

All photography by David Scheirman

HUEY LEWIS AND THE NEWS

SOUND ON STAGE USING THE POWER PHYSICS FLOWN SPEAKER SYSTEM

by David Scheirman

Many of this country's major sound reinforcement firms broke into serious national concert touring work by having a previously-existing service relationship with a regional act that achieved nationwide commercial success. When a touring act achieves notoriety, and realizes a general market acceptance for its product, consistent sound and lighting systems are one of the first things to be figured into the tour budget. In this manner, regional sound companies may also find themselves catapulted into the national spotlight.

This article takes the form of report on one such relationship between a touring band and the sound company that serves it. 1984 was a breakout year for Huey Lewis and the News, a San Francisco Bay-area based recording act that dominated the pop airwaves with selections from the group's album, *Sports*. Sound On Stage of Brisbane, CA, has provided rental sound system services for Huey and the group since their formative nightclub years.

Sound On Stage has been in existence as a touring concert-sound system rental and design firm for nearly a decade. Company co-owner Jerry Pfeffer graduated from college with a degree in communications, but live concert sound held a greater interest than did broadcasting.

The steadily growing firm has recently been sending touring systems across the country with such acts as Night Ranger, Luther Vandross, and Huey Lewis and the News. Beginning in mid-1984, Sound On Stage supplied Huey with its newly-designed Power Physics™ speaker system, specifically designed for flying in arena situations. The unique modular loudspeaker enclosures are part of an overall integrated sound system package designed to serve today's contemporary live musical events.

Power Physics Speaker System

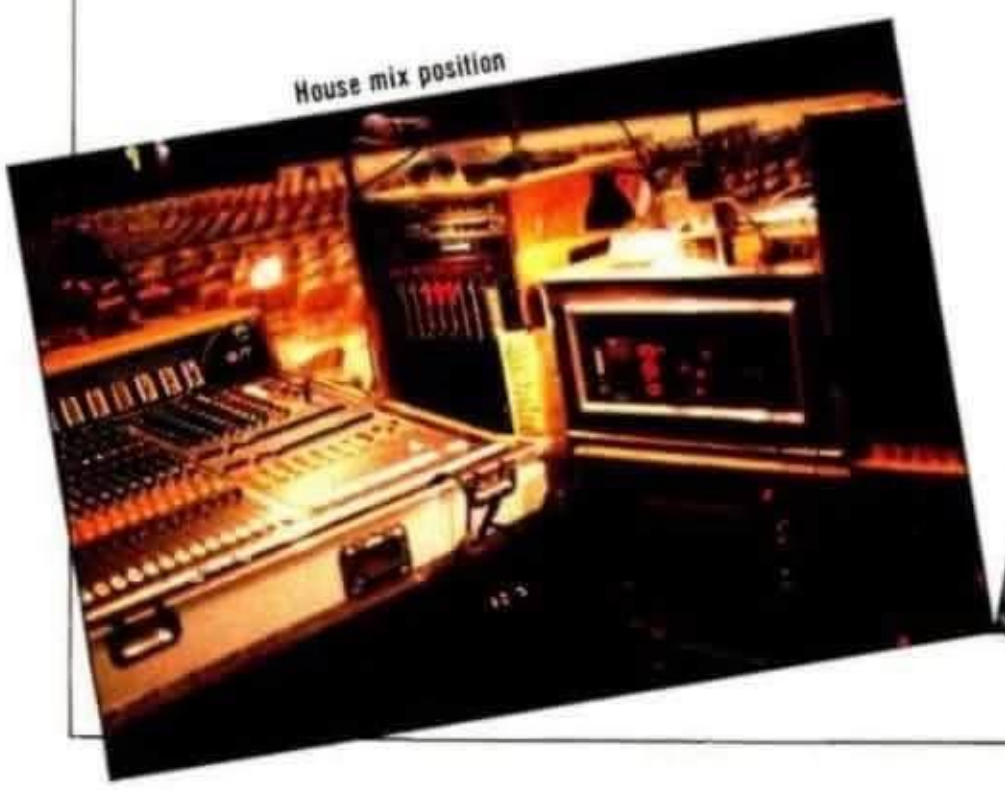
The Power Physics system is constructed of bass, mid-bass and mid/high cabinets. The identically-sized enclosures are trapezoidal in shape, to enable the easy construction of hanging arrays, and more closely approximate a point-source array with each cluster of cabinets. Each box is 48 inches wide, 18 inches high, and 37 inches deep. A stack of five boxes weighs approximately 800 pounds (two bass, two mid-bass, and a horn box). The system is designed so that the boxes may be stacked into columns in any desired order, depending on the coupling required in a particular frequency band. The bass and mid-bass cabinets are horn-loaded, and three different versions of the horn (mid/high) box exist (Figure 1).

The bass cabinet, known as a CS-15, contains a single Gauss 15-inch Model 5642 loudspeaker. Conceived by Pfeffer and engineer Chris Lovett, the CS-15 design was finalized and developed by audio designer Charles Stevenson.

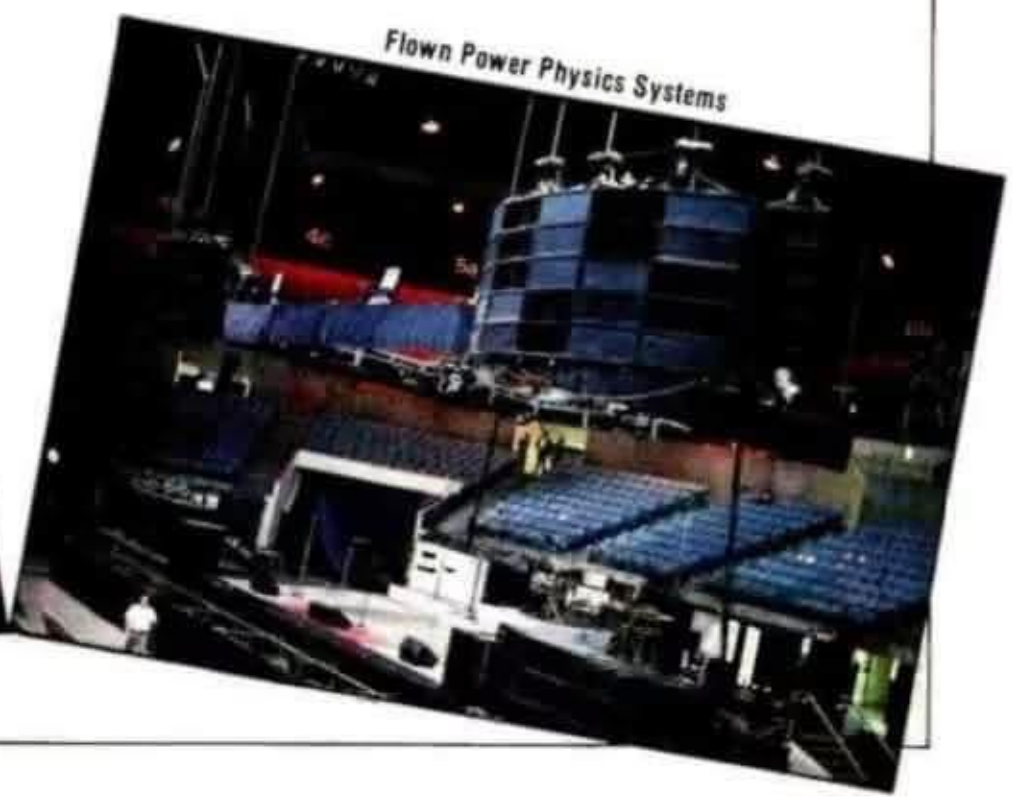
"When designing any speaker system, there will be a few trade-offs to keep in mind," advises Lovett. "The desired size and shape of the cabinet, the truck pack, the sound quality and sound pressure levels necessary . . . it all must be taken into account.

"I feel that Charles Stevenson's

House mix position



Flown Power Physics Systems



bass box design is brilliant. The efficiency is around 30%. There seems to have been somewhat of a bias to overcome in this industry against horn-loaded bass cabinets — perhaps because of some of the strange bins that have gone before. But this box gives us *exactly* what we wanted."

The mid-bass cabinet houses a pair of JBL 10-inch K110 loudspeakers, each contained within a deep horn-loaded chamber. A vertical cabinet structural support and phasing wall separates the two chambers.

The three different versions of the mid/high cabinet offer a variety of horn configurations for desired coverage patterns. A box known as the "Twin" holds two Harbinger Model 1208 conical exponential horns with JBL Model 2441 drivers. Four JBL Model 2402 tweeters are also included. The "Shin" cabinet holds two Harbinger Model 1207 radial horns, and is intended for short-throw applications. Again, four JBL Model 2402 tweeters are included.

A long-throw horn box, known as the "Hurler," is also available. It contains a single large double-driver, long-throw radial horn designed by Mark Wayne, and is driven by a pair of JBL Model 2441 compression drivers.

Assembling the Arrays

The loudspeaker enclosures are trucked to each performance site as pre-assembled stacks of five cabinets. A sturdy metal dolly enables the stack to be moved directly from the truck to the stage area (Figure 2). Additional cabinets are carried separately for smaller stage-level stacks, when necessary. Each individual box is equipped with a pair of wheels and an integral grip handle for ease of transport by one stage hand (Figure 3).

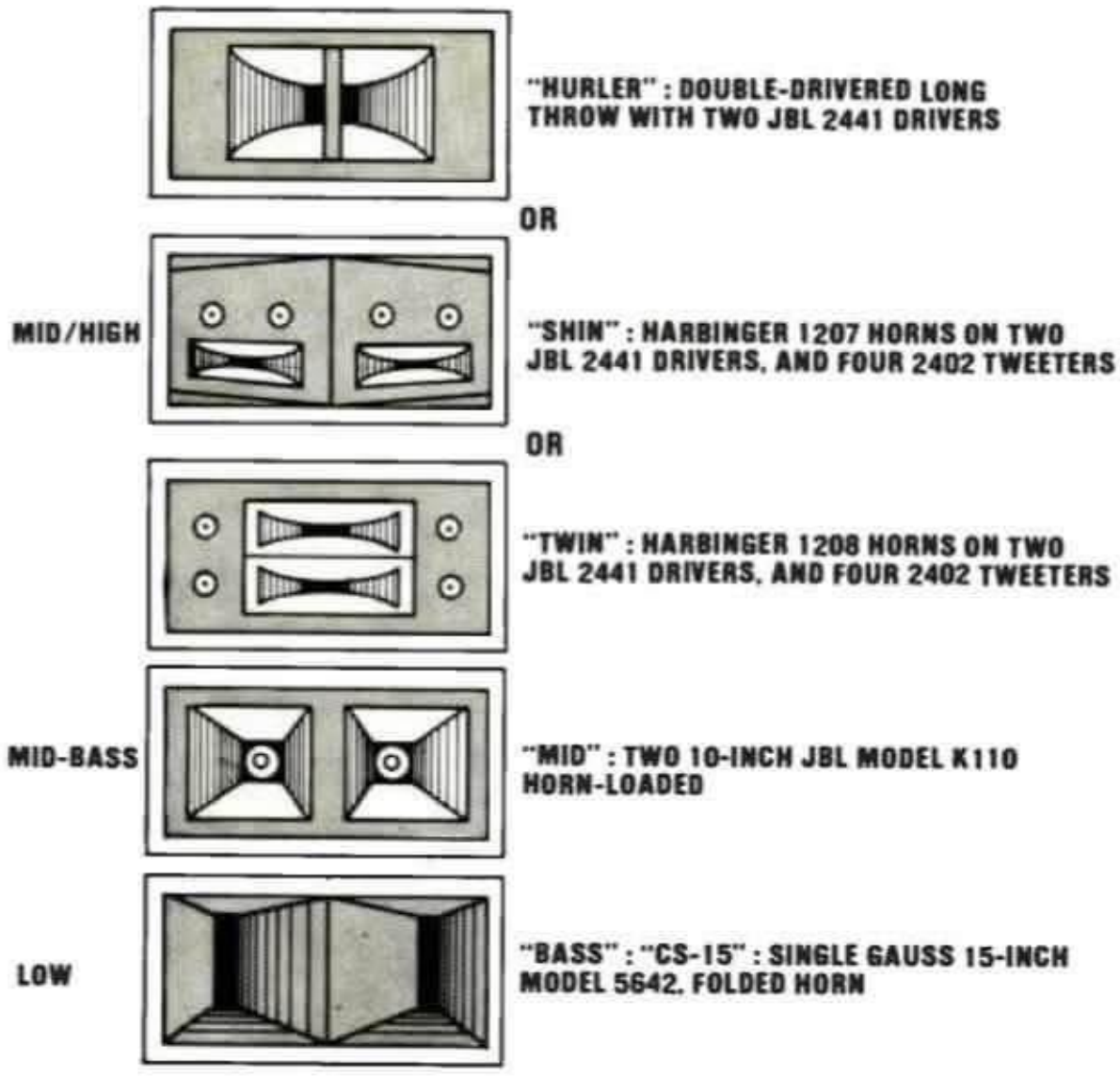


Figure 1: Five basic types of Power Physics loudspeaker enclosures.

Each stack of five cabinets is secured with steel safety cables, the top metal frame and bottom dolly being strapped together with nylon ratchet straps (Figure 4).

As each stack is rolled to the performance area, it is placed in position to become a part of a five-stack array. Half-inch bolts are used to secure the adjacent metal frames together, forming a rigid structure (Figure 5).

"We have been experimenting over the past year, and making some slight modifications in the cabinet stacking order as we go," explains John "J.T." Taylor, audio crew chief for Huey Lewis and the News. "In some arenas, we need more bass coupling. Others require the Hurler cabinets to be directed at a particular seating area. With the modular box concept, we are able to make those adjustments from day to day, and still have the hanging array be a consistent package."

Once the desired combination of rolling stacks has been aligned on the floor in front of a stage, and bolted

Figure 2: Enclosures are trucked in stacks of five, and secured with straps to sturdy metal dollies.



Figure 3: Two permanent wheels and an integral handle offer ease of transport of the trapezoidal boxes by one stage hand.



together, the sturdy, compact array is ready to be lifted into the air with chain-motor hoists (Figure 6). One five-stack array weighs approximately 4,000 pounds, and is easily picked up with three, one-ton hoists. Straps and shackles that hold the package together are available from Aeroquip. "The thing I've noticed about using Aeroquip gear for cargo control and hanging hardware," Taylor advises, "is that it is readily available in any major city, wherever you go. Many times we can even find replacement parts in truck stops."

Flying the System

In a typical arena situation, a total of 10 hoists are used to suspend the loudspeaker arrays. In addition to the large left and right main arrays, a six-box rearfill cluster and an eight-box main sidefill cluster are flown on each side (Figure 7). For the show that I observed (held in a 15,000-seat sports arena), a total of 102 boxes were used. A dozen cabinets per side comprised the "deck system," stacked three high on the sound wings. Thirty-nine boxes were flown on each side of the performance area, 25 of which made up each main array. A total of 20 bass boxes, 18 mid-bass boxes, and 13 horn boxes were in use per side (Figure 8).

This system configuration gave a total of 40, 15-inch loudspeakers in folded horn boxes, 72 10-inch loudspeakers in horn-loaded chambers, 48 two-inch compression drivers on four different horn types (two per side equipped with large JBL lens units), and 80 super-high tweeters.

Typically, four union stage hands will be assigned to work with "fly man" Carl Ciasulli *(pictured left)* in assembling and flying the speaker arrays. "Sometimes just the three of us from the sound company set the whole thing up," Ciasulli confides. "Other times, we may have 20 college kids, all needing directions. We have tried to put this whole package together so that it is quick and easy to work with, either way. Everything is color-coded and labeled. The speaker cable harnesses are pre-assembled and taped together. The system goes up fast, and it comes down fast. The whole sound system is packed up, and the doors of the sound truck closed, usually within no more than an hour and fifteen minutes in an area like this one."



Power Distribution System

Once the chain motors have been operated and the loudspeakers arrays are in position, the 300-amp three-phase power distribution system is available to power up the audio gear. A master distro panel features VIZ power-line monitor and current-draw meters. Four-pin Hubble twist-lock connectors are used to attach AC feeder cables to five different areas: monitors; main mix position; house left amplifiers; house right amplifiers; and band gear. Each feeder carries 60 amps (two hot legs; 220V) which is then split to 110V on two, 30-amp breakers.

"Each amplifier rack has 220 volts coming to it," explains Ciasulli. "We run one hot leg to a quad box that powers half of the amplifiers in that rack. The other half of the amps go on another quad box and hot leg. That gives us a separate 30-amp breaker for half of the amplifiers in a given rack. If we lose a breaker during the show, we don't lose the entire rack of amplifiers."



Figure 4: The stacked boxes are secured with steel safety cables. Nylon ratchet straps around the edges hold the five boxes and metal frames together in a cohesive unit.



Figure 5: Half-inch bolts are used to secure the upper metal frames and truss bars together. (Shown: audio crew chief John "J.T." Taylor.)

Convertor cables are available, fitted with 110V Edison adaptors. "Sometimes, when three-phase power is not available, it's handy to be able to power up the racks without rewiring them," the engineer notes. "Almost every venue has three-phase power available, but sometimes you'll run into an old school or a nightclub that doesn't. Carrying the adaptors makes it easy!"

Power Amplifiers

Crest amplifiers push the Power

Figure 6: Once bolted together, the five stacks comprise a single rigid array ready to be flown.

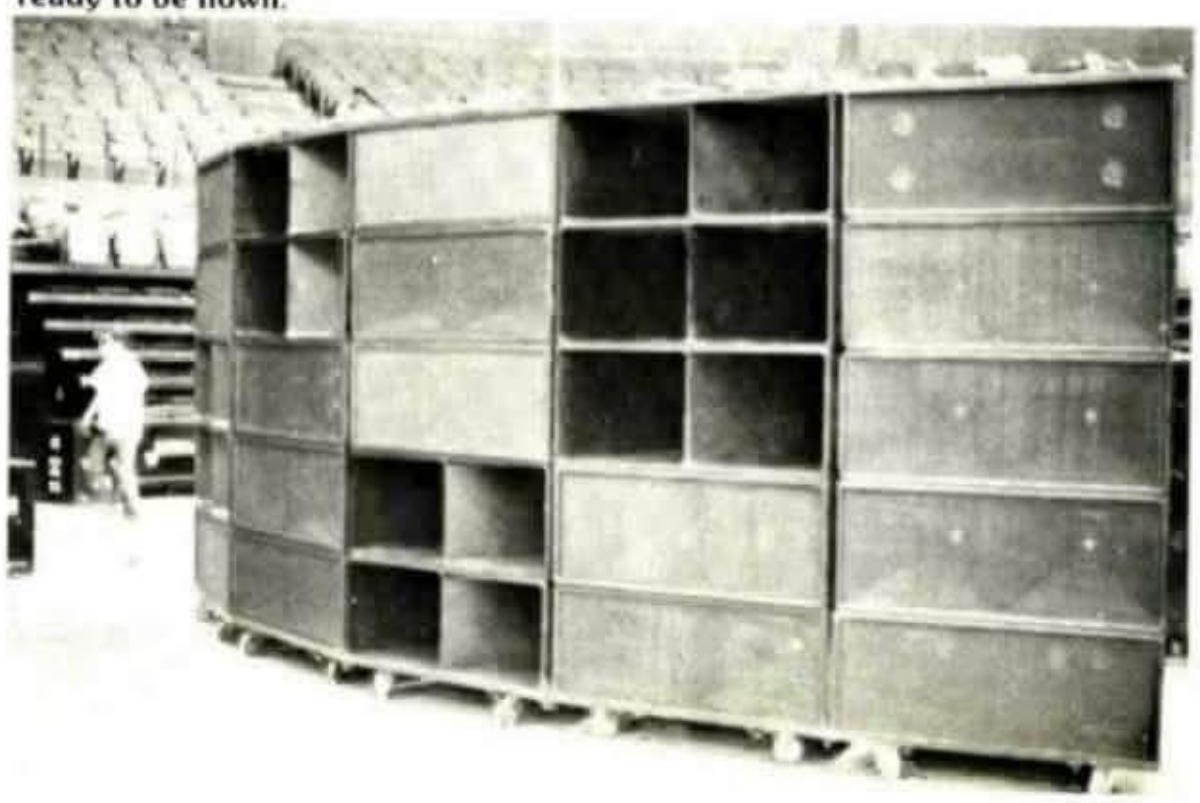
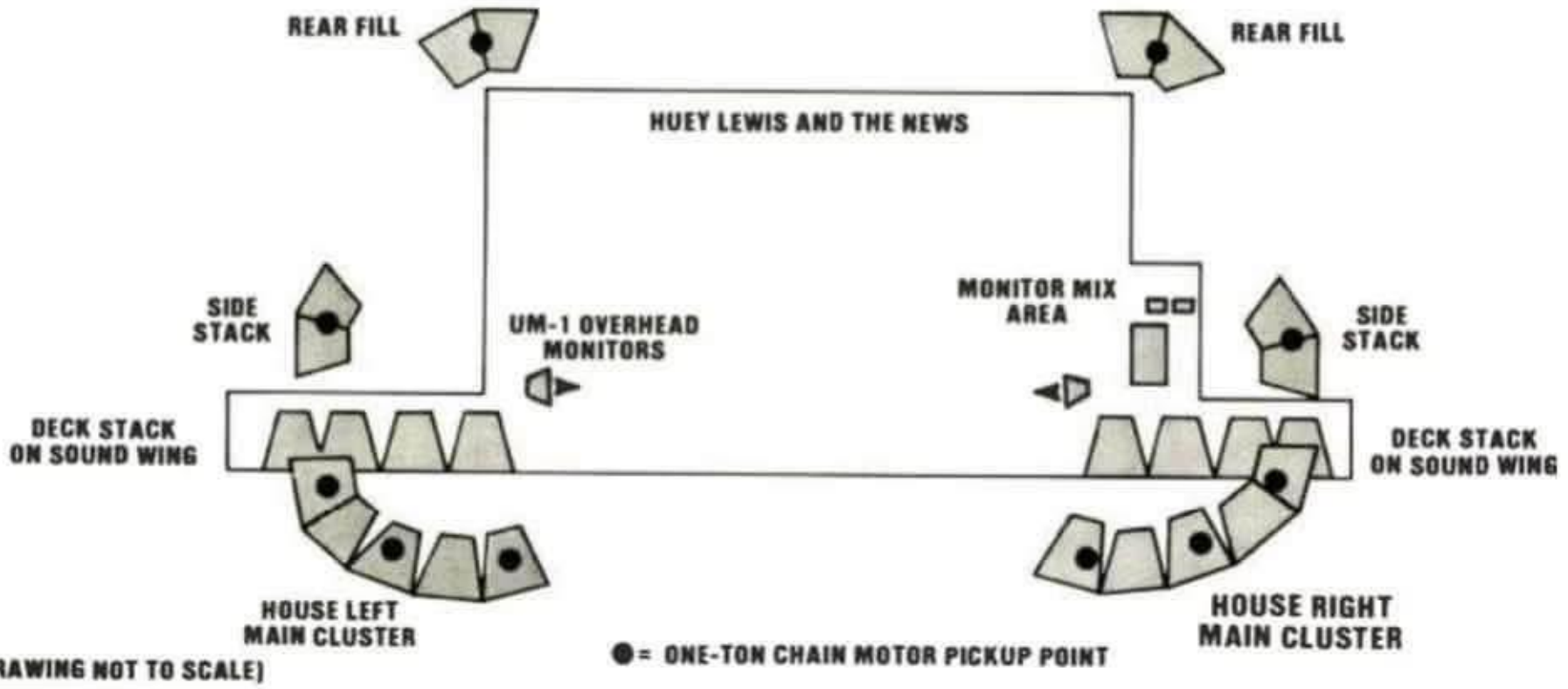


Figure 7: Layout of Power Physics Loudspeaker Arrays.



Physics speaker system. Loaded six to a rack, the amplifiers used offer four different power ratings (Figure 9). Model 5000 amplifiers are used for the system's bass frequencies. The 16-ohm Gauss speakers are connected four to a side, giving approximately 600 watts per channel into the four-ohm load. Model 4000s power the 10-inch mid-bass horn-loaded speakers, with four transducers assigned to each 500-watt channel. A second Model 4000 is available in each amp rack as a spare or auxiliary unit.

A Model 2501 powers the horns, with four two-inch compression drivers loaded on each channel, a configuration that puts approximately 200 watts per channel into a four-ohm load. Crest Model 2001 amps power the super-high frequency tweeters, with four units assigned to each 120-watt channel. Total estimated system power available to the main speaker system is approximately 23,600 watts.

"As far as I'm concerned, the advertised number of watts in a sound system doesn't really tell you a lot," states Sound On Stage technician John Taylor. "It all depends on what sort of enclosures those watts are driving. The fact that this system relies on efficient horn-loading principles means that we can deliver the same sound-pressure levels as an infinite-baffle speaker system that needs more than twice as much power to drive it."

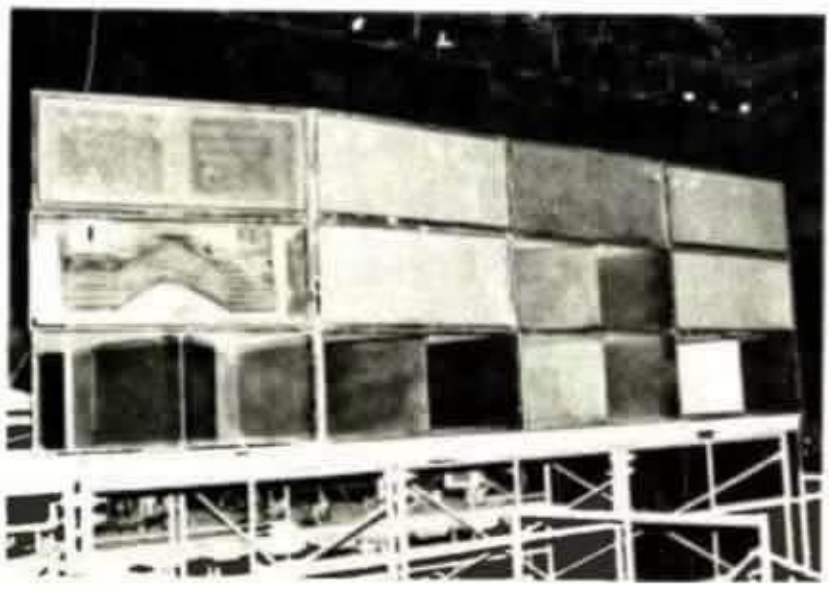
Stage Monitors

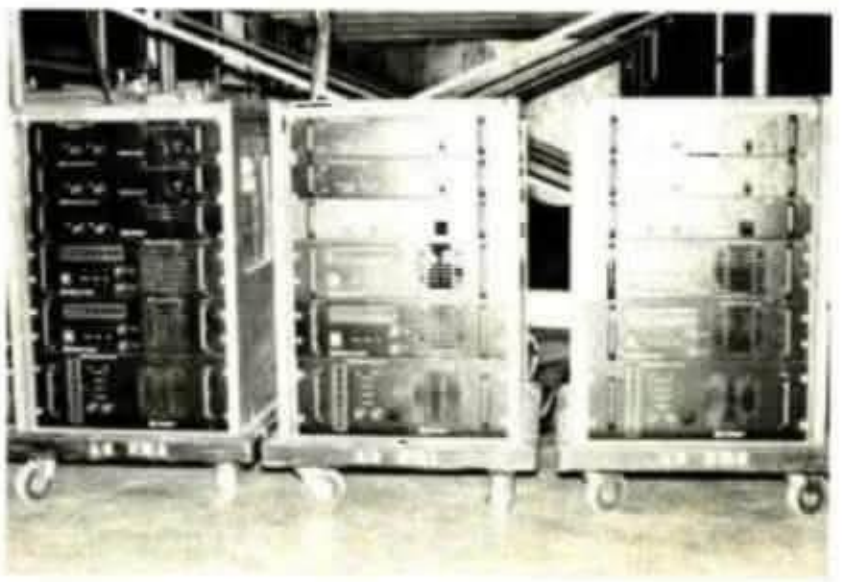
Jim "Bugsy" Moran *(pictured right)* oversees a streamlined stage monitoring system that is centered around a Gamble SC 32-16 console (Figure 10). "A lot of people aren't used to the Gamble boards yet, because there aren't that many of them around," Moran explains. "I think they're the best you can get. It's sort of like driving a really custom hot-rod car. If you're just used to driving run-of-the-mill clunkers, the performance car is a bit scary at first. Then, when you sit down and get the *feel* of the controls, everything seems possible. It's the same way with this board. Once you spend a few hours alone with it, and put on the headphones and start to 'tweak' a few things, you can hear and feel the difference."



Sound On Stage owner Jerry Pfeffer feels that the firm's Gamble boards have more than paid for themselves. "It was scary at first, buying a console that cost more money than my first house," he notes. "The Gamble consoles that we own have turned out to be *well* worth the purchase price, both from a performance and an eco-

Figure 8 (*shown left*): **Piled three high and five wide, this "deck stack" covers the forward floor seating areas. Figure 9** (*shown right*): **Crest power amplifiers drive the Power Physics system. Each rack contains a Model 5000 (bass), a Model 4000 for mids and one for a spare,a Model 2501 (horns), and two Model 2001s (tweeters).**







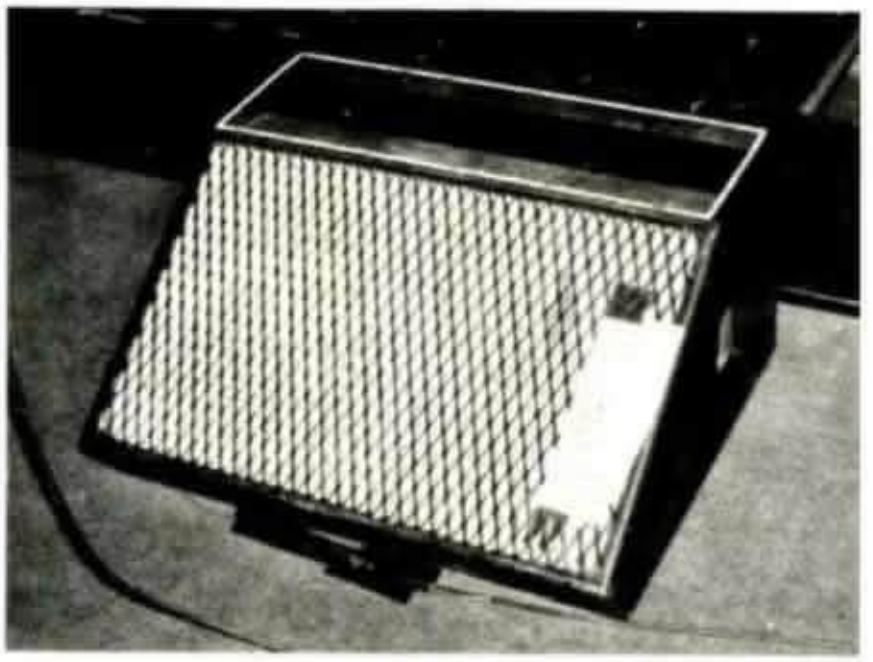


Figure 10 (*shown left*): The streamlined stage monitor system is centered around a Gamble SC 32-16 touring board. Yamaha F-1030 and Sundholm 202 electronic crossovers are used to offer bi-amped mixes. Figure 11 (*shown right*): Custom floor slants for Huey Lewis and guitarist Chris Hayes hold two JBL E-120 speakers and an Emilar driver. Sturdy bracing and a metal grill allow the performers to walk up the front of the box and stand on it.

SOUND ON STAGE WITH HUEY LEWIS

nomic point of view."

For Huey's show, Bugsy Moran provides a total of eight monitor mixes; on occasions when the Tower of Power horn section joins the group's tour, an additional two mixes are provided. Yamaha F-1030 and Sundholm Model 202 electronic crossovers split the mix output signals for the bi-amplified floor slants. Klark-Teknik DN360 graphic equalizers are available for "critical" mixes. "The Gamble board has parametric equalization on its output mixes," notes Moran. "I don't use the graphics much." A dbx Model 160 compressor-limiter is channel-inserted for the kick drum.

Monitor system power is provided by Crown DC-300As and Phase Linear 700Bs on the low-end, while Crest Model 300 (Power Line Series) amplifiers push the high frequencies.

Huey Lewis' downstage vocal position is served by a custom-built two-by-12-inch floor slant housing two JBL Model E-120 loudspeakers and a two-inch Emilar compression driver (Figure 11). The enclosure has been constructed so as to allow the performers to walk up the front grill and stand on top of the sturdy box, which is capped with a non-skid material.

In addition, a flown pair of Meyer UM-1 UltraMonitor cabinets are targeted at the vocalist's downstage center position (Figure 12).

"It is not a very large, massive monitor system," remarks Moran. "Huey likes to be able to listen to the house sound coming back at him, and then sort of bring the monitor level up to that for a reference. This is not a blow-you-away stage level sort of show.

"Actually, we don't want to spoil the guys with too much gear all at once," he laughs. "They are only into their second real year of arena touring!"

Additional on-stage floor slants include boxes loaded with Gauss 15-inch loudspeakers and Altec 1.4-inch Model 290 compression drivers. Drummer Bill Gibson is flanked on each side by a pair of custom mini-stacks, each of which is loaded with two, 15-inch Gauss Model 5842 loudspeakers, a 12-inch JBL Model E-120, and a JBL Model 2441 compression driver (Figure 13).

"This band plays well together on stage," Moran explains. "They actual ly listen to each other, even on large stages. Nobody tries to blow everyone away — they consciously try to limit the on-stage level. It makes it easier both here on the stage, and in the

They know why...

■ *"We can work around lights on the studio floor with far less concern about noise."*
W. E. (Bill) Thompson
KPRC TV, Houston, TX

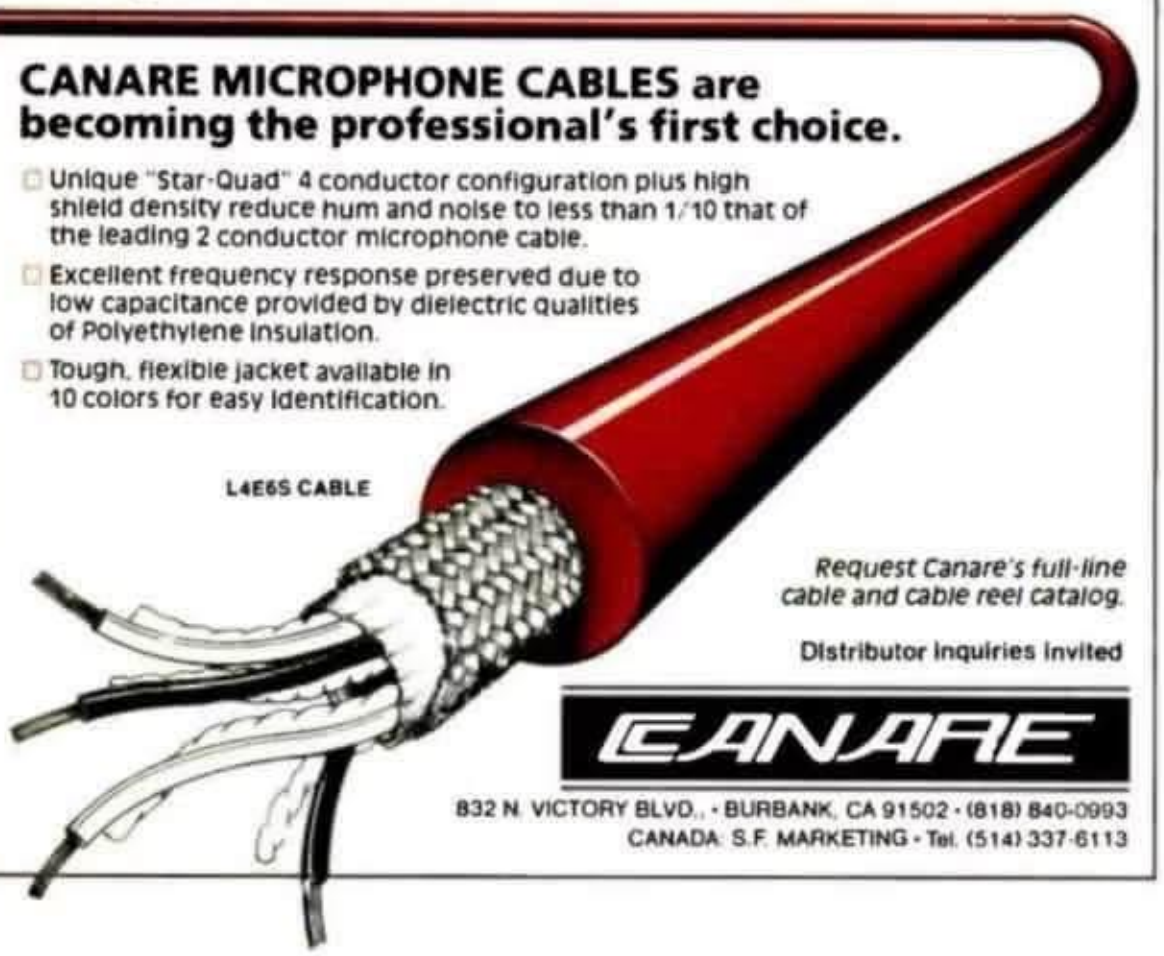
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For additional information circle #38

house. Mario Cippolina, the bass player, used to have a big speaker stack when they played in clubs; that has been cut in half now that we're in arenas. The players let the main speaker system do the work. What we have on-stage is just for reference. We're *not* trying to fill up the whole arena with just guitar amps, or even monitors."

Stage Inputs

Featured performer Huey Lewis sings through a Shure SM-58, and blows harmonica through an old-style Shure "bullet"mike that is fed into a Fender Harvard tube amplifier which, in turn, is picked up with a Beyer Model 400. Other vocalists are supplied with Beyer M69 microphones.

Johnny Colla's saxophone is picked up both with a Beyer Moded 201 and a wireless system. Shure SM-58 microphones are used on other guitar amplifiers, a Leslie cabinet (top and bottom rotors), and to trigger a Linndrum machine from the kick drum.

The kick is also given a Beyer Model 88. The snare is miked, top and bottom, with Shure SM-57s, and the hi-hat with a Sony Model CP23. Sonys are also supplied for the overhead cymbals, while Beyer 201s pick up the rack and floor toms.

When the guest horn section is present, Sennheiser MD421 microphones pick up the trumpets, alto and tenor saxophones, and a Beyer 88 used on baritone sax.

House Mix Position

Soundmixer Mark Deadman *(pictured left)* has been with Huey Lewis and the News since the group's early beginnings. He has a long history of involvement with San Francisco Bay-area bands, including a stint with the Sons of Champlin nearly a decade ago.



"One of the most interesting things about the production crew on this tour is that nearly everyone has mixed sound at one time or another," Deadman points out. "Our stage manager, Alan Chinowsky, toured with Tower of Power doing their sound. Production manager Terry Persons was with Pablo Cruse. Everytime I turn around, another sound man is looking over my shoulder!"

Deadman mixes Huey's show on a Gamble HC 40-24 board. Additionally, a Studiomaster 8×4 rack-mounted mixer is available for use as a horn-section submixer (Figure 14).

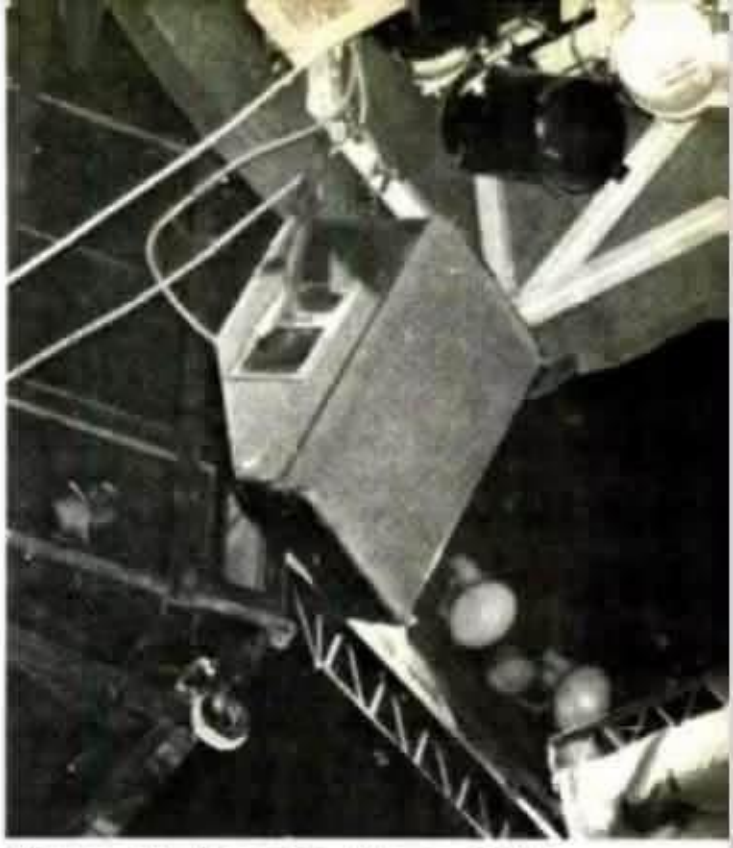


Figure 12: Hanging Meyer UM-1 UltraMonitors comprise the high-fidelity, low-visibility sidefills for Huey Lewis.

"Being able to pick and choose the consoles, and the sound system that we want to use, is a great position to finally be in," Deadman says. "A lot of people think that Huey was an overnight success, but that is not true. For *five* years, we've been out there, doing a lot of little clubs, a lot of opening-act slots for people like the Doobie

. . . *continued overleaf* —

For additional information circle #41





Figure 13 (*shown left*): **Custom three-way drum monitor stacks house Gauss and JBL drivers. Figure 14** (*shown right*): **House electronics gear includes a Gamble HC 40-12 board, a Studiomaster submixer, Yamaha Q-1027 graphic equalizers, dbx compressor-limiters and noisegates, Uptown Audio and Brooke-Siren Systems crossovers, Lexicon Model 200 stereo reverb, and assorted digital delay units.**

SOUND ON STAGE WITH HUEY LEWIS

Brothers.

"When you are using someone else's system, it is hard to go for the sound you *really* want. That is probably the best thing about the position I find myself in now . . . being able actually to specify the equipment, and working with the tools I want to use. Sound On Stage has always given us good service, since the days we were doing smaller shows. Being able to work together on developing this system has been good for both of us."

Deadman's house processing gear includes Yamaha Q-1027 graphic equalizers, dbx Model 162 compressor-limiters, and a dbx Model 160X provided for use by opening acts. Effects include a Lexicon Model 200 stereo reverb, two Korg SDD-3000 digital delays, a Roland SDE-3000 delay unit, and an MXR digital reverb.

"Even when a sound company has good effects 'toys' to supply, I have always felt it important to have our own tools available. That way, no matter what system we were using, I was able to keep a consistent sound," Deadman confides.

A dbx Series 900 modular processing rack offers Deadman five 903 compressor-limiter modules (assigned to kick, snare, bass and Huey's vocal), and three 904 noisegate modules for use on the toms.

System Drive Rack

Sound On Stage drives the Power Physics system with an Uptown Audio CO-4C four-way electronic crossover. Uptown design engineer Chris Lovett is also, by coincidence, senior design and service technician for Sound On Stage. "This company used to use a lot of off-the-shelf electronic products," he states. "Around 1980, Jerry [Pfeffer] and I decided to design our own crossover based on the particular type of filters we wanted. Then, 18 dB Butterworth type filters were mainly available. We wanted to try the three-pole Bessel type, and found it to be the most satisfactory. Since then, I've looked at four-pole Linkwitz-Riley types. The steeper filters theoretically give you less interaction between adjacent bandpass frequencies.

"I am building a limited number of my UTA™ crossovers . . . custom devices can have a pretty high cost. There is a very specialized market for these crossovers, so I am not looking for a mass-market product. There are plenty of products out there for people who *just* need a crossover."

A spare Brooke-Siren FDS-340 crossover is provided as a standby unit, although Sound On Stage audio crew chief John Taylor professes not to like the fact that the unit "can't be turned off all the way." [Note: being able to completely turn down each frequency band of a crossover is often considered a "must-have" feature by touring sound engineers. Manufacturers, take note! — DS.]

. . . continued overleaf

For additional information circle #42

Taylor sets up the speaker system in a stereo mode for each show, with the sidefill hanging stack being given the opposite stereo signal when compared to the adjacent main speaker array. The deck system is run mono for positive coverage of the front floor seating areas. The rear hanging stacks are given a stereo feed.



System levels are set early in the day. Taylor and Sound On Stage technician Rob Goodwin use walkie-talkies for communicating information about crossover levels and system coverage. "The radios make it very easy," explains Goodwin (*pictured left*). "One man is at the house board, and the other walks the hall. We use the radios for setting the flying system height, and for getting the optimum crossover settings."

The Sold-Out Show

During 1984's touring season, two industry trade magazine's consistently reported Huey Lewis and the News as one of the 10 largest grossing tours with each passing week. The Sound On Stage Power Physics system was set up and used to fill some of the nation's most popular performance venues. Capacity crowds were the general rule.

Since the system is driven by a power amplifier section rated at something under 25,000 watts, and many touring acts are carrying systems with power ratings four times as large, I was very curious to make an objective comparison of this horn-loaded, compact system, and a relatively typical massive direct-radiating system that I heard in the same 15,000-seat San Diego Sports Arena two nights previous. Both shows were sold out.

I personally enjoyed the sound of Huey Lewis and the News with this Sound On Stage system. It was a "clean" sounding show, with a relatively small amount of bass rumble for that particular arena. The collegiate crowd was exceptionally responsive, and the audience members spent much of the time on their feet.

I would have liked to have doubled the size of the loudspeaker system in the 15,000 seat venue to increase the system's headroom. The show mix was often approaching the system's acoustical limitations, and its ability to actually move the air without taking the power amplifiers into clipping.

Mixer Mark Deadman countered my suggestion with the following (realistic) comments: "Sure, more speakers would be nice; it's great to have more horsepower than you need. But we're talking *reality* here — more sound means another truck. At this point in this act's career, getting out and doing as many shows as we can in an affordable manner is important, more important than going after esoteric stuff. Our whole production is geared towards being *affordable*. The cost of a larger system has to come out of somebody's pocket. Besides, go ask these kids if *they* liked the sound of the show!"

(You're right, Mark. They loved it. The vocals were strong and clear. The kick and bass guitar had a solid impact at the rear of the hall. The high-frequency coverage was smooth and even.)

Economic realities are perhaps bringing about subtle changes in the thinking of some production managers and touring soundmixers. Sure, there will always be a "Mega-Tour" out there, hanging speakers from every rafter. For the many other shows on the road, however, an active search is on for sound systems that offer the best audio quality for the fewest feet of truck space.

The Power Physics system designed by Sound On Stage is a good example of a new, consciously-designed loudspeaker package for touring use that attempts to keep those parameters in mind. ■■■

ULTRADAR

For additional information circle #44