

HIFI ZINE

THE ENTHUSIAST'S AUDIO WEBZINE

Magnepan Incorporated—A Tiny Giant

Industry Spotlight
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Though it may sound like the stronghold of a race of ice giants straight out of The Golden Compass, White Bear Lake is a working class suburb of Saint Paul Minneapolis. There *is* one giant living amongst the modest homes, strip malls and wetlands though, and that's the venerable Magnepan, Incorporated. Known for the quality and value of their relatively large planar loudspeakers, the family run business has been manufacturing their quasi-ribbon and true ribbon products since 1969. Founded by Jim Winey, a 3M engineer who found his Janszen and KLH electrostats wanting, the company continues to be family owned and operated.



We have a large and fairly active audiophile self-help group hereabouts, the ASM or Audio Society of Minnesota, and our Presidente pulled some strings with his buds and arranged a field trip for us. I was happy, for even a few hours, to escape the pain of trade show prep, so I pointed my nav widget at White Bear Lake and off I went.

Our little group, about a dozen, was hosted by Wendell Diller, Magnepan's sales and marketing manager. Manufacturing takes place in a 50,000 square foot shed, and we picked one of the hottest days of the year for our tour...argh.



We started with the wood shop, where the panel frames are formed on a numerically controlled machine. Those frames begin life as a quotidian sheet of trusty MDF; dimensionally stable, homogeneous in all three dimensions, and inexpensive. Sorry, no wenge here folks...

Wendell Diller and Mark Winey



The Wood Shop's spiffy router table



CNC-machined loudspeaker frames

Elsewhere in the plant, the magnet assembly is being formed. Long strips of flexible magnetic material are lined up in parallel and adhered to a perforated metal sheet which becomes a planar pole piece.

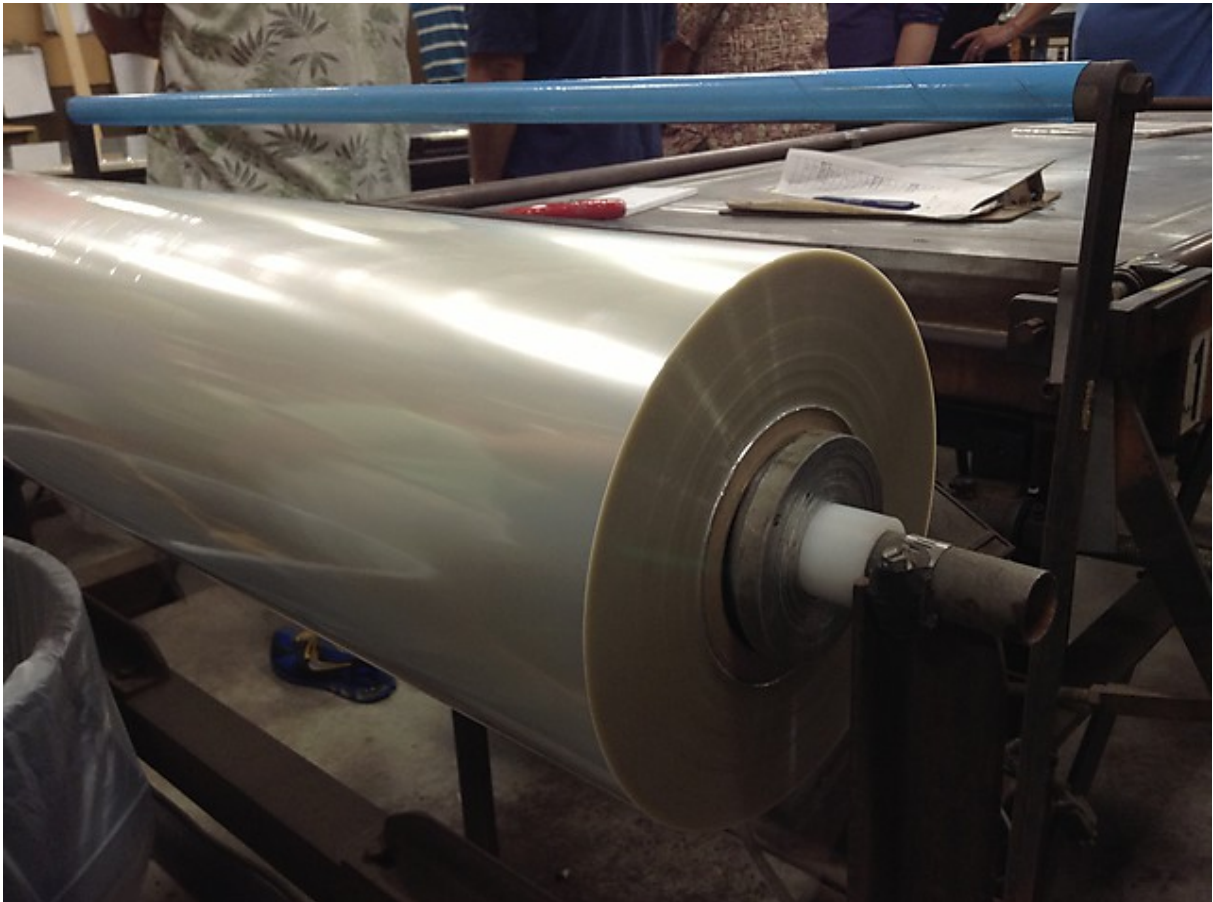


Flexible magnet material



To create a “voice coil,” you need a former. Traditional loudspeakers use circular or square cross-section wire wrapped around a cylindrical former. Magneplanars use something akin to more modern printed voice “coils” sometimes used in tweeters. Instead of wire, a very, very thin aluminum strip is attached, by hand, to Mylar film. When placed in proximity of the magnets, this drives the entire surface of the film. Mylar is also dimensionally stable and not hygroscopic which assures proper tension across the frame.

Magnet assembly



Raw mylar film

In the following photograph, Wendell is standing over a nearly completed panel. The silvery ribbon can be seen...notice how the spacing changes from the long edge farthest from Wendell to the one closest to him, which is part of the solution to producing a broadband emitter. A related aspect of that same solution is the use of two different width magnetic strips where appropriate. Tweeters get a much narrower magnetic strip than low-frequency and broadband panels since shorter wavelengths are involved.



Nearly-complete Magnepan panel

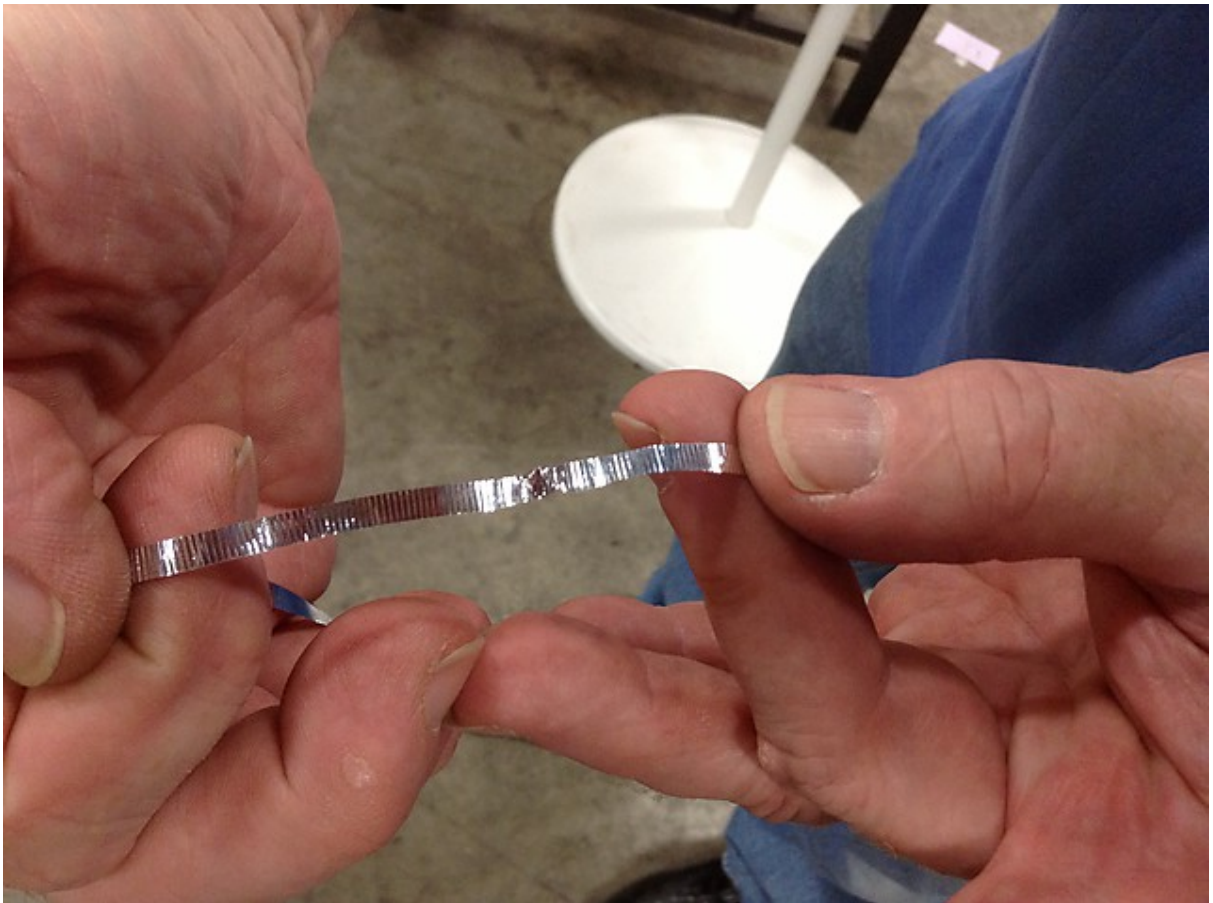
The result of all these elements is a finished panel. Again, the variable ribbon spacing is visible, as are those magic white buttons:



Finished Magnepan Panel

According to Wendell, the buttons “...break up the diaphragm into multiple resonant areas.” Huh? As you probably know, electromechanical systems exhibit resonances as do purely mechanical and electronic systems. EQ is a common example of electrical resonance. The simpler the system, the easier it is to predict the resonant modes. By the way, resonance according to Wikipedia is the “tendency of a system to oscillate with greater amplitude at some frequencies than at others.” Think guitar string or my fave Helmholtz Resonator, an empty Northern Lights Ale bottle – since I get to drain it prior to use. Imagine a Maggie at resonance, that large expanse of plastic flopping around excessively, it’s liable to bottom out with some resulting nasty distortion. Hence the buttons, which detune the panel and reduce the effects of resonances.

Though most of Magnepan's products are quasi-ribbon, they also make true ribbons in the old school sense; a corrugated strip of aluminum, vanishingly thin, suspended in a magnetic field:



Magnepan's ribbon



The ribbon within the completed tweeter assembly

Magnepan offers this true ribbon in their high-end tweeters, two good examples being their 3.7 three way and their super kewel Mini Maggie 2.1 system. Insanely great sound at what could also be called an insane price. In fact, that sums up their entire range...neutral voicing, excellent transient response, room filling with a wide sweet spot considering they are panels, and prices that make one laugh at the idea of domestically (hand) made goods generally being on the spendy side. The down side? They are dipoles, which can be problematic in certain rooms though some of their models are designed to be wall mounted and, "What's that you say, sonny?" – they are not for the hard of hearing or the blow my hair back, "Damn, this is as loud as my Marshall stack!" School of Rock Reproduction.

I'm a recent transplant to the Twin Cities, so I don't have the local historical perspective of some of my ASM geekolytes.

What I can tell you is, I've been in CE and pro audio for a long time, and even when I was a New England kid worshiping at the altar of the Boston Audio Society with local kids like Edgar Villchur, Henry Kloss and Tomlinson Holman cranking out groundbreaking product, the far-away Magnepan company had a reputation as seriously high fi for not a lot of dough. The same is true today...olde tyme value, great sound. If you get a chance to listen, please do.

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