

# THE HORIZON AUDIOgram

Horizon Audio Services Ltd., is a Professional Systems Contracting company specializing in the design and installation of sound and video systems for Houses of Worship. Over 95% of our business each year is with churches.



## 2002

The Horizon Audiogram is the official newsletter of Horizon Audio Services. For more information on the products and services that we provide...

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## Special points of interest:

- *Horizon Audio Announces the Passing of Company Co-Founder*
- *Comic Corner*
- *What's New from NSCA 2002*

## Digital Processors—One box can do it

With the proliferation of digital signal processing devices over the last few years, it was only a matter of time before digital made its mark in church audio systems. DSP's have become extremely economical, given all the functions one unit can do.

There are many units on the market that provide two, four, or more channels of high performance parametric equalization, compression, limiting, and signal delay all in a single or double rack space chassis. These functions would have required at least three separate pieces of equipment back in the 'old days'.

Current generation models offer parametric equalization filters, which differ from the one-third octave filters used in previous models. A parametric filter gives us full control over the filter amplitude (amount of cutting or boosting applied), the center frequency, and the 'Q' (filter width). One-third octave filters have a fixed frequency center and fixed Q; thus it is easy to see why para-

metric models offer much greater equalization power and control.

Another advantage of digital processors is the ability to program multiple memories or scenes. Equalization curves can be tailored for a specific situation, such as the pastor with his wireless lapel microphone. Another scene can be set specifically for live or recorded music; another for the lectern microphone, and so on. This allows us to optimize the audio system for specific tasks.

Currently, our models of choice include the Ashly Protea series, with two and

four channel models and in economy situations, the QSC DSP-3 and DSP-4 models, small 'black box' units, that can plug on to the rear of some QSC power amplifiers.

Today's digital devices save you cabinet rack space and money, as well as offering greatly enhanced system control and performance capability.



## Audio Training

In a previous newsletter we highlighted a two-tape videocassette set we had discovered called *Sounds Simple* audio training tapes. To date approximately 30 churches have purchased this set for on-going training of their system operators. At \$99.95 per set, these tapes offer about 70 minutes of training time, and are an economical, long-term train-

ing tool. Horizon Audio stocks these tapes on a continuous basis. Although not available for rental, you are welcome to drop in and pick up your copy, or ask us to ship them to you. Our standard 'net 30 days' terms apply.



## *Horizon Audio Announces the Passing of Company Co-Founder Frances Wettlaufer*

We regret to announce the passing of Fran Wettlaufer, who co-founded Horizon Audio over 20 years ago with husband Dave.

Frances was diagnosed with Non Hodgkin's Lymphoma three years ago, and fought three occurrences of the disease. Through most of this time she was able to carry on a reasonably normal lifestyle, however, after the third occurrence last summer, she and her doctors decided to undertake a stem cell transplant, a process that in many patients can substantially improve the odds of long term survival. She entered hospital for this treatment last December, and although she initially showed encouraging signs of improvement, the cumulative effects of the disease and the treatments proved overpowering.

She passed away on February 19<sup>th</sup> in her 48<sup>th</sup> year. She is survived by husband Dave, and children Matthew and Carolyn.

### *With Heartfelt Thanks*

I wish to express my gratitude and appreciation for the Christian love and sympathy many of you have expressed over the past weeks since my wife's death. In particular, I appreciate the ministry of Pastor John Westenberg, Crossroads Alliance Church, Ingersoll; Captain Len Ballantine, The Salvation Army Westminster Park Church, London; Rev. Matthew Penny, Central United Church, St. Thomas; and Rev. Ron Garrison of Mission Partners International. It's been a long and often difficult journey since December 2000 when we finally received a tentative diagnosis with the doctor's words "I think you have either leukemia or lymphoma". However, those of you who knew Frances knew that she possessed a strong spirit and profound faith in the Lord. These were the key elements in her battle plan. She vowed to fight on as long as she had strength, and she did!

I have learned over the past three months that no husband ever knows all the things his wife does! I learned how effective Frances was at communicating her faith and beliefs in a quiet and unassuming way. One of our son's teenaged friends stated at the funeral that Frances had given him his first Bible, and he is still reading it. Another lady told me that Fran had been the first to encourage her to start studying the Bible. Today that lady attends a Bible study regularly, and sometimes even leads them. Frannie also daily demonstrated her faith to our children and myself, although I know we were not always listening! (I think I listened more than the kids did!)

Three scripture passages have significance as we adjust to our new reality. Proverbs 31 asks "who can find a virtuous woman?" I of all people know that Frances was not perfect, however, I also know that the verses following this question apply to her. It concludes with "charm is deceptive and beauty is fleeting, but a woman who fears the Lord is to be praised". The second proclaims our sure and certain hope of the resurrection as expressed by the Apostle Paul in his writing to the Corinthian church. "And God will raise our bodies from the dead by his marvellous power, just as he raised our Lord from the dead." (1 Corinthians 6:14) The third passage is from Proverbs 10:7. It states; "The memory of the righteous will be a blessing", and Fran's memory is certainly a wonderful blessing to us.

And now, as she wanted us to do, we carry on, but with an altered sense of priorities. Wayne Watson has expressed this in a song, the chorus of which says; **"Because the ones left standing have to cry all the tears, and replay all the memories, the good and bad from the years. And we shoulder the weight of the work left to be done, and the ones left standing carry on. And in eternity when all the mysteries are gone; it will be clear that it was our God keeping us strong."** Again I thank you for your support; blessings to you all!

*David Wettlaufer*

## Technical Corner: Speaker Performance

A speaker is a speaker is a speaker, right? Well, no! For best results, a speaker designed for the application in question will be most satisfying. The engineer designing a high quality home hi-fi speaker has different goals in mind than does the live sound engineer or the professional installation engineer. You will always achieve the best long-term results when you use the correct tool for the task at hand.

Everyone will be familiar with the concept of speaker frequency response and power handling, however, there are many aspects of speaker performance that most people will not think of. How about sensitivity, efficiency, rated dispersion angles, crossover point, impedance curve, time alignment, and power response?

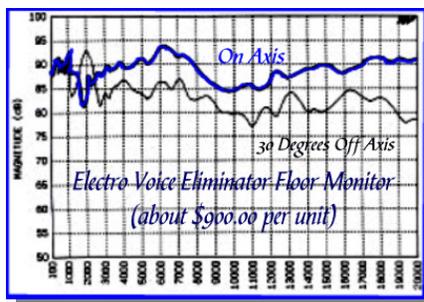
Perhaps the single most important aspect of concern to most church sanctuary installations is the speaker's specified dispersion angles and dispersion control. We want, ideally, to have everyone in the pews hear essentially the same frequency response and same volume. We want to ensure that no seating area gets left out. Dispersion control refers to how well the speaker can spread its sound over the area specified by the manufacturer.

We have all seen speaker frequency response curve graphs. These are usually measured directly in front of the speaker. We call this the 'on axis' or 'axial' response. But what does the response look like off axis? Let's move the measurement microphone 30 degrees off axis. Does the frequency response look the same? Let's try 40, 45, and 50 degrees off axis. With each measurement we will see that the volume of the speaker reduces, especially in the high frequencies. When the volume falls further than 6 dB lower than the on axis measurement, we arbitrarily say that this is the rated dispersion angle for the speaker, at that frequency. Thus, if the on axis volume at 8

kHz is 'x' db, but at 45 degrees off axis has fallen to 'x-6' dB, we say the speaker has a 90 degree dispersion pattern at 8 kHz. Ideally, the speaker will behave similarly over a wide frequency range, however, in real life we know that it is easier to make a speaker disperse sound widely and evenly at lower frequencies than at higher. How well a speaker does at high frequency dispersion is a good indicator of its overall quality. It takes careful research time and money to accomplish this, thus the higher cost of a good speaker. Smooth even sound dispersion is important not only for the main speaker system, but for monitors as well. If two or three people are using one monitor, it would be good if they each heard the same frequency response, and one would think that, because the singers are standing side by side, they would.

However, we have measured the on axis and 30 degree off axis response of several economy and middle priced monitors, and have been amazed by the results. A 30 degree angle is the equivalent of a singer taking one step over from on axis. With inexpensive units, (ranging in price from about \$375.00 to about \$600.00 per unit) these two measurements can be so much different that you would think you are looking at two different speakers! It's not until one gets into the \$800.00 and up price range that we begin to see some reasonable consistency.

When you are considering the purchase of monitors or new main congregation speakers, remember that you want everyone to hear the same sound quality regardless of where they are sitting. Generally, the more money you are willing to invest, the better results you will obtain, and the longer you will be happy with your purchase!



## What's That In His Ear?

It's become quite popular among professionals on television; tiny earpieces in their ears with fine wires disappearing down their back. These of course are In-The-Ear monitors; ITE, or simply in ear monitors for short. These devices are fed from a small portable receiver that picks up a monitor signal transmitted from the monitor bus on the mixer. Although a good wireless in ear system can be expensive, they can solve many problems, not the least of which is the excess stage volume. Think of it; if the stage volume can be reduced, then, theoretically at least, the sound system operator can reduce the volume of the main system.

In Ear systems take time to get accustomed to, and the user will need to hear a more refined monitor mix, as instruments that were heard on stage will tend to be blocked out by the isolation of the earpieces, however, once you get used to them, you won't want to give them up!

Horizon Audio has both the Shure P4MHW E1 wired system and the Shure P6TRE1 wireless model in stock and available for trial. Stop by for a look and listen!

## COMIC CORNER

WELCOME TO THE 21ST CENTURY



"I'm the worship leader, and you?"

Comic Courtesy of:

*Horizon Audio Stocks Compact Power Storage Devices—You have them in a variety of devices, including your wireless microphone transmitter and hearing enhancement receivers. Batteries! Of course you can get them from Canadian Tire, Home Depot, or the local corner gas and convenience store, but can you be sure of how often their stock turns over? We stock Panasonic alkaline units in nine volt and AA sizes, at prices that will usually be as good as or better than the big box stores. We will even ship them to your church office, with net 30 day invoice terms. Don't be caught with your power storage devices empty!*

## Suspenders Set To Make A Comeback



Many years ago I remember my father wearing wide elastic suspenders to work each day. I thought they looked rather silly and unfashionable. However, in this age of personal digital gadgets, I'm wondering if I might need to reconsider my previous judgement.

In preparation for an extended summer holiday trip I recently purchased a small GPS (global positioning system) receiver. I noticed in the manual that an optional carry pouch is available for it. I pondered all the devices I have accumulated over the years that I can clip onto my belt. Now, whether I am hiking the western mountains or strolling the never-ending halls of the West Edmonton Mall, I can be confident I won't get lost. I can reach for any one of the following:

- my tri mode digital cellular telephone
- my dual band FM amateur (Ham) radio walkie-talkie
- my Palm Pilot
- my wide band portable communications receiver scanner
- my FRS (Family Radio Service) short distance walkie-talkie
- and my new GPS receiver.

These devices have to compete for belt space with my Leatherman multi tool and mini Mag-Lite. Perhaps I should also consider a pager, or maybe one of those Blackberry wireless E-mail things. I have decided to save the suspenders for my hockey outfit, but I better be sure my belt is done up tight!

## What's New From NSCA

Each year the National Systems Contractors Association sponsors the premier trade show for the professional audio industry. Horizon Audio personnel have attended the show each year for about 15 years now, as it is *the* show to get the scoop on the latest innovations. Often what we see at NSCA eventually finds its way into our installations, once we are convinced all the bugs are worked out! This year Dieter Kunz, our systems engineering specialist, travelled to Denver, Colorado and returned with the following show highlights:

- New programmable UHF wireless microphone systems (950+ frequencies) from Telex and Electro-Voice
- A new generation of portable lightweight speakers *not* manufactured of polypropylene from Electro-Voice
- The latest version of E.A.S.E.™, a design program for acoustic investigation and speaker system design
- The next generation of digital processors from manufacturers like Ashly, Shure, Symetrix, QSC and Rane
- A long awaited new line of engineered speakers from JBL (AE series) with no less than 33 new models
- Refined lavalier microphones from Audio-Technica
- A new flagship line of installation amplifiers from Crown featuring CobraNet™ compatibility and high efficiency power supplies with output power ratings of up to 3000 watts!
- Ultra flexible compact rack mount mixers from Crest
- A portable recordable CD unit from Superscope. Change the pitch without altering the tempo, and change tempo without altering pitch!
- From Denon and Marantz, new models of CD players and CD recorders housed in one chassis
- The Razorblade™ economical quadratic diffusor from Canadian company Primacoustic. This modular unit is said to effectively diffuse sound from about 400 Hz up, and should be an economical way to reduce echoes from large sound reflecting surfaces (such as rear walls of sanctuaries) without reducing the general reverberation time.

The NSCA show lasts only three days, but we will be hard at work digesting all the new information for some time to come, determining what products offer good, long-term value for our church clients. Hopefully, we will have sifted through the mounds of literature and more than 50 product CDs Dieter returned with before next year's show starts!