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FirstWatt SIT4 review

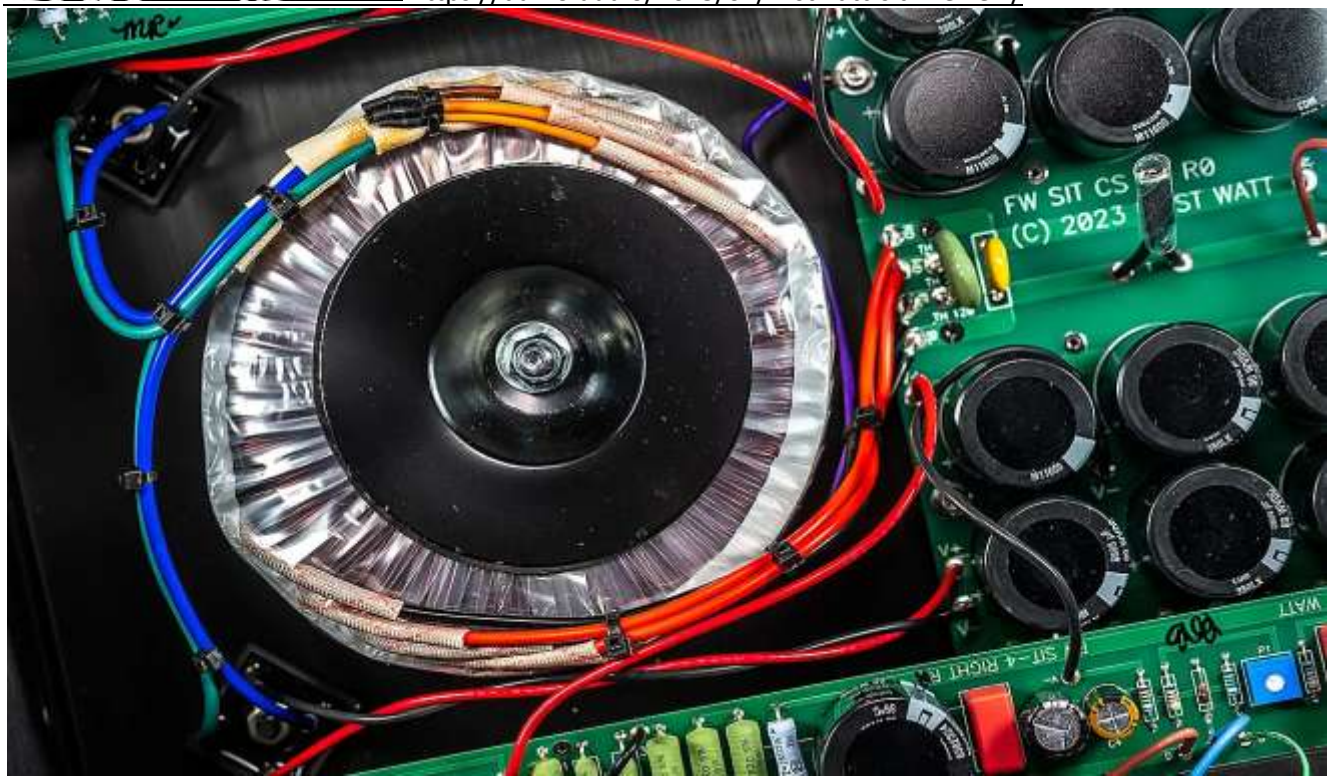
Last watt. It's never the last word. Instead, it's more like driving ancient threadbare rubber just before it cracks to cause a blowout. If that's how sucky things may get, why'd we ever want retreads? It's an observation which led Los Alamos-based hi-fi critic Dick Olsher to coin a phrase which in my own words renders as "if the first watt blows, why chase more of the same". Not one to leave that question hanging, legendary US amp designer Nelson Pass launched his brand FirstWatt as a skunkworks affair from his kitchen table in Sea Ranch, NoCal. From it he still furnishes the underground speaker brigade with transistor amps which mustn't be revved into 4th gear before hitting proper traction.

If your speaker is a 109dB Avantgarde horn or 100dB Voxativ widebander, you need 1st gear excellence since you'll never make it into 2nd. In fact, you'll be inhaling mood-altering potency in the milliwatt range. Related to this idea is the flea-watt amp, most often a direct-heated single-ended triode that might make from 2-8 watts before THD exceeds 10%. Of course with Nelson a transistor man well versed in high-power class A behemoths bad for most backs, his FirstWatt side hustle now part of the main Pass Labs production facilities in Auburn is purely sand not glass. Aside from that, these FW circuits emulate the flea-watt ideal of simplicity. That means the lowest number of gain

stages, little to zero negative feedback, pure class A bias and a sound-first tuning which prioritizes simple distortion of mostly 2nd-harmonic sometimes 3rd and nought past the 5th. This differs from most mainstream approaches which prioritize ultra-low THD but whose means to generate it leave high odd-order harmonic remnants. Not conceptualized to generate high-volume turnovers, FirstWatt amps sell in low numbers and then discontinue to make room for new models. It's Nelson's very own Goldberg Variations game concerned with specialty not mainstream apps. It foremost aims at owners of simpler high-efficiency/impedance speakers with minimal to no crossovers.

Nelson is very generous with sharing circuit schematics with his own DIYaudio forum. In turn, many of its members gift him with rare often discontinued parts in the hopes that in the maestro's hands, some unique use for them might emerge. It's how Nelson got hipped to a particular industrial static-induction transistor whose production died when the Japanese Tokin factory was levelled in an earthquake. Nelson found this part so promising that over the years following his team chased down remaining global stock. Once he had secured a long-term stash, he began dreaming up circuits around it. He was already familiar with the transistor type from his SIT1 thru 3 models. Those used a smaller SIT he had commissioned from SemiSouth. Once that company folded, his supply of these parts dried up and eventually the far more powerful Tokin version replaced it. The SIT4 stereo and SIT5 monos are first to exploit it.

If these were valve amps, the thermionic galleries would be aflutter-like orchid fanciers learning of a new species in faraway Polynesia or alcohol freaks hearing of caskets of cognac rescued from a shipwreck off the coast of France. But since these are transistor amps, most owners don't care to know about parts provenance. Hence there's been very little noise about these SIT amps in the mainstream. Amongst the cognoscenti meanwhile, it's been different. Today's re:Mix of my 6moons review for Darko.audio now turns you into such a cognoscenti even if just of the distant non-committal kind. Ready to walk on the very obscure and esoteric side for a change? To outfit you in proper history attire, the FW catalogue is already on its 19th (!) model. Some were single-stage affairs where one gain stage generated both current and voltage gain. Some used step-up transformers for passive voltage gain. One used current feedback. There were Mosfet and Jfet outputs. None rated for more than 50wpc. Most hovered between 10 and 25. None had an output impedance lower than 0.1Ω. One was as high as 80Ω. Many eschewed degeneration resistors as that other form of feedback as Nelson calls it. Once you learn that ultra-lightweight driver cones with ultra-potent motors develop so much self-damping that fashionably low output impedance causes serious overdamping to the possible tune of an octave's loss of bass reach plus a disagreeable clipped dry gait, you appreciate that different jobs require different tools. One size does not all fit! We might even say that the FW catalogue addresses many of the misfits and outcasts in the speaker kingdom.



This catalogue has another unwritten rule. All amps must bed into the same chassis and heatsinks. As Nelson might say, this keeps him honest when exploring different circuit permutations and gain devices. None

benefits from special favours like a bigger power supply or more dissipation surface. Whatever the flavour differences, they develop within the same limits imposed by the outer hardware. To scale up power, Pass Labs stocks ever bigger heavier amps. It's why despite its Tokin SIT rated for 600V, 30A, 400W and 50MHz, the SIT4 running one of them per channel only makes 10wpc into 8Ω and half that into half. Even its 4Ω output impedance is triode SET reminiscent as is the behaviour of the device. Voltage gain is a near-standard 20dB, input impedance a nicely high 100kΩ. Power consumption at idle or full power is 200 watts compliments of class A's always-on status for its gain parts. There's no negative feedback and the distortion behaviour is curated for the negative-phase 2nd harmonic. It all fits into the standard 17x15x5" WxDxH FW case and weighs 32lbs. Now you've got proper SITuational awareness for the type of job this amp aims at; and where using it would likely – or most definitely – be a fool's errand.

Before we proceed, one paragraph on total harmonic distortion. Low odd-order harmonics are like blue notes in Jazz. They add a certain freshness. High odd-order harmonics are like walking over to a bar piano, then using five fingers to simultaneously press down on three adjacent white keys and the two black ones in-between. The result really rubs disharmoniously and gratingly. Even super-low doses injected into playback can cause a rusty, sharp and fatiguing effect. Now stretch your thumb and pinkie far to hit any two keys which along the piano's keyboard repeat. Those are called octaves. Now do the same with your other hand as well to sound *four* C, G, B-flat or whatever keys. The more octaves you stack one atop the other, the richer the sound gets. That's the 2nd and 4th even-order harmonics in action. It's why I call them octave doublers. They're harmonious and perfectly benign.

It's why low-power triode amps without feedback so high output impedance and bad damping can, on the right speakers, sound most attractive. Their THD is high but its structure very simple. It consists merely of the 2nd harmonic one octave above the fundamental; and some 4th harmonic as the second octave above the fundamental. The more complex the music, the more high amounts of such distortion cause a thickening effect. Hence the percentage of this THD determines just how much collagen we inject. In single-ended triode lore, 3-10% of low even-order harmonic distortion is considered normal. Compare that to high-feedback class D which might book 0.001% THD but upon closer inspection contains remnants of 7th-harmonic and higher residue. Despite homeopathic doses, that tends to sound rather cooler and harder. This ends my mini detour into THD not as a sermon on righteousness but to hint at a range of sundry playback flavours each with an appreciative audience. There's no one right amp for all occasions and listeners; and nobody listens to music with a scope but through two ears connected to a brain which imposes its own distortion.

Have you listened to good class D in a copasetic context? If so, you might agree that it can create very high contrast as though stars at high altitude shimmered against a jet-black sky unencumbered by a city's light pollution. In my experience at least, it can *also* create a sense of overdamping as though a blanket over a burning body restricted all oxygen to quickly kill off the flames. Phenomenal absence of noise enables high detail count but the context is one of desiccation and a clipped cadence. On the

other end of that pole at least according to my exposure, a high-THD SET can sound very moist, elastic and fleshy whilst prospectively erring in the direction of tropical humidity. The emphasis isn't on extreme separation or detail pop but connective tissue and a fluid gait. Others call it big tone and textural richness. Whilst the SIT4 is ostensibly a SET executed with transistors not triodes but otherwise behaving very similarly, we'd expect – and really get – a good dose of that fleshy moisture and redolent not crackling gestalt. Rather less expected should be the simultaneous counter-proposal of high separation so the type image specificity, detailing and three-dimensional soundstage layering that normally doesn't coexist with a musically more humid climate. If we group those latter aspects under 'high resolution' just because it conforms with convention, we might rightly call the SIT4 a hi-rez SET. In my book that would *actually* fit and very correctly manage expectations. We obviously want copasetic speakers whose woofers don't rely on massive absorption of back EMF whilst presenting unhappy constellations of impedance drops and phase angles. We also want reasonable sensitivity so we run the SIT4 within its power envelope and not the last fraction of its last watt. In our digs, this meant Cube Nenuphar v2, Voxativ Hagen2 and Zu Soul VI. On those loads, the narrow-chested bookish SIT4 ate the lunch of our 250W class AB mono jocks particularly on the first two loads. The Zu does very well on our high-power monos too but the SIT4 still had the edge on tone textures. On the other two, it was no contest. Right tool for the job and all that snazz.

Why not just use a 'real' SET you ask? Because higher noise, phase shift and inductance from a

quarter to half mile of output transformer windings leave a fingerprint that might not be as attractive when compared to the SIT4 which bags the good triode stuff but skips the lesser bits. We'd also expect the Tokin SIT capable of rather higher current than the average direct-heated triode. That's not disrespecting tubes, just suggesting an alternative whose overall balance of similar attributes could be preferable. Saying so isn't some backhanded suggestion that the SIT4 sounds like tubes. For one, it doesn't use transformer coupling. That alone suggests a difference. On whizzer-cone widebanders with a minor propensity for presence-region bite and friskiness, the softer grip of a tube SET with its more limited bandwidth and treble roll-off might actually be a better fit because such an amp mellows some of the load's innate misbehaviour. There's good reason why widebanders + SETs are such a classic recipe. On a well-behaved widebander like Cube's meanwhile, I'd take the lower noise and higher resolution of the SIT4 any day without feeling that I'd give up anything in trade. Others could come down slightly on the other side of this equation but we should expect a close call and for sure a very careful weighing of pros and cons.

Here's where the SIT4's mainstream power deficit turns on its head. The recently bowed SIT5 monos with a single Tokin SIT per chassis scale to 35/60W into 8/4Ω, lower Z-out to Ω, suppress distortion from 0.6% to 0.1% whilst noise halves from 75µV to 36µV. On paper that makes them superior machines while the green paper doubles in trade — so €10K for the pair. The increase in power involves a high-power current-sharing Mosfet. The Tokin no longer handles both voltage and current

gain as it does in the SIT4. It's a different circuit curated for more power-hungry low-Ω so 'normal' speakers. We shouldn't expect identical sound; not that it'd matter when by spec necessity the SIT4 would do a poor(er) job on such loads. But coming from the same designer with the same taste using the same overbuilt part good for 200 pure class A watts into 8Ω were one Ahnuld enough to man-handle the resultant chassis, we *should* expect the same calibre or league of sound. If you find the SIT4 concept of a hi-rez triode sound intriguing but own harder-of-hearing speakers expecting a firmer hand on their reins, the SIT5 monos beckon already. And no, I don't have my samples yet but Warsaw colleague Dawid Grzyb already published his opinion on *HifiKnights*. What I can already share is my belief that this Tokin SIT as tapped by Nelson Pass in today's SIT4 has just elevated the FirstWatt crop to a higher octave. And yes, that'd be an even not odd harmonic. And yes, that's relative to having reviewed most of the FW models and until recently owned a Pass Labs XA-30.8. If you own Cube Nenuphar type loads, don't even dream of SIT5. They'd cost you double but likely not perform ideally when such widebanders prefer higher output impedance for less damping.

They'll want a SIT4. Incidentally, its tonal completeness and textural generosity do not rely on additive upstream trickery. I got these results using a DAC-direct connection off the variable reference voltage of the R2R ladders of a Sonnet Pasithea. I heard zero need to add my Vinnie Rossi direct-coupled 300B preamp to the mix. In short, the mythical middle between tubes and transistors might just have found its most idealized marriage in the SIT4. Simply leave the big speaker guns and just bring the canoli. To flip that script to bigger guns if likely not howitzers, the SIT5 awaits. For howitzers, the traditional turnover in the Pass Labs catalogue suggests that 2025 might just see the first crop of the next generation of high-power Nelson amps.

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Further information: FirstWatt

P.S.: If this review seemed more treatise than sonic commentary, it's because I didn't want to assume familiarity with either the brand or its specialized applications. That required more background cover to more quickly run out of space for the usual music-listening notes. If that caused more high-order odd harmonic dryness and flatness, rest assured that to the ears, the SIT4 is anything but…

Written by Srajan

Srajan is the owner and publisher of 6moons. He used to play clarinet at the conservatory. Later he worked in audio retail, then marketing for three different hifi manufacturers. Writing about hifi and music came next, then launching his own mag. Today he lives with his cat - Chai the Bengal - in a tiny village overlooking the estuary of Ireland's Shannon river at County Clare's border with County Kerry. Srajan derives his income from the ad revenues of 6moons and his contributions to Darko.Audio.