## **Job List —** Some users and their applications of the **LynTec** CrowdComp™

TRUE AMBIENT SENSING Crowd Compensating Computer

**Gillette Stadium — Foxborough, Massachusetts**
New home of the New England Patriots

**Minute Maid Park — Houston, Texas**
Home of Houston Astros

**Notre Dame Stadium — South Bend, Indiana**
80,2500 seat football stadium.

**Spartan Stadium — Michigan State University — East Lansing, Michigan**
72,000 seat football stadium.

**San Francisco Municipal Railway**
Paging level compensation for varying platform noise.

**RCA Dome — Indianapolis, Indiana**
60,000 seat multipurpose arena. Home of Indianapolis Colts and '91, '97, 2000 Final Four. Crowd noise during Final Four >117 dBA.

**Beth El Synagogue — St. Louis Park, Minnesota**
Worship facility in major airport final flight path. Rabbi and Cantor's gain controlled by room ambient including choir.

**Safe Harbor Hydro-electric Dam — Conestoga, Pennsylvania**
Facility-wide paging ambient control using 4 CrowdComps.

**The Pyramid — Memphis, Tennessee**
22,000 seat arena. Home of Memphis University basketball.

**Boston College Alumni Stadium — Boston, Massachusetts**
45,000 seat football stadium using 4 CrowdComps.

**Continental Airlines — Denver International Airport**
Paging ambient controlled in highly reverberant aircraft maintenance hangars.

**The Ballpark in Arlington — Arlington, Texas**
Home of the Texas Rangers.

**Ericsson Stadium — Charlotte, North Carolina**
72,000 seat football stadium. Home of Carolina Panthers

**FedEx Arena — Memphis, TN**
New Home of Memphis Grizzlies.

**Floyd Casey Stadium — Baylor University — Ft. Worth, Texas**
50,000 seat football stadium.

**Alltel Stadium — Jacksonville, Florida**
Home of Jacksonville Jaguars.

**Amon G. Carter Stadium—Texas Christian University — Ft. Worth, Texas**
46,000 seat football stadium.

**Hubert H. Humprey Metrodome — Minneapolis, Minnesota**
Multipurpose arena. Home of Minnesota Twins & Vikings

**Kumamoto Prefectural Hall — Japan**
Ambient level control of lobby background music and announcements.

**Sanford Stadium — University of Georgia — Athens, Georgia**
10,000 seat multipurpose arena.

**Del Mar Racetrack — San Diego, California**
Racetrack seating 15,500 with additional 25,000 standing capacity.

**University of Nebraska, Memorial Stadium — Lincoln, Nebraska**
Home of the Nebraska Cornhuskers.

**Veterans Stadium — Philadelphia, Pennsylvania**
Home of the Philadelphia Eagles and Phillies

**Ford Field — Detroit, Michigan**
New home of Detroit Lions.

**Compaq Arena — San Jose, California**
Home of San Jose Sharks.

**Gund Arena — Cleveland, Ohio**
20,000 seat arena. Home of Cleveland Cavaliers.

**Rose Garden Arena — Portland, Oregon**
18,000 seat arena. Home of Portland Trailblazers

**Reno Airport — Reno, Nevada**
Ambient control in baggage claim areas

**Turner Stadium ('96 Olympic Stadium) — Atlanta, Georgia**
Home of the Atlanta Braves

**Darrell K. Royal-Texas Memorial Stadium, University of Texas — Austin, Texas**
77,000 seat football stadium

**Neyland Stadium — University of Tennessee — Knoxville, Tennessee**
107,000 seat football stadium

**Chicago Board of Trade — Chicago, Illinois**
Ambient control of trading floor paging

**Cinergy Field — Cincinnati, Ohio**
Home of the Cincinnati Reds

**HoHoKam Field — Mesa, Arizona**
Spring training camp of Chicago Cubs

**Sports Fans:**

Pro teams using the
**LynTec** CrowdComp™

Astros
Bears
Bills
Blazers
Braves
Browns
Buccaneers
Colts
Cavs
Cubs
Diamondbacks
Eagles
Giants
Grizzlies
Jaguars
Lions
Packers
Panthers
Patriots
Phillies
Rangers
Ravens
Royals
Sharks
Texans
Tigers
Titans

AppNote

# LynTec

## CROWD COMP™ APPLICATION NOTE

**FOR FRIENDLY CONSULTANTS AND OTHERS WHO MAY HAVE AMBIENT NOISE CONTROLLED APPLICATIONS.**

The **CROWD COMP**™ has found wide acceptance in NBA, NFL and NHL sports applications.

*We've also learned some **real-world** lessons about interfacing with the sound system operators and owners.*

To give you the benefit of our experiences, here are some observations:

Most sound system operators never have an opportunity to listen to the system from the audience's vantage point. Operators and announcers are not in an ideal location to hear how the sound system sounds to the audience, especially during a noisy event.

Their basis of operation of the system is primarily by what they hear, secondarily by what management hears or by how many complaints are received.

Sound system operators are very reluctant to relinquish **any** control of the system to an automatic box, regardless of how well it works.

Early consultation with the sound system operator is **very important**.

### Operator's gotta be a believer!

He must understand and ***believe*** that automatic gain-riding can make his job *easier* and his mix *sound better*. If the sound system operator doesn't believe that crowd compensation is a good idea, he'll make sure it doesn't work since he'll be forever trying to prove he's smarter than the box.

*Automatic gain control* to some is a compression system that over-compensates when it has no signal input.

Not with the CROWDCOMP!

The CROWDCOMP ambient controlled system is a gain expander, expanding the level only when the crowd is loud. Operators need to realize they will have to ***change*** their approach for the CROWDCOMP to be effective. No longer will they *set it loud so it'll get over the noisiest crowd*.

With the CROWDCOMP, the quiet crowd will have only enough level to hear comfortably... letting the CROWDCOMP raise the level when the crowd is loud. This may be a tough concept to sell to the guy who's accustomed to ***everything*** loud.

A San Diego newspaper reported after CROWD COMP's were installed at a race track...
**'The sound system modulates as the crowd orchestrates'** Must have been a music critic.

### Dealing with the NIMS

**(N**ot **I**n **M**y **S**ystem!) syndrome

The sound system operator wants **CONTROL**. Don't we all? With a Remote Display mounted on the board, he'll still have it. The RD-1 Remote Display gives him instant feedback of what the CROWDCOMP is doing for him and instant control to bypass it.

### Training the owner

Stadium and arena management and owners rarely are in a location that is representative of the noise level that the crowd experiences. They are normally in a much quieter environment and may object when the sound level expands...

*The Golden Rule:* He who has the gold ***rules*** the sound system. He must be educated! He has spent some of that gold to provide the audience with sufficient intelligible sound... it may sound too loud to him when the *bill-payers* are hearing fine... **Get him into the crowd!** Try to get the decision maker to walk into the crowd during an exciting event to hear how well the CROWDCOMP is working.

### Yell / response time factor

Basketball and football crowds typically yell together with a rise time of 1 to 3 seconds. Everyone in the crowd runs out of breath at the same time, resulting in a fall time of 600 milliseconds or less.

Manual operator tracking of this envelope is impossible because of between-the-ears computation time and the even slower brain-to-hand response time.

An operator may ***say*** he follows the crowd, but usually he gets busy or just tired and **leaves it loud**. The CROWDCOMP however, **will track** the envelope, providing accurate level control in response to the crowd.

### Referees wireless microphones should not be ambient controlled

Achieving gain before feedback in central cluster applications is difficult at best. **Rarely** will the referee be **too loud,** so his microphone level always should be high and mixed into the speech system *after* the CROWDCOMP. The ref's mic. channel must always be left open during the game because it's almost impossible to anticipate his every announcement.

### Potential pitfalls of this approach

#### Referee's position

The referee's field position may be anywhere. If he hasn't had some sound system training, he may even face the cluster during an announcement and send the system into feedback. Operator control is mandatory.

#### Half time burps

Normally the wireless transmitter is turned on continuously and the microphone is opened by the referee for an announcement.

The wireless receiver antenna is located as close as possible to keep the line-of-sight transmitting distance to a minimum. During half time the referee takes a well deserved break off-the-field. Off-the-field in large stadiums means he enters a concrete tunnel and relaxes in a bunker that is effectively an R.F. shielded room.

In this foray, the received signal weakens, disappears or becomes noisy. If the operator doesn't anticipate this action and pull down the referee's mic. slider during half time and at the end of the game, he'll be rewarded with burps and pops that aren't contingent upon the referee's refreshments.

Job list ☞

We welcome your experiences, comments or questions.

Lynn Potter **800-724-4047**