



## NEW CERAMIC AYON Speaker Line 2018 - Design Background – Philosophy

**Every speaker concept, no matter which, always is a compromise; there is not and there will never be the perfect speaker. We of Ayon Audio have a long tradition of manufacturing speakers (especially dealing with conventional speakers in the range of higher efficiency) and therefore we target to build the "best possible" conventional speaker equipped with ceramic drivers in whose price range and which can fulfil all our requirements on design and sound.**

Meanwhile more than 15 years have passed, when we presented our first generation of Ayon speakers with some then ground-breaking technological highlights, e.g. the airflow streaming principle, the special instrument plywood cabinet – to a large extent derived from instrument making – or the almost unique oval shape of the cabinet.

The new Ceramic series is the consequent further development of the very successful and legendary old Ayon ceramic speaker-series (Seagull, Hawk, Falcon, Eagle) of 2004-2010. Only one decade later with the new "Cell" ceramics chassis technology, the new cabinet material, the improved "elliptical" cabinet structure (with the resulting curved front plate producing a very spacious and homogeneous directional characteristic) it was possible for us to decisively further develop the speakers.

One important requirement is e.g. that they should be easy to drive, especially for low-powered amps, no difficult loads and a well-tempered impedance curve, 6 dB filter slew rate over all 3 ways, perfect phasing, and maximal 3D-reproduction in both the low- and the high-volume level range.

Especially most lovers of tube- and class-A-amplifiers, but not only those, have increasing difficulties to find their "optimal" speaker although the offer has become unmanageable.

There is a gigantic offer of speakers, but the speaker industry seems to more and more ignore the admittedly small group of "audiophile" music lovers or is most of all busy with herself to secure her market share against the competitors at any price with even slimmer and cheaper speakers (despite showy installation of multi-chassis there is hardly any cabinet volume left) and uniform designs for a bit of a yawn. Here all basic parameters and calculations of a good speaker design are quasi neglected.

The declared values of efficiency sometimes are bizarre or mostly are combined with very low impedance values, with a non-disputable filter flank rise of up to 48 dB and moreover are combined with power consuming (compensation-) crossover networks. This is exactly the contrary to be expected from a new modern trendsetting "passive" loudspeaker design.

Therefore, we decided to take new paths based upon our long "Ceramic" past in speaker design. To our advantage, we could use all our experience and overall refine again many well-tried.

We could convince our manufacturers to optimize exactly (electrically, magnetically, max. efficiency, etc.) the chassis we wanted and to adapt it to our predefined parameters. This step was extremely important to very precisely define our cabinets, determine and optimize their shape and inner structure, calculate their optimum volume, their resonance course, and their stiffness to achieve an even more

optimal swinging behaviour. Furthermore, we could to a large extent abstain from the inner damping or use it only extremely moderately to avoid losing additional efficiency and not to "damp away" the so important inherent swinging behaviour of our multilayer special-wood cabinet (instrument class). Thus, the faithful reproduction of the original signal is improved decisively.



*A view into Ayon's cabinet trademark: The "not damped" elliptical Ayon instrument plywood cabinet with its unequalled all-around radiating characteristics – by means of the elongated elliptical front plate the sound being carried into the room far and quasi "all around". In the new Ayon Speaker Series we also wanted to use organic and natural material to the greatest extent possible.*

### **Passive crossover network: acoustic 6dB crossover for the whole frequency range!**

Here, the topmost priority is "absolute simplicity"; it sounds simple but is much more difficult to realize than elaborate crossover networks capable to filter away, iron out, compensate, and equalize everything. These "overcharged" crossovers are very helpful to correct deficiencies of the chassis themselves or the selected chassis constellation (of necessity wrong chassis calculations or damping measures) or respectively to achieve a perfect frequency response. However, immediately the sound falls on the way-side, hardly any energy distribution, little fine dynamics and radiating force, poor 3D-resolution; everything somehow sounds equally loud and lifeless.

The loss of efficiency over those crossover networks is quite significant.

Proudly we can prove that occasionally we apply the shortest signal path in a 3-way-ceramic driver system. Simplest filter, perfectly matched coils and coil quality, very linear impedance gradient and minimal correcting filter circuits. All this was only possible, because from the very beginning the chassis were well matched, i.e. the chassis were optimized to the cabinet and not the other way around; therefore, practically almost nothing needs to be corrected in the crossover.

The advantages of our crossover network are: only 6dB acoustic filter slew rate, linear frequency response, excellent impulse behaviour, optimum time behaviour and an easily drivable impedance.

The BlackFalcon additionally is equipped with a special transistor-tube crossover network circuit, that probably is unique until today. Here, especially in the position "tube amp", for the first time a speaker configuration is responsive to and adapted to the properties of single-ended as well as push-pull tube amplifiers. During the last years we have looked at many different tube circuitries with their output transformers, analyzed them, blended them with all our know-how, and incorporated the findings into the crossover network of the BlackFalcon. The result is an autarkic parallel running crossover part fine-optimizing the mid- and bass-ranges especially for tube devices. In this process certain typical tube amp properties are even more sonically elaborated; this way, when driven by a tube amp the BlackFalcon can fill rooms even better, more dimensionally, and tonally more authentically, combined with more light-footedness and power.

**It is our philosophy of crossover design to achieve the following results with as few as possible but premium-quality components:**

- linear frequency response on and off the axis
- linearization of resonances
- perfect transient response
- optimum step response
- inaudible phase distortions
- lowest distortion level over the whole frequency range
- uncritical impedance gradient
- optimized dissipation loss

Note: some speaker manufacturers vaunt, that they use only most expensive and "best" components in their crossover. Applying so-called "best" and "sinfully expensive" is one thing, but does not say anything about the final sound reproduction, on the contrary: in many cases, hereby some particular properties are accentuated in the soundstage and this leads to an annoying and inhomogeneous reproduction. It is decisive to find the right MIX of right values of the components and their adequate quality on right position of the crossover respectively to combine them; this requires a sensible fine-tuning and long intensive listening.

**Ayon's sound ideals:**

Some of our sound corner posts are: excellent and wide-ranging spatial reproduction, neutrality, resolution power, and dynamics. The sound pattern is strong, warm, and three-dimensional with an outstanding infatuation of micro details. The bass-range is clearly structured (but not booming unnecessarily deeply), elastic and hassle-free, the mid-range exceptionally open and natural, the high-range makes hearing enormous details without a trace of acuteness. The attunement is very homogeneous and coherent at this point reaching best quality of a broad bend chassis, but without their disadvantages related to bandwidth, details, and discoloration.