

Zanden 8120 and 3100 – part 1

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Review samples supplied by Chattelin Audio Systems

Retail prices in the Netherlands:

3100 preamp – 12.490 euro

8120 power amp – 21.490 euro

Zanden 8120 description

The Zanden 8120 is a class A/B 90-watt fully balanced Push-Pull amp using four ECC82 driver tubes and four Tung-Sol KT120 power tubes with minimal negative feedback. Optionally it can be outfitted with XLR inputs which was the case with my sample. Massive attention has been paid to the power supply with multiple stages of regulation. Another important point of attention is shielding using three different materials: copper, aluminum and a grey fabric called PulseShut. This is a material which is a high-frequency noise-absorption material originally developed for IT and telecommunications purposes. The perforated lid is a bit bendy but the amp itself is built incredibly solidly and weighs nearly 50kgs. The tubes are positioned atop the electronics in a 3D scheme with pretty much no empty space inside. Bias is set at the factory and no user adjustments are required



because the amp uses a unique bias method. Eric Pheils of Zanden USA explains: “The 2nd and 3rd stages are directly coupled, achieved using Zanden’s own original patented circuit and consisting of a choke and resistors in series, allowing the bias voltage to be generated from the output of the 12AU7 tubes in the 2nd stage. It is an extremely simple and stable circuit which creates the fixed voltage necessary for the proper functioning of the output tubes. Furthermore, it allows Zanden to eschew both the control circuitry necessary in traditional fixed bias amplifiers, as well as the negative feedback of designs using a cathode follower”.

Zanden 3100 description

The Zanden 3100 preamp uses only 2 Philips JAN 5687WB tubes: one for the rectification and one for the output stage using zero negative feedback. Virtually all the components inside are covered with second-generation Pulse-shut. The 3100 is not fully balanced internally but its XLR inputs and double XLR outputs are transformer-coupled, creating properly balanced outputs. The transformers eliminate the need for further gain stages and allow for a very simple circuit. The preamp appears to be made entirely of acrylic but actually consists of a fully enclosed stainless steel box with the white acrylic parts attached on the sides. Before assessing the full capabilities of the Zandens in my main setup, I first wanted to see how they would perform in the smaller secondary setup.

Zanden 8120 + 3100 in the secondary setup

The secondary system currently consists of a PrimaLuna DiaLogue Premium or NuPrime ST-10 power amplifier, an Ayon Stealth preamp, and DAC and Xavian Perla Esclusiva speakers. Cinch interlinks used between DAC and preamp and between preamp and power amp are AudioQuest Water. Power cables are Belden 19364 with Isotek connectors for the power amps and Furutech Alpha 3 with

Furutech FI28/38 connectors for the preamps and sources. As the Xavians have a nominal 8-ohm impedance I used the Zanden's 8-ohm taps.



Listening

Substituting the PrimaLuna DiaLogue Premium for the Zanden 8120 while retaining the Ayon Stealth as a preamp and DAC it took no time at all to realize that this amp really pushed the Perla's performance to the max. The soundstage became wider but also considerably deeper, with a more room-filling ambiance. Vocals and other centrally placed sounds were more clearly discernible yet also more free-floating in space. Midrange textures were richer in harmonics, smoother yet also more detailed and ever so emotionally engaging. Interestingly, in spite of the extra texture, fluidity, and richness, the sound had not slowed down. In fact, transient snap, bass control, overall speed had improved, the bass now being almost as propulsive as that of the NuPrime ST-10. Considering that the latter is a Class-D design and that bass precision is one of class-D's typical strong suits, that is particularly impressive. There is a subtle and pleasant smoothness, spread very evenly across the entire frequency range but the Zanden does not have any signs of hysteresis and none of the typical thickness in the bass that plagues many tube designs. Indeed, the Zanden's bass performance as a whole seemed to be on par with some of the best solid-state amplifiers that I know, adding to this a tube magic on par with the best I've heard from Push-Pull tube amps.

Aqua Formula xHD DAC

Adding the Aqua Formula xHD to the mix, still retaining the Ayon Stealth but only as a preamp, the sound improved further: more detail, more transparency, more neutral and more even-handed, and even faster and more nimble bass. I already knew that the Formula xHD is a great DAC but this time it



surprised me even more because the unlikely partnering with the Ayon as a preamp and the Zanden 8120 as a power amp turned out to be surprisingly great. It is with this combination that I forgot about reviewing altogether and listened to track after track with Roon on Radio mode. Arguably the Xavian's strongest suit, conveying emotion, was now revealed to the max, the system making music in a way that makes you slip into the performance and just forget about time.





Zanden 3100 preamp

Substituting the Ayon Stealth for the Zanden 3100 preamp and allowing it 30 minutes to warm up, the presentation was quite different: warmer, sweeter, more transparent and refined and a little bit more romantic. Coming from the very energetic Ayon, the Zanden 3100 sounded quite relaxed. It did not seem to have the same sense of immediacy, pacing or dynamic impact. Listening for longer, however, as my impressions of the Ayon faded to the background, the 3100 started to grow on me. It is less bold and less overtly energetic in its delivery but clean, clear and articulate nonetheless. Its sophisticated presentation reminded me of the Jeff Rowland sound. As with that brand's (pre-) amplifiers, harshness, grain or edge are just not in the Zanden 3100's vocabulary.

The next day, I allowed the unit to warm up for more than an hour and started listening with the 3100, not the Ayon. Whether it was my reset hearing or perhaps the full hour of warm-up time was really better for the 3100, in any event, the preamp now sounded just right in terms of punch and dynamics. To make sure of my observations I reconnected the Ayon Stealth. For the record: this unit sounds dynamically fully "on" from the start, changing only mildly in terms of imaging and fluidity as it warms up. Comparing the preamps in this order it became clear that the Ayon does not really sound much more *powerful* per se but that it does have a more sonorous delivery, with a more direct and articulate lower bass and a very solid upper bass/lower midrange. It is a bit Classic Wadia-like or PS Audio-like in that respect and this is something that I personally like because it can give performances more of a "live" aspect but in all fairness, this could also be perceived as coloration. What to make of this? I'd say that it's more a matter of perspective than one of quality. Both preamps provide an involving experience and both have that lyrical quality that makes one get lost in the music.



Cables

So far, all listening was done using single ended cables. I also connected T T L'd balanced XLR Cardas Hexlink Golden 5C cables and while this also sounded great with a slightly more fulsome sound, I preferred the cinch interlinks because they were slightly more articulate in the bass and purer in the midrange. I used the "old" Hexlink cables initially because they sound quite similar to the Waters. Naturally, other cables will lead to other, or even reverse results. Indeed, when I tried the Cardas Clear XLR, the sound was much more articulate and precise than with the XLR Hexlink or the cinch Water, but slightly less solid and sonorous than with the AudioQuest Water cinch. In this setup, I preferred the latter, which comes down to system synergy, meaning that a different room or different speakers will probably work out differently.

Zanden 8120 in the main setup

The main setup normally consists of the CH Precision C1 DAC/Streamer/Controller and A1 stereo amp, two music servers: the Melco N1ZH and the Antipodes EX and Wilson Audio Watt/Puppy 8 speakers. For this occasion, the Wilsons were substituted for the Kroma Audio Carmens which were simultaneously on a visit for review. Speaker cables are the Jorma no.3 and analog interlinks the AudioQuest Water cinch and Cardas Clear XLR. All power cables are Belden 19364 with Oyaide 004 IECs, except for the ones for the power amps which in this case both used Belden cables with the warmer sounding Oyaide 079 IECs. In this system, I use no separate analog preamp, only the CH Precision C1 DAC directly with its hybrid analog/digital volume control. It is not practical to assess an analog preamp in this setup because I would be comparing it with the absence of a preamp which is like comparing apples and, well, no apples. For this reason, I refrained from testing the Zanden 3100 preamp in this part of the test. Near the end of the review, however, audio buddy Big Niels came to

visit, bringing his Audio Research Ref5 preamp with him. This enabled further comparisons, which are detailed further down in part 2 of this review.



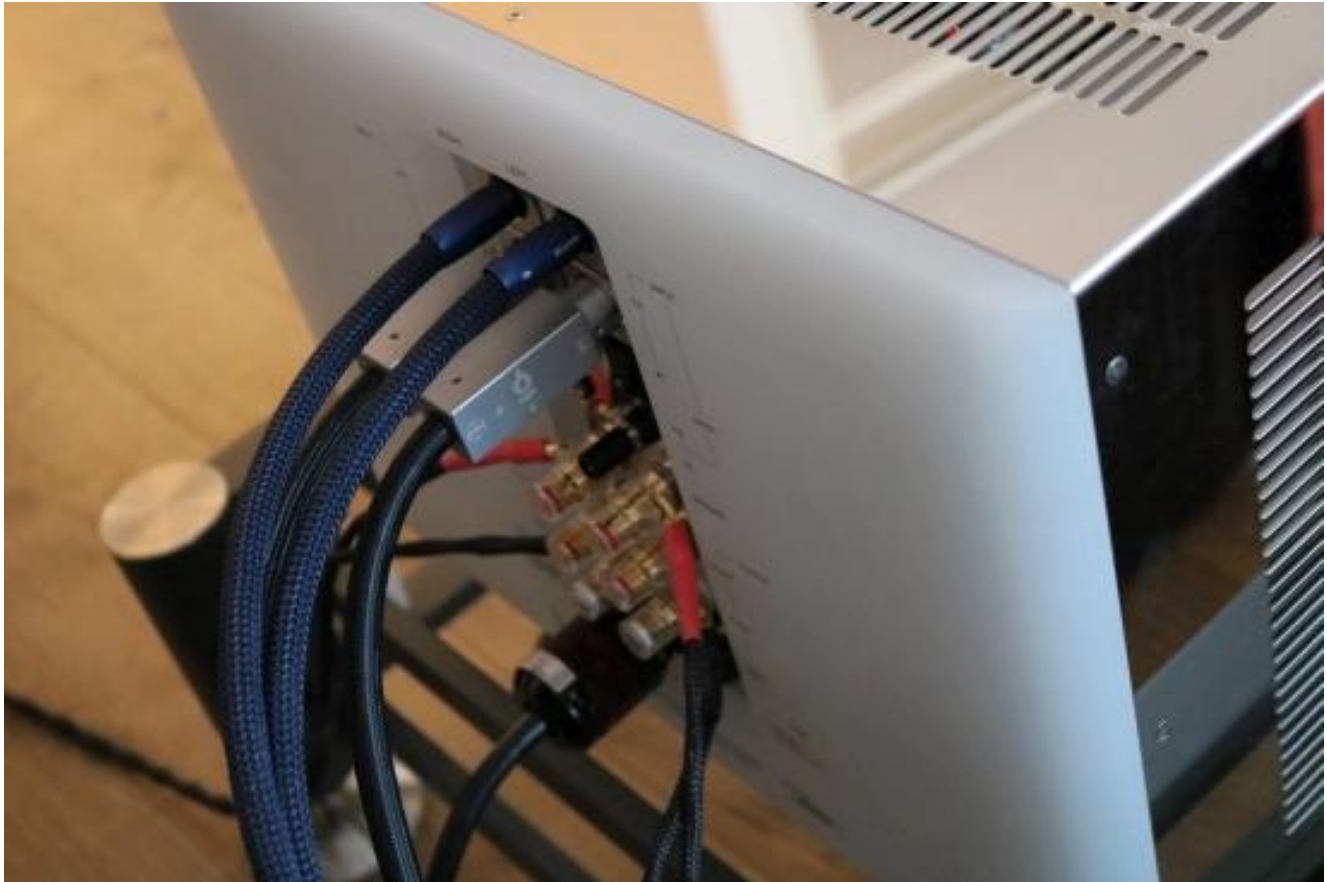
8 ohm versus 4 ohm

Although the Carmens have a nominal 8-ohm impedance and it would seem obvious to use the Zanden's 8-ohm taps, I felt compelled to experiment with this anyway. While the 4-ohm taps may work well for people who prefer a more romantic touch, I felt that that 8-ohm taps provided a more powerful, more transparent and more articulate delivery, while still being capable of making for a romantic sound when this was in the recording. Clearly, the 8-ohm taps were technically the best match. In retrospect, I am confident that the 4-ohm taps would also not have worked in the secondary setup with the Xavians.

Interlinks and Cinch versus XLR

I know there are people who on principle prefer cinch or XLR. I've long favored the latter, mainly because my Jeff Rowland equipment only allowed such connections but I also found for some cables that I owned in both cinch and XLR that the latter sounded better. That was with a Wadia 861 CD player and Jeff Rowland Synergy III preamp, which only has XLR connections, necessitating the use of cinch-XLR adapters. Later experiences made it clear that there is not really a hard rule as to which type sounds better and that it largely depends on the connected components that are used. Balanced designs need not sound best using XLR cables (but they can) and single-ended designs that also offer XLR inputs need not always sound best with Cinch cables (but they can). In this case, I found myself in a bit of a limbo because I do not have cinch and XLR cables of the same brand and type but even if I did, past experiences already taught me that it is near impossible to determine whether the deciding factor for the best cable match is in the source or destination component. But

because I was informed that Zanden sounds best using XLR connections, I felt that I should definitely assess this using different interlinks between CH Precision C1 and Zanden 8120.



I started off using the AudioQuest Water cinch which is a cable that has proven to be applicable across a wide range of components and give predictable results. In this case, too, the Water provided a good balance between control, sonority, and musicality. Going from the Water to the Transparent Super Gen 5 made for a smoother, lush delivery but also less dynamic impact. Changing to XLR cables (and adjusting the volume accordingly), the Cardas Clear XLR made for a large jump in bass definition and overall clarity and transparency compared to the Water cinch, with more impressive dynamics, while retaining the smoothness and airiness of the Transparent Super. Substituting the Clear for the CH Precision Balanced Link further increased the overall levels of control, definition, and power, with truly stunning dynamics. Although the sound was now arguably most natural in timbre and definitely most impressive, the delivery was also a little bit more factual, very precise and less romantic if you will. For my taste, the Cardas Clear XLR provided the best balance between romance and precision and so it was the cable that I used for all further listening.

Listening

Substituting the CH Precision A1 amp (with feedback between 0 and 20 depending on music played) for the Zanden 8120 on an Artesania Aire Floor Platform, while retaining the CH C1 as DAC and Controller, so with no actual analog preamp in the chain, the Zanden amazed me with its neutrality and transparency. I expected a more tubey sound but while it sounded sweeter and fuller, it was just as dynamic and lively as the CH Precision A1, and very fast and articulate. I mentioned in the first part of this review that the Zanden 8120's bass power and solidity is on par with some of the best transistor amps. While I still stand by that statement, I should add that the Zanden does not achieve the insane levels of articulation, transparency, and transient snap as the CH Precision A1. Especially



in the bass, the A1 is more nimble and articulate even when its global feedback is set to zero. Then again, of all the tube amps that I used, the Zanden most certainly is the most articulate and well-controlled and it also has the most powerful, most well-defined bass, by a large margin!

Bass is not all that matters, of course, but I find that this area is the most difficult to get right, especially with tubes and the Zanden definitely nailed this. More amazingly, still, the 8120 really seems to combine the best of both worlds while avoiding the typical flaws of either tube- or transistor designs. This is a tube amp that does not sound like a typical tube amp because it has none of the usual seductive but detractive tube side effects which, for some people probably defines the stereotypical “tube sound”. The Zanden is just so very linear in its behavior, so articulate, so upbeat and dynamic that it is probably not the ideal amp for people looking for that typical euphoric tube richness and smoothness, which in essence, is often a form of distortion. However, don’t assume that the Zanden is too clean for its own good because that is absolutely not the case. Yes, it is analytical in the sense that it does not mask anything and lets you hear deep into the mix but compared to the extremely neutral CH A1 (hey, it’s Swiss!) it is slightly sweet and, importantly, it has a richly textured, harmoniously full sound as well as that certain quality that evokes emotion in a way that transistor amps in my experience always do to a lesser extent, the A1 included. The Zanden has a more emotional delivery, not due to coloration or added thickness but by better fleshing out the sounds and fully allowing them to decay while projecting them more freely in a soundstage that is not only more room-filling but also better layered and more 3D and therefore, more involving.

For electronic music and music, in general, that is more driven by rhythm than melody, I feel that the CH Precision A1 still has the edge. With this kind of music, the A1 is not only technically great but also refined and spacious and every so engaging. For music that is more focused on vocals and/or acoustical instruments, however, the Zanden definitely has the edge. With the Zanden, all the

technical aspects are well taken care of, allowing the mind to be satisfied while the music simply pours straight into the soul. This amp's delivery is so very natural and involving that it is really hard to stay in critical reviewer-mode for longer than a single track.



Perspective

Equipment Support

The surface or contraption on which any component is placed can be of a big influence on its sound. For this review, so far, I put the Zanden 8120 on an [Artesania Aire Floor Platform](#), allowing it the same treatment as for all the other components under review. While a rack or stand will always provide a different perspective, some amplifiers seem to work equally good or even better when put straight on the floor. All the [Bryston amps](#) that I tried, as well as the CH Precision, for example, sound great when placed straight on the floor and they change only marginally in character when placed on different feet or different supports. The Audio Research Ref75 SE has also always sounded great right on the floor, becoming a little bit too forward in the midrange when placed on the sturdy and spiked [Artesania Digital Server platform](#). So far, I had not yet tried it on an Aire platform.

ARC Ref75 SE power amp

Audio buddy JW was so kind to bring along his Audio Research Ref75 SE, a 75-watt class A/B Push-Pull amp using a four Tung-Sol KT150 tubes. To enable a fair comparison with the Zanden, these two amps needed to be used under identical circumstances, meaning the same interlinks and power cables, both using the 8-ohm taps and both placed on the same surface.



Initially, I placed both amps side by side on the floor. In line with earlier experiences, this worked perfectly well for the Ref75 SE, lending it a solid and sonorous bass and full lower midrange, without losing articulation or transient speed as compared to it set up on a sturdy rack. The amp drove the Carmens with gusto and turned in the best bass that I had heard from this amp so far. For the Zanden, however, this was definitely not ideal. Compared to its sound on the Aire platform, when placed directly on the floor, the 8120 lost a lot of its transparency and openness with details now being hidden in the mix, making it sound a little bombastic, the Ref75 SE sounding considerably purer, more communicative and more involving in comparison.

Adding a second Aire platform and placing both amps on these platforms reinstated the Zanden amp as I had come to know it, its soundstage blossoming and extending in all directions, its midrange opening up and its transparency and resolution back all the way up there. The Ref75 SE also improved similarly, with a more free-flowing soundstage and even better low-level resolution and clearer textures but for this amp, it wasn't all positive. On the Aire, the Ref75 SE's bass was now pretty thin, with considerably less punch, articulation, and propulsion. Set up this way, its already lean-ish balance was pushed further into the same direction, which did it no favors.

How's that for contradictory results? The Zanden sounds best when placed on the Aire platform while the Ref75 SE should definitely *not* be used on this platform. This large discrepancy between the two amps may be explained by two factors. There is the matter of voicing, of course, any Audio Research component sounding arguably a little bit tilted toward a leaner bass and more open upper midrange and treble and the Zanden being a little bit fulsome in the bass and a little darker in the upper treble. More importantly, perhaps, is the matter of their structural integrity, or, in case of the Ref75 SE, the lack thereof. This amp's chassis is pretty thin and flexible. It even has a 5th foot in the middle, which is not supported when the amp is placed on the Aire platform. The Zanden, by contrast, with its near-50kg heft, is as solid as they come. Naturally, the Aire is not the only platform

that will make the Zanden sound good and the floor may not be the ideal surface for the Ref75 SE but it is clearly important that care is taken with respect to these amps' placements.



Allowing for component-specific optimization, the two amps remain different beasts but can be brought closer to each other. In this optimized comparison, the Zanden on the Aire platform sounds big, sonorous and very powerful with very solid bass and just the right amount of openness. Just shy of the CH-kind of articulation and transparency, the 8120 is upbeat, sonorous, revealing and very dynamic, without ever tipping over into brightness. Even on the floor, the Ref75 SE is still considerably less solid and propulsive in the bass but it is very articulate, even more so than the Zanden. Its midrange is clearer and its treble brighter, with a touch more air on top. With sensitive enough speakers as a prerequisite, this difference in presentation can swing opinions either way.

Audio buddy JW prefers his ARC for what he identifies as a more “lyrical” presentation, which is the result of his living with Ribbon speakers for half his life and also ties in with his “Overtone/Obertone” preference. Other people, myself included, prefer the Zanden for its more rhythmically assured and more sonorous delivery, tying in with my “fundamental/Grundton” preference. Because of things like these, matters can become very complicated when discussing which amp sounds more natural or more realistic. For example, JW finds the ARC to be more realistic because it sounds more open on top and he doesn’t mind the extra brightness but I find the Zanden to be more realistic because its upper bass is more articulate and better-textured and more natural precisely because it does not lay anything on top. I could go on and on but I think I’ve made my point: “natural” and “realistic” are relative terms.

In terms of timbre, resolution, and refinement I feel that the two amps are performing more or less equally well. Rhythms, percussion instruments, and piano almost always sounded best with the Zanden, vocals are great on both amps and certain sensitive and soulful arrangements (when they do

not rely on bass solidity or heavy rhythms) could sound purer, with a more SET-like directness with the ARC.

Even though I quite like the Ref75 SE and it offers great value for money, it has a certain brightness and could do with a little bit more warmth. The Zanden, by contrast, works perfectly in every combination that I have heard it, sounding rich and full-bodied yet adding no obvious character of its own, controlling every speaker very well yet never sounding overly controlled.



Tube types

The interesting thing is that the ARC uses KT150's while the Zanden uses KT120's. One would assume that the latter should sound more powerful but as has I experienced before, the power supply, output transformers and the circuit itself usually add much more to the mix than the tubes themselves. The Ref75 SE uses comparatively small output transformers which the makers claim are more refined than bulkier samples. The Zanden, however, seems to prove this a relative matter. Whether it is a matter of power supply and output transformers or decisions made in the circuitry, the KT150's inside the Ref75 SE do not sound as bold and sonorous as I've heard them in other designs, for example, the Line Magnetic LM-150IA. Meanwhile, the Zanden with its KT120's sounds more solid than any other Push-Pull tube amp that I have used, even including the 16-tube ARC VT200.

It should also be noted that the Carmens are very easy to drive, which created the ideal situation, especially for the ARC. Looking at the Ref75 SE's meters, they moved very little even when playing very loudly with the Carmens. Compare that to the same amp used with Apogee Duetta Signatures, where the meters are normally half way and on 75% when playing loudly. It's that the Duettas are no longer in my possession, otherwise it would have been interesting to see how the Zanden performed

with them. Somehow, I'm confident that it would have driven them fantastically, in spite of having KT120's rather than KT150's.

Zanden 3100 and ARC Ref5 preamps

Near the end of the review, audio buddy Big Niels came along and out of his sleeve, he pulled an Audio Research Ref5 preamp, meaning that the Zanden 3100 could be assessed in this system after all. This was the ideal situation because we now had two complete same-brand pre-power amp pairs to compare. First, we used the four components as intended by the manufacturers: Zanden 3100 with 8120 and ARC Ref5 with Ref75SE and then we went all-out and cross-combined the four components.

Mixing and Matching

I know that there is a school of thought that says that a given power amp sounds best with its intended preamp companion. While I would agree that a same-brand pre-power combination is likely to provide most of the delivery that the manufacturer intended, I don't feel that this needs to necessarily provide the "best" sound in all circumstances. I have been in situations where this theory was indeed confirmed but easily as many times, a more pleasing combination could be found by mixing and matching. After all, all systems are different and no two persons want precisely the same. For this reason, I always encourage anyone to experiment with everything and not blindly accept a prescribed combination as being best.



Zanden 3100 and Zanden 8120

Although I found the 8120 amp to sound most impressive when driven directly from the C1, it still sounded great when the Zanden 3100 was inserted into the chain and the C1 set to DAC mode,

disabling its volume control. Although softer around the edges, less transparent and pure and less immediate than with no preamp, the sound was not at all colored and still very natural and definitely engaging. The delivery was still quite powerful and while still essentially neutral, now richer and smoother than without a preamp. Clearly, there is good synergy between the two Zandens. Audio buddy JW preferred the sound with the preamp in place, stating that the sound directly from the C1 was too direct and upfront for him. This makes sense because he has always used a preamp and has always tuned his system to sound quite relaxed, while I have for the past few years been verging ever more toward a more neutral and more powerful delivery. Needless to say, while I appreciated the 3100 addition, I preferred it when the 8120 was driven directly.



Ref5 and Ref75 SE

Changing from the Zanden combination to the ARC Ref75 SE and Ref5 combination, the difference between the two setups proved larger than when comparing only the power amps, and different, as well. While the Ref5 lent more bass weight to the Ref75 SE and added a more romantic touch with a super-liquid midrange and a lush richness yet no apparent coloration, the sound was also less transparent and dynamic than the Zanden combo or when the Ref75 SE was driven by the C1 directly. While JW was fond of the midrange lushness and overall liquidity and this was indeed quite appealing, I could not get over the reduction in bass precision and overall articulation. If I had to choose between these two pairings, I'd go for the Zanden combo in a heartbeat.

Ref5 and Zanden 8120

On its own, the 8120 is technically immaculate as well as emotionally superbly convincing and I feel that it sounds spectacular when driven directly by the CH Precision C1. Some of my visitors, however, themselves used to listening with a dedicated preamp, found the sound without an actual preamp

sometimes a little bit too direct. One of these persons is JW. He prefers music to be a little bit more romantic and so he favors the richer sounding pre-power pairings, particularly the ARC one. Although the Ref5 preamp sounded luscious and rich when paired with its natural partner power amp, the sound was considerably less articulate and much more relaxed than I liked. JW also agreed with me that the bass precision and PRaT were reduced in the process but he didn't really mind that because the midrange liquidity was more important to him.

But when we paired the ARC Ref5 with the Zanden 8120, this turned out to provide the absolute best balance between technical precision and emotional involvement. Now there was all the power, speed, control, dynamics, and transparency to satisfy me as well as the richly saturated textures, everlasting decays and utterly lyrical, emotional delivery to make JW happy. With this setup, we listened to track after track, astonished at the level of performance until I had to call it quits because it was a weekday and I had to get some sleep before work. While the Zanden pairing definitely sounded very good, we all felt that the unlikely combination of these two brands provided the best of all worlds. What can I say? The audio hobby remains full of surprises.



This is how the Zanden 3100 was used: on the Artesania Exoteryc rack, using the rack's integral feet.

Wilson Watt/Puppy system 8

After the Carmens were picked up, Ben and Peter were happy to let me keep the Zanden amps for a while, which allowed me to test the 8120 with the Wilsons as well. Like the Carmens, the Wilsons are quite sensitive but they are also notorious for having a low impedance through the midbass which can make some amps run out of steam at louder levels. Well, not with the Zanden 8120. I never felt like I was missing power or dynamics, not even in cinema mode when watching loud action movies. The Wilsons are very highly resolving and quite critical in that they will reveal any issues upstream,



no matter how small. If there is even a trace of hardness in the source or amps, the Wilsons will let you hear this. With the Zanden 8120 there is all the resolution that you could possibly ask for but never ever any hardness. Also, all the aforementioned Zanden's musical aspects were present as clearly as they were with the Carmens. With the Wilsons, just as much, the 8120 has that rare combination of technical excellence and conveyance of emotion.

Conclusion

Like the power amp, the Zanden 3100 does not sound euphorious and has no perceptible coloration. It sounds highly refined, very pure and natural and quite neutral with a very spacious, room-filling soundstage with well-defined images within. The 3100 is the natural partner for the 8120 and indeed combines very well with it. Although it sounds very pure and has no coloration, in my experiments, this preamp added a certain sweet quality and made the 8120 sound less forceful. While the combination sounded transparent and seamless and was certainly seductive, it did not allow the music to rock out as much as I would like it to.

For me, the Zanden 8120 really is the star of the show. It combines the best of transistors and tubes and avoids all of the typical flaws of either of these designs. This is a tube amp that does not sound like a typical tube amp because it has none of the usual detractive tube side effects which, for some people actually define "tube sound". It is extremely linear in its behavior, very articulate, upbeat and very dynamic. The 8120 has a mild warmth and sweetness yet it is very transparent and lets you hear deep into the mix. It has exemplary bass control and dynamics as well as a more emotional delivery than probably any transistor amp. This is not due to coloration or added thickness but by better fleshing out the sounds and projecting them more freely in a soundstage that is not only more room-filling but also better layered and more 3D and therefore, more involving. What's more: the 8120 worked synergistically in all the combinations that I tried it in, meaning that it seems to be a highly universally applicable amp. Needless to say, this is now one of my favorite amps.