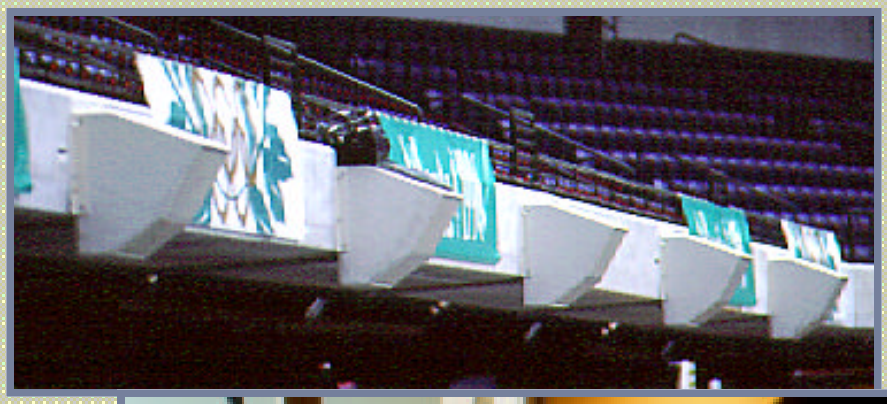
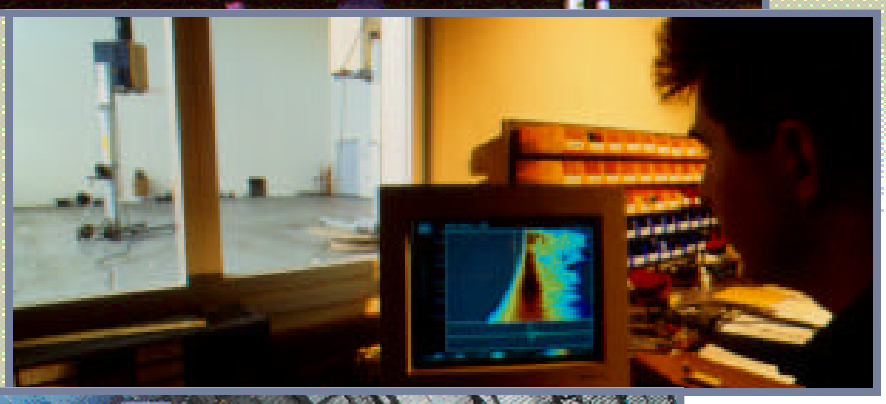
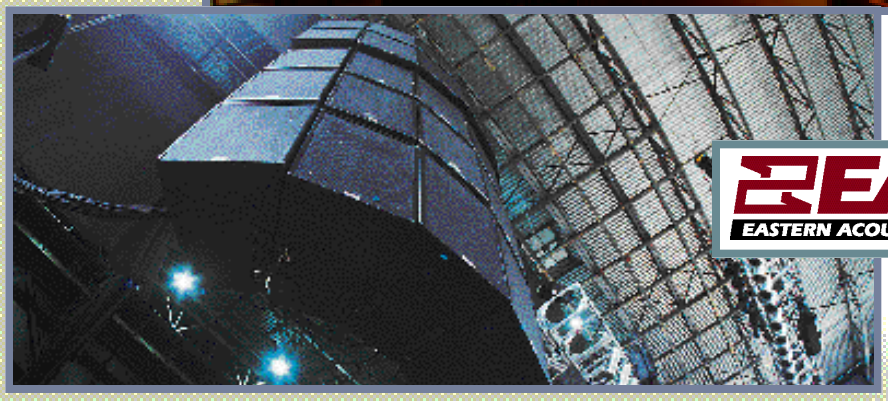




Responsive Engineering Leadership



EAW
EASTERN ACOUSTIC WORKS

Relentless Perfectionists Whose Passion is Solving Pro Audio's Most Difficult Problems

When EAW co-founder Kenton Forsythe began his search for better solutions to audio problems in 1974, he identified accurate bass response in the live music setting as a problem existing technology could not solve. In response, he created "the better bass bin." The BH212CT's dramatically improved performance was the result of a true exponential horn flare — and of a revolutionary construction technology that continues to produce the world's most accurate midrange and low frequency horns.

The BH212CT was our first example of responsive engineering leadership: applying the laws of physics to develop total systems that reward critical listening while expanding the possibilities within their intended applications. At that time, audio pros were searching for accurate bass response: they never expected to find it in such an intelligently designed system.

When Forsythe and Kenneth Berger founded EAW in 1978, they sought to use this unique product development philosophy to rede-fine what could be expected from loudspeaker technology. While the problems EAW addressed over the years vary greatly, the method we employ has remained constant.

As the company grew, Ken and Kenton assembled a team of audio professionals driven not merely to solve problems but to raise the industry's accepted standards. Acoustical engineers, support technicians, application engineers, communications specialists and manufacturing experts have all played a part in the company's success.

Nearly every type of professional audio application has benefitted from EAW's technology leadership. In the touring market, our bench-mark Virtual Array® systems fly quickly, work together in arrays and pack easily in the truck. Removing the constraints of portability from VA® Technology, we applied the same design tools to permanently installed applications. Our MH Series systems provide high output, low distortion and accurate directivity in a variety of dispersion pat-terns and enclosure sizes.

Over time, we have applied our product development process to all types of venues, even addressing problems in some of the smallest applications like underbalcony coverage for performing arts centers. And recently we have brought our engineering leadership to a whole new market: cinema exhibition. Already, EAW has raised the perfor-mance standards for both main and surround channel systems. And

systems in now development promise to revolutionize what audi-ences will expect from 21st Century cinema audio.

After nearly two decades of creating breakthrough technologies for important events and installations, EAW has come to define audio leadership. But leadership is not built on past achievements alone. It requires an ongoing commitment to realizing new possibilities in every area of pro audio. Working to solve the problems of leading designers, contractors, consultants and engineers allows us to contin-ually set new standards for loudspeaker system performance and lead the industry into a new era in sound reinforcement.

poster circa 1979

without sacrificing the mathematical accu-racy of the flares. Finally, we examine every aspect of the loudspeaker — from handles and casters to enclosure shape and size —to make the systems as easy to work with as they are to listen to. No matter what the application, once the needs of the loud-speaker system have been defined, EAW Engineering creates a total system solution optimized for that application's needs.

EAW's Total System Approach

Over the years, EAW has developed many revolutionary technologies—Close Coupled Processing, the Concentric Phase Aligned Array, the Tuned Dipolar Array and the Virtual Line Array to name a few. But technology is only a means to an end; EAW's engineering goal is to create total systems that offer total solutions.

Applying the laws of physics to problems identified with critical listening skills, EAW design engineers develop and refine products until rigorous performance criteria are met not just for specific com-ponents but for the total system.

EAW works with the world's leading transducer manufacturers to create purpose-designed cone transducers and compression drivers which design engineers then integrate into total systems optimized for particular applications.

Whenever possible, we employ true three-way design. Requiring each subsystem to handle a more narrow bandwidth eliminates dis-tortion resulting from excessive driver excursion and maximizes the effectiveness of pattern control devices.

EAW's computer-designed crossover/filter networks do more than merely divide the signal between the subsystems; they provide coher-ent summation across the transition range, creating loudspeakers that require virtually no equalization to deliver flat response. Using an exacting iterative development process, our engineers create circuits precisely tailored to integrate each loudspeaker's set of components into a total system. Our use of only heavy-duty components ensures that the circuits will not introduce distortion, even at concert-level SPLs. Where appropriate, EAW's total signal processing system may include active, passive and even acoustical filters.

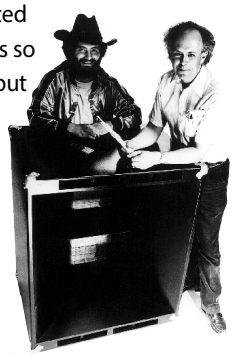
From the BH212CT to our latest cine-ma system, EAW historically has led the industry horn-loading technology, setting new standards for predictable pat-tern control an smooth power response. Our proprietary construction techniques let us manufacture large, acoustically rigid horns

This cutaway of the BH212CT shows the exponential flare that made this the world's most mathematically correct bass horn.

EAW's Engineering Credo

EAW engineering's goal for every loudspeaker system is to provide flat power response and minimal distortion as those criteria apply to the system's given application. As a result, the entire EAW product range sounds remarkably similar, from the ultra-compact UB12 to the massive MH692.

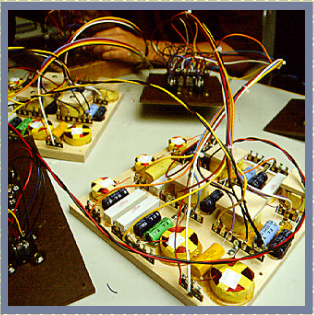
As we have integrated active electronic signal processing into the total system, we have insisted that our processors not employ dynamic effects so the sound quality remains consistent at all output levels. At their heart, all EAW processors are designed as crossovers precisely aligned to the systems they are designed to control.



Kenneth Berger & Kenton Forsythe with the SR215, circa 1978.

Engineering Leadership from Leading Engineers

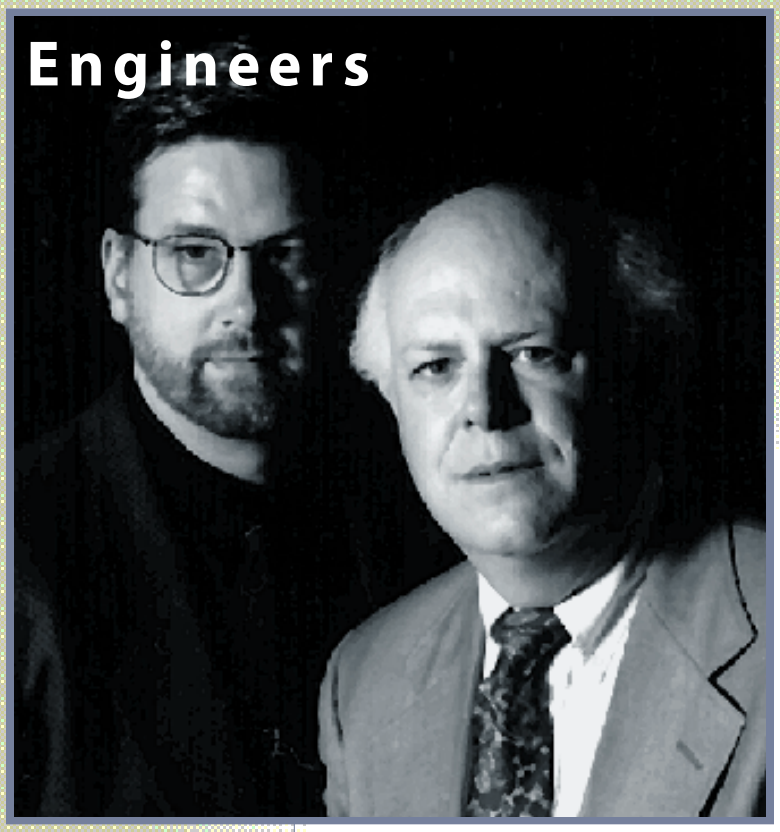
The team, tools, technologies and techniques



EAW's computer-designed crossover/filter networks are precisely aligned to the systems they control so our loudspeakers sound "flat" out of the box.

When audio experts look for help solving their most difficult problems, they turn to the EAW engineering team. As a group, they embody the engineering insight to envision break-through solutions as well as the experience to ensure that the systems work in the real world.

With combined experience of nearly 45 years researching, designing, manufacturing and implementing loudspeaker systems, Executive VP, Strategic Product Development Kenton Forsythe and VP, Engineering Gary Hardesty have been directly involved in sound system design and creation for some of the largest and most important entertainment events and architectural installations in modern history.



Kenton G. Forsythe, Exec. VP, Strategic Product Development (right), and Gary Hardesty, VP, Engineering, demand that EAW innovations use fundamental laws of acoustical physics in new ways.

EAW has invested substantially in human and technological resources to ensure that we create consistently excellent products. Forsythe and Hardesty have assembled a world-class team of design and support engineers and provided them with a powerful set of design tools and techniques.

Senior Design Engineers (from left) Dave Gunness, Jeff Rocha (seated) and Andy Lewis design each system to provide flat power response with minimal distortion while solving the problems of its particular applications.

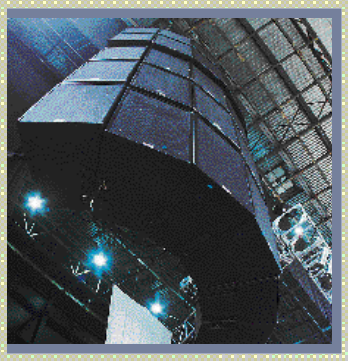
Our automated test facility incorporates state-of-the-art audio testing technology with our own proprietary enhancements. Our performance standards demand that the engineering team use a complex iterative process to design passive crossover/filter networks using advanced computer modeling techniques. Rapid data acquisition allows us to repeatedly test each system as an integral part of our design process allowing the engineering staff to refine systems, iteration after iteration, until the system achieves its engineering goal.

EAW uses advanced measurement equipment at our automated testing facilities to compile the most comprehensive data sets in the industry.

Leadership Across the Spectrum of Professional Applications

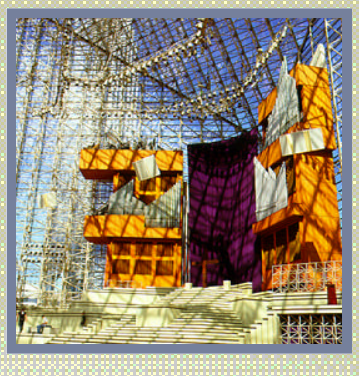
The World Touring Standard

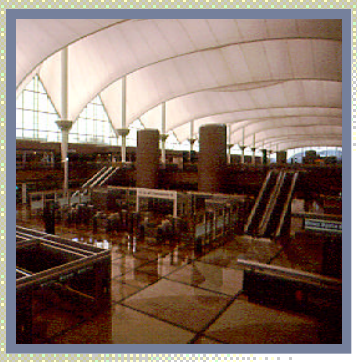
The KF850 Virtual Array loudspeaker is accepted in more technical riders than any other system on the planet. And for good reason: VA Technology provides high power handling, low distortion and unrivaled arrayablility in a system that sounds flat "out of the box," letting engineers spend time working on the mix, not the system. Our Stadium Array Series continues to evolve with important new technolo-gies like the KF853/BH853 High "Q" systems giving touring arrays long throw capabilities, and now the KF855 Down Fill system giving the front rows sound that's as great as the view.



Taming Difficult Acoustic Environments

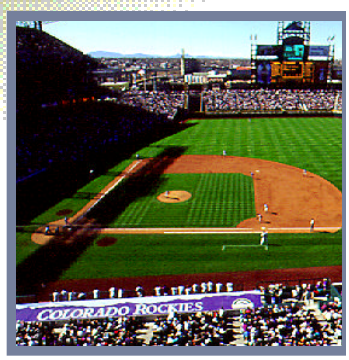
The largest religious buildings astonish the eyes, but confuse the ears. From Notre Dame in Paris to the Crystal Cathedral in California (home to a national television ministry), EAW's true three-way designed loudspeakers have tamed notoriously hostile acoustics and solved problems that were long thought to be intractable. Dedicated midrange subsystems provide superior vocal reproduction, while large-format horns are optimized for wide band pattern control that keeps sound off reflective surfaces and out of broadcast audio feeds.





Every Message is Essential

In the largest transportation hubs and public gathering places, daily foot traffic is measured in hundreds of thousands if not millions. And any one of those people in any part of that facility may need to hear a voice announcement that could change their day, their week or even their life. Which is why state-of-the-art public spaces like Denver's new international airport rely on EAW loudspeakers to provide accurate, articulate voice reproduction and effective pattern control to be sure that announcements are heard and understood in every corner of every room.



A Total Ballpark Experience

In 1990, EAW custom-engineered loudspeaker systems for Anaheim Stadium, creating a new standard for stadium sound: articulate voice announcements plus full range musical reproduction. As a result, fans today expect to hear "stadium rock" music as an integral part of the action. At Coors Field in Denver and dozens of other pro and college stadiums around the world, EAW engineering keeps the crowd excited and focused, delivering the total experience that keeps them coming back game after game.

Leadership Across the Spectrum of Professional Applications

Dramatic Improvements in Theatrical Sound

Leading Broadway sound designers depend on EAW to give their sound systems unforced naturalness and precise imaging at the high output levels they need for today's pop-driven scores. By eliminating crossovers in the vocal range, EAW's true three-way systems provide natural vocal reproduction with minimal distortion. Accurate directivity reduces spill onto the stage, letting designers use multiple lavalier microphones without feedback. Purpose-designed compact systems provide underbalcony and stage lip coverage, for an unbroken sense of intimacy throughout the theater.

Teamwork, Excellence, Leadership

Only top performers qualified for the 1996 Summer Olympic Games. EAW's Virtual Line Array won the right to bring the Opening and Closing Ceremonies to the international live audience. Our reputation for excellence let us join a team that included the very best audio pros in the world. We put everything we had into solving their problems, creating four different custom-engineered systems for the Olympic Stadium and shipping hundreds of loudspeakers on a demanding timetable. From the permanently-installed VLA prototypes in the Aquatic Center to the ultra-compact UB12s in the retail store, every loudspeaker performed like a champion.

Renewing Cinema's Leadership in Audio Technology

Before World War II, cinema exhibition represented the cutting edge of audio technology. In the decades since, sound reproduction became the weakest element in the cinema experience. Working with leading exhibitors like American Multi Cinemas, EAW is leading the way with new cinema loudspeaker systems that solve long-standing problems and maximize the impact of digital soundtracks.

Leadership Across the Spectrum of Professional Applications

Adding Impact to Multimedia Presentations

Until EAW engineers developed high definition, high output systems that put EAW quality in ultra-compact enclosures the sonic element of multimedia lacked the impact of its visual component. Our MM Series systems give multimedia presentations full range response using mid/high satellites for precise audio imaging and separate low frequency units for a full low end. More and more multimedia users rely on EAW or sonic impact, not just sound.

Powering a Techno Rave

Club designers and "Rave" producers rely on EAW loudspeakers to handle computer-driven dance music using sounds up to and beyond the extremes of human hearing. The dancers who love it demand superior clarity at high volume. And, of course, the beat must never stop. EAW systems are designed for high power handling and low distortion, so the quality of the sound doesn't change as volume increases. At Mayday's massive raves and in nightclubs around the world, EAW provides sizzling highs, pound-ing lows and concert-level SPLs with-out breaking up. Or breaking down.

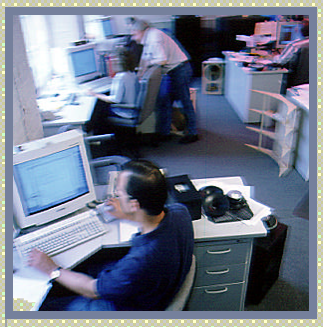
A New Kind of System Redefines a Genre

In 1996, EAW technology revolutionized televised live event production. Until now, there seemed to be no way to meet the conflicting needs of the live sound and broadcast crews. Live audiences need good sound but large arrays interfere with camera angles. What's more, sound reinforcement can spill onto the stage, interfering with the television feed. Using proprietary Tuned Dipolar Array technology, we created the Virtual Line Array specifically to solve these problems. It has become the system of choice at such events as the Grammys, Oscars, Superbowl and Olympics.

Themed Loudspeakers Should be Heard, Not Seen.

EAW helps designers at the world's leading theme parks transport visitors to another time and place. Even when its a place where loudspeakers do not exist. In all cases, visitors demand parades and rides complemented with the power of sound reinforcement. To solve their unique problems, EAW engineers work with designers to create systems that disappear from view, whether hidden within the decor like this system at Universal Studios in Florida, or camouflaged as some other object. Weatherproof enclosures stand up to hurricanes, blizzards, scorching sun and withering humidity — show after show, season after season.

The Agility to Make it Happen Now



EAW uses the most powerful Computer-Assisted Design (CAD) software, letting us optimize the acoustics as well as the ergonomics of each enclosure.

Because our manufacturing process marries hand-crafted precision to CAD/CAM technology, a customer's concept can become a prototype that is ready for testing in a matter of days.

We use computer-numerically-controlled (CNC) saws and routers as part of CAM operations. Critical information from our CAD drawings can be programmed directly into the CNC machines to create the components with maximum efficiency. Once a prototype has been approved, the new product is brought to full production almost immediately.

The advanced, high-durability water-based paint we use allows our manufacturing staff to make faster changeovers, speeding the production of custom colored enclosures. Our use of manufacturing cells puts quality control at every step of the process rather than at the end of the line.

EAW is looking to the future of automated machining to keep our manufacturing processes as well as our loudspeakers on the cutting edge of technology. By continuously improving every aspect of our opera-tions, EAW can meet the needs and exceed the expectations of an increas-ingly sophisticated and demanding market, today and tomorrow.

Computer-Numeric-Controlled (CNC) saws and routers in our automated woodshop use CAD data to efficiently produce precise, repeatable enclosure components.

Responsive Communication is Critical to Leadership

ACCESS TO PERFORMANCE DATA

When EAW introduced the Acoustical Performance Partnership (APP), we created a first-of-its-kind information exchange between an audio manufacturer and the sound system design community. Our belief was that by facilitating designers' access to accurate performance data, we could help them create sound systems that more precisely fit the needs of their applications. To implement this goal, we developed a comprehensive testing procedure. Raw data are then distilled into the formats designers need. Comprehensive APP data are contained on the APP CD-ROM or can be accessed via our site on the World Wide Web.

EAW'S GLOBAL NETWORK OF RENTAL COMPANIES

The VATA global network of sound system rental companies provides tour managers and touring musi-cians PA services featuring EAW's Virtual Array® Technology and Stadium Array Systems. For the first time, national and international tours can enjoy consistent EAW sound wherever they go.

Since the VATA encourages teamwork among members, mid-sized companies draw on each others resources, letting them land bigger contracts. And by combining their power, several larger firms have provided EAW-based sound reinforcement for some of the world's largest productions ever.

INTERACTIVE COMMUNICATIONS

EAW's technology leadership extends beyond our products to our communications.

Our World Wide Web site at **http://www.eaw.com/** helps you use our products effectively, and it gives you a forum to share ideas and information with your colleagues. It lets you access all available performance data and even provides a conduit that lets you draw on the educational resources of an entire industry. Our Idea Exchange is an industry touchstone where you can discuss the issues with your pro audio colleagues and "Ken's Pro Audio Hyperlinks" connect you to scores of sites in the pro audio industry and related fields. The All Access area lets you meet the people behind the products, opening the door to direct communication with people at all levels of EAW Sales and Technical Support.

EAW EASTERN ACOUSTIC WORKS

The Laws of Physics / The Art of Listening

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