

## President's Message



You have heard a lot recently about the "NEW" ALMA. What can be so "NEW" about a trade association that is nearly 40 years old? A newly focused

mission statement, new executive management, newly expanded board membership, completely revised by-laws with re-defined membership classes, and twenty new members in the past year, a 29% increase in membership. In addition, the board met this past August for a three day planning retreat and, for the first time, held a regional summit with Northeast U.S. industry leaders. With this commitment to address the needs of the industry, ALMA is moving forth with vision and energy to meet these needs.

One of the key issues to be addressed by ALMA is that of the participation of companies outside of North and South America. Currently the by-laws do not allow them to be members or to exhibit at the symposia. Should ALMA change this policy to become less protectionistic and more global? This hot topic will continue to be addressed in ALMANews and future symposia. Meanwhile, members should be sure to talk with a Board member or Carol Bousquet, the ALMA Executive Director, to register your thoughts and ideas on this subject.

If you are not a member of ALMA, you are missing out on one of the best investments you can make in your company's ability to remain competitive and grow. This is especially true if you are from a small or mid-size company where ALMA can help to expand your "virtual" limits to information access. If you are currently a member, then why not increase the value of your membership by participating on the Board of Directors or on one of the on-going committees? You will find the networking opportunities invaluable.

As my term as board president ends, I wish to congratulate the ALMA board on having the courage to make some tough but important decisions over the past two years. Much of the change has been a direct result of the board's commitment and hard work. Mike Lamm, of Atlas/Soundolier, will become President in January. He has been instrumental in the ALMA turn around and will continue to lead the board in what will no doubt be another two years of dynamic growth.

Thank you for the opportunity to serve and for your support!

**DAN DIGRE**, ALMA President

*MISCO (Minneapolis Speaker Company)*

# ALMA AMERICAN LOUDSPEAKER MANUFACTURERS ASSOCIATION News

Volume 5 / Issue 2  
Fall / Winter 1998

## Test and Measurement of Loudspeakers: a Lesson in the Art of Compromise

By Richard Guy

**T**ESTING AND MEASUREMENT OF LOUDSPEAKERS IS A TOUGH SUBJECT TO DISCUSS IN A FEW WORDS, as testing procedures are as varied and complex as the numbers and types of loudspeakers available. Yet at every stage of the design and creation of a driver or the design of a complete loudspeaker system, the need for accurate testing and measurement is crucial. Successful loudspeaker design is an exercise in juggling many complex and inter-related parameters. Not only is it like trying to keep 5 or 6 balls in the air at once, but all the balls are of differing sizes and weights! Balancing of the importance of many interdependent characteristics soon teaches the successful designer the fine art of compromise.

For those involved in manufacturing parts for the loudspeaker industry, test and measurement is usually a reasonably straightforward matter of dimensions, weights, volume, unit-to-unit and batch-to-batch production consistency. Is it the right mass, are coatings the correct thickness, etc? Many's the component designer who has wished he could order spiders with a known and repeatable compliance figure. For the manufacturer of speaker softparts such as spiders, the standard test has been a static measurement of deflection, given a specified mass. This usually results in spiders being classed as soft, medium and stiff (and maybe one point in between each of those). Neither of these 'measurements' plugs easily into design formulas.

Variations in soft parts results not only from the obvious differences in raw materials and processing changes, but also post forming treatments, and the incorporation of additives into or on the parts. All of these variations in manufacturing and subsequent treatments affect the performance of the loudspeakers, often improving one characteristic at the expense of another. And, these variations get magnified and multiplied when loudspeakers are assembled.

This leaves the designer with the clear need to test and measure prototype loudspeakers in order to select the optimum combination of soft parts, post assembly treatments, and, even the very selection of adhesives. The questions are: What to test? How? And, what can be done to ensure that test results are reliable and repeatable?

Reliable and repeatable tests start with stable measurement conditions. Several key loudspeaker measurements vary with changes in temperature and relative humidity. While this seems simple and obvious, most loudspeakers are more sensitive to these changes than you are. A five or six degree change in temperature can result in a serious shift in suspension compliance.

It is also important that loudspeakers are thoroughly exercised before beginning tests. Use a low-frequency warble tone or sine wave at low frequency to 'run-in' the (ideally) unmounted loudspeaker prior to testing. This exercise should be at least two hours, and longer is better. Use a level that pro-



## Executive Director's Message

AS OF SEPTEMBER 1, 1998 WE COMPLETED THE FIRST YEAR OF MANAGEMENT TRANSITION. Thank you for your patience, participation and support this past year. As you can tell by the changes in this issue of *ALMANews*, our newsletter as well as the association is changing and growing fast!

One of our primary efforts has been focused on enriching the only trade association in existence for the loudspeaker industry by expanding the ALMA membership. This is not the game of quantity but definitely is one of quality. The more companies and individuals participating and owning a sense of "membership" the better the quality of the interactions and programs for all. Again I welcome the many new members who have joined ALMA this year and thank those members who renewed memberships.

I sincerely hope that one of your membership goals (new and old members) includes active involvement in our organization; we find the greatest overall satisfaction is derived from active members. Utilize all the services we offer; we cannot effectively serve you as a support organization, a networking medium or an educational and career development resource without your active participation. Standing committees include Symposium Programs, Membership Development, Standards Development, Financial Development, Exhibitor Development, Market Research, Education and Nominations — please join one! We can always use your help!

Otherwise, the primary request I receive in the ALMA office pertains to the need for market statistics. The board is committed to investigating the feasibility of conducting a market study and will report the status of any developments in this area.

A big thanks to R. Stewart Renner of Bose Corporation, an ALMA board member, for his dedicated volunteerism setting up the ALMA Web site! While in its earliest stages, we all recognize the great potential for this medium in the world loudspeaker industry. *We still need our members to supply a fifty word description of your company for use in the on-line Buyer's Guide and hope you will provide a link to the ALMA Web site in your company Web site too.*

Last, but certainly not least, I hope you'll join me in giving Dan Digre the pat on the back he very much deserves as his term as President of ALMA comes to an end with the January elections. It has been my personal pleasure working with him over the years and I know the Board echoes the sentiment — he's done an outstanding job as an advocate for the growth and future of our association. And, he has done it with generous doses of good humor and with gracious aplomb. Thank you Dan!

We are very excited about this Winter program which is the direct result of your survey suggestions. I hope you will attend. With many thanks to our *ALMANews* advertisers for the success of this issue — see you in Las Vegas! ★

CAROL BOUSQUET, *Executive Director*

ALMA, 39 Ames Road Groton, MA 01450 tel: 978/448-5658 fax: 978/448-6851 eml: cbous@ma.ultranet.com

**NOTE:  
NEW VENUE!**

MEET THE "NEW" ALMA!

AMERICAN LOUDSPEAKER MANUFACTURERS ASSOCIATION  
**ALMA**

# Winter Symposium

**JANUARY 5 and 6 1999** The Tropicana Hotel, Las Vegas, Nevada

### TUESDAY, JANUARY 5, 1999

- 12:00 - 5:00pm Board of Directors Meeting — The Tropicana Hotel
- 7:00 pm Members-only Dinner — Yolie's Brazilian Steakhouse, 3900 Paradise Rd., Las Vegas

### WEDNESDAY, JANUARY 6, 1999

- 8:00 am - 6:00 pm Winter Symposium, The Tropicana Hotel — South Pacific Ballrooms 3 and 6
- 8:00 - 9:30am Component Standards — Tradewinds
- 9:30am Education Committee Meeting — South Pacific Ballroom

### WEDNESDAY, JANUARY 6, 1999 (continued)

- 10:00 - 11:30am Standards Committee Meeting — Tradewinds
- 10:00am Exhibits Open
- 11:30 am Buffet Lunch
- 12:30pm General Assembly Meeting
- 1:15pm Technical Papers Presentations
- 2:15pm Break
- 2:30pm Panel Discussion: "Loudspeaker Test & Measurement: What to Test & Why"
- 5:00pm Networking Reception

**SAVE MONEY — REGISTER BY DECEMBER 5, 1998**

duces plenty of excursion, without thermal damage to the woofer. Allow it to return to room temperature (at least one hour) before testing. The effect of this preconditioning is to stabilize the resonant frequency which usually shifts 5 to 15%.

A wide variety of hardware and software testing systems are available today, ranging from inexpensive tester boxes (\$89.95) for a few Thiele-Small parameter measurements (available from mail order catalogs) to sophisticated computer-based measurements systems such as Melissa, LMS, AP System 1, Bell Lab's SYSid system and for those with unlimited budgets, B & K. While ease of operation and the nature of the measurements varies widely among these systems, they all share the common benefit of reducing hours of tedious work in an expensively equipped lab, to a few minutes and with hard copy output too!

Driver tests should include the obvious: frequency response measurements, free air resonance and impedance curves. Thiele-Small parameters are also valuable to assist in applications engineering (and to be certain that the loudspeakers are working in a 'useable range' for the enclosure types desired.) Harmonic distortion measurements and waterfall decay plots are also very valuable tools for examining and optimizing selection of materials, post-assembly dampening treatments and the selection of ferrofluids.

One of the best of the qualitative tests yet devised is the "spectral contamination" profile. This test correlates a graphic result with what we hear very well. Excellent sounding drivers perform very well, and while poor drivers are exposed mercilessly.

Major new advances in cone technology are

showing up in the marketplace with new composites appearing at almost every trade show...and more are coming. We are measuring new composite speaker cones in our lab today with 1 to 2% of the harmonic distortion of conventional paper or polypropylene cones together with frequency response that is smooth and extended and with reductions in moving mass that result in output increases of 2 to 3 dB! Accurate instrumentation and testing allows the driver engineer and the systems designer to incorporate these advances into their new product designs, and optimize the results in a timely and cost effective manner. ★

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*Richard Guy is a consultant member of ALMA, and operates a consulting engineering firm specializing in the design and measurement of loudspeaker raw materials, speaker systems, components and speaker system design. He can be reached at Tel: 925-743-8834 or by email at rickspro@value.net*

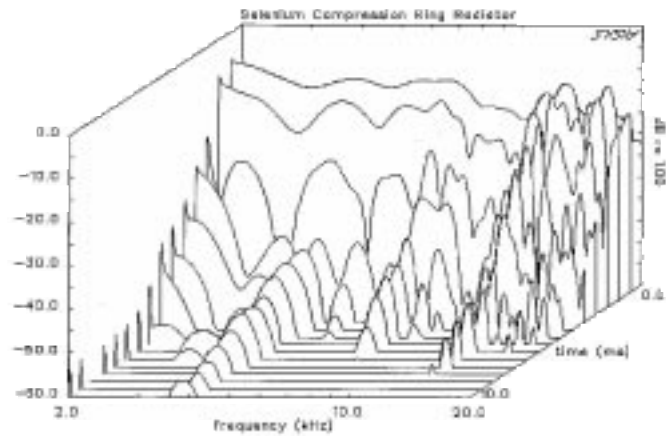
## How We See What We Hear

Measurement systems today are no longer limited to static tests such as frequency response or tones. Now it is easily possible to measure the "dynamic" characteristics of a design or material. For example, most audio professionals are aware of the sound of the classic ring radiator tweeter, and the sound of titanium diaphragms. Their resonant colorations quickly identify them. Long after the transients have gone, the ringing remains...like the bad aftertaste of a cheap sodapop.

Examination of transient performance, and waterfall decay plots quickly help the designer find resonant problems that introduce this undesirable distortion. Dampening compounds can be added to loudspeaker surrounds, materials changed, and ferrofluid for dampening added to the voice coil gaps.

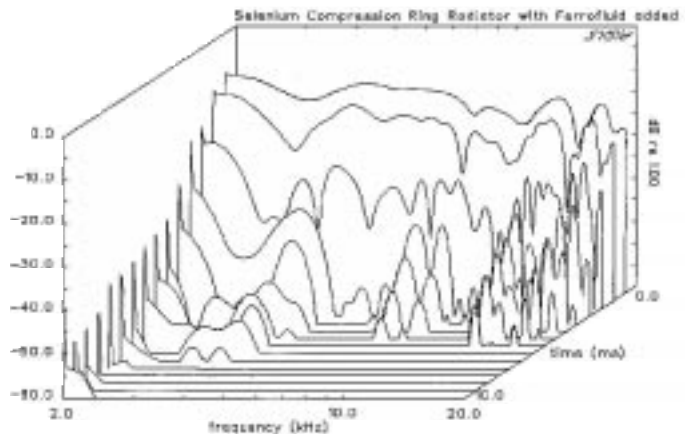
The following graphs illustrate typical measurement conditions, and comparative test results showing an improvement. The device under test was a compression type ring radiator manufactured by Selenium, one that utilizes a titanium diaphragm. The dynamic signature of this tweeter was pretty much what you would expect from titanium.

The first graph shows the frequency response of the stock unit, with each successive curve showing the decay in slices of time for 10 milliseconds after the initial impulse. A resonance is apparent at about 3.8 kHz, and the high end response above 10 kHz shows very little decay during the first five slices in time.



Addition of dampening material to the titanium surround made little difference. Space limitations preclude inclusion of that graph. However, the addition of a small quantity of ferrofluid, as shown in graph two damps out the resonance at 3.8 kHz, and by the third slice in time has substantially reduced the high frequency ringing of the titanium.

These graphs are an illustration of new techniques of performance measurement. Looking at minute details under the 'microscope' permits fine tuning the performance of transducer designs and materials.



# STANDARDS PROGRESS

Daniel J. Field,  
ALMA Standards Chair  
VP, Engineering and Product  
Development, Klipsch, LLC

*Note: The next Standards Committee meeting is scheduled for 8:00 a.m. on Wednesday, January 6, 1999 at the ALMA Winter Symposium at The Tropicana in Las Vegas. It is open to members and non-members — all are welcome and invited to attend and participate.*

The Spring '98 ALMA standards meeting was at overflow capacity, and we covered quite a lot of ground, including rigging safety, power testing, polar response resolution, and metal parts specification. But first, some more recent developments:

The Federal Trade Commission has advised in a ruling on July 9th that the 1974 FTC Amplifier Power Rating does in fact apply to sub woofers and to multimedia speakers. This conclusion is noted as "tentative", pending the outcome of a notice of proposed rule making that outlines several additional changes:

- ① Changing from one third, to one eighth the amount of power applied during preconditioning;

STANDARDS PROGRESS CONTINUED ON PAGE 7

## CALL FOR PAPERS/ PRESENTATIONS

### 1999 Spring ALMA/NSCA Symposium

ALMA is issuing a "Call for Papers/Presentations." This call is extended to both symposium exhibitors and non-exhibitors. Up to four presentations, 12 minutes each will be chosen.

Topics must be regarding a commercially viable technology, process, or product, and be specifically related to loudspeaker design or manufacturing. Presentations may cover a new technology or be an excellent tutorial of an existing one.

*The panel topic is "Test and Measurement of Loudspeakers: Hardware and Software", therefore papers relating to this topic are solicited and will be given special consideration, although all paper topics are welcome.*

### Criteria for proposal submission:

- Proposal with abstracts/summaries must be received by February 28, 1999.
- Must consist of a description of 75 words or less suitable for reprinting in pre-symposium promotional literature
- Abstracts must include a suggested title
- Must list three specific objectives of the presentation
- Must include names, addresses, phone numbers and a short biography of presenter(s)
- Must include any special audio/video equipment needed
- Must be able to be presented in 12 minutes
- Presenter must be able to supply copies of presentation to symposium audience (approx. 150 people)

Selected presenters will be notified by March 15, 1999

Fax, mail or email proposal and abstracts to: ALMA, 39 Ames Road, Groton, MA 01450, fax: 978/448-6851, eml: cbous@ma.ultranet.com

## ALMA Winter Symposium Panel "Test and Measurement of Loudspeakers: What to Test and Why"

As a result of past symposium survey results, the ALMA Winter Symposium, at the Tropicana, January 6, 1999, will feature a panel discussion, the first in a series, on the "Test and Measurement of Loudspeakers: What to Test and Why". The panel will feature Dr. Floyd Toole, Corporate VP Engineering for Harman Industries, Don Keele, Project Engineer, Telex Communications (formerly EVI Audio), Joe D'Appolito, President, Audio & Acoustics Ltd. and David Moulton of Moulton Laboratories. Mike Lamm of Atlas Soundolier and the ALMA Board of Directors will moderate.

### Winter Symposium Panel "Test and Measurement of Loudspeakers: What to Test and Why"

Come hear the industry's most prominent experts featuring Dr. Floyd Toole, Corporate VP Engineering for Harman Industries, Don Keele, Project Engineer, Telex Communications (formerly EVI Audio), Joe D'Appolito, President, Audio & Acoustics Ltd. and David Moulton of Moulton Laboratories.

Panelists will examine concerns like: How do we hear? What do we hear? Psycho acoustics. Why do we measure? How do measurements relate to audio quality? How have measurements changed over the years? Are we measuring the right things? Can we measure the right things? Which measurements are most meaningful? How much accuracy and resolution are important? How do design, specification, and production measurements differ?

ALMA is embarking on an in-depth series of programs on the subject of test and measurement in the loudspeaker industry. This series of three or four symposia will be presented over the next two to three years. The topic is large and the goal is to be thorough. The ALMA program committee will continue to assemble some of the country's most prominent experts to lead these program discussions.

### Spring Symposium, Nashville, April 28, 1999

The Spring Symposium panel discussion, scheduled the day before the NSCA at The Opryland in Nashville, April 28, 1999, will continue with the focus on "Loudspeaker Test and Measurement: Hardware and Software". That panel will examine what hardware and software are available; what kinds of measurements can be made; what degree of accuracy is possible; what measurements are unique to the various systems; what cost and complexity is involved; and what the strengths and attributes of the major measuring systems are.

The Spring Symposium panel participants will be announced at a later date. Both Symposia will feature powerhouse panelists, prominent experts in their field of specialization which will be most provocative and educational to all in the loudspeaker industry.

For more information or to register to attend or exhibit at the January Symposium use the registration forms included in this issue of ALMANews, visit the ALMA Web site at [www.alma.org](http://www.alma.org) or contact Carol Bousquet, ALMA Executive Director at 978/448-5658 or email her directly at [cbous.ma.ultranet.com](mailto:cbous.ma.ultranet.com). ★

## ALMA Mission statement

To provide the North and South American Loudspeaker Industry a forum for the exchange of technical information to continually improve the design and manufacture of loudspeakers and related products.

## ALMA NORTHEAST SUMMIT A SUCCESS

by Richard Field, Klipsch LLC

*Editors note: The first ALMA Northeast Summit was held August 20, 1998 near Boston during a 3-day board of directors retreat. The goals were to introduce the new ALMA to area loudspeaker-related companies, gather feedback on what attendees expectancies are for ALMA and to solicit new members. Because of its success, the board agreed to hold this event and others like it on a regional basis in the future.*

I was extended the opportunity to join with the ALMA Board of Directors at the ALMA Northeast Summit sponsored by Ferrofluidics on August 20 at The Westford Regency Inn and Conference Center. Because of my novice status relative to the organization, I kindly accepted the task of writing a brief summary of the experience from a visitor's perspective. (Hey, I thought — I can write about things I don't know about with the best of them.)

### **Those in attendance at the first ALMA Northeast Summit included loudspeaker systems and driver manufacturers, component manufacturers, industry consultants, assembly machinery, academic and publishing professionals.**

The summit meeting began with board president Dan Digre addressing the ample gathering of members (both active and potential) from all disciplines of the loudspeaker industry. Those in attendance at the first ALMA Northeast Summit included loudspeaker systems and driver manufacturers, component manufacturers, industry consultants, assembly machinery, academic and publishing professionals. Dan focused the group by stating that one of ALMA's core objectives is to create both a network for the unique disciplines represented and a forum for information exchange.

Gary Cohen represented the Electronics Industries Association (EIA) on the potential for conducting a marketing study of the loudspeaker industry. He said that the number one benefit of EIA membership is access to market research. Board member Mike Lamm reported on past programs which have focused on the dimensioning and tolerance of soft parts, trends in home installation, quality, magnetic materials, active noise cancellation, ISO 9000, NAFTA, and more. As program chair he discussed the topic for the winter symposium *"Loudspeaker Test and Measurement: What to Test and Why"*.

Steve Tatarunis of Ferrofluidics Corporation headed the lively topic of higher education for loudspeaker engineers. An active discussion proceeded on the feasibility of some type of academic certification for loudspeaker design. Those present seemed in agreement that this would be a good thing. Some options discussed were BS & MS degrees and certificates.

The very long list of required subjects for study competed with the economics of such a project for discussion time. This topic looks like a (pardon the pun) no-brainer for future ALMA consideration.

Mike Lamm gave an update on ALMA standards. Ed Dell (Audio Amateur) expressed interest in marketing the EIA/CEMA compact disc for loudspeaker testing. Carol Bousquet concluded the meeting with an update on ALMA membership and its budget.

At the end of the meeting, attendees had the opportunity to "network" and exchange information about the day's events. The comments I heard about the summit were all positive, ranging from "well done" to "should be bigger."

## COMPANY FOCUS

### Oersted Technology

For more information contact Oersted in Tualatin, Oregon at 800-311-9058.

Oersted Technology, based in Tualatin, Oregon, manufactures magnetizers, magnetizing fixtures, magnetic instruments, and other equipment for industry. Oersted's magnetizers include unique, patented features, such as electronic capacitance switching (ECS) and a built-in peak current meter for unequaled flexibility and control. Oersted Technology also makes completely automated systems, computer-controlled for high-volume production. The company is committed to the needs of the speaker industry and has supplied equipment to some of its most innovative and successful manufacturers.

For the speaker industry, magnetization of the newer high-energy permanent magnets presents some considerable difficulties. Older materials such as Alnico are relatively easy to magnetize (and, unfortunately, they are also easy to accidentally demagnetize as well). Oersted often receives parts from manufacturers made of ferrite which have been magnetized using equipment originally designed for Alnico and find that upon remagnetization they become stronger by as much as ten percent, or even more. Methods which are strong enough for Alnico may be marginal for ferrite and are completely inadequate for Neodymium-iron. There certainly are ways to do it using more advanced methods.

Oersted's ECS technology allows the operator to adjust the capacitance to the requirements of a fixture designed specifically for the magnetic material being used, thereby reducing heat and increasing cycle rate. ECS also provides the user the flexibility to magnetize a variety of magnetic materials with one machine, which is important for companies who are making several different parts or who are considering upgrading to a newer magnetic material. We hold the patent on ECS magnetizers, and are the only company in the world to make equipment allowing electronic control of capacitance as well as voltage.

In order to magnetize a permanent magnet, a magnetic field must be produced which is above some limit and is able to coerce the magnetic domains of the part into the required state. Once the required field strength is reached, magnetization takes place in a very short amount of time, perhaps on the order of one-hundredth of a millionth of a second. The peak magnetizing pulse may have to exist for a longer time, however, in order to overcome electrical eddy currents. These are set up by the rate of change of magnetic flux through a conductor, such as the steel structure of a speaker. Ferrite magnets are good electrical insulators, but neodymium-iron conducts electricity well enough to sometimes cause eddy-current problems within the magnet itself. Being able to change the magnetizer's capacitance is helpful in these situations, because it allows one to vary the pulse width as well as the height, to overcome eddy currents with increasing capacitance, or to reduce heating with less capacitance. Oersted's magnetizers also have a special circuit which measures the output current of each magnetizing pulse, which may be thousands of amps, and reports its peak value on a panel meter after the pulse is complete. If anything is happening to reduce the pulse height (such as fixture heating which increases the electrical resistance and leads to a lower peak current) the operator can see the result on the current meter and take corrective action. Oersted's are the only magnetizers produced which have this capability built-in.

A quality speaker product depends not only on a good design, but also on the full magnetic saturation of its magnet. Oersted is happy to magnetize sample production parts and determine, through measurement, what equipment is necessary to achieve proper saturation. Because the company offers both standard magnetizers and custom-designed automated systems, it is able to provide magnetizing equipment to companies with prototype speaker designs and to high-volume speaker manufacturers. ★

The following morning found the Board of Directors meeting at ALMA world headquarters. Here I was able to experience the "behind the scenes" efforts by the ALMA officers. I realized that the board consists of some very dedicated professionals giving a lot of time and talent, on a volunteer basis to run this organization and sharpen its

focus on the future. If you ever wondered what ALMA was all about, stick around. This group knows how to define and achieve value. I tip my hat to the people who work to bring value to ALMA, and to the companies who support their effort. ★

# Should ALMA Allow International Membership?

*Editors note: The ALMA membership needs to begin considering whether to open its membership to include "foreign" companies. Presently, membership is limited to companies in North and South America or Western hemisphere-based companies. The board of directors is hereby commencing a member dialog on this issue and is asking for your opinion. Please indicate in the symposium survey, to a board member or to the ALMA Executive Director your rationale on this issue so the board can begin to formulate a policy that "meets the needs of its membership". Written opinions are preferred.*

*The following discussion was submitted by ALMA member Don Schmidt of DFS Sales. It would be of editorial interest to publish other's opinions. Contact Carol Bousquet, ALMANew's editor and Executive Director for more information.*

The real question is, what do its members want from ALMA? Do we want ALMA to be a social organization or an information center on new technologies and markets in the loudspeaker industry? Will ALMA aid its members as they move into the next millennium by appropriately and accurately communicating new technologies, product standards and global demands?

We are becoming a global economy and that trend will increase. Present ALMA members will be provided a better opportunity to obtain knowledge of developing technologies and markets outside of the Americas by inviting Eastern hemisphere loudspeaker companies to join ALMA. It will also help provide a forum for setting world-wide loudspeaker standards.

Many of the largest speaker manufacturers in the Americas have their headquarters offshore and the offshore decision makers are barred from joining ALMA. In some cases, local engineers join ALMA and are able to obtain information about ALMA members but with the present setup it is not reciprocal.

Almost all U. S. based loudspeaker manufacturers are currently importing speakers and/or components offshore. By letting offshore component manufacturers join we can address the big myth of "I can buy cheaper offshore." This is far from the truth. Buying offshore has its tradeoffs that include freight costs, duties, minimum order quantities and lead times. In addition, there are quality issues. What happens when something goes wrong? How soon can you get replacement parts? How long will you be down? There are areas in which the domestic supplier is not competitive on price or quality. By opening the door to non-American suppliers, domestic suppliers would be able to talk first hand with competitors, share ideas and validate their competitive status. The skill of working globally is not the same as working domestically — there is much to learn about international economics and industry. And, that's a two way street! ALMA could assist its membership in learning to source offshore as well as how to export. International membership would allow domestic suppliers to have direct exposure to foreign competitors to determine their strengths and weaknesses.

Currently, the U. S. is the single largest consumer of audio components. As the demand for speakers grows in the third world, it would be beneficial for Western hemisphere-based loudspeaker manufacturers to know their market demands. ALMA can be a tool to assist all manufacturers to be competitive in the future by opening its doors to all companies, regardless of location. Furthermore, it would provide greater revenue for ALMA and support additional member services. ★

## MEMBERSHIP CRITERIA

For membership in ALMA, members must be companies manufacturing loudspeaker products in the Western Hemisphere, including manufacturers of: loudspeaker component parts, raw driver/transducers, loudspeaker systems, manufacturing and testing equipment and software.

### Categories of membership

.....  
Corporation — \$500.00

.....  
Subsidiary of full dues paying Corporation — \$200.00

.....  
Independent Consultant/Engineer/Sales Rep — \$75.00 (non-voting)

Note: Membership is automatically included when a non-member registers as an exhibitor or to make a Symposium presentation.

To join, contact ALMA, 39 Ames Road, Groton, MA 01450-1963 Tel: 978/448-5658 Fax: 978/448-6851 eml: cbous@ma.ultranet.com

## A special welcome to the following new ALMA members:

Boston Acoustics	PSB Speakers
ECCO (Electronic Controls Inc.)	Jeff Foster
Eminence Speaker Co.	Dan Queen
F. W. Bell	Tom Buddenbohn

### ASSOCIATE MEMBERS

Rob Baum	Vance Dickason	Michael Klasco
Kevin L. Blair, PhD	Bill Dickson	Dan Queen
Tom Buddenbohn	Jeff Foster	Don Schmidt
Sam Bullaro	Doug Greenlee	John Vonohsen
Dick Campbell	Richard Guy	

### FULL MEMBERS

AcoustaCoil Corporation	Harman International Industries, Inc.	Oersted Technology
Acoustic Design	Harman Motive Inc.	Oxford International Ltd.
Acoustic Technology International	Hawley Products, Inc.	Paramount Audio
Advanced Elastomer Systems	Hernon Manufacturing Inc.	Plastech Cleveland Stamping
Advantage Cutting & Gasket	Hisco Inc.	Polk Audio
Alesis Studio Electronics	Hitachi Metals America Ltd.	Precision Econowind, Inc.
American Durafilm Co., Inc.	Industrial Composites	Preco Inc.
Atlas Soundolier	Integrated Engineering Software	Projected Sound
Aura Sound	International Jensen, Inc.	PSB International
Bose Corporation	JBL Professional	Pyle
Boston Acoustics	Kaneka High Tech	Rapid Die & Molding Co.
Bravox S/A	King Audio	Sausalito Audio Works
C. P. Moyer Co., Inc.	Klipsch LLC	Selenium Loudspeakers
CTS Corporation	Krenz Electronics	SK Venture Partners
Dimensional Imprinting	KSC Industries	Specialty Products
DSC Technologies	Loctite Corporation	Stillwater Designs
Dupont Company	Lord Corporation	TEF Div. of Goldline
ECCO	Loudspeaker Components Corporation	Telex Communications
EFD, Inc.	MISCO	Transilwrap Mfg./PPI
Eminence Speaker	Montgomery Wire	Tru-Die, Inc.
F.W. Bell	MTX	U. S. Speaker Basket, Inc.
Ferrofluidics Corp.	Nu-Way Speaker Products, Inc.	Ultimate Sound
Fibre Form Corp.		Vantage Tool & Engineering
Gerther Audio		
H.P. Reid		
Harman Consumer Group		

## ALMA Task Force on Higher Education Formed

The newly formed "ALMA Task Force on Higher Education" met for the first time this past August. The Task Force is chaired by ALMA board member Steve Tatarunis and is comprised of a mix of loudspeaker engineers, educators and students who all bring their unique perspective to the table. It is ALMA's goal to work with one or more institutes of higher learning to assist in the creation of both graduate and undergraduate certificate programs in "Audio Design Engineering" or perhaps more specifically "Loudspeaker Design Engineering". Suggested curricula includes, but is not limited to, Test and Measurement Theory, Material Science, Filter Theory, Physics of Acoustics, Electro-Acoustics and DSP. At press time, The University of Massachusetts—Lowell is the most actively involved school in this program. Check the ALMA web site (<http://www.alma.org>) and future newsletters for updates on the Task Force's efforts. Those interested in joining the Task Force or assisting in any way should contact Steve Tatarunis at 603-598-7216 or [statarunis@ferrofluidics.com](mailto:statarunis@ferrofluidics.com).

## Meet ALMA's New Board Members



Before joining Harman-Motive Inc. as a senior transducer engineer in 1996, **STEVE HUTT** wore most of the hats at BOND Electro-Acoustics in his home town of Toronto. With over 20 years in audio, his duties have covered most facets of transducer and system design and the process interaction from concept to manufacturing. Steve's hobbies include playing sax and piano. He lives in Bloomington IN, with his wife and two sons.

**DON EGER** is Director of Sales and Marketing for the TEF Division of Gold Line. Don has thirty-five years experience working in the audio industry. The last twenty years he has been involved in audio measurement using TDS. The TDS measurement process was developed by Richard Heyser. Don helped develop the applications of this measurement while working for Crown International. Currently Don works with assisting customers in learning how to best apply the TEF instrument to the measurement of loudspeakers and to measuring room acoustics.



### ALMANews Editorial and advertising information and 1999 publication schedule

Editorial submissions and press releases on behalf of members are solicited and welcome. Another member benefit is the ability to advertise in *ALMANews* at reduced rates. Non-members may advertise also. Please contact the ALMA office to request a rate sheet or visit the ALMA Web page for ad rates.

**Remember, ALMANews is mailed to over 2,400 highly targeted industry recipients!**

The *ALMANews* Spring Edition deadline is January 15, 1999 for a February 1 mailing. The Fall/Winter edition deadline is September 1, 1999 for an October 1 mail date.

STANDARDS PROGRESS CONTINUED FROM PAGE 4

- ② Remove the advertising requirement on bandwidth, impedance, and distortion, and
- ③ Clarify how this rule applies to self-powered speakers.

Obviously, some changes are in store. For a copy of the final (old rule) and the proposed (new rule) go to <http://www.ftc.gov/os/9807/index.htm> and select the notices from July 9th. These are in pdf format.

A further development on the power testing front: The RS-426-B became official last October. However, there are no current vendors of the test CD. After discussions with EIA/CEMA Engineering, Tom Mock (Community Professional) and the CEMA Standards Subcommittee that authored the standard, Colin Campbell (Polk Audio) ALMA has been authorized to pursue a sponsorship arrangement to make this disc widely available. A subcommittee will make recommendations at the next Standards meeting to be held at the Winter Symposium.

ALMA agreed to gather comments from the loudspeaker industry to address the proposed standards for loudspeaker rigging/safety put out by the ESTA (<http://esta.org/E1-7PubRev.htm>). Steve Hutt, Richard Guy, Howard Doctor, and Bruce Marlin have volunteered to be the review panel on behalf of ALMA.

A review of the AES "recommended practice for power response testing", which involves collection of high resolution data was made, and several comments noted.

Web site design (<http://www.alma.org/>) by Stew Renner and team is progressing nicely. This is expected to be a welcome resource for all standards activity.

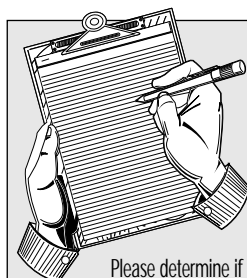
During the April standards meeting, we worked on two other initiatives:

- ① Continuing support for soft parts dimensioning, tolerancing, and measurements, and a call for more survey submissions...*if you still have this survey, please send it to Greg Seidel of NuWay Speaker Products; ALMA Components sub-committee chair (see sidebar).*

- ② Formation of a Metal Parts Sub-committee; to discuss industry standards for magnetics, chemistry, and dimensioning. Mike Thomas of Plastech-Cleveland Stamping is the chair of this team, and we continue to look for new members to bring this effort along.

ALMA Standards activity is a fine way to get involved at the forefront of loudspeaker technology, and to deal with the tough challenges we in the industry all face on a daily basis. The standards meetings are open to members, and to interested non-members, and is a free, ALMA supported activity, operated entirely on a volunteer basis. Getting involved is easy—just show up and volunteer.

*Thanks to all who have done so, and a warm welcome in advance to all those who will join us in January! ★*



### Survey Participants Still Needed

Greg Seidel, Standards Components Chair

The ALMA soft parts survey was distributed to interested parties via e-mail. Although the response was less than optimal, the information did reveal some basic trends in terminology. The results showed that dimensioning and measurement techniques widely vary, and will require further review. A summarized version of common terms will be available at the upcoming standards meeting. There is still time to get your input included.

Please determine if you still have a survey, and take a few moments to fill it out and return it to my attention. For those of you who were overwhelmed by the depth, simply concentrate on the terminology details only. If you misplaced your copy and would like to respond, please contact me at (847) 395-5141 or e-mail me at [greg@nuway-speaker.com](mailto:greg@nuway-speaker.com).

## Visit the new ALMA web site at [www.alma.org](http://www.alma.org)

ALMA thanks Nu-Way Speaker Products, Inc. and MISCO (Minneapolis Speaker Company) for their generous sponsorship of the new ALMA Web site in 1998.

Web site sponsorships are solicited to underwrite the cost of the Web site in 1999. Contact Carol Bousquet, Executive Director for more information.

### ALMA Mail List for Sale

Featuring an "updated" list of more than 2,400 industry-targeted contacts within North and South America!

\$250 ALMA members, \$750 non-members.

*Note: One-time use only.*

*Disk will be mailed direct to certified mail house only.*

**Contact the ALMA office for details.**

*Important: Companies or individuals not desiring to be on the list may request their name be removed.*