

The Trinity Hybrid White Paper

Llano Design Group

Put simply, tubes just sound better than transistors and ever seasoned audiophile knows it.

But there are more forces at work here than simply using a tube in place of a transistor to build an audio amplifier.

The Trinity amps are an exercise in simplicity. It is really two fully separate amplifiers, one for voltage amplification, and one for current amplification. We take a triode tube operating in the purest form of class A bias (single-ended Class A) and use it for the voltage amplifier. We give it a separate power supply and let the tube do what it does best, amplify voltage. We then couple this voltage amp by way of two high quality audiophile grade coupling caps to a huge mos-fet output section also operating in Class A. This mos-fet section has no voltage gain at all. It only provides high current gain for the vacuum tube. You see mos-fets are almost infinite gain devices, so the current amplifier is capable of being driven directly from the vacuum tube voltage amp, and since both the voltage and current amplifiers are inherently stable, no feedback is required at all. Add to this our ultra quiet, yet simple passive bias circuit and you have an amplifier that is capable of amazing sound.

But we did not stop there. I noticed in designing the Trinity, that the family of triode tubes chosen for the amp had one thing in common. Though the filament voltages varied, some were 6 volts while most were 12. They all drew about 450 ma of current. So I decided to build a test bench supply that simply limited 450 ma of filament current. Then I could just plug in the tube I wanted to hear and test without worrying about the voltage and I went on with my search for the perfect tube for the amp. It worked great, it provided 6.2 volts on say a 6922 while providing 12.8 volts on a 12AT7. And all I had to do was just plug in the tube!

After several months, and about 40 different sets of tubes, I came to the conclusion that there was no single tube that worked best. Each one its own merits and unique character in a given system. One sounded better with ribbon speakers, while another was clearly better for dynamic speakers. One had the rich harmonic overtones we all love on Jazz at the Pawn Shop. While another had the fast articulate attack that brings to life the percussion on Telarc's Magnificent Seven. Some had lower gain with a more laid back presentation, while some were clearly more forward with higher gain making them a perfect choice for systems with passive preamps.

WHAT IS A DESIGNER TO DO WHEN FACED WITH SO MANY CHOICES? Just choose what I like best in my system for you and try to sell you on why it will sound better in your system? That's the way it's been done for all these years?

Now why would I want to do that? When you are clearly the one to make the best choices for your system, taste, and the music you choose to listen to...

Then it struck me, why choose at all? I already had designed, built and thoroughly tested the power supply that made all this possible! Why not use this power supply in the amp and let the customer decide what tube best suits his needs for his own system. After all very few of us have the exact same components in our systems. Would it not be nice to be able to voice the amp for each application? That would allow you to accommodate and take into account,

Speakers, Cables, Room Acoustics, and other System Components. But most of all personal taste in both the system's presentation and music you listen to.

Well, almost two years later, and many Trinity amps later, it has been a huge success. I would like to take this opportunity to thank each and every Llano customer for their support over the years and to assure you that we will continue to serve the audiophile and home theater community to the best of my ability.

Trinity has a few other advantages also, since the front-end is a single-ended Class A design, and required to deliver very little current, the tube circuitry is VERY reliable and tube life is long. There is no bias to adjust, in fact there is no maintenance required at all. Tube sound, with far more versatility than any tube amp on the planet. Combine that with the ultra high current output and reliability of the huge solid state output section and the Trinity is capable of driving any speaker in the world today, but with the all finesse, grace, and pure musicality of a vacuum tube amp.

Fully dual mono, the Trinity uses twin custom wound 1.5 Kva toroidal transformers to power the solid state output section. It has current output at least equal to and in most cases far greater than any solid state amp on the market. With a combined device dissipation rating of 3200 watts the amp loafs along at rated power. I have been building Class A solid state amps now for over 15 years, and I am here to say, the Trinity design is by far my best work. Our customers have auditioned them against Krell, Rowland, Boulder, Mark Levinson, Proceed, and a whole host of other well known names. 99% of the time...the Trinity has come away the winner. Why, simple, it has the technical advantage. A simple, yet elegant design with minimal circuitry in the signal path and applications of theory that seasoned audiophiles have always known to make for good sound.

True Zero Feedback, Single-ended Class A, Simple Two Stage Design, Triode Amplification, and Class A output. All in one package...

It can't help but sound good!

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