Social Hour

Winter ALMA Symposium Registration

	Members	Non-members
Exhibit	\$400	\$900 *
Attend	50	100

*includes membership

Spring Symposium Notes

For the first time, ALMA met this past spring in conjunction with NSCA in St. Louis with a Blue Ribbon Panel on the Commercial Loudspeaker Industry the highlight of the day. The panelists included Bob Myers, VP of Sound Com Corporation; Jim Postlewaite, Acoustical Design Group, Inc.; Dave Carlson, Senior Engineer, Mark IV Audio, Inc.; Doug Button, Director of Transducer Research and Development for JBL Professional; and, Ingolf J.C. deJong, VP General Communications. ALMA Board member Mike Lamm of Atlas Soundolier coordinated and moderated the panel discussion.

Bob Myers felt that the most useful specifications for loudspeakers are coverage angle, sensitivity and power handling. He also mentioned that some loudspeaker advertising was controversial. He felt manufacturers have product lines that are too crowded and have too many models that are similar. He hopes the future brings more modular speaker packages that are easy to install and that provide real high end performance.

Doug Button noted that the customer is more demanding than ever and coupled with this is the low cost measuring systems that can verify or expose published specifications. He sees a trend toward higher Q systems resulting in high power density. He observed how the line between speakers, electronics and speaker enclosures is beginning to blur as systems become more integrated. Meanwhile, manufacturers are beginning to incorporate statistical process control to produce more consistent quality.

Jim Postlewaite spoke about the importance of standardizing loudspeaker data, especially as it relates to sensitivity, polar pattern and power handling and that this data should be available for use by the various computer predictive programs. Similarly, 3-D speaker drawings in

AutoCad would also make the life of the consultant easier.

Dave Carlson focused on the conflicts associated with the various aspects of speaker system design such as appearance, mechanical installation, acoustical performance, cost, weight, and other factors and sees speaker design as the art and science of balancing those diverse factors. He sees a trend in the desire for more performance data and the need for the industry to come to consensus on how to define and measure speaker parameters.



MIKE LAMM (AT PODIUM) OF ATLAS SOUNDOLIER COORDINATED AND MODERATED THE BLUE RIBBON PANEL ON THE COMMERCIAL LOUDSPEAKER INDUSTRY AT THE SPRING ALMA SYMPOSIUM HELD DURING THE NSCA IN ST. LOUIS.

Ingolf de Jong spoke of the importance of quality and dependability and the need for packaging that dependably protects the speaker in shipment. Also vitally important is responsive customer service support. He concurred with the other panelists on the need for uniform measurements and specifications and that information should be available via the Internet and fax on demand.

Lively audience panel crosstalk followed the panel discussion mainly focusing on the same two points shared by all of the panelists — the need for uniform specifications for speaker parts and standard, accurate measurement of loudspeaker performance specs. This certainly underlines the importance of the work of the ALMA Standards committees and future panel discussions. ★

Standards Committee Notes

The Spring Standards meetings in St. Louis attracted a large number of dedicated professionals. Among those present were Ingolf DeJong; Dan Field; George Johnston; Dave Carlson; Dan Digre; Jim Hunter; Dave Goryl; Stewart Renner; Steve Loberger; Greg Seidel; and Dennis Smith. The topics included high resolution spider deflection tests, review of new speaker power test standards, and some minor changes in the IEC 268-5 specification.

New possibilities for standards work were identified in the course of this meeting and in the ensuing forum session including: a standard format for loudspeaker system data; a standard for the measurement of subwoofer power amplifiers; ALMA standard voice coil dimensions and a standard method for driver sensitivity measurement. *We are in need of people to take the lead in writing and distributing drafts for these proposed standards. Are you or someone in your company interested?*

The Component Subcommittee will meet in Las Vegas at 10:00. Agendas will be forwarded to committee members.

If you would like to discuss any aspect of standards or want to become a member of either committee, please contact Greg Seidel, 708/395-5141 for the Components Subcommittee or Dan Field, 317/587-5260 for the Systems & Drivers Subcommittee. ★

ALMA is the day before CES exhibits begin!

AMERICAN LOUDSPEAKER
MANUFACTURERS ASSOCIATION
3335 N. Arlington Heights Road, Suite E
Arlington Heights, Illinois 60004



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ALMA 1997 INDUSTRY HAPPENINGS

NOVEMBER

AES 101st Convention
Los Angeles
NOVEMBER 8-11, 1996

JANUARY 1997

ALMA Winter Symposium
Las Vegas
JANUARY 8, 1997

CES
Las Vegas
JANUARY 9 - 12, 1997

NAMM
Anaheim, CA
JANUARY 19-21, 1997

AES 102nd Convention
Munich, Germany
MARCH 22 - 25, 1997

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before CES exhibits begin!**

ALMA Membership Information

For membership in ALMA, an entity must be a corporation, a firm or an individual engaged in North and/or South America in the manufacture of loudspeakers or loudspeaker systems or a supplier of raw materials, equipment or services used in the manufacture of loudspeakers.

Categories of membership

-
Corporation – \$500.00
-
Subsidiary of full dues paying Corporation – \$200.00
-
Independent Consultant/Engineer – \$75.00 (non-voting)

Note: Membership is automatically included when a non-member registers for a table top display or symposium presentation at Annual Symposium

To join, contact ALMA, 3335 N. Arlington Heights Road, Ste. E,
Arlington Heights, Illinois 60004
Tel: (847) 255-3003 Fax: (847) 577-7276



Another year has gone by and our winter ALMA Symposium / Display at CES is almost here. This year our meeting will be held at the Riviera on January 8, 1997. There is a standards committee meeting from 10:00 A.M. to 12:00

P.M. We will be on our own for lunch. The General Assembly meeting will start at 1:00 P.M., although exhibits will open at 10:00 A.M. in order that attendees have plenty of time to meet with exhibitors. We will be having elections for President, Vice President and some Board positions. Also during the General Assembly meeting we will be honoring two of our Senior members by presenting them with our new Board Emeritus Award. Claude Smith, CEO of NuWay and Phil Williams, V.P. of Rapid Die and Molding. Neither of them could attend our NSCA meeting last spring when we were going to present these awards. They have been actively involved with ALMA and have given many years of service to developing ALMA and furthering the American loudspeaker industry. Our main topic of the symposium will be Dimensioning and Tolerancing of Soft Parts. We feel this topic needs to be presented to our group because it impacts all aspects of loudspeaker construction. It would be a great improvement if we could agree on how we define and measure our parts. Also understanding the dimensioning capability of our parts will help improve the quality of our designs, which in turn will make them more robust. We hope you will come and take part in the discussion. At approximately 3:00 PM we will start the presentation of the symposium papers, and at 4:00 there will be refreshments, socializing and more opportunity to peruse the exhibits.

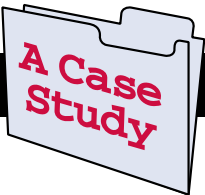
This year my position as President expires. I want to thank the board and Andy Larsen for their support and help in making the last four years a success for ALMA. We have grown significantly as an organization during these changing times. We have an excellent Board with a strong commitment to ALMA's future. I am looking forward to continuing to serve on the Board. The future of the industry looks great and I know that ALMA will continue to grow and become even more important as a resource to you in the future. ★

NEAL BAITCHER, INDUSTRIAL COMPOSITES, INC.

ALMA NEWS

American Loudspeaker Manufacturers Association

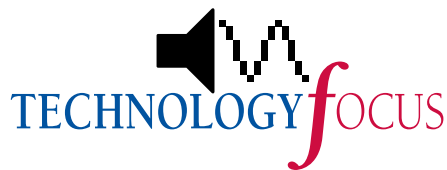
Ferrofluids in Coaxials



BY MIKE KLASCO OF MENLO SCIENTIFIC

Most speaker engineers know that ferrofluids are a useful tool for increasing powerhandling in tweeters. In fact, it is not so easy to find a tweeter that does not use ferrofluid. But ferrofluids are a more powerful and versatile design tool than just preventing tweeter burnout and this can be seen from this case study.

Ferrofluids are now commonly used on cone midranges and in the last few years on autosound and pro-sound woofers. But in the case of coaxial speakers, ferrofluids are a particularly unique fit.



I recently worked on a series of coaxial speakers where ferrofluids were engineered into the design from the start to overcome what are otherwise problematic aspects of coaxes. Developed by Electronic Auto Systems (EAS) of El Monte California, these are true coaxial speakers with the compression driver mounted to the rear the woofer's magnetic structure. What normally would be the woofer pole piece vent is now an exponentially expanded high frequency horn throat. The woofer's curvilinear cone also functions as the horn for the compression driver.

Coaxes are very handy speakers. For stage monitors they let the designer put a bigger woofer into a smaller box (the woofer does not have to give up size in order to share the baffle with a horn). Performers do not like being blocked from view by a bulky monitor. In club sound systems and studio monitors, the axisymmetric coverage (equal in horizontal and vertical) provided by coaxes that use the woofer's cone as the horn tends to have a very smooth sound. Having a point source for all the sound does not hurt stereo imaging either! Aside from space savings, smooth sound, and strong stereo image, there is the cost savings on using the woofer cone as the horn (although a number of coaxes use a separate horn in front of the cone).

ALMA Member, EAS, is a west coast OEM supplier of woofers for aftermarket autosound and Public Address. EAS combines a boutique operation's benefits of short runs, high flexibility, and US assembly with the wide tooling and resources of an off-shore tonnage manufacturer. EAS recently expanded into a new and larger facility with two production lines.

So why are ferrofluids especially useful in coaxes? And what are some of the design aspects that ferrofluids solve that have previously made coax development so problematic? To begin with, we mentioned that the compression driver uses the vent in the woofer's pole piece as its sound path to the horn — so the forced air cooling provided by the vent is

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ALMA Mission statement

The Association will consist of members who have common business interests. Regarding these interests, ALMA members have stated that the following are to be the foremost goals of ALMA:

- 1 To engage in research for improving loudspeaker quality;
- 2 To establish standards for the loudspeaker industry;
- 3 To collect and disseminate statistical data;
- 4 To encourage public acceptance of the industry's products;
- 5 To bring manufacturers and suppliers together; and
- 6 To lend its offices in matters of arbitration.

Voice Coil Diameter Sizes

How big is a one inch voice coil? At first glance the answer looks trivial and obvious; as in "Who's buried in Grant's Tomb?", or "How many cans in a six-pack?" Based on long-standing industry data, there are at least 16 different answers to that question. A review of inside VC diameters reported to ALMA in a study done in 1978 revealed that a one inch voice coil could be anywhere from 0.990 to 1.032 in ID. Likewise, there are 13 different 3/4" voice coils and 19 different 1-1/2" voice coils.

Okay, so what? Why worry about it? The big deal is this: if we have 16 different standards, we have no standard. And no standard means that there is no guarantee that supplier "A's parts, and supplier "B's parts are going to fit together. Further, when otherwise identical parts are used in slightly differing voice coil diameters, what results is a non-optimum fit, and most likely a change to the wrong part to make it fit. This is all extraneous detail work that has no payback.

Do our member companies have enough available personnel that we can afford to be this individualistic? No, I don't think so. Is trouble-shooting ill fitting parts the best use of our available design talent? Certainly not. Yet we've lived with this problem for many years. Within the various member companies, the problem is not clearly obvious. Companies that have been in the

business for 30 years have stable tooling, and a degree of standardization that serves local needs. The design manager might observe that his spider and cone part designs all fit his voice coils very well. He no doubt remembers that it took a long time to get it that way too. When he calls a part supplier to get a new part for a prototype both he and the supplier know what his standard size is. Sometimes the part supplier tells him he's got the same thing in a 1.014, but most of the time he doesn't. It doesn't matter, after all, because his customer can't use it anyway. So the supplier sets about tooling the new part which is "sinfully" similar to one he's got on the shelf. The resulting part works fine, and the three week lag time for the new tooling is built into everybody's schedule. The only problem with that scenario is that the customer's competitor has already presented his prototype and has a leg up on the order.

None of us has the luxury of these three weeks in the ever shortening product development cycle. Do you think a company that can deliver a prototype in three weeks has an advantage over one that does it in six? No question about it! What about the members who buy loudspeaker drivers? Could they use those extra few weeks to get a leg up in their market? Sure could!

We all may see the advantage of voice coil size standardization. After all, agreeing to a given VCID goes a long way toward standardizing every other part in the

speaker, from the voice coil, the front plate; the back plate; the spider and cone ID's, the whizzer and dustcap ID's, etc. All are directly influenced by the voice coil diameter. Just about every critical part has some sensitivity to the VCID. So, by simply locking in a VCID, we can solve this problem cleanly and effectively. Right?

I know what comes next the design manager will be in favor of standardization: as long as the standards are the same as the present tool sizes. In truth, this is the sole reason why an agreement has not been achieved before now. In order to conform with a "standard", the nonconforming companies would have to change many thousands of dollars in tooling, from voice coil mandrels to centering fixtures. This is an "extraneous" investment. The companies that have mature tooling are not going to want to change.

Before we accept this and move on, I'd like to get answers to some relevant questions: What is the cost of the engineer's time, the one that is constantly having to review dimensional drawings, make multiple fit adjustments to the pads, and spend 90% percent of his time solving trivial problems that crop up because of the precise fit of two pads to each other. Surely this is not an effective use of the engineer's time... Is there any other electronics manufacturer that has to decide, for example, what the pin thickness is on an op

amp, or the diameter of a resistor lead? No, that sort of thing has been decided long ago with industry standards. The speaker industry has been happy to reinvent the wheel year after year. What is the cost to the vendor for having to develop a new tool for every part he makes? That cost shows up in everyone's bottom line. The cost of changing a few fixtures may be small in comparison to the longer lead times and additional hidden costs of the "custom" part.

Finally, what is the cost in lost business due to longer lead times? This is an elusive yet very real figure owing to the cause and effect of modern early to market trends. How many times will a company's special tooling requirements cause a loss of business because of this additional cycle? For most of us, once is too many.

Even with these figures, it may result that the cost of changing tools is not immediately justifiable, I'd be the one to say that the only reasons to do this are economic ones... but there must be one or two sizes of voice coils in every factory for which changes would be beneficial.

Think of the advantages there would be in using standard sizes. When "give me a one inch voice coil..." is a much shorter conversation, and the resulting coil matches the spider ID without fail. The engineer could order parts for a prototype on Monday morning, actually build something on Wednesday, and show it to the customer on Friday. Tell me they can do that in Korea! ★



GERTNER AUDIO

Gertner Audio is known primarily for its CELTECH (Clarity Enhanced Loudspeaker Technology) Series high end loudspeakers. Gertner Audio was founded in 1989 by Stephen J. Gertner, Jr., in his search to develop speakers that sound accurate and did not fall apart under actual usage. Much of his design philosophy was formed while attending The Pennsylvania



State University where competition between stereo systems was common. These were not sound quality competitions, but were enough to show performance flaws in almost every major brand of home speakers being manufactured at the time.

Gertner gained a perspective on quality loudspeaker manufacturing when he came across a pair of older home speakers made by a company that specialized in prosound speakers. These

CONTINUED FROM FRONT PAGE

lost and must be made up another way. Ferrofluid's 4x higher thermal conductivity than air serves this requirement.

Less obvious is the tendency of coaxes to have rubs. Two factors contribute to this; one is the open dust cap (or no dust cap at all) as the mids and highs must pass through this opening. On most woofers the dust cap provides some structural integrity to keep the voice coil round. In fact, on some high power woofers two dust caps are used, a large cosmetic dust cap on the cone and a stiff heavy dust cap mounted directly to the bobbin to maintain roundness even when the cone is flexing excessively. With only a flimsy dust cap, keeping the voice coil from flexing and rubbing against the pole piece can be a problem. A related problem is the pole piece typically has a horn extension so that there is a smooth transition from the top of the pole piece to the apex of the cone. This exten-

sion worked remarkably well under demanding conditions. Sound quality did not have to come at the price of endurance.

Eventually Gertner obtained an OEM account. Over a period of years he developed the sound to not only be accurate but to work consistently within various home environments under many different operating conditions. A solution was found in a highly efficient combination of quality drivers, circuitry and the development of a patent pending angled port design.

It has been several years since the national debut of the CELTECH Series. The original facility in Easton, Pennsylvania has been replaced by a much larger facility in North Carolina because the climate is better and there are more resources for cabinets. This has proven to be the most difficult area to develop. That search for improvement continues.

The CELTECH Series represents the ideals that led to Gertner Audio. They are loudspeakers of exceptional quality and design. They range in price from approximately \$1000 to \$4,800 per pair. While their "footprint" is as small as possible, they range in size from 24 to 50 inches in height. They are not only made in the U.S.A.,

but 90% to 100% of the parts are also manufactured in the USA.

sion is about 2" long. If you have ever tried extending the pole piece of a woofer even just a ¼" above the top plate (to increase linearity), you will have noticed that voice coil rubs increase quite a bit. This is because the slightest voice coil rocking is magnified by the time the bobbin reaches the extended pole piece — as it is getting quite distant from the spider.

For both the bobbin torsional resonances, flexing and rocking, ferrofluids effectively suppress these phenomena due to their liquid bearing characteristics. The heat transfer benefits of ferrofluids avoid voice coil overheating — so the coil does not expand and rub.

To insure compatibility with the ferrofluid, Hisco P450 polyimide composite is used with QUIN-T's TufQUIN collar material. Neither of these materials absorb ferrofluids. The magnet wire is 200°C rated and wet wound with

Currently, they are sold manufacturer direct but will soon be available in the dealership market. Gertner is seeking manufacturers representatives to carry the line. Other lines are under development including a line for home theater applications.

The speakers are designed to be time enduring, highly efficient, electrically stable, room response friendly and have realistic imaging and low distortion. The speaker drivers use cloth surrounds and heavy cast frames where possible to help maintain linear excursion and endurance overtime. The cabinets are made primarily of MDF to reduce formaldehyde emissions from earlier particle board cabinets. They are assembled before they are finish veneered. This allows them to build a very high strength cabinet with an almost seamless appearance and expertly matched wood grain. The crossovers are hand wired using high grade capacitors and inductors. The systems are individually tested before shipping.

For more information, contact Gertner Audio at 800/927-7805.★

Brady's high performance adhesive. Splashing due to cavity pressure is avoided by magnetic structure venting through the top plate.

The 1000 series is available in a 10" and a 12", has a 2" diameter woofer voice coil with or without a screw-on compression driver. The "entry level" package optionally includes a Motorola large format compression driver and cross-over network.

The 2000 series is available in a 12" and a 15", has a 2.5" diameter woofer voice coil with a precision 1.75 inch diaphragm, one inch exit compression driver. The driver is a smooth sounding high performance device with aluminum diaphragm, elastomer edge, copper-clad aluminum flat wire coil — and, of course — ferrofluid.

For further information contact EAS at 818/575-5098.★

The Hilligoss Family

PROJECTED SOUND, INC.

F. O. was quite a remarkable man! In 1949, F. O. Hilligoss decided to build a drive-in theater without any prior experience in construction and without any formal education past high school. He was hired to build a drive-in theater near Greencastle, Indiana. He designed the steel screen tower, surveyed and laid out the



ramps, and dynamited limestone during the field excavation — all this with no prior experience. He spent hour upon hour at the Indianapolis Public Library doing research on all necessary aspects of construction and building. When F. O. opened his theater in the spring of 1950, drive-in speakers and parts for them were extremely expensive. Most theaters lost ten percent due to theft annually. By 1954, he began buying the weather proof replacement drivers from Jensen and began reselling them to other theater owners in central Indiana.

In 1955, F. O. decided that the drive-in theater market needed a better speaker, and by November 1956, he was ready to "go to market" with a line of them. His sons Tom, now President of

the company, and Dick, Vice President, joined him. Tom related how his dad visited him in Texas, where Tom had recently separated from the Air Force. He threw a speaker down on the couch and asked Tom, "How'd you like earning \$10,000 a year selling these things?" Tom was astounded at the prospects. He said, "Only H.L. Hunt, Howard Hughes and Gene Paul Getty earned that much money in a year in those days!" Tom said, "Sure!!" and returned to Indiana to join the company and launch what became a lifelong career. At that time the company name was "Drive-in Theater Supply Company." It became *Projected Sound* in the spring of 1956. All components were made by other manufacturers. They were essentially assemblers of these components. By 1968, they felt they could manufacture a better driver than they were being supplied. They began producing small weatherproof units ranging from three and one half to six inches in size. Another brother, "J", joined the company in 1972 at a point when *Projected Sound* had the lions' share of the drive-in market. The company was even supplying drivers to three or four competitors!

In 1975, with the demise of the drive-in theater looming on the horizon, they entered the OEM field of commercial loudspeakers. F. O. Hilligoss passed away on August 2 that year. By 1983, they began importing loudspeaker components, transformers, etc. Today, the company has over forty eight employees and produces

over five hundred thousand loudspeakers per year of two and one half to twelve inch loudspeakers which are distributed throughout the world. End user applications are usually public address and background speakers, however, many are still produced for drive-in theaters! The Houston Astrodome is equipped with *Projected Sound* speakers.

Tom loves to relate how 2000 of their five inch speakers are used in the subway system in Taipei, Taiwan, when Taipei had over 100 speaker manufacturers of its own to chose from! Another great story is how the Hilligoss group got together last year for a family reunion and his ninety-something year old aunt mentioned how ironic it was that two groups in the family made loudspeakers, prompting the question, "Who else might that be?" As it turns out, Tom, "J" and Dick's great-grandmother was Rachel Cordelia Klipsch!!

With only about 400 drive-in theaters left in the U.S., markets still exist for theater speakers throughout the world, such as South Africa, South America, Rome and Athens! So, if ever you're on vacation in any of these places and decide to go to a drive in, beware that you may very well be listening to a Hilligoss family, *Projected Sound Inc.*, ALMA member product!

For more information about *Projected Sound* products, call 317/839-4111.★

Editor's Farewell Note

It was my pleasure creating and editing ALMANews these past few years, however, I am not able to continue with this task in the future as other job responsibilities take precedence. The board is now tasked to come up with an alternate method of production. It is my hope you will continue to support ALMANews as it is in the best interest of all of us who are members of this association and the loudspeaker industry. Thank you for your support and interest during these last 6 issues! It was fun!

ALMANews Now Accepts Advertising

Another new benefit to members is the opportunity to advertise in ALMANews. Please contact the ALMA office to get a rate sheet, to submit artwork and to determine deadlines. ALMANews is published twice per year. Only "camera-ready" artwork is acceptable.

NEW MEMBERS

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