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REPORT!**

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**18 PAGES
OF MUSIC
REVIEWS**



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THE CUTTING EDGE - ALON WOLF INTERVIEW

Alon Wolf

ROBERT HARLEY AND
JONATHAN VALIN TALK WITH
THE MAN BEHIND MAGICO

THE CUTTING EDGE - ALON WOLF INTERVIEW

TAS: Let's start with how you began designing loudspeakers.

Alon Wolf: I built my first Peerless kit when I was 12 years old. Like many other designers, I've always had an interest in technical things and in music, and that led to experimentation.

This was in Israel?

Yes. We at that time did not have the privilege of walking into an audio store and buying speakers—or just about any other luxury goods. I had a fairly modest upbringing, so if you wanted to have something decent to listen to, you had to build it yourself.

At that point, were you already a musician?

Yes. I started to play the violin when I was six years old. I was hoping that I could play music for the rest of my life, which is one reason I came to the United States. I thought that if I could make money fast enough, I could just go and do my art and not have to worry about anything else, but that didn't quite work out [*laughs*].

You've taken an unconventional path in starting a speaker company, with a controversial \$22,000 mini-monitor [the Mini, now the \$29,600 Mini II], and the Ultimate, a quarter-million dollar horn-based system [now \$329,000]. That's not the way most loudspeaker designers launch a company.

Well, it didn't quite start out that way. I began building loudspeakers seriously for myself first, about fifteen years ago. People heard what I was doing and I began to be asked to build them something similar. The first client who made me realize that speaker building could be more than a hobby was Paul Stubblebine, who commissioned me to build a speaker for his new mastering studio. Paul is one of the top mastering engineers, and masters lots of audiophile records—all the Reference Recordings and many MOFI and FIM recordings were done by him over a pair of our loudspeakers.

We called the speakers he has The Wall. It is a four-way system with two 15" woofers, two 10" drivers, a midrange, and a tweeter. It is a real monster at 800 pounds per side. It's actually built from sliced ribs of MDF [medium-density fiberboard], and was the first realization of the type of construction that led to the Mini's cabinet. The idea of slicing ribs and stacking them atop each other started over ten years ago.

After that I began building speakers from aluminum. Our second generation, the Reference, had a 1200-pound cabinet made from massive aluminum extrusions—the same construction currently used in our Model 6. Then came the five-way horn-loaded Ultimate, which is in our current product line. Jeff Rowland, who owns three pairs of our loudspeakers, mentioned us to his distributor in Hong Kong. The distributor asked us to build the definitive two-way, which turned into the Mini.

It's a bit surprising that you used MDF in the early designs given your current view of MDF.

That's how you start, with MDF. We've moved on though... [*chuckles*].

It seems like the new V3 is your first product designed for relatively widespread consumer use.

That is very true. It's our first product built around formulas that are well established and accepted by the market, but with our special twist on how to do things. It's not controversial.

We definitely believe that we take the design and execution levels to a place that's not the norm in the market.

You said that the V3's form factor is fairly conventional, but that the design and execution are different—the "special twist" you mentioned. Is that the exotic components and construction techniques?

When I say our own twist, I mean the way we build things, which is obviously unique to us. This applies to every model we build, even though they are different from one another. We definitely believe that we take the design and execution levels to a place that's not the norm in the market. It's the way the box and drivers are built, the crossover design, and, of course, the use of the highest-quality components. Unlike some competitors, we actually share our design techniques, name the materials we use, and are more than happy to show the quality of our parts.

One fundamental aspect of all your products is that you don't use MDF.

No, we don't use MDF. In fact, we will argue that MDF is a far cry from the proper material for a loudspeaker box. The same thing is true for all sorts of resin materials, which are also common in the industry. As you know, MDF is mainly glue. It is resin with sawdust, which creates a material that, even though it's massive and dense, is not very stiff. It doesn't matter how much MDF you use; its molecular structure is not stiff enough to properly support a loudspeaker bass driver. It does not matter how thick of an MDF piece you use. A 2"-thick rubber slab is still rubber. MDF is not quite rubber, but it's not aluminum and it's not birch ply either. That's why we don't use MDF.

You would be shocked at how different our designs sound in an MDF box. We've tried it in order to find ways to build a cheaper loudspeaker, and it just can't be done. It doesn't matter how well braced it is, how much you support it, or how thick

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or massive it is. As soon as you put the design in an MDF box, half the magic is gone instantly. MDF stores energy, it's overdamped, and not stiff enough to support the drivers. You lose a lot of energy to the box, which adds coloration, increases distortion, smears your impulse, and puts you back where most other loudspeakers are.

You use birchwood, which has a long distinguished history in speaker building. Why birchwood as opposed to some other wood?

Well, birch ply is extremely stiff. In fact, it is difficult to damp as plain sheets. That's why all our designs use sheets that are constructed from the ply side's end-grain. In that form, the ply is even stiffer and better damped. Of course, the mass increases greatly. You get an ideal structure to support our aluminum facade.

The caveat is that you still don't want to screw any driver directly into any wood product, including birch ply, because there's only so much coupling you can get between the driver and the wood. You're limited in the amount of torque you can use on the screw before it starts chewing the wood up. There is nothing anyone can do about that. You can use all sorts of fasteners and methods of trying to couple the driver to the baffle, but you can never couple it tightly enough for it to stay in one place when the driver starts to move.

That's why all our loudspeakers use an aluminum front baffle. We can apply much greater torque to the driver-mounting hardware and guarantee many years of tight coupling, which just can't be done with any wood product. There's no hardware between the aluminum and wood in any of our designs—it's always pressed in some way. In the Mini, we have three aluminum rods that attach the back plate to the baffle. In the V3, we have six 1"-square aluminum bars behind the baffle that are bolted to the baffle and squeeze the front wooden part of the enclosure. There is no place where hardware sees wood.

Let's talk about measurements, and what they can and can't tell us about loudspeaker performance.

I don't want to come across as someone who builds speakers from just an intellectual point of view, which is really not the case. Of course, at the end of the day, we listen and we listen and we listen. At the heart of what we do lies the musical experience. I spent twenty years of my life playing an instrument [*classical guitar*] for more than four hours a day. The aesthetic appreciation of what musical instruments sound like is very real to me.

I think that what we bring to this field is the sensibility of how music affects us as humans. If I got anything out of being around music all my life it's the fact that it's not just the sum of its parts. We have a different approach than most manufacturers. A typical product performs well in some areas (fancy tweeters or fast horn-loaded mids) but is compromised in the end. Although it does some things well, it also does a few things not so well. I strive in our designs to avoid that trap

and to produce a balanced product that allows the listener to really appreciate the music and not just the special-effects of sound reproduction.

Having said that, do you believe that the quality you describe is quantifiable or not?

Absolutely. I believe that loudspeaker design is a science and not some voodoo proposition. With the help of very talented engineers, headed by our CTO, Yair Tammam, we build loudspeakers using all the advantages that the technical world has to offer us today. One of the reasons we started building our own drivers is so we can bring new technologies, topologies, and materials that have not been used before into this industry.

I believe that if a loudspeaker is built properly, it will measure properly, and it will sound proper. Some might claim that they like the sound of a speaker without knowing that it is poorly designed, but it's hard to argue about what people hear. There are many factors that go into what we hear and like. For example, a poorly executed crossover point, with a 5dB suck-out, should not be considered a viable product, even if some claim they like the way it sounds.

It doesn't matter how much MDF you use, it's simply not stiff enough to properly support a loudspeaker bass driver.

There are people out there, as you well know, who are pushing certain measurements as if they were the be-all and end-all of loudspeaker design—such as frequency response.

Frequency response is only one of the measurements we look at. A loudspeaker can measure flat while the box is generating 30 percent of the acoustic output—and you wouldn't even know it. So, just looking at a frequency response graph is not enough. Distortion, power response, phase behavior, impedance—you need all these measurements to be able to tell how a loudspeaker performs. Also, keep in mind that it's not just choosing the right measurement; it's also knowing what to look for *within* the measured data. When a doctor looks at an MRI scan he sees completely different things than what you might see. So when you look at frequency response, you might see something completely different than what somebody who's doing this for a living might see.

How much of the design work is theoretical and how much is listening?

The design work is completely theoretical. Then, it becomes virtual. Our mechanical and electrical functions are designed in a

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I spent twenty years of my life playing an instrument for more than four hours a day [classical guitar]. The aesthetic appreciation of what musical instruments sound like is very real to me.

virtual environment. Using proprietary software, we can even emulate a passive crossover design. After measuring the electrical and physical properties of the drivers, we import this data into this software-created virtual environment, where we can simulate the crossover to a quarter of a dB accuracy. We can build the crossover in this virtual environment, and send the three filtered signals to three different amplifiers (in a three-way speaker) that drive an actual speaker. We can change the values of crossover parts in the computer and

immediately hear and measure the difference. We then build the crossover and listen. If we're disappointed, it means we missed something.

The listening always verifies the theoretical design work. I'll give you an example. We first designed the V3 with a flat aluminum baffle. We knew it wouldn't be as good as a curved baffle because of the diffraction caused by the flat baffle. But we didn't realize that the difference would be so great. We just couldn't live with a flat baffle, even though ninety-nine percent of speakers on the market have a flat baffle. It bothered us to release a speaker that didn't have the level of performance we get from our other products. This is an example of how listening guides the design.

You once said that you don't understand the concept of "voicing" a speaker.

To me, voicing is tuning to taste. But whose taste? The designer's taste? What room is he in? What equipment is he using? What has he had for lunch? We listen, and if we don't like what we hear it is back to the drawing board. But to try to mold the sound of a loudspeaker to my particular taste is not a responsible way to build a world-class product. **TAS**

MANUFACTURER COMMENTS

Magico V3 and Mini II

I would like to thank Robert Harley and Jonathan Valin for their thorough reviews of the V3 and Mini II loudspeakers.

At Magico, we reject the general notion that all loudspeakers are compromised to some degree. The choices that we make are conceptual and no shortcuts are taken in implementation. We design and build all our products, first and foremost, as precision tools to reproduce music. As such, we ensure that every aspect of the design is carried out to the best of our abilities.

We feel that in terms of the fidelity of music reproduction, there are no theoretical advantages to a ported design. The shortcoming of a sealed design simply lies in a more difficult implementation. It requires greater effort to correctly build an enclosure/driver complement that can sustain the immense pressure created by the system's ability to actually reproduce very low frequencies. We believe that the usual midbass punch and drama associated with ported designs have nothing to do with the way real music sounds. Our goal is to allow the speaker to move out of the way as much as possible. Let the music play. It has plenty to say without us adding more to it.

Alon Wolf
Magico LLC

Crystal Cable Piccolo

Thanks for the great article—we are the most happy with your findings about the totality of the musical experience. That is really the most important goal in our mind when designing and developing our products.

However, I would like to make clear that the Piccolo line is Crystal Cable's most affordable, entry-level range. Our aim was to challenge ourselves and find out how thin we could go with the design to keep the balance between high-end performance and the beautiful, surprising look.

The silver-gold conductor inside the Piccolo has a diameter of 0.3mm which gives an extremely flexible look and feel without musical compromise. This is important to me as a former concert pianist.

The technology and metallurgy used in the Piccolo line is implemented with larger conductors in our other product ranges, from the Micro, the Standard, the Reference, and the Ultra lines.

Thanks again for the wonderful review.

Gabi van der Kley
Crystal Cable BV