Subject: Re: folded voight pipes???
Posted by Bob Brines on Mon, 12 Dec 2005 21:05:25 GMT
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The success of a quarter-wave speaker depends on controlling the first 2 or 3 harmonics. The normal procedure with a "Voigt Pipe", also known as a Tapered Quarter Wave Tube, is to place the driver at the node of the 1st harmonic, which is acoustically, but not necessarily physically, 1/2 way down the pipe. This completely suppresses the 1st harmonic. The problem with a poorly designed TQWT is that the 3rd harmonic (there are only odd harmonics in a stopped pipe) is not properly suppressed. The Lowther Club of Norway TQWT is much too small in volume to allow the suppressed 1st harmonic to affect the 3rd.In an untapered Mass-Loaded Transmission Line speaker, the normal procedure is to place the driver at the first node of the 3rd harmonic, about 1/5 the length of the pipe. Suppressing the 3rd harmonic reflects both ways and helps to suppress both the 1st and 5th harmonic. Generalizations are not real good with pipes, but I have found that if a driver works at all in a quarter-wave pipe, an untapered pipe will usually lead to the smoothest output.The graphs above are are modeled output using a Lowther PM6C diver in the LCN TQWT, a quick hack at an optimized TQWT and an optimized MLTL. The MLTL presents the smallest physical cabinet and the smoothest output. I am treading as close as I think I can to the limits of what a commercial vendor can say, but is worth at least what it cost you.Bob