

The Pass Labs XA25 Class A Stereo Amplifier - "The Little Engine That Could"

10-29-2019 | By Jeff Day | Issue 106

I was quite excited when I received notice from *Positive Feedback* Editor Doc David that there was a Pass Labs XA25 Class A stereo amplifier available for me to write about for *Positive Feedback* (photo below).



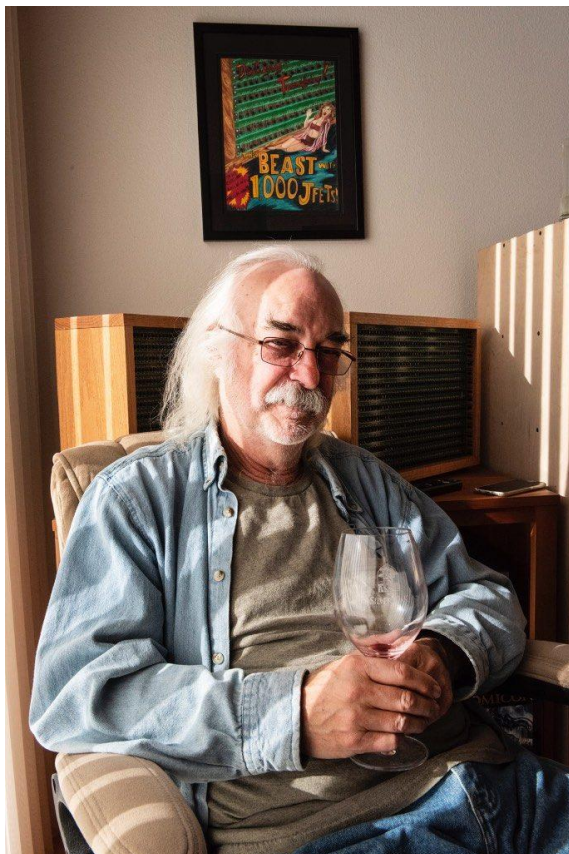
I had been mightily impressed with the 18 watt per channel (into 8 Ohms) First Watt SIT-3 single-ended amplifier (photo below) that I had wrote about last summer ([HERE](#)), so I was really curious to hear what the somewhat more powerful Class A XA25 at 25 watts per channel (into 8 Ohms) would perform like in comparison.

However, before I jump into the nuts & bolts of the Pass Labs XA25 amplifier, allow me to tell you about Nelson Pass, head honcho of [Pass Labs](#), [First Watt](#), and [PASSdiy](#).

Nelson has been a central figure in the audio design world since the mid-1970s, however Nelson's passion for all thing's audio goes back to his youth, when he and his neighbor friend built a lot of DIY projects, starting with loudspeakers when he was 15, and then getting into amplifiers a couple of years later.



Nelson was born in Massachusetts, and his family moved to Los Angeles in 1957, and then to Santa Rosa in 1958, where he grew up as a youngster until he went to the University of California, Davis (UC Davis) in 1969 to study physics. Nelson earned his Bachelor of Science in physics in 1974.



During his time as a physics student at UC Davis Nelson founded his own company to design and manufacture loudspeakers, called PMA, and was also hired by ESS to do research and development related to loudspeaker crossover and enclosure design work. Nelson arrived at ESS just before Oskar Heil, who developed the famous ESS AMT 1 "Air Motion Transformer" loudspeaker.

Nelson worked at ESS during 1972 and 1973, a period when he gained a lot of knowledge about audio circuit designs through studying the schematics for op-amps in the National Semiconductor application books, and by repairing all brands of amplifiers for Sun Stereo as a service manager.

During that period in audio, interest in solid-state amplifiers began to eclipse interest in vacuum tube amplifiers, as audio enthusiasts began to desire more powerful amplifiers for the less sensitive loudspeakers that were becoming more commonplace.

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A lot of the solid-state amplifiers of that period were using Class AB or Class B designs, but they didn't sound too good compared to the Class A vacuum tube amplifiers, so interest rose in developing high-powered Class A solid-state designs that had better sound quality.

Nelson told me that his first unique amplifier design was in 1973, a Class A solid-state design. Nelson continued to incorporate what he was learning about sound quality and solid-state circuits into his own amplifier designs, and in December of 1974 Nelson and a colleague from ESS, René Besne, left ESS and founded Threshold Audio, the same year that Nelson graduated from UC Davis with a physics degree.



Nelson designed the amplifier circuit and selected the circuit components, and René did the industrial design to develop the amplifier's appearance and ready it for production. Their work resulted in the Threshold 800A amplifier (above), which was a Class A amplifier that had 200 watts per channel output into 8 Ohms, with an innovative dynamic bias approach that helped reduce power consumption and heat while maintaining Class A sound quality. The Threshold 800A amplifier would go on to be a favorite of audio engineer and founder of *Stereophile*, J. Gordon Holt, as well as audio enthusiasts around the world.

Pass Labs

Nelson left Threshold Audio in 1991 to found Pass Labs so he could enjoy broader investigation into his own audio design interests. Today through Pass Labs Nelson offers a full range of audio electronics including amplifiers, preamplifiers, integrated amplifiers, and even a headphone amplifier.



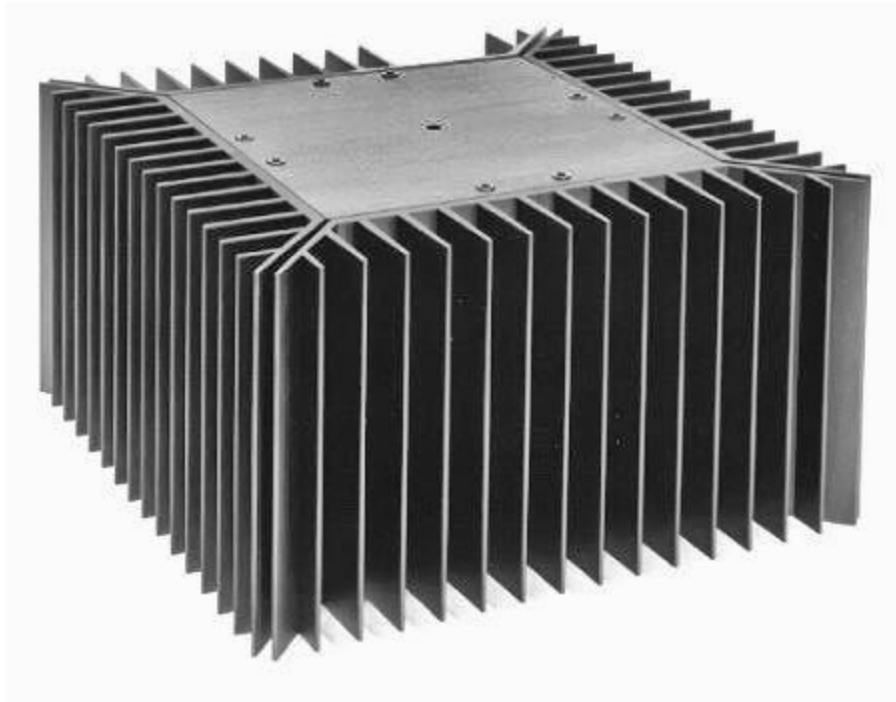
Pass Labs' current power amplifiers cover a broad range of audio enthusiast interests from the massively powerful and beautifully constructed X600.8 monaural amplifiers capable of delivering 600 watts of superb performance into 8 ohms for the most challenging loudspeaker loads, all the way down the power scale to the svelte XA25 stereo amplifier that delivers 25 watts per channel into 8 Ohms—the subject of this article—that has been receiving accolades from reviewers and customers about its lower-powered musical finesse.



Now allow me to take you back in time for a moment to the late 1980s and early 1990s, a period of time when audio enthusiasts in America began to become interested in simple 1930s vintage, and

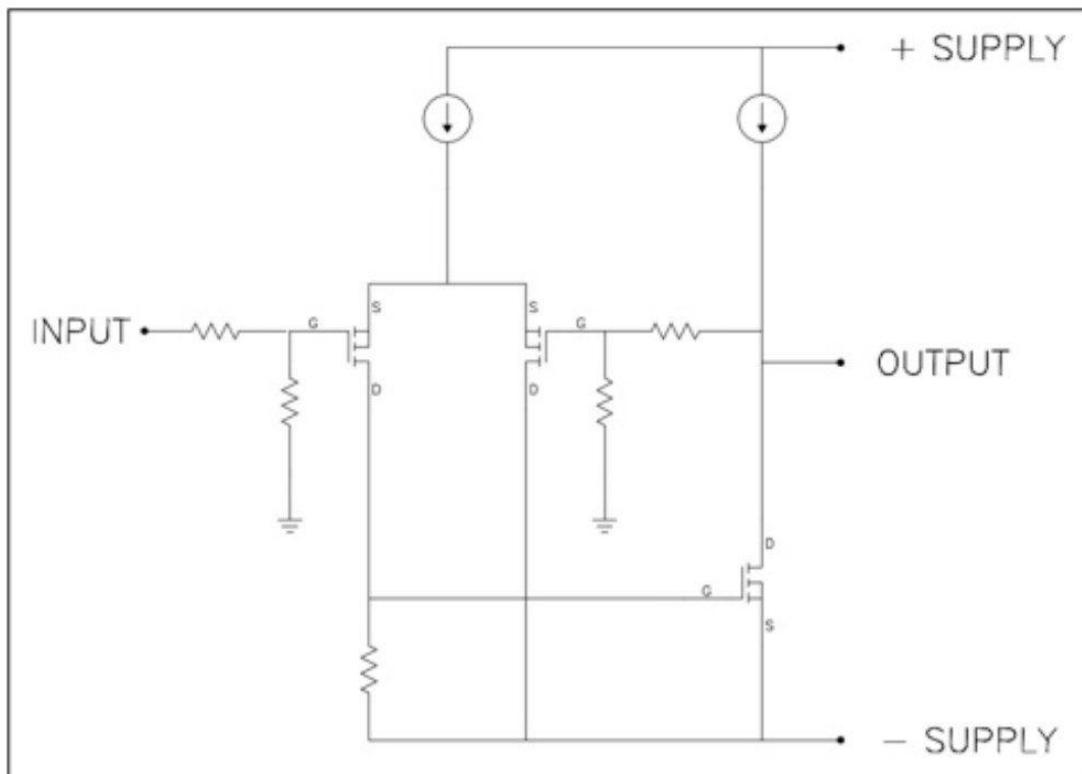
vintage-inspired, low-powered single-ended-triode (SET) vacuum tube amplifier designs, due to their exceptionally musical sound quality, and relative affordability.

There really was no one during the late 1980s and early 1990s building affordable and simple single-ended analogs of SET amplifiers with solid-state devices, until in 1997 when Nelson released the Pass Labs Aleph 3 (below).

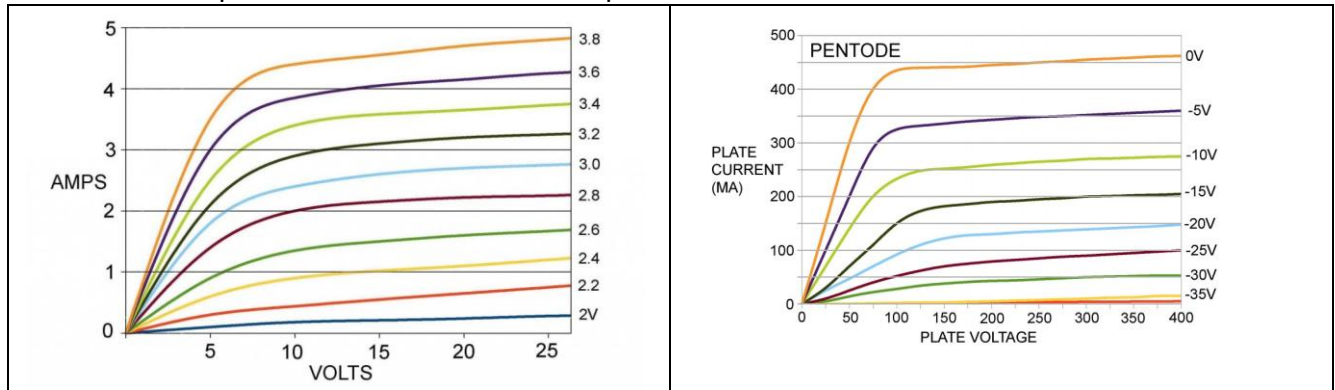


The Aleph 3 was relatively low-powered at 30 watts per channel, and was described by Nelson as "... the first of the newest generation of amplifiers from Pass Labs. This design results from my commitment to create the best sounding product, a simple circuit having the most natural characteristic. The Aleph 3 integrates power MOSFET devices and pure single-ended Class A operation in a simple two-gain-stage topology with the sole purpose of recreating subjectively

natural sound (circuit below - Jeff)."



While I had very much enjoyed the musical delights of low-powered single-ended triode or pentode amplifiers (SET and SEP, respectively), intrigued by the Pass Labs Aleph 3, I bought one in 1997 to see how it compared to the vacuum tube amplifiers I was familiar with.



The Aleph 3 used MOSFETs in a simple single-ended Class A circuit, and it turns out that MOSFETs (and JFETs) have power curves (above) that look quite similar to the power curves of pentode vacuum tubes (below).

Over the years I have enjoyed the single-ended pentode circuits I have listened to, like that of the 5-watt per channel Almarro A205A integrated amplifier, for example, that uses its EL84 vacuum tubes in a simple single-ended pentode circuit, and which I still enjoy listening to today powering my vintage Altec 832A loudspeakers.

I thought the Aleph 3 compared favorably with the SET (and SEP) designs I was familiar with, but it had the added benefit of 30 watts per channel output, which opened up a broader range of loudspeaker compatibility than most SET vacuum tube amplifiers could accommodate.

I loved the Aleph 3's no-nonsense appearance with its huge heat sinks encircling the chassis, its ultra-reliability, and its low cost of maintenance (no expensive vacuum tubes to replace), not to mention that its power output of 30 watts per channel sounded great on my Sendor SP-1/2 loudspeakers in the apartment I lived in at the time.

I thought the Aleph 3's price of \$2400 USD was fair as well, and it was something that I could actually afford to buy as an audio enthusiast back in 1997. In 2019 dollars the Pass Labs Aleph 3 would go for \$3836 USD, which is reasonably comparable to the Pass Labs XA25 stereo amplifier's \$4900 USD MSRP that is the subject of this article.

The Aleph 3's simple design, excellent sound quality, greater loudspeaker flexibility, high reliability, low cost of operation, and affordable price made the Aleph 3 a hit with audio enthusiasts, and for the first time there was a single-ended solid-state design that was a viable alternative to low-powered SET or SEP amplifiers.

First Watt and Pass DIY

In addition to his passion for Pass Labs proper, Nelson is equally passionate about his [First Watt](#) and [Pass DIY](#) enterprises.



Nelson had become intrigued by the performance possibilities of low-powered amplifiers and wanted to continue his exploration into interesting low-powered amplifier designs (and other stuff), which didn't really fit into the Pass Labs product lines.



Towards that end, in 1998 Nelson founded Pass DIY and First Watt to explore novel amplifier designs in an environment unfettered by commercial concerns.



Nelson's long involvement in and appreciation for do-it-yourself (DIY) audio is described on the Pass DIY website.



Nelson is also a regular contributor at [diyAudio](#), and is heavily involved in—and helps sponsor—the [Burning Amp Festival](#), which is a major service to the DIY community.

Nelson is unique in that he also has a passion for educating audio enthusiasts, and helping us regular folks get great equipment into our systems with simple and affordable DIY designs.

I think it is really cool that Nelson helps enthusiasts achieve superb performance by offering his DIY designs essentially for free, allowing enthusiasts to build up great sounding components for little more than the cost of the parts ([diyAudioStore](#)).

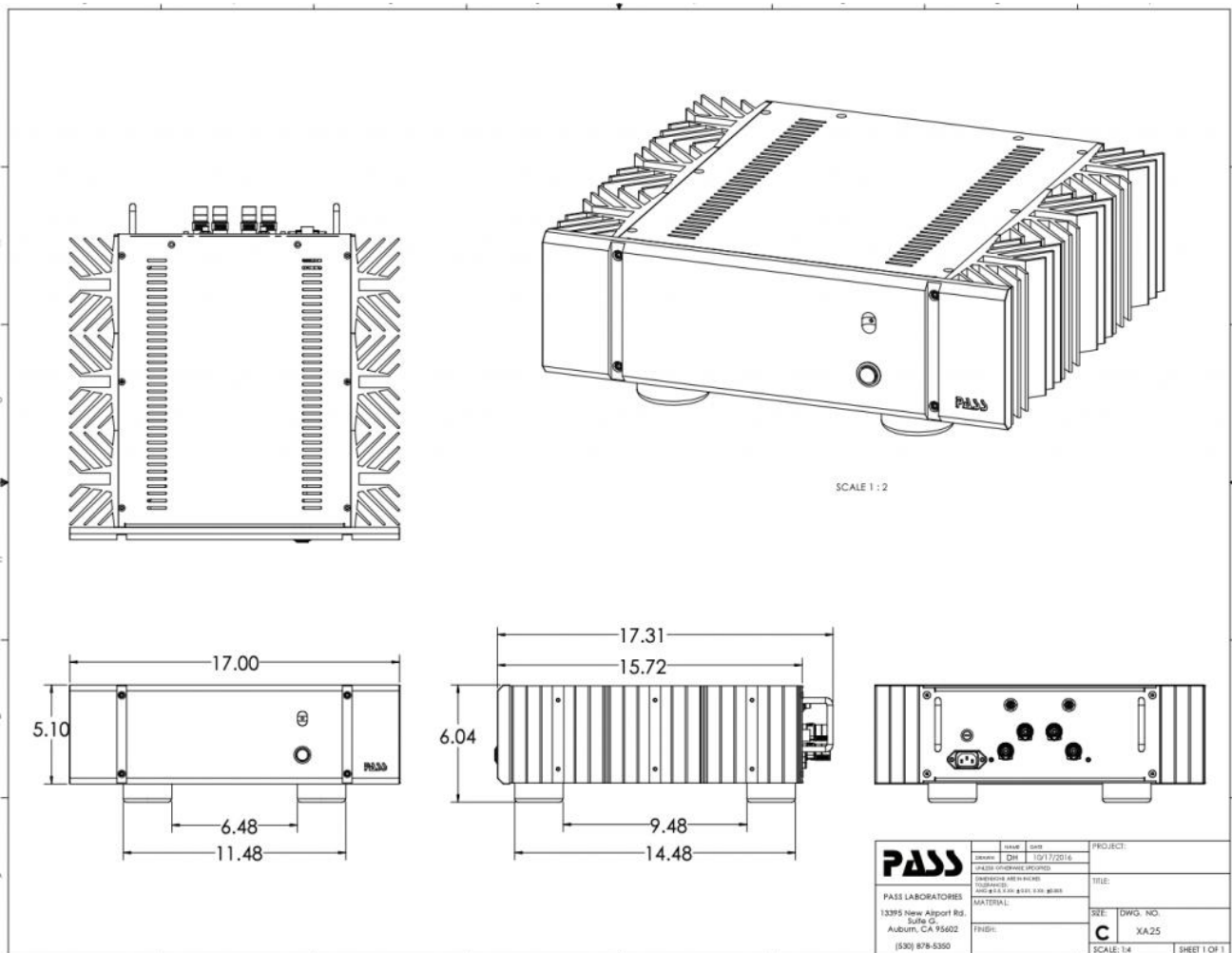
I want to try some of Nelson's DIY designs in the future and tell you about them, because there are some truly great options for hifi enthusiasts that are very affordable, and learning how to "voice" a component to your tastes, and make it sound complimentary to the rest of one's system, is an valuable skill to develop.

The Pass Labs XA25 Class A Stereo Amplifier (\$4900 USD)

Now onto the subject of this article, the Pass Labs XA25 Class A stereo amplifier (photo below).



Let me start with a general description of the Pass Labs XA25 Class A stereo amplifier using a few excerpts from its owner's manual:



"The XA25 measures 17"w x 17.4"d x 6"h and weighs 45 pounds. You may place it wherever you please, but not directly on carpet - it is going to need lots of free air for adequate cooling. There needs to be space above and unobstructed space around the sides to allow for proper air flow. This is a factor in reliable operation and long life. ... At idle the XA25 will consume 240W from the AC mains."

"The XA25 accepts a single-ended (RCA / Cinch) input connector. The input impedance is 47 Kohm making the XA25 compatible with either tube or solid-state line stage preamplifiers or source components with a built-in volume control."

The rear of the XA25 is equipped with a pair of Furutech binding posts for each channel, four total. The binding posts are marked red and black. The Red output connector connects to the Red (+) of your speakers and the Black connector will connect to the Black (-). The Black output connector is at circuit ground. You can use it to connect to powered sub-woofers if you like."

"The amplifier is stable into any load which does not dip below 0.5 ohms, but it will protect itself by shutting off any channel which outputs more than 10 amps (200 watts peak into 2 ohms). The protection circuit is reset by turning the amp off for a few moments and then turning it back on."

"The Furutech binding posts deserve special note - in keeping with the requirements of Class 2 circuits in North America they are fully insulated. Speaker cables connected as intended will have no exposed conductive metal. The Furutech posts accept banana, spade, bare wire or pins with a diameter of 4.5mm or less. Bare wire, pins and spades socket into the binding post only from the

bottom. The nuts on the binding posts should only be finger tight. Never tighten with wrench or pliers."



"Once the speakers have been connected in observation of the proper regulations and with the observation of polarity and phase you may attach the input cables and power cord. It is always advised that the power cord is the last connection made and the first to be removed."

"The XA25 takes approximately an hour to fully warm up and sounds better as it does."

"You are now ready to play music. Turn the level at the source or preamp to a low level. Press the power switch on the front panel of the XA25, the blue LED above the power switch will light. Turn the volume up to your preferred listening level. Sit back and enjoy!"

Before I get into what I heard while listening to the Pass Labs XA25 Class A stereo amplifier, allow me delve a little more into the details of its design.

In chatting with Nelson about the circuit of the XA25 amplifier, he told me "The initial concept dates back to 2013 when I began considering the big Ixsys power transistors (photo below) as part of a solution. Prototyping on the XA25 began in early 2016, and the first shipment of the XA25 was in 2017."

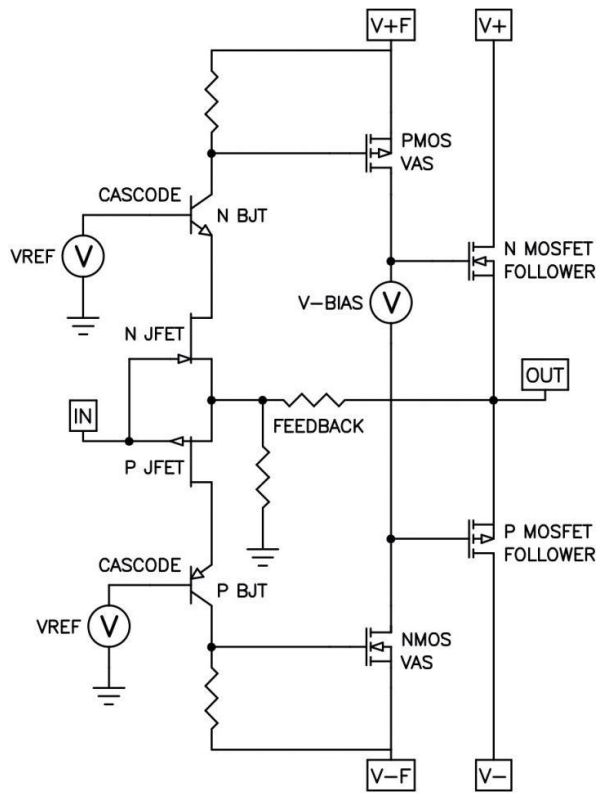


When the Pass Labs XA25 Class A 25-watt (into 8 Ohms) stereo amplifier took on the role of being the entry level amplifier in the Pass Labs product line in 2017, it diverged from the aforementioned single-ended Pass Labs Aleph 3 and First Watt SIT-3 amplifiers, instead using a relatively simple push-pull Class A circuit.

Nelson told me this about the circuit:

"There are several unique

things about the amplifier that make it a departure from the rest of the Pass Labs amplifiers. It's a fundamentally very simple topology made special by new parts and a unique approach to operating them in Class A without degeneration in the circuit (simplified circuit shown below). Years ago, we discovered that degeneration—that is to say placing resistors in series with FET source pins (or emitter pins for bipolar transistors)—has an impact on the sonic performance."



PASS LABS XA25 SIMPLIFIED SCHEMATIC

"My late business partner Joe Sammut was adamant about the qualitative difference, and could spot it in blind testing, so I took it seriously. The difficulty comes the fact that there is a reason why people use degeneration (the "other form of feedback") in gain stages—it stabilizes the characteristics of the parts so that you don't have to do precise matching and compensation to keep circuits stable. At the same time, it acts like the feedback it is. Routinely, your "no feedback" solid-state amplifiers depend on degeneration in the gain stages to control the performance, and so it does not achieve all the goals that make SET tube amps attractive."

"For those sonic reasons there have been several efforts at operating bipolar transistors undegenerated, and while the benefits have been noted, they have been accompanied by reliability issues. No need to mention names.."

"I set removal of degeneration from power amps as a design goal and over the course of several years came up with a couple of reliable techniques that are employed for the first time in the XA25. The result is better dynamics and more "life" to the sound, and with power FETs it turns out that there are a couple more advantages that you don't see with bipolar transistors."

"Your basic FET character is "square-law," where the current through the device is a square function of the voltage across the control pins, the gate and the source. In this regard, the FET is very much like a tube."

"It turns out that push-pull Class A operation of square law devices can result in intrinsic cancellation of distortion to literally mathematical zero. Unfortunately, degeneration in the circuit introduces distortion to that arrangement."

"The other interesting thing about square law devices is that their push-pull Class A envelope is naturally larger for a given bias current, which improves the efficiency of the circuit without recourse to special tricks. Again, degeneration spoils the party."

"And as I said, this subtle effect is not available to bipolar transistors."

When I first placed the Pass Labs into my stereo, it seemed much more powerful than its 12.5 watts into the 16 Ohms of my vintage Altec's would imply (25 watts into 8 Ohms).

I asked Nelson about the impression I had of how powerful the Pass Labs XA25 Class A stereo amplifier seemed compared to its 25 watts into 8 Ohms rating, and it turns out there was a simple answer to my perception:

"First off, it does have more power than its rating. It's not spec'd, but the last time I looked it started to clip at 80 watts into 8 ohms, which would make it about 40 watts into 16 Ohms. As I have pointed out, the other factor is a conventional Class A output stage achieved without degeneration, giving additional dynamic to the characteristic. Pretty much the only restraint on that output stage is the character of those big Mosfets, whose DC dissipation approaches 800 watts with transient current ratings up around 200 amps."

The Pass Labs XA25 Class A stereo amplifier reminds me of the classic American fairytale for children, *The Little Engine That Could*.

In *The Little Engine That Could*, there was a long train that had to be pulled over a mountain pass after its *big* engine broke down. Where the big engine failed, a small engine succeeded in pulling the difficult load of the long train over the mountain pass, all the while saying, "I-think-I-can".

The Pass Labs XA25 Class A stereo amplifier is *The Little Engine That Could*, and it is way more authoritative and powerful than its nominal 25 watt power rating would suggest.

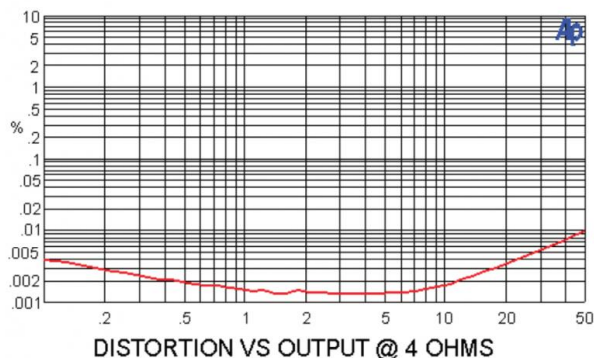
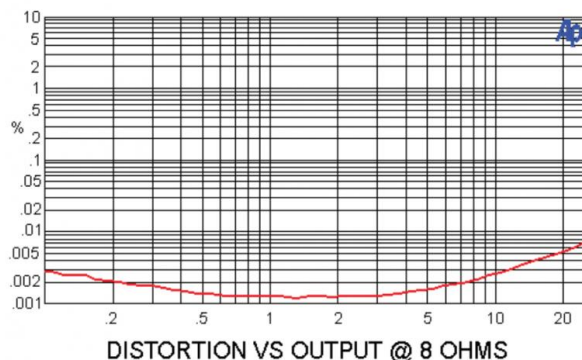
The Associated Components of the Review System

The hifi setup used for this article about the Pass Labs XA25 Class A stereo amplifier was as described in my recent feature article for *Positive Feedback*, "The Duelund-Altec Project – Dare to Dream!" (which you can read [HERE](#)).

For an analog source I used my Classic Turntable Company hot-rodged Garrard 301 turntable in an Artisan Fidelity plinth, with a SPEC AP-UD1 Analog Disc Sheet turntable mat, a Peter Riggie Audio Engineering Woody SPU tonearm equipped with—what else—an Ortofon SPU Classic GM MkII stereo phono cartridge, stepped-up with an Intact Audio SUT that compliments the Ortofon SPU Classic GM MkII, and a Thomas Schick tonearm equipped with a Soundsmith Zephyr Mk III phono cartridge.

For a digital source I used my Apple MacBook to stream digital to my Mhdt Labs Havana vacuum tube USB DAC via my DIY Art of Tone tinned-copper USB cable, and for an FM source I used my McIntosh MX110Z tuner-preamplifier.

Amplification components included my vintage McIntosh MX110Z tuner preamplifier, a pair of vintage McIntosh MC30 monaural amplifiers, and of course the Pass Labs XA25 stereo amplifier that is the subject of this article.





For this article, I had hoped to use either a Pass Labs XP12 preamplifier, or a new preamplifier design that Nelson has been teasing me with for a while now, but as fate would have it, there's wasn't an XP12 available, and as Nelson told me, "Unfortunately, the press of other business has kept that preamp from getting finished. I expect to have it at the beginning of the year in a couple of forms. In the meantime, I'm sure the McIntosh is a fine preamp."



The loudspeakers in this system were the Duelund-Altec Project loudspeakers, consisting of the successful marriage of the latest state-of-art Duelund Coherent Audio CAST tinned-copper capacitors, inductors, and resistors—in a Jean Hiraga inspired crossover circuit (photo below)—with the historically important vintage Altec loudspeakers (above, below) that were custom made for the domestic use of conductor Leopold Stokowski in the early 1960s (hereinafter referred to as the "Stokowski" Altec's).



I had also hoped to try the Pass Labs XA25 with my Tannoy Westminster Royal SE loudspeakers, as they are a more revealing and difficult to drive than the Altec's, and they would have been a good test of the Pass Labs XA25 stereo amplifier.

However, I have another article coming directly upon the heels of this article that will involve substituting the vintage Altec drivers in my "Stokowski" Altec's with the latest [Great Plains Audio](#) (nee Altec) drivers, which means the logistics of moving these two massive pairs of speakers around in such short order and swapping drivers for listening comparisons with the XA25 was not practical, so I didn't do a "West' Test" with the XA25 this time around.



Speaker cables were the Duelund DCA16GA tinned-copper speaker cables, and interconnects were Duelund DCA16GA tinned-copper cables, one pair terminated with the new Duelund plastic-free RCA connectors, and one pair terminated with the previous model of Duelund RCA connectors.

My wall outlets are Acoustic Revive customized Oyaide R-1 outlets fitted with Acoustic Revive CB-1DB Receptacle Base Plates and CFRP-1F Carbon Fiber Outlet Plates. From the wall outlet an Acoustic Revive Absolute Power Cable provides AC to an Acoustic Revive RPT-6 Absolute NCF Power Distributor, which distributes AC to the DAC and amplification components via Acoustic Revive Absolute Power Cables. My turntable connects to the Acoustic Revive RPT-6 Absolute NCF Power Distributor with a combination of an Acoustic Revive RAS-14-TripleC NCF Power Stabilizer and a Furutech G-320Ag-18 power cable.

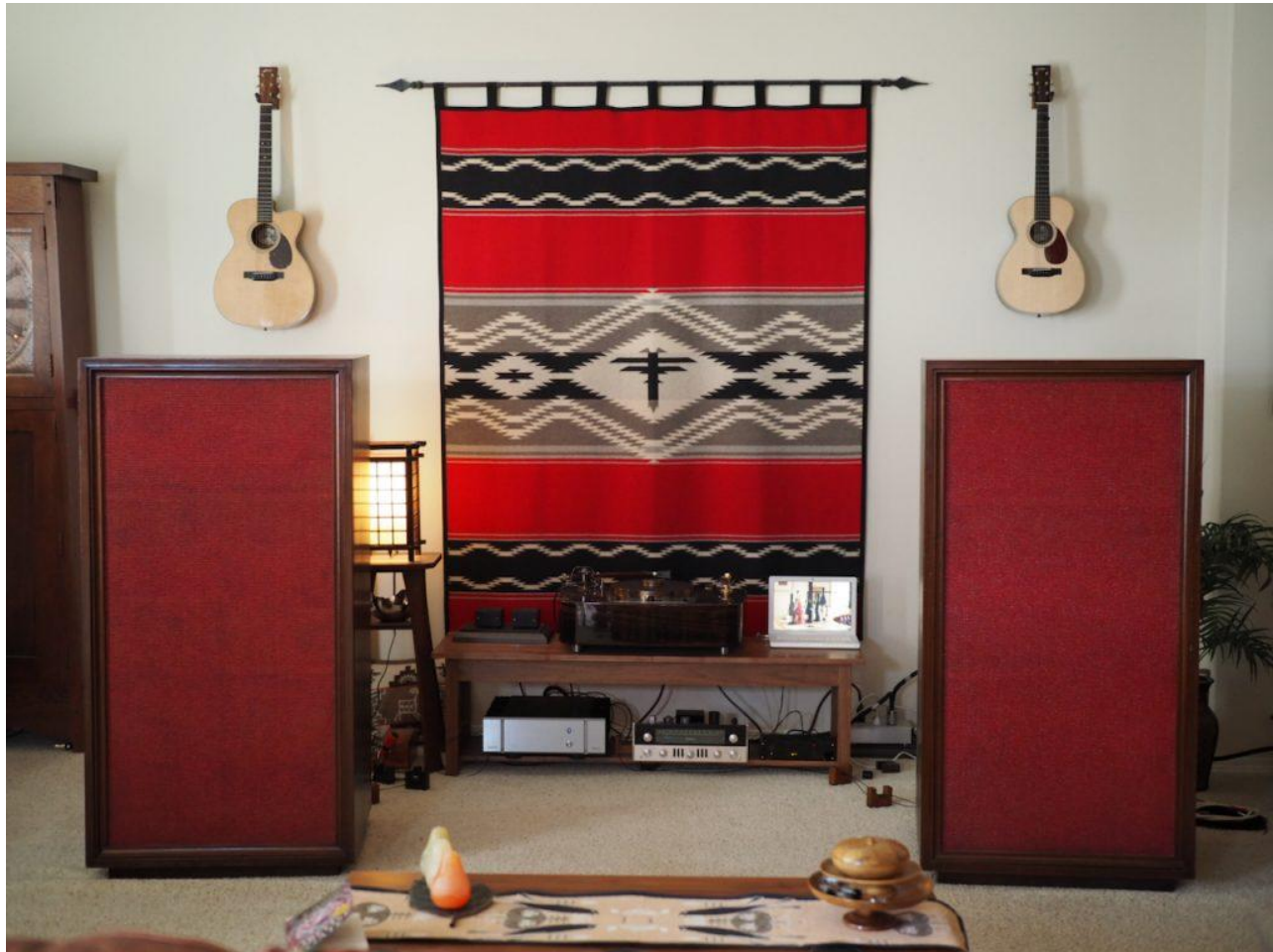
Other accessories included two Acoustic Revive RWL-3 Acoustic Conditioners for room treatment, Acoustic Revive RR-77 and RR-888 Schumann Ultra Low-Frequency Pulse Generators, and Acoustic Revive Quartz Under-Boards under the Intact Audio SUTs and the Acoustic Revive RPT-6 Absolute NCF Power Distributor.

Listening Impressions of the Pass Labs XA25 Stereo Amplifier

Here are a couple of preliminary suggestions that'll help you get the best out of your new Pass Labs XA25 Class A stereo amplifier in your own listening sessions.

First, I found the Pass Labs XA25 sounded a little forward and brash until it had adequate run-in time on it, about 300 hours of playing time, give or take. Around 200 hours of run-in time the XA25 started to smooth out noticeably, and by 300 hours of run-in time I thought it was baked to perfection.

One owner told me his XA25 continued to improve all the way up to the 1000-hour mark, but by 300 hours I was already impressed by the XA25's performance, so any improvement beyond that I figured would just be icing on the XA25's performance cake.



So, the moral of this story is that you shouldn't get too excited if your XA25 doesn't sound silky smooth cold out of the box, as it *will* after you give it adequate run-in time (not unusual for amplifiers or audio electronics in general).

Second, I found the Pass Labs XA25 needs an hour of warm-up *while playing music* to sound its considerable best. I streamed Jazz24 for an hour or more prior to my vinyl listening sessions to get the XA25 into its best form (again, this not unusual for amplifiers or audio electronics in general).

Thirdly, the Pass Labs XA25 owner's manual states that "The amplifier is designed to perform well with the included power cord ...," and that is no doubt true, but I also found that both my Acoustic Revive and Sablon Audio power cords enhanced the performance of the XA25.

After the Pass Labs XA25 amplifier had run-in, it settled into a rather remarkable level of

performance, and impressed me more than any amplifier I've yet heard on my Duelund-ized "Stokowski" Altec's.

The Musicality Characteristics of the Pass Labs XA25

Ok, after that general introduction to the performance of the Pass Labs XA25, lets drill down in reductionist fashion, and discuss the *musicality* of the XA25 in terms of its characteristics on the fundamental attributes of music.

So how well does the Pass Labs XA25 take recorded music and portray it compared to live music in terms of *timbre* (the unique 'voices' of instruments), *resolution of tone color* (the ability to distinctly hear the chordal variations resulting from adding additional pitches to three tone triads), *melody* (the tune you 'whistle while you work'), *harmony* (treble & bass accompaniments to the melody), *rhythm* (the steady beat that determines the tempo), *tempo* (speed), *dynamics* (variations in loudness), and *loudness* (the ability to play naturally at live-like levels appropriate to a piece of music)?



Simon and Garfunkel's *The Concert In Central Park* is one of my favorite live albums with its great music and live & billowing atmosphere, and of course my enjoyment of Simon and Garfunkel's music is no doubt buoyed by my growing up with it as a youngster, and interpreting their beautiful and powerful lyrics as the latest poetic expression of music that provided "meaning and truth" to a generation of young people looking for answers to the meaning of life during and after the Vietnam War.

The Concert In Central Park also makes for a great album for checking out timbre with Simon and Garfunkel's vocals and the variety of instruments being played.

Speaking of vocals, not only does the Pass Labs XA25 get the vocals right in timbre, but it also unravels Simon and Garfunkel's beautiful harmonies easily, with all their nuance and passion in full display, while sounding natural without even a trace of unnatural sibilance.

The saxophones, guitars, drums, bass, keyboards, synthesizer, and trumpets all passed the timbre test too, with the Pass Labs XA25, all sounding within the believable timbral range for those instruments.

The Concert In Central Park songs are also full of beautiful melodies, compelling rhythm playing, and driving bass beats, and the Pass Labs XA25 makes them bloom in all their musical beauty, much like I hear in life with live music.



Have you ever noticed that with some audio gear that every record you put on sounds like the tempo is slower than it should be, or faster than it should be, homogenizing the intended emotional impact of the music?

Not so with the Pass Labs XA25, where the tempo of every song on *The Concert In Central Park* comes through clearly, informing the emotional feel of the music, whether it's a lively and fast tempo that lends excitement to the music, or a slower tempo that complements a more romantic or introspective song.

Now let's talk about dynamics, which is a particularly strong point of the Pass Labs XA25's performance.

The combination of the deceptively powerful Pass Labs XA25 amplifier—"The Little Engine That Could"—and the high-sensitivity Altec's easily provided the full spectrum of dynamic performance while I was listening to music, whether it was on the subtle gradations of *pianississimo*, or the "hang onto your hat" blasts of *fortississimo*, and even at live-like sound pressure levels (SPLs) the XA25 created a dynamic realism that was breathtaking in the same way that dynamics in live music are.

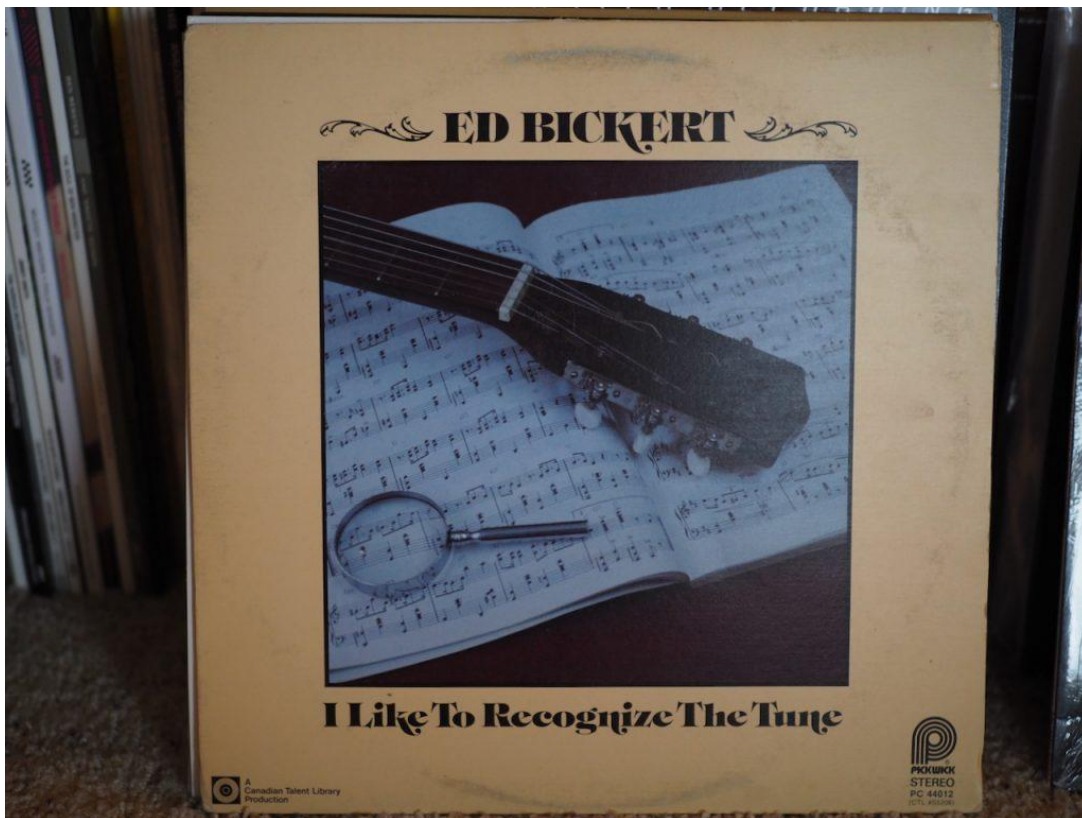
That's a big deal from a performance standpoint, as live-like dynamics are one of the three primary factors for getting reproduced music to sound and "feel" like live music in the home (the other two being "presence" and "tone"), and the Pass Labs XA25 provides the full spectrum of dynamics that made the melodies, beat, and rhythm of *The Concert In Central Park* full of life and emotionally engaging.



With my Duelund-ized Altec's, the Pass Labs can play so loud on big dynamic swings that I had to be a little careful setting the initial volume. If I set the volume too loud, the XA25 was so powerful that it was scary at times, and I had to jump up and turn down the volume for fear of blowing a driver, as my Altec drivers are rated at 30 watts (a crazy amount of power to put into such sensitive drivers), and the XA25 could easily hit that before clipping.

When I exercised prudence, and set the volume of the XA25 to live-like levels appropriate for the music there was no worries, and the music had such a live sound and feel that it was extraordinarily engaging, and it made listening to *The Concert In Central Park* feel like I was there in person at the concert on September 19, 1981.

When listening for tone color—the chordal variations resulting from adding additional pitches to three tone triads—my go-to music is jazz, which is full of tone color in the form of Major 7ths, Major 6ths, minor 7ths, minor 6ths, Dominant 7ths, diminished, half-diminished, augmented, 9ths, 11ths, and 13ths, and inversions of those chords, for example.



One of my favorite jazz guitarists was Canadian Ed Bickert (11-29-1932 to 2-28-2019). Remarkably, Ed played a Fender Telecaster, and his skill was so enormous that he could play that Telecaster and make it sound like a classic Gibson L5 archtop jazz guitar. In fact, you may have heard Ed playing on Paul Desmond's *Pure Desmond* and never realized it was Ed playing his Telecaster, just assuming it was someone really good playing an L5. Ed knew how to play his guitar to achieve beautiful tone.



There's a number of good Ed Bickert albums, but for this listening session I got out Ed's *I Like to Recognize The Tune* album. Ed mostly improvises around the melody on the songs of *I Like to Recognize The Tune*, but the songs where Ed plays chord melody, the Pass Labs XA25 let me hear the tone color coming through in full resolution, which helped inform the feel of the jazz being played, and highlighted the artistic creativity of Ed as he played.



Bill Evan's *Everyone Digs Bill Evans* is an album of beautiful music that really demonstrates tone colors with a lot of chord inversions, and is just fun to listen to. Like with Ed's *I Like to Recognize The Tune* album, the Pass Labs XA25 Class A stereo amplifier does a superb job of resolving all the notes that contribute to tone color in the *Everyone Digs Bill Evans* album, making the music more beautiful and emotive, and highlights Bill's incredible talent on the piano.



With respect to the attributes of musicality, the Pass Labs XA25 Class A stereo amplifier excels in every attribute, whether its timbre, resolution of tone color, melody, harmony, rhythm, tempo, dynamics, or playing naturally at live-like SPLs, and puts it all together to paint a breathtakingly beautiful and emotive listening experience.

On a scale of "one" to "ten" for its musicality performance, the Pass Labs XA25 Class A stereo amplifier was easily a "ten."

The Visuospatial Characteristics of the Pass Labs XA25

Now that we've talked about the XA25's musicality characteristics, let's drill down again in reductionist fashion and discuss the *visuospatial* characteristics of the XA25.

Visuospatial performance tends to be the audiophiles' playground, whose performance characteristics don't relate to music per se, but to performance related to the non-musical artifacts of the recording process, like *transparency* (the ability to 'see' into the recording), *resolution* (the amount of detail in the audio signal that is audibly presented), *soundstage* (the ability to discern the three dimensions of the recorded space in width, height and depth), the *soundspace* (the ability to convey the acoustic sense of 'space' of the recording venue), and *imaging* (the ability to localize instruments & musicians on the soundstage).

Performance related to visuospatial characteristics can make listening to recorded music more enjoyable when they are presented in a natural sounding fashion that complements the music.

However, when visuospatial characteristics are overtly exaggerated in such a way that they distract from a naturally live-like presentation of the music, then they can decrease emotional engagement and overall enjoyment of the music listening experience.



The Cowboy Junkies' *The Trinity Session* has been an audiophile favorite since its release in 1988 due to its excellent recording quality, huge church acoustic, and the superb country-blues music-making of Margo Timmins (vocals), Peter Timmins (drums), Michael Timmins (guitar), John Timmins (backing vocals, guitar), Kim Deschamps (pedal steel guitar, dobro, slide guitar), and Alan Anton (bass).

Remarkably, the Cowboy Junkies' *The Trinity Session* was recorded live at the Church of the Holy Trinity, in Toronto, Canada, using a single Calrec ambisonic microphone and a Sony DATman digital recorder, proof that it is possible to have an excellent recording from digital, and rather ordinary digital at that.

From [Wikipedia](#), "He (producer Peter Moore) chose the Church of the Holy Trinity in Toronto for its natural reverb. To better persuade the officials of the historic church, Moore claimed "The Timmins Family Singers" were recording a Christmas special. The session began early on November 27, 1987. Songs with the fewest instruments were recorded first, and then the songs with gradually more complex arrangements. In this way Moore was able to solve acoustic problems one by one. To better balance Margo's vocals against the electric guitars and drums, she was recorded through a PA system left behind by a previous group. By making subtle changes in volume and placement relative to the microphone over six hours, Moore and the band finally reached the distinctive sound of the album."

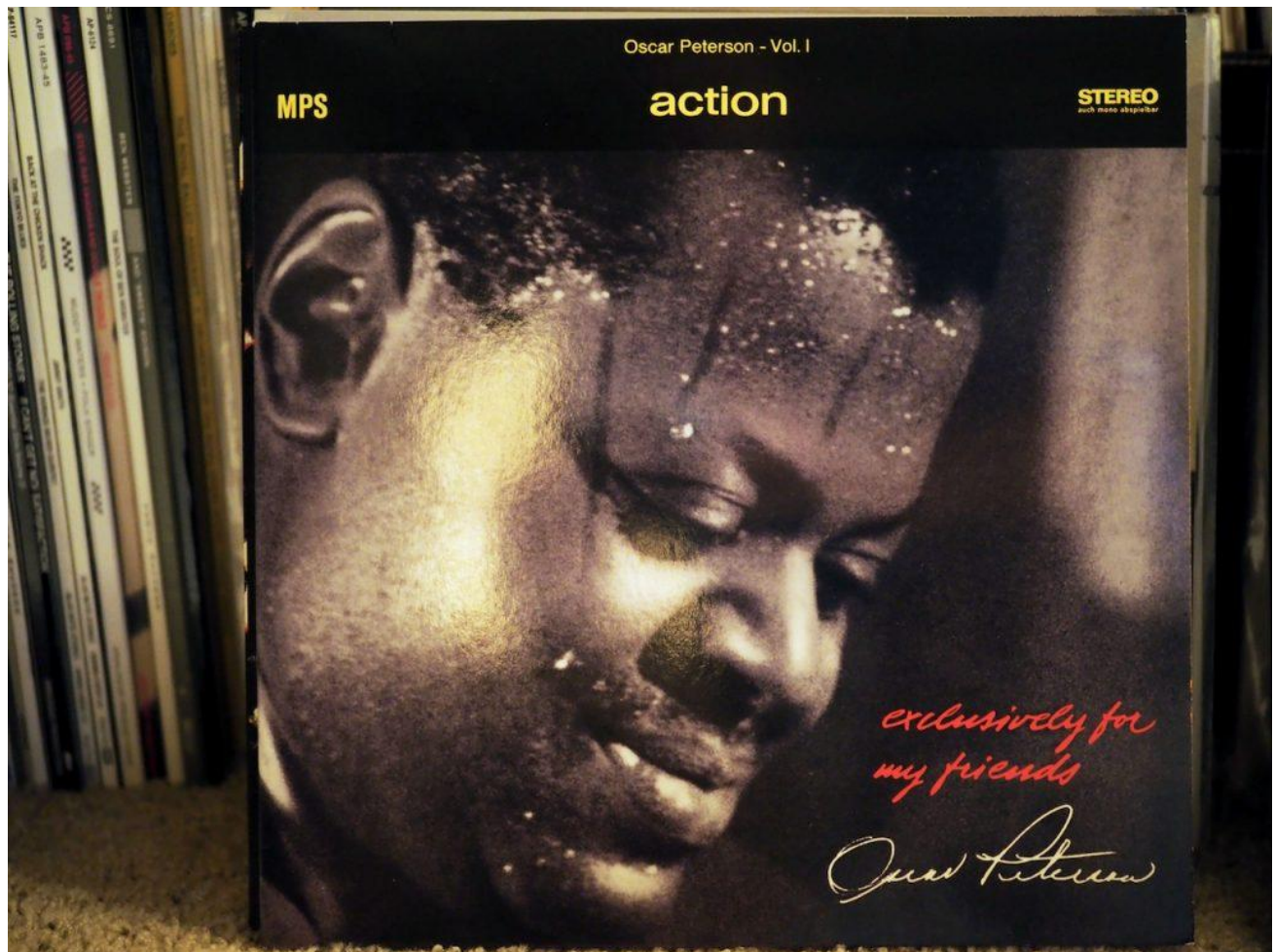
The visuospatial performance of the Pass Labs XA25 stereo amplifier playing my LP of *The Trinity Session* displayed the huge sense of space and natural reverb of the Church of the Holy Trinity in all of its prodigious natural splendor, and you can even hear what I think was the HVAC system swooshing away in the background on "Mining for Gold."



Images are present across the full width of the recording's soundstage, but the reality of this recording was the musicians were grouped around the mic pretty closely, so you don't hear lots of depth in the recording.

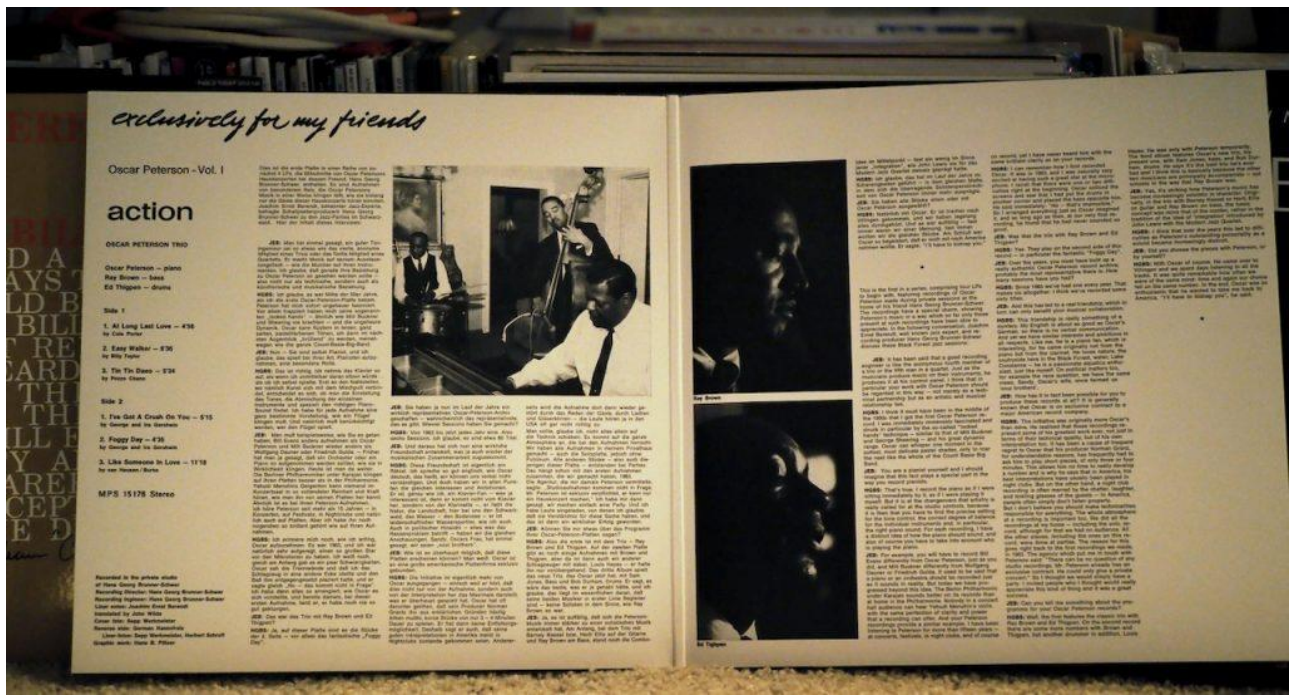
The imaging is presented naturally by the Pass Labs XA25, and is somewhat diffuse, reverberating into the church's acoustic, about what I would suspect if you had been in the church listening the Cowboy Junkies play their music around a single microphone.

The Pass Labs XA25 is very transparent, resolving, and organic sounding tonally, which for *The Trinity Session* translated into a very intimate and nuanced musical performance, with guitars, bass, drums, etc., displaying beautiful timbral textures and gorgeous overtones that disappear out into the church's acoustic.



The next example record is from the fantastic MPS box set of Oscar Peterson's *Exclusively for My Friends*, which was recorded in private sessions at the home of his friend Hans Georg Brunner-Schwer over the period of 1963 to 1968, and was released in 1990.

The Volume I record *Action*, has Oscar Peterson playing piano, Ray Brown playing bass, and Ed Thigpen on drums, and the Pass Labs XA25 amplifier presented this superbly recorded music with beautifully natural tone, a life-like presence of the musicians in my living room, and live-like dynamics on the piano, bass, and drums.



The transparency and resolution of Pass Labs XA25 allowed me to hear all of the timbral and technique nuance as Oscar, Ray, and Ed played, with the end result being that the music sounded remarkably real and live-like.

This is a trio, so the soundstage sounded appropriate for a trio, with the Pass Labs XA25 filling my living room with life-like aural images of Oscar's piano, Ray's bass, and Ed's drums.

Given this was recorded at the home of Hans Georg Brunner-Schwer, I didn't hear a huge spacious acoustic like I did with *The Trinity Session*, but the acoustic I did hear was just like it should be, putting the artists in my room with the natural acoustic of the room it was recorded in.



This beautifully recorded boxset of *Exclusively for My Friends* is one of my most treasured sets of musical performances, and the Pass Labs XA25 was absolutely faultless with its presentation of the music and visuospatial elements of these recordings. Simply stunning all around.



My next example record is a more complex one, that of *Rachmaninoff Symphonic Dances / Vocalise*, by the Dallas Symphony Orchestra, with Donald Johanos conducting.

This audiophile classic was originally recorded on the Turnabout label (TV 34145S) and released in 1967, but the version I have is the superb 45 RPM Analogue Productions version from 2009.

The Acoustic Sounds [website](#) says about this album, "It quite simply does not get any better than this. This record has been lauded by every critic since 1967 as the closest thing to recorded perfection that exists. This is the record you put on to convince yourself that investing in that high-end system was in fact worthwhile. It will positively test the limits of any system. Dynamics, texture, colors, air, bass—everything! This one's got it all."

The Pass Labs XA 25 stereo amplifier was stunning on *Rachmaninoff Symphonic Dances / Vocalise*, with live-like dynamics, beautiful tone, lots of transparency, and resolution gave me a remarkable listening experience full of timbral textures, a full display of the musicians' technique with lots of nuance, and of course, superb imaging from a wide and deep soundstage with lots of layering of the instruments.



The recorded acoustic is natural and spacious sounding, and Acoustic Sounds is not kidding, this album will really tell you all about "Dynamics, texture, colors, air, bass—everything!" in your hifi system, and the Pass Labs XA25 was superb in portraying all of the musical and visuospatial elements of the album in breathtaking fashion.

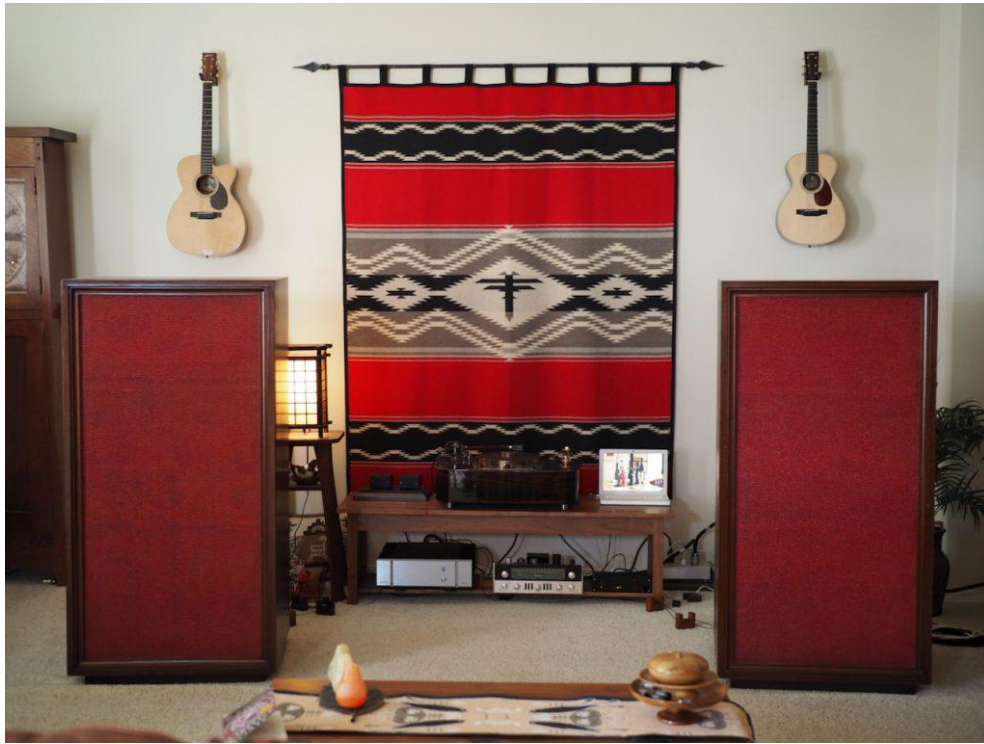
To summarize, the Pass Labs XA25's performance on the *visuospatial* characteristics of transparency, resolution, soundstage, soundspace, and imaging were absolutely superb, always being presented in a believably lifelike fashion that enhance the music listening experience and never distracted from it. I have zero nits to pick with the Pass Labs XA25's visuospatial performance, it is about as ideal as I can imagine wanting from an amplifier.

The Combined Musicality & Visuospatial Performance of the Pass Labs XA25

Ok, now that we've taken a look at performance of the Pass Labs XA25 in reductionist terms with respect to musicality & visuospatial performance as a collection of attributes, let us now do the opposite, and explore how well the XA25 integrates all of those attributes in the holistic context of sounding & feeling like a live music experience in the way it delivers an *emotional response* from listening to the recorded music.

Regarding emotional response, researchers who study the neurobiology of music have found that certain elements of musicality and visuospatial presentation stimulates emotional responses in the brain.

Their research results suggest that a home music system that can play at loudness levels realistic to the music, is realistic in dynamic terms, and can realistically portray timbral textures, tempo, and



beat, will be more emotionally engaging and musically satisfying than a home music system that can't do those things as well. Note that those are all aspects of musicality.

Also, researchers have found that there is a brain connection that does processing for both visuospatial artifacts and transposing melodies, and when that brain region is stimulated by the

processing of the visuospatial information in recorded music, it can contribute additional pleasure to the music listening experience, increasing the emotional impact of listening to music.

So ideally, I want a component that can make any recorded music I want to listen to a pleasurable and reasonably believable experience in terms of musicality, and if the music happens to be well-recorded in terms of visuospatial information so that it adds to my listening enjoyment, so much the better.



The combination of the muscularly powerful Pass Labs XA25 Class A stereo amplifier with my sensitive Duelund-ized "Stokowski" Altec's integrates and pushes all of the musicality and visuospatial buttons in such a grand way that every listening experience I've had with them has been remarkable in the way it connected me to the emotional impact of the music.

It didn't matter if I was listening to jazz, folk, rock, blues, classical, country, or what have you, or whether it was an audiophile spectacular recording or just an average recording, it's the best and most intense emotional presentation of musical performances I've ever experienced from a hifi system, ever, period.

The Pass Labs XA25 Class A stereo amplifier is one heck of a good amplifier!

Comparing the Pass Labs XA25 to the Vintage McIntosh MC30 Monaural Amplifiers

You've no doubt noticed Nelson's references in this article—and my First Watt SIT-3 article ([HERE](#))—about how the solid-state MOSFETs, JFETs, SITs, etc., he has implemented in his amplifier circuits perform compared to single-ended-triode (the SIT-3) or single-ended-pentode circuits (the Aleph 3), so I thought it would make for an interesting listening comparison to compare my favorite push-pull vacuum-tube amplifier from history—the formidable vintage McIntosh MC30 6L6GC push-pull monaural amplifiers (1954-1962)—to Nelson's Pass Labs XA25 Class A push-pull stereo amplifier.



Both amplifiers have approximately the same nominally rated output into 8 Ohms (25 watts for the XA25 and 30 watts for the MC30), as well as large power reserves up to the point where they clip

into 8 Ohms (80 watts for the XA25 and 60 watts for the MC30s), and both are easily capable of driving difficult loudspeaker loads.

Recently, during a visit by fellow music and audio enthusiast Paul James from Australia, Paul, my buddy Doc Leo, and myself did a listening comparison between the Pass Labs XA25 and my restored & hot-rodded vintage McIntosh MC30 monaural amplifiers in the hifi system used for this article.

It had been ages—like a year—since I've had the pleasure of hearing my vintage monaural McIntosh MC30 amplifiers in my main music listening system, and I hadn't yet had a chance to listen to them with my Duelund-ized Altec's, so I was really glad that Paul - being a major vacuum tube enthusiast—suggested we give them a listen in comparison to the Pass Labs XA25.

What a grand adventure to engage in, and we had a ball listening to these two very different approaches to audio amplification!

I think that both of these amplifiers are examples of the best of their kind, with the Pass Labs XA25 representing a pinnacle of solid-state Class A push-pull design in a lower-powered amplifier, and the vintage McIntosh MC30 monaural amplifiers are long time favorites of mine as high-performance examples of Audio Golden Era push-pull valve amplifier design.

The main difference power-wise between these amplifiers is that when driving the 16 Ohm "Stokowski" Altec's with the Duelund CAST tinned-copper crossovers, the Pass Labs XA25 drops to about 40 watts at clipping into 16 Ohms, while the vintage monaural McIntosh MC30s have 16 Ohm taps on their transformers that allows them to maintain their 60 watts at clipping into 16 Ohms.

As I discussed in my "Duelund-Altec Project - Dare to Dream!" feature article at *Positive Feedback*, most people don't usually connect the terms "vintage" with "high-performance," assuming instead that these two terms must be mutually exclusive.

After all, don't the latest models of hifi offerings being produced for audio enthusiasts today represent the maximum attainable performance by leaps and bounds over the vintage equipment?



Historically speaking, the performance peak for recording quality & software quality, amplification quality, and loudspeaker quality occurred during the period of 1920 to 1960—the apogee of the vacuum tube era—with incremental improvements or even declines in performance since then.

That's why you see ultra-talented designers like

Nelson Pass referring back to the best of those Audio Golden Era vacuum tube and amplifier designs as a benchmark of comparison for sound quality in his latest leading-edge solid-state designs.

Having owned many single-ended-triode, single-ended-pentode, and push-pull vacuum tube amplifiers over the years, in their overall performance from a musicality and visuospatial perspective—and from the perspective of flexibility in powering loudspeaker designs of moderate sensitivity—all have come up short of my vintage McIntosh MC30 monaural amplifiers.

Certainly, some of the best of the Audio Golden Age vacuum tube designs—like my hot-rodded monaural McIntosh MC30s—are fantastic, but how do they compare to a current state-of-art solid-state design like Nelson's Pass Labs XA25 Class A push-pull power amplifier, given competitive solid-state designs didn't even exist during the peak of valve amplifier performance developments in history?



As an aside, I would say that the peak of performance development for solid-state amplification is occurring *now*, with designs like the Pass Labs XA25 and First Watt SIT-3 being a couple of examples of the best in leading-edge solid-state amplifier performance.

With the Pass Labs XA25 Class A solid-state stereo amplifier and the vintage McIntosh MC30 monaural amplifiers being excellent examples of performance apogees in their respective current and vintage periods of performance advancements, how do they compare in terms of absolute performance in today's terms?

My observations are that both Pass Labs XA25 Class A solid-state push-pull stereo amplifier and the vintage McIntosh MC30 push-pull monaural amplifiers deliver extremely high levels of musicality and visuospatial performance, both are capable of providing a tremendous dose of emotional involvement from the music, and both can drive a wide range of loudspeakers.

The Pass Labs XA25 stereo amplifier is extremely transparent, resolving, and distortion free, from the highest highs to the lowest lows. It easily provides the full spectrum of dynamic performance, whether it was on the subtle gradations of *pianississimo*, or the "hang onto your hat" blasts of *fortississimo*, even at live-like sound pressure levels (SPLs).



The XA25 also sounds incredibly powerful in contradiction to its nominal power rating of 25 watts (due to the formidable amount of power it can produce before clipping), and it can provide incredible bass slam when it's in the music, and yet it possesses comparable organic musicality and visuospatial characteristics that I normally associate with my favorite push-pull vacuum tube amplifiers like my vintage McIntosh MC30 monaural amplifiers, or the directly-heated singled-ended triodes (DH-SETs) and single-ended-pentodes (SEPs) that I have owned in the past.

The vintage McIntosh MC30 monaural amplifiers are known for their 'spooky real' presence, their big, colorful, and dramatic presentation of music, and their ability to infuse music with deep color tones and rich timbral textures that makes the music sound vibrant and alive. With the Yazaki-san suggested modifications that my friend Ron Barbee installed, it enhanced the sound of my MC30s even further, with a more elegant, rich, utterly natural, and timbrally gorgeous presentation, as well as a liquid, flowing, mesmerizingly musical overall presentation.

First off, I should tell you that I could *easily* live happily with either the Pass Labs XA25 Class A push-pull solid-state stereo amplifier or the vintage McIntosh MC30 monaural amplifiers powering my loudspeakers (or preferably both!), they are both brilliant amplifiers.

Both of these amplifier designs—one modern and one vintage—sound extremely good, but differ in the way they combine their strengths in musicality, visuospatial performance, and emotional impact.



The Pass Labs XA25 is more resolving and transparent than the vintage Mac MC30s, which you can hear in more detailed and nuanced timbral textures, additional body to images, and the huge sense of space in the soundstage that it is capable of providing.

Subjectively, the XA25 feels much more powerful than the MC30s, even though it's not on the 16 Ohm Altec's, and it has greater dynamic ability across the dynamic spectrum, with impressive bass performance.

The vintage MC30s have a more liquid and flowing sound than the XA25, the tones seem to decay a little longer in time, which gives a little more relaxed natural feel to the music.

The XA25 is a little more to the exciting and engaging side of life, with the MC30s being a little more to the colorful and romanticized side of life.

If you boil it down to a single performance aspect, the main difference between these amplifiers is that the vintage Mac MC30s play more with what musicians call *legato*—playing in a smooth and flowing manner without breaks between notes – than does the Pass Labs XA25, however that

legato-like presentation in the MC30s is achieved at the expense of the transparency and resolution the XA25 offers.

Vacuum tube amplifiers like the vintage Mac MC30s tend to excel at emphasizing this sort of liquid and flowing feel in music. The solid-state Pass Labs XA25 is not quite as liquid and flowing as the vintage MC30s, but it is not that far off either.

Hard-core vacuum tube amplifier enthusiasts like my audio pals Paul and Doc Leo weight this legato-style of liquidity and flow very highly, and so preferred the more liquid and flowing nature of the MC30s to that of the XA25.

However, I also am a vacuum tube enthusiast, but I'm also an enthusiast of solid-state designs with superb musicality like the Pass Labs and First Watt designs, and in this case—even in spite of a slight diminishment of liquidity and flow with the XA25 compared to my MC30s—I still preferred the XA25 on my Duelund-ized Altec's to the MC30s.

So, the positives for the Pass Labs XA25 are its impressive level of performance, which is at the leading-edge of solid-state design, and I think the XA25—like the First Watt SIT-3—represent what I consider pinnacles of solid-state design, to the extent that I think the Golden Age for high-performance solid-state amplifier designs is occurring right now, and as such the XA25 represents the birth of a classic solid-state amplifier that can go toe-to-toe with pretty much anything out there from any period of time in history in terms of musicality, visuospatial performance, and emotional impact.

So, while the XA25 is competitive with the best vintage vacuum tube designs in terms of its musicality, it excels beyond them in its overall visuospatial performance, and its ability to deliver emotional impact is superb.

Other pluses are that the XA25 doesn't require expensive vacuum tubes to keep running, it's going to be totally reliable for the long term, and at \$4900 it's a relative bargain for its superb level of performance.

Comparing the Pass Labs XA25 Push-Pull Stereo Amplifier to the First Watt SIT-3 Single-Ended Stereo Amplifier



I thought you might enjoy hearing a little about how the Pass Labs XA25 Class A push-pull amplifier compares to the highly-regarded First Watt SIT-3 single-ended stereo amplifier (my full review of the SIT-3 can be read [HERE](#)).

Here's an summary excerpt from my review of the First Watt SIT-3:

"Sonically, the First Watt SIT-3 demonstrated very impressive performance in terms of resolution, imaging, soundstaging, and in recovering the acoustic space of the recording venue, as well as the "acoustic envelope" around individual instruments in DH-SET fashion. I don't think I've ever heard an amplifier resolve as much musical & recorded nuance in such a natural fashion as the SIT-3 does, and I was constantly hearing musical nuance that I'd never heard before in my music."

"Musically, the First Watt SIT-3 provided a very satisfying portrayal of natural sounding timbral textures, with excellent resolution of tone color, as well as an articulate, nuanced, and vivid portrayal of melodies and harmonies. The SIT-3's rhythmic abilities were impressive, with beat delivered as physically engaging, along with highly resolved bass frequencies that my tube amps can't match. From the lowest lows to the highest highs that my loudspeakers could produce, the First Watt SIT-3 provided a level of resolution, timbral nuance, and musical articulation that was truly wondrous. Tempos and changes in tempos were easily discerned, adding to the emotive feel of the music."



Well, most notably, the Pass Labs XA25 Class A push-pull stereo amplifier is much more powerful and authoritatively dynamic than the First Watt SIT-3, making the XA25 more relevant to a wider variety of medium sensitivity loudspeakers.

So you get the idea, the First Watt SIT-3 is a superb amplifier, but power-wise it is more like a 300B amplifier on my 16 Ohm Altec's (about 9 watts output into 16 Ohms), and it really needs Altec-like sensitivity to get the best out of it, so it is more narrowly targeted at listeners with higher-sensitivity loudspeakers.

The First Watt SIT-3 is more like my vintage McIntosh MC30s in terms of legato-style liquidity and flow,

being smooth and refined, yet it also possesses superior resolution and transparency than the

MC30s, providing a listening experience with lots of natural sounding nuance. The SIT-3 is a very charming and musical amplifier, a little to the laid-back side of life compared to the XA25, and it does everything superbly.

The Pass Labs XA25 has a more dynamic sound and exciting feel to it, whereas the First Watt SIT-3 is more liquid, nuanced, luxurious, and refined sounding.



In terms of bass tonality, on the new Blue Note Tone Poet release of Tina Brooks' *Minor Move*, for example, I think the SIT-3 captures what an upright bass sounds like in jazz a little more naturally than does the XA25, which emphasizes the bass more.

However, in rock & roll that punchy & muscular bass of the XA25 really puts feeling into the beat, making the music thrilling and exciting to listen to.

Yes, the Pass Labs XA25 Class A push-pull stereo amplifier and the First Watt SIT-3 are both incredibly good—but different—amplifiers, and I feel ridiculously fortunate and privileged to have them both here at the same time to tell you about.

Well, I hope that gives you a little insight into these two high-performance amplifiers, which incidentally, are both priced very fairly for their lofty levels of performance.

Summary and Conclusions

The Pass Labs XA25 Class A push-pull stereo amplifier has been very popular with audio enthusiasts since its release, which is easy to understand, as the Pass Labs XA25 sounds great, is extremely well built, is reliable, is inexpensive to maintain (no costs beyond the AC it consumes), is relatively affordable (\$4900 USD), represents huge value for its price, and it is a powerful and compact amplifier that is able to easily drive a wide variety of loudspeakers, from my high-sensitivity vintage Altec's to much less sensitive contemporary designs.



The Pass Labs is competitive with the various single-ended and push-pull vacuum tube amplifiers I have owned over the years in terms of what they do best, superb musicality along with beguiling visuospatial performance prowess.

The rather utilitarian appearance of the Pass Labs XA25 stereo amplifier's exterior doesn't really hint at the exceptional performance potential this amplifier offers. You are not paying for a piece of audio jewelry with the Pass Labs XA25, you are paying for truly superb performance at a real-world price, in a well-designed and executed amplifier that will reliably take you into your musical future.

I mentioned it earlier, but I want to reiterate that the Pass Labs XA25 amplifier has been my amplifier of choice for my Duelund-ized "Stokowski" Altec loudspeakers during its stay, it's particular combination of power, musicality, visuospatial performance, and its ability to convey the emotional impact of the music just bowled me over in my listening sessions. It really is an extraordinary amplifier.

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I enthusiastically recommend the Pass Labs XA25 stereo amplifier for everyone who loves music and the hifi hobby, I can't imagine any of you being disappointed with this amplifier, it is a true gem and destined to become a classic which other amplifiers are judged by.



I would like to thank Nelson Pass and Bryan Stanton for making the Pass Labs XA25 Class A push-pull amplifier available to me to write about for you. Thanks guys!

As always, thanks for stopping by *Positive Feedback* to read this article, and may the tone be with you!

XA25 Class A amplifier

Retail: \$4900

Pass Labs

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