

## The Bösendorfer VC2 Loudspeaker

Expertly tuned

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History does not have to offer us plenty of examples when a musical instrument maker is versatile enough to manufacture audio equipment as well. Back in the Renaissance era there was hardly any electricity, modern pragmatic times are prone to sharp specialization. Yamaha Corporation is one notable exception, confirming the rule. They make pianos and they make hi-fi. The actual manufacturing locations are, though well separated geographically.

Viennese firm Bösendorfer has been making pianos for quite a while. Relatively recent news for this Klavierfabrik is their venture into loudspeaker production at the same facilities in Vienna, Austria. Stereo Times readers are of course aware that a relatively short history of hi-fi has seen countless enterprises involved in speaker business. Only a few managed to offer fresh ideas that actually work. One such product is the Bösendorfer VC2, a slim floorstanding speaker that has a distinct personality. In it, art and craft meet and enjoy a life together.

### Technical Intro

The Bösendorfer VC2 is the creation of Austrian engineer Hans Deutsch, who has been around the speaker business since the 1960s. In 2000 he was hired by Bösendorfer to start their loudspeaker department. Deutsch had a huge portfolio of inventions to offer the notable Viennese piano maker. Mostly they relate to the way a speaker driver behaves in different mounting conditions. Enclosures, as they are called in acoustics. Enclosures designed by Deutsch are not your garden-variety boxes. Take the VC2s for instance. A slim front panel shows the nice gloss of the lacquer-over-wood veneer. Its single 1-inch tweeter don't take much of the real estate here. There are no other drivers in front. Each side panel houses a 5-inch woofer/midrange driver. They are located closer to the front and are not on the same axis. A little further to back panel, a rectangular wooden board, veneered and lacquered, is mounted to each panel via four gold-plated bushes. No other word to describe them comes to mind except sounding board. Sounding board!?

Current high-end wisdom does not approve of loudspeaker boxes, which tend to sing. Well-damped or even 'dead' is a common parlance applied by speaker designers when they share their thoughts on cabinets. No resonance, no colorations, - the majority agrees.

If we take some time and delve into classic books on electroacoustics, we may surprisingly discover that the absence of resonance, per se, is not so important. Much more important is the manner in which the resonance is spread in the frequency spectrum. Relative amplitudes may also be important. We may also discover that resonance, unrelated to cabinet damping - those occurring in the air



cavities, for example - can form a disharmonic series and bring much more unpleasant colorations than the vibrating panels of a speaker box. Dead cabinet may lead to dead sound. There is no easy road to successful speaker building. History has many examples of failures.

### **Ideology**

The woofer/midrange, which sits in the side panels of the Bösendorfer VC2 works in an unusual enclosure. Hans Deutsch calls it a "horn resonator." This horn resonator allows mechanical filtering of frequencies below 130Hz. Electrically a 2-way speaker, the VC2 could be acoustically ranked as a 3-way speaker - with a very simple low loss, low distortion 2-way electrical crossover. At low frequencies the horn resonator greatly increases the effective area of radiation. The speaker works into an acoustical load, which is much more friendly than usual. There is no damping or absorbing material inside the VC2 cabinets. Deutsch thinks that their non-linear frequency behavior is detrimental to the sound. Unwanted resonance is dealt with by carefully choosing cabinet dimensions and internal bracing.

Acoustic theory states that without resonance there will be no sound. Any musical instrument has some sort of an exciting element (relatively small in size), be it a string, a reed, a membrane or a mouthpiece) connected by some means with a larger sized resonating body, transferring the sound into air.

### **Construction**

I would classify the horn resonator as an acoustical transformer of a kind. (In an acoustical transformer a cross-section of a vibrating airflow is different at the input and at the output.) While there is scarce information on how the horn resonator is realized in the VC2 I may speculate that the woofer/midrange works in a box, which has one or two openings, or channels. (The section of the channel is probably changing along its length. As in a horn.) At very low frequencies there is little acoustic resistance in the channels, so the movement of the woofer cone causes the air in the channels to be forced out into the room. At low frequencies the channels (which are hidden under the sounding board) radiate. Higher in frequency the channels are 'tucked' by their oscillation inertia and only the woofer cone produces sound waves into the room. This is the mechanical filtering mentioned in the Ideology section.

I doubt that the sounding boards actually produce any sound, at least not with the levels to be picked up by a listener in his or her chair. More likely the air under the soundboard acts as an impedance transformer. A flat wave is generated; sound pressure and sound velocity are in phase. Energy transfer has no complex constituent; acoustical load is very friendly to the woofer.

Let's not elaborate further into acoustical theory here, since space constraints are always an issue, in print or in bytes. Drive units, which do the actual work in the VC2's enclosure, are custom made. The woofer/midrange has a paper cone with some contribution made by hemp and carbon fiber as well. A six-layer voice coil moves in a very short and tight air gap. A doped silk dome tweeter has a four-layer coil on a kevlar former, also moving in a tight air gap. To conclude the construction portion of this review, the Bösendorfer VC2 uses in-house-made drive units and a very unusual enclosure. The speaker is slim, looks nice and is amplifier-friendly. At low frequencies it may work very efficiently and with very little inertia.

### **Listening**

My daytime job is... ahhh... a reviewer for a Russian language print magazine. I

took liberty in using the editorial facilities to listen to the Bösendorfer VC2. We have a fairly large room with a judicious use of acoustical treatment on the ceiling and on the wall behind the speaker. It is not a perfect room but it does not give us a lot of trouble either. I had had a very brief encounter with a larger Bösendorfer VC7, in this very room, so I came prepared. Well, I'll spare much of the details - too much tedious and boring struggle with gravitation - but the VC2s (as well as VC7s) are very fussy. I am not talking about changing cables or electronics, no. It is the old placement issue. Virtually every speaker has a location in a room that is significantly better than any other alternative. The sound often comes alive in such a spot. It took a lot of moving, toe-inning and toe-outing the Bösendorfer VC2s to find such a spot. It has something to do with the tweeter having a rather narrowly perceived directivity. It also has something to do with the horn resonators interacting quite actively with the room boundaries. Anyway, a good spot was found for the VC2s (I do not usually toe-in the speakers at all, but had to do it with the VC2s). On my way to the good spot I was experiencing double mono, excessive midrange warmth and the like.

It is important to position these speakers properly. They will realistically render the music's attack, sustain and decay. More importantly, the system can actually reproduce the meaning of the sound and the performance in its entirety. Tonal balance and musical accents are properly placed and not misplaced. All those small but important aspects are not so important individually, but when they gather into a meaningful whole there is involvement you hear and an emotional contact with the music that you have. A good system reproduces music, which you, the listener experiences as music, not just as a set of sounds. I think this should be the veritable goal of an audio designer. And I just have to say it: the designer of Bösendorfer VC2 reached it.



Emotional richness abounds in a good performance of the Saint-Saens Symphony No. 3 ('Organ'). It tells a lot about the ability of your system to pass this richness to the listener. The first movement is based on counterpoint and is harmonically copious. For the most part you are presented with a liquid and smooth dialog between the orchestra and the organ. The second movement turns uneven more often.

Herbert von Karajan, a conductor who is always attracted to new technologies, embraced the digital recording enthusiastically. The Saint-Saens 3rd performed by Karajan in the 80s and issued by Deutsch Gramophone [439 014-2] characteristically presents a multi-miked artificial orchestra sound, each instrument group living in its own separated acoustical space. The conductor and the engineers create a holistic flow out of this sound cells, our system with the Bösendorfer VC2s carry this flow standing away from interfering with the rhythmic and emotional content.



To add contrast I chose Charles Dutoit from early 70s on Decca [4445522 2CD]. This had a very different orchestral perspective but again the music with through the Bösendorfer VC2s flowed. It often occurs that a disjointed sequence of sounds has no meaning. Here again, I experienced how sounds form into words and the words into a musical speech. This is very valuable though sometimes I noticed a hint of our system dragging sustained notes a bit too long. Very sharp attack is dampened somewhat and there is a trace of bloom on notes having long decay. Meanwhile, kettledrum strokes were natural and precise. The mentioned effect of blooming was

sometimes noticeable on double basses and piano. The very upper registers seemed to be limited in amplitude, which may not be a feature of the VC2s balance but the result of the unusual attack the speakers sometimes present.

Fruity and ripe, gentle and immensely listenable, the sound of the Bösendorfer VC2s had a bit of dark coloration yet still presented a quiet and assuring manner of delivering musical content.

### **Conclusion**

The technical reasoning behind the Bösendorfer VC2s is very unusual, balancing on the dark boundaries of experience, art and technology, just like makers of musical instruments. This speaker does not take away much, but what it adds is consonance and often helps to understand musical content.

Room and location are very important issues when trying to get the most out of the VC2s. A friendly dealer may be a valuable asset. No nods to current speaker fashion in these speakers' modern looks and narrow front panels. That is the way they work.

I measured the impedance of VC2 using Clio system on a PC. The low frequency transfer function resembles either a closed box tuned at 100 Hz or a very damped vented alignment with added box losses. Air gap resonance may contribute to the curve shape below 100 Hz. Some panels' resonance are present at 210 and 320 Hz. In the tweeter operation area the impedance is amplifier friendly 12-14 Ohm, phase leaning slightly to inductive behavior. The woofers present a minimum of 5 Ohm. A competent amplifier, tubes included, will drive these speakers trouble-free.

## *Sergei Taranov*

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### **Specifications**

Dimensions (h x w x d) 36.5 x 9.7 x 6.3 inches

Width of base 8,5 inches

Impedance 8 Ohm

Power rating 90 Watts

Net weight 48 lbs

**Price: 5000 Euro**

### **Manufacturer**

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