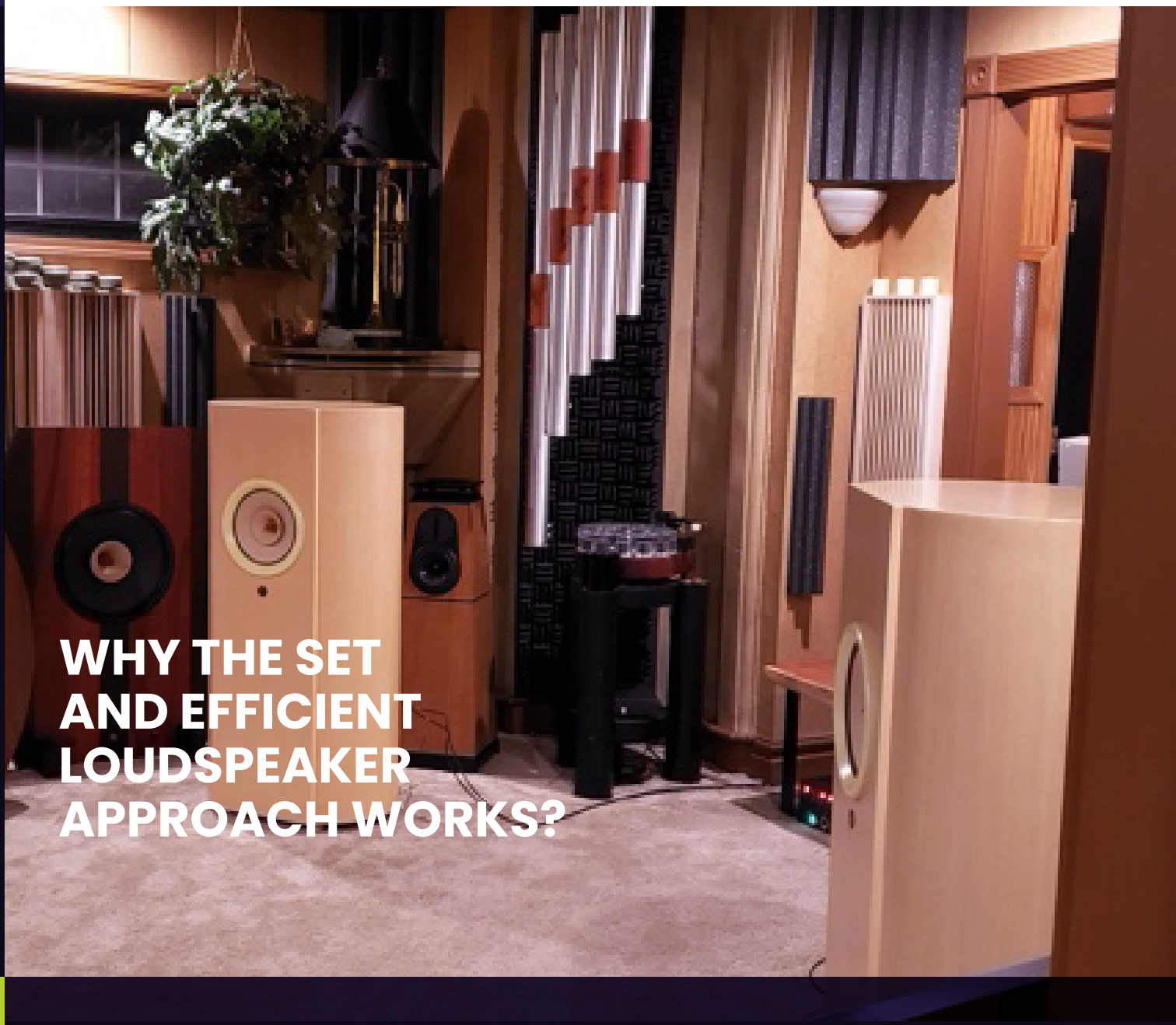
Efficient loudspeakers

HIGH FIDELITY



WHY THE SET AND EFFICIENT LOUDSPEAKER APPROACH WORKS?

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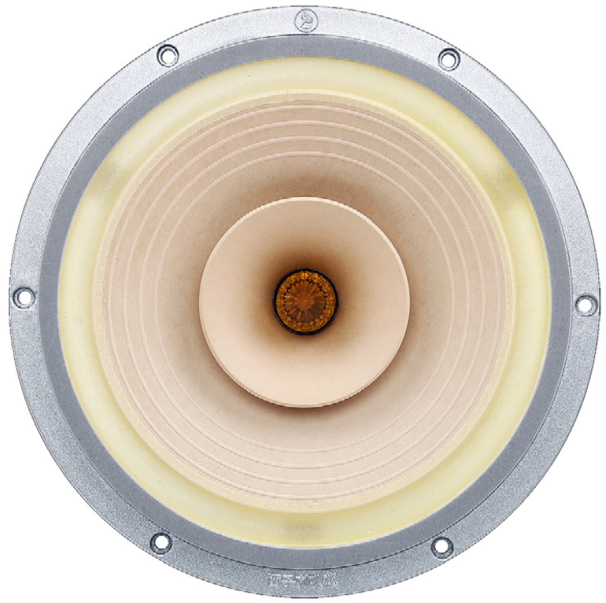
Enjoy the Music.com

Efficient Loudspeakers

On our audiophile forums, members have a moniker that usually includes a tag line. Mine say; “If the first watt sucks, why continue?” Having said that, this is not going to be another hard line attempt to convince you that SET amplifiers are the only way to get good sound, or that high efficiency loudspeakers automatically sound better than anything else.

Over the years I have learned that for every assumption about audio there are exceptions that could lead one to conclude the exact opposite. This “law” encompasses every facet of audio, from cartridges to loudspeakers and all the cables and components in between.

Most people for example have assumed that a 2 to 8 watt per channel SET amplifier would not have the balls to get out of it’s own way. It could not possibly have any real bass, but we hear the midrange is to die for.



Most people would also assume the only way to hear any dynamics from a flea powered amplifier is to use big nasty horn loudspeakers so really what is the point?

All of these assumptions are probably a side effect of the general direction that high-end audio has taken since the 1960’s. Solid state has made high power affordable for everyone so the loudspeaker industry responded by making loudspeakers less efficient to both reduce their size and flatten their response.

Despite popular belief, you do not need horn loudspeakers to use or enjoy a SET amplifier. You can also find many horn loudspeaker designs that sound wonderful, better than wonderful in fact, so the question then becomes this:

IF THE FIRST WATT SUCKS, WHY CONTINUE?

SET AMPLIFIERS ARE THE ONLY WAY TO GET GOOD SOUND, OR THAT HIGH EFFICIENCY LOUDSPEAKERS AUTOMATICALLY SOUND BETTER THAN ANYTHING ELSE.

MAKE YOUR OWN
Efficient stereo home

WHAT ARE THE ADVANTAGES ARE TO USING SET AMPLIFIERS WITH HIGH EFFICIENCY LOUDSPEAKERS?

To answer this, lets start with the advantages of a SET amplifier over any other type. A Single Ended Triode is the simplest circuit design there is, using the least number of parts. Typically this is a driver stage coupled to a single output device. Triodes do not require negative feedback, something found in most all push-pull circuits, solid state or tube. Negative feedback is used to lower distortion specs and in the case of solid state devices it is often the only thing keeping the transistors from exploding all over the inside of your amplifier. Feedback a problem? If you don't mind the time smear it creates and the resulting 2 dimensional sound stage, then no I guess it's probably not.

Aside from the amplifier's superiority by simplicity, there is a more profound reason for using SET amplifiers. The magic predominately lies in the first watt. By magic I mean inner detail and most of the dynamics. For example, a pair of 96dB loudspeakers playing with one watt of power against the average noise floor in your listening room (55dB) is 40dB of dynamic range. (96 – 55 = 41dB) Adding a second watt increases the dynamic range by

only 3 dB. For every additional 3dB you need to double your power. This should clearly illustrate that there is over 10 times the dynamic range in the first watt as there is in the second.

This brings us directly to loudspeakers. A typical loudspeaker today is 86 dB efficient with 1 watt. It also usually has a complex crossover that attempts to keep the frequency response and impedance flat. The crossover alone will usually dissipate a significant portion of the first watt as heat before it even reaches the drivers. To reach the same loudness level as the 96dB loudspeaker will with 1 watt requires over 8 watts on the 86dB loudspeaker. If we used 2 watts on the 96dB loudspeaker the other would require 16 watts to keep up. If we used 4 watts on the 96dB loudspeaker the other would require 32 watts to keep up.

The problem here is resolution. If you can not hit a listening level with the 1st watt, you're not likely to hear what's happening in that 1st watt. For a driver to achieve a high efficiency it's moving parts must be low in mass. That makes it dramatically faster or more accurate than a loudspeaker with heavier moving parts. If you like inner detail and want to hear all of the textures and layers of a good recording you need fast, efficient and coherent loudspeakers.

A good SET amplifier combined with a single full range driver with no crossover or a simple two-way using minimal crossover parts on the tweeter only, has a purity and depth that you simply don't find in more conventional systems.

If you've ever observed how audiophiles rotate through audio gear during their lifetime you might also find it interesting that the ones who finally land on SET amplifiers and good loudspeakers seldom find anything they like better.

FULL RANGE
is the answer

A good SET amplifier combined with a single full range driver with no crossover or a simple two-way using minimal crossover parts on the tweeter only, has a purity and depth that you simply don't find in more conventional systems. It is a benchmark for coherency, and noted for its ability to create hauntingly real holographic sound stage. Bass and dynamics with this combination sound more realistic in part from the tremendous speed and in part from the coherency.

I've consulted many people about their audio systems, and the most common complaints include dry somewhat fatiguing sound with a fairly boring soundstage followed by the realization that it simply doesn't connect you to the music emotionally like it could. Experience has taught me that by far the easiest way to get a liquid sound that becomes holographic with stunning clarity and detail, something that excites the listener, is to set him up with an SET and simple pair of efficient loudspeakers. It also usually ends up being the least expensive solution.

The biggest conformation of this is reports from audiophiles who used to have several hundred watts and many thousands of dollars invested in show winning audio gear, but now report that even a good two watt SET on efficient loudspeakers has better dynamics and weight which they find simply amazing. If you've ever observed how audiophiles rotate through audio gear during their lifetime you might also find it interesting that the ones who finally land on SET amplifiers and good loudspeakers seldom find anything they like better.

The bigger is better mentality that is directly connected to more expensive the better is certainly the handicap that stunts most audiophiles from discovering truly high fidelity sound. Will the guys at the audio salon laugh... yes the will. Will your fellow audiophiles laugh when they hear you sold everything and got a two-watt amplifier... yes the will. Is this important to you?

Only you can decide, but I would suggest it has little to do with high fidelity.

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