

# FIDELITY

international



16

english



16

02/2020 • Winter 2020/2021

The German Voice of Premium Audio... a free online magazine



## THE BURMESTER B38: AN UNFORGETTABLE SOUND EXPERIENCE

The B38 loudspeakers are the latest addition to Burmester's B-Series. This series is characterized by its slim and timeless design, which integrates perfectly into any environment. Similar to the smaller pair B18, the new B38 loudspeakers distinguish themselves through their three-dimensional stage image and amazingly transparent sound.

*Burmester*

WWW.BURMESTER.DE

Anyone who has ever seen a botched handover in the 4x400-meter relay final knows what can go wrong at the crucial moment. Wolfgang B. Thörner, CEO of *WBT-Industrie GmbH, Germany* (<https://www.wbt.de/english.html>), has set himself the task of perfecting the handover of the signals in a hi-fi chain. With his latest coup, he has come a long way closer to this goal: he has developed an elaborate process called "PlasmaProtect™" with which he refines connectors. ▶

1910

1920

1930

1940

1950

1960

1924: Hirschmann develops the banana plug

around 1940: RCA introduces the RCA plug

from 1950: Definition of DIN plug shapes

Photography: Ingo Schulz, FIDELITY Media GmbH

To do this, he converts gold into gas and forces it to deposit atom by atom in a wafer-thin, extremely smooth and indestructible layer on the plug with strong magnets. Beforehand, no less than five cleaning processes are required to prepare the parts for treatment. Thus it succeeds: the perfect handover!



1985: WBT is founded

1988: The first WBT RCA plug with crimp technology

1998: WBT presents the sandwich spade

2008: The nextgen™ series receives banana plugs

2019: PlasmaProtect™ becomes series-ready

1983: Toshiba introduces the optical Toslink connector

1986: The first RCA socket WBT-200

1996: WBT introduces the RCA plug WBT-0147

2003: Start of the nextgen series

2012: The nextgen™ series enters the 2nd generation

# Formula xHD

- Proprietary Optologic DAC
- Pure FPGA-based R2R Ladder
- Fully-floating (isolating) D/A converter system
- Hybrid USB xCore 200 (dual core) in Bit Perfect up to 768 kHz PCM and DSD 512
- Filterless Non-oversampling digital architecture




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## Unconventional DNA

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La Voce S3 dac



La Scala Optologic dac



Formula xHD dac



La Diva cd transport

# DEAR READERS,



Photography: © FIDELITY

Author Stefan Gawlick (left) and editor in chief Carsten Barnbeck (right) during a visit to Göbel High End

In the infamous words of Joni Mitchell, “Don’t it always seem to go that you don’t know what you’ve got till it’s gone?” Well that’s precisely how I feel about trade fairs and similar events these days. As exhausting as they can sometimes be, we really miss the buzzing atmosphere, the lively goings-on and the discussions with manufacturers, exhibitors and attendees. They are the perfect one-stop shop enabling you to gain a quick insight into the latest technology on offer and allowing you to get up close and personal with products before they’ve even hit the market. The reactions of inquisitive attendees help you to get an idea of what’s hip, what’s hot, and what’s not – an essential part of the work that we do. It has now been almost a year since we enjoyed that kind of close contact with the industry and it is looking more and more likely that it could be

quite a while yet before we will be able to experience a full-blown trade fair again. Based on fairly cautious, gloomy predictions, HIGH END in Munich, which is scheduled to take place next September, will probably be the first opportunity we will get. Whether we like it or not, we will have to get used to this feeling of withdrawal and to having the trade fair blues. Until then, we will have to hold on to the idea that at least there will be plenty of exciting new products and innovative developments to keep us audiophiles entertained.

Carsten Barnbeck



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02/2020  
Winter

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**Please note:** All items are listed with German retail prices (including sales tax) at the time of equipment evaluation.



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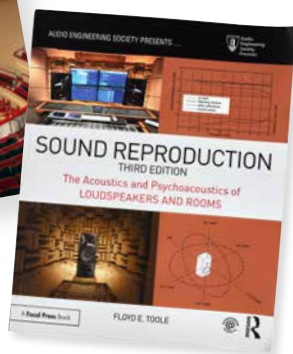
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A visit to...Pure Emotion by AW

# PLEASE BUCKLE UP!

By Carsten Barnbeck. Photography: Ingo Schulz

Curiously enough, volume is rarely one of the criteria used for defining what characterizes a select, high-end loudspeaker. Yet perfect linearity is a key requirement for a sound transducer (even if I assert this only off the record). And the Pure Emotion 1.0 masters this discipline like no other. A visit to a superlative.



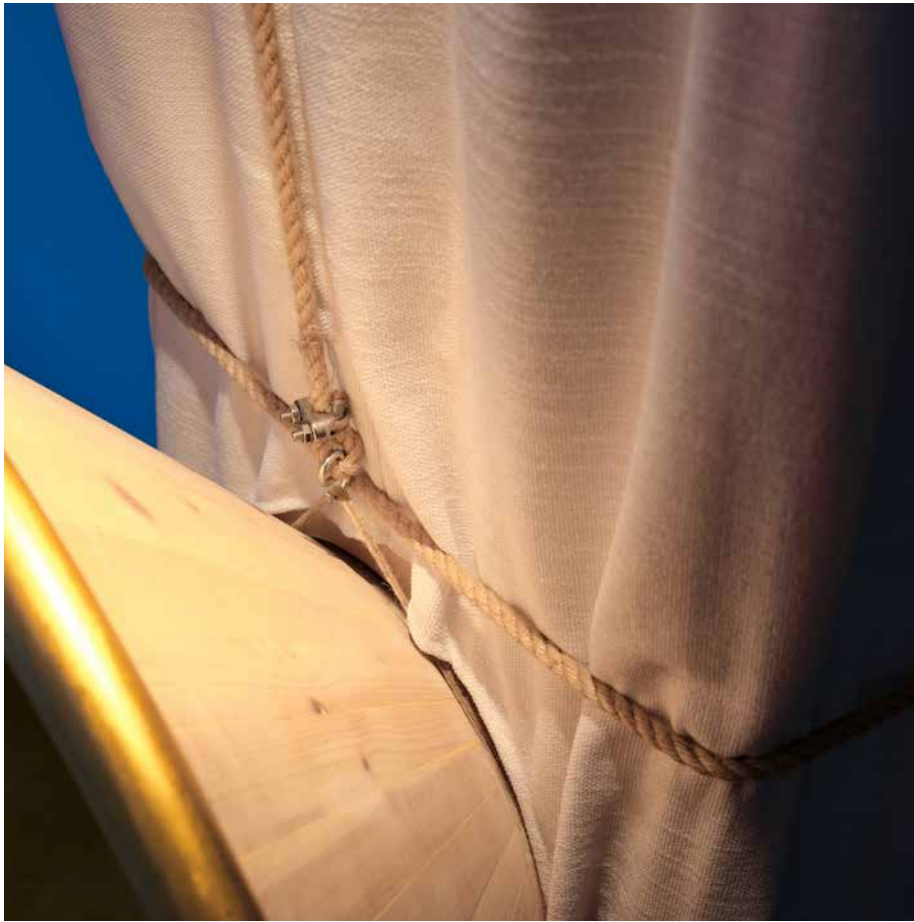
A thick layer of gold leaf applied by hand over the course of several days conceals the complex design of the spherical wave horn. It consists of several layers of Swiss pine (visible at the sides), plastic, aluminum, and iron, delivering optimum resonance performance.



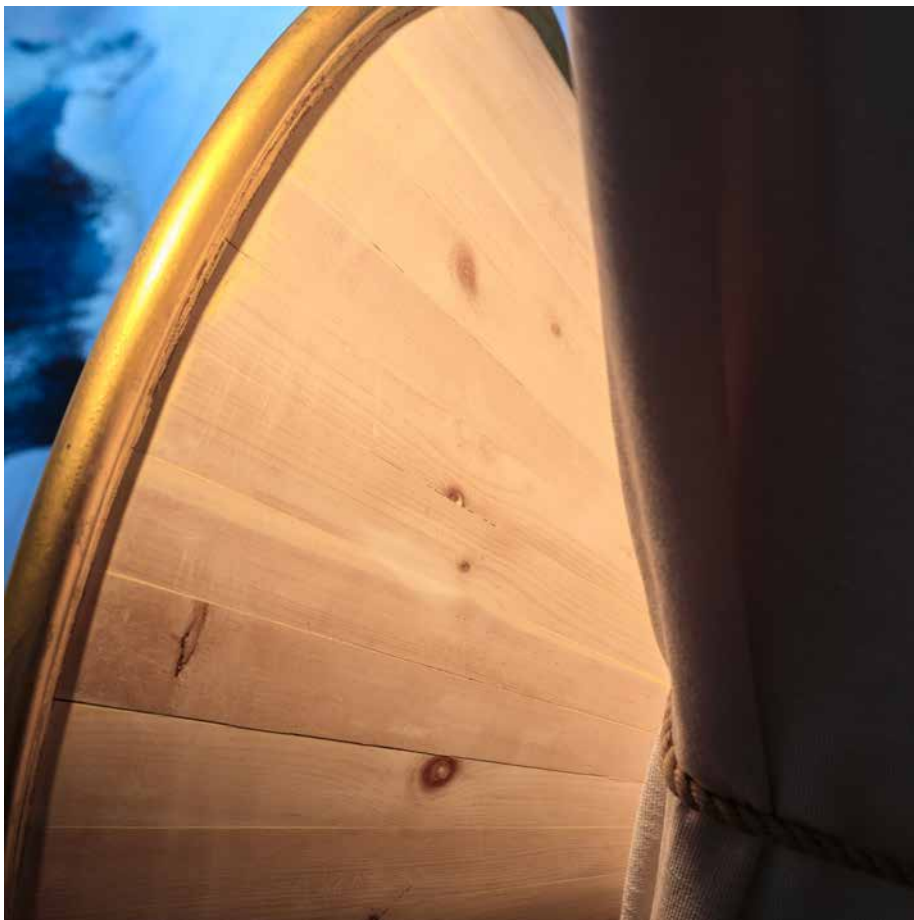
108 Decibel coefficient and maximum distortion-free acoustic pressure of 120 decibels, that's what I had read in the data sheet just a moment ago. An impressive figure for a loudspeaker—for any loudspeaker, no matter if it features an active, passive, classic, or horn design. And yet all I had were figures, which in no way prepared me for what was to follow: "I'll put something dynamic on and turn up the notch a bit. Then you'll hear what the speakers can do," said a smiling Axel Wurm in his unmistakable Hessian dialect. And with that, he pressed the remote app's Play button. In the next moment, a drummer began to pedal his kick drum with a vengeance while pummeling

his snare drum into submission. When the sound reached me, I feel as if an unknown force was ripping the base plate from my brain. The shock wave surged through my body and had me searching, mildly dazed, for something to hold onto.

Any mention of "stable impulse response" would have been a mockery given the two cornute towers rising in front of me. Terms like "elemental force," "explosive character," or "steam hammer" would have hit the mark much better. The Pure Emotion 1.0 not only generates superlative acoustic pressure, it also launches its output into a listening space so fast and abruptly, you don't have time to think about it. ►



The fabric covering also contributes to the Pure Emotion 1.0's sound.







As a passionate craftsman and music lover, Wurm loves playing with materials and shapes. That's demonstrated by his two harps, which dish up melodious enjoyment in his living room at home.



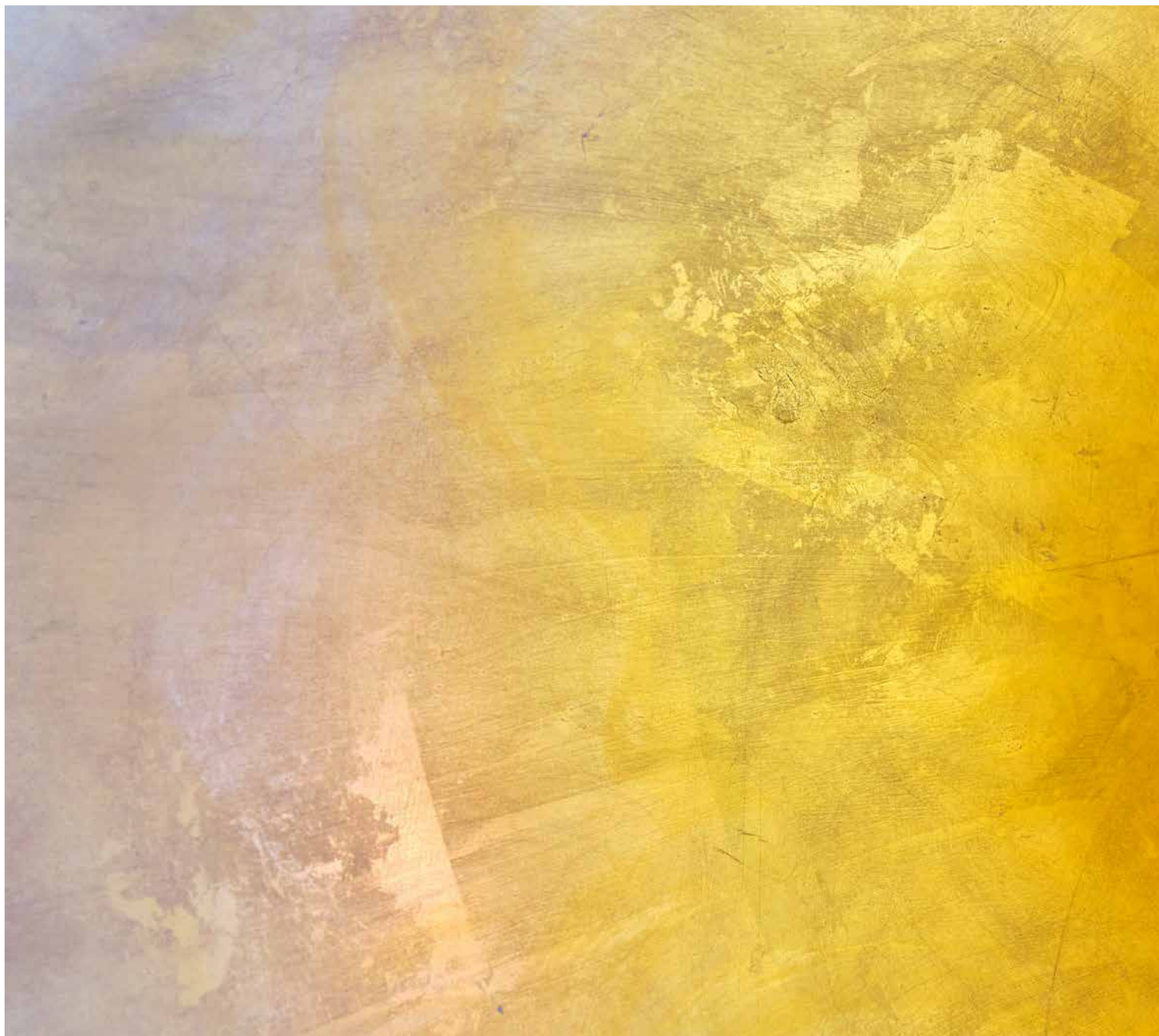
On top of that, as deafening as it may have seemed at its fiercest, the speakers' broadband impulse resonated with absolute cleanliness, nuance and stability, even at this level. And still, the best was yet to come from this floor-standing speaker. "We set them up on a friend's property out by the lake and then really pumped up the volume: Even at a distance of 30 meters, it was so loud you couldn't hear yourself speak," the proud design engineer would later throw out as a small anecdote.

## A hobby project with consequences

But let's start at the beginning: Last fall, we, along with many other visitors to the Westdeutsche HiFi Tage (Western German Hi-fi Days) trade fair, unexpectedly stumbled into Wurm's demonstration room. There in the huge parlor space located in Bonn's Maritim Hotel we heard an understated, thoroughly stylish Audio Agile front end making music

attached to a pair of monumental, exceptionally designed, and, for their size, surprisingly unobtrusive hybrid horn speakers. During the trade fair, Wurm had explained they spent two days and nights tweaking the tuning in that challenging space before the equipment produced music like they wanted to hear. His efforts were rewarded: The loudspeakers were remarkable not only because of their dimensions and their unique fabric covering. They also delivered such a clear sound and played with such speed and dynamism in this huge parlor space that they were showered with multiple standing ovations at the end of the demonstration. A brief "hello" followed by a conversation with the creator of the 1.0 led to our realization: That's where we need to go!

And then I found myself sitting in a room measuring just under 50 square meters plopped in the center of Erlensee near Hanau, Germany, eyeing up the exact same audio chain that served up such an impressive ▶

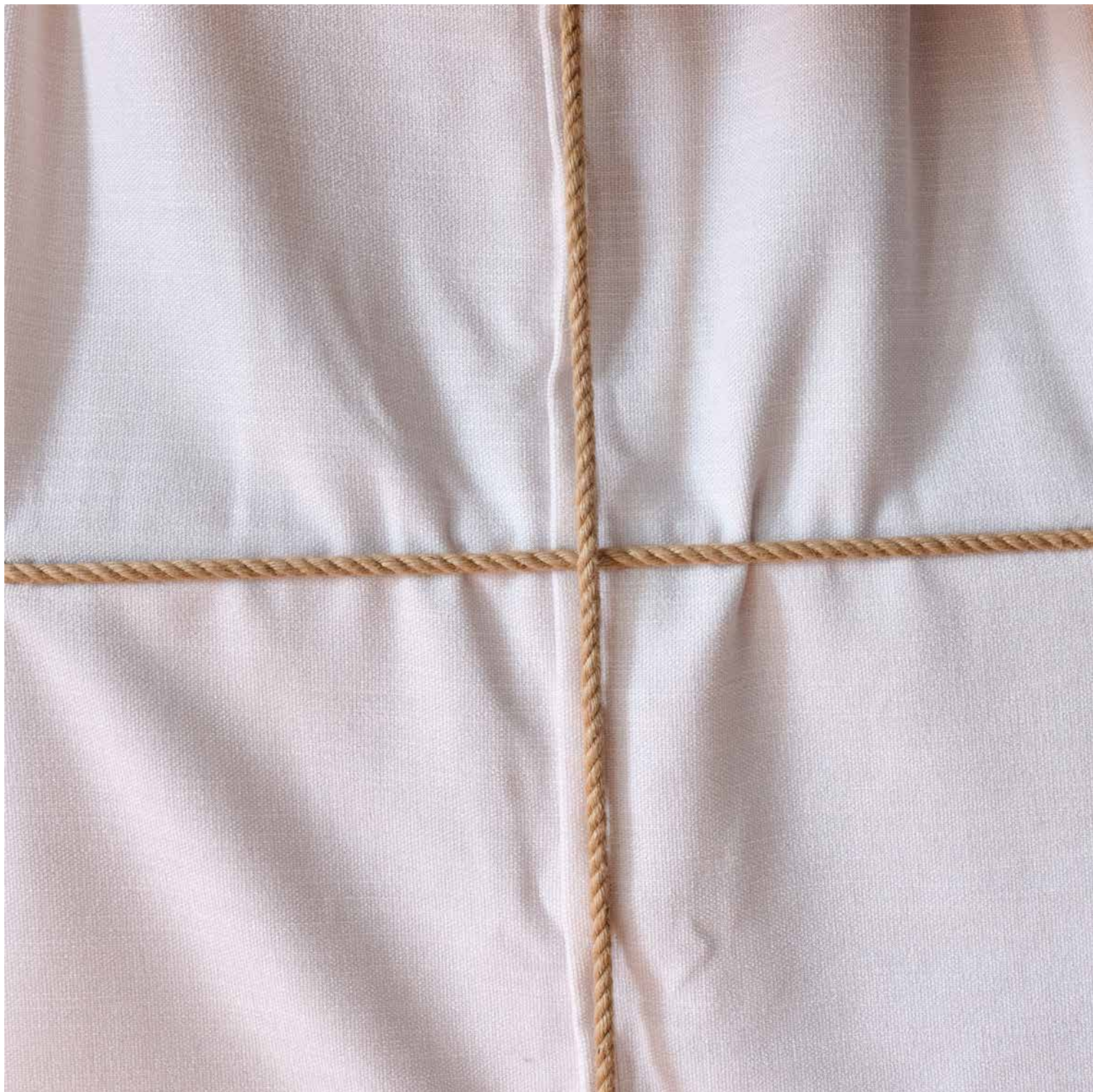


Gold works, but there are other options: Practically every aspect of the Pure Emotion (the pictures show Wurm's working samples) can be customized to suit personal preferences. That also includes the 1.0's sound, which can be altered from subtle to drastic using the DSP board.

treat in Bonn. The scene described at the beginning does, of course, reflect one extreme facet of Pure Emotion's 1.0. The loudspeaker can also exhibit discipline when it plays, expand any stage into a beguilingly large, trim space, and infuse the room with subtly melodious vocals. Wurm explained to us the idea behind this almost unfathomable power, turning to the popular Rolls Royce analogy: No matter how exacting the requirement might be, the speaker has sufficient coefficient of performance to master it with fleet-footed aplomb. And its brute force didn't appear in the slightest to diminish its flair for dynamic intricacies and precision, as I would learn from many other musical examples. Even at very low

volume, the 1.0 resounds in broadband and in full; it reveals holographic reproduction and doesn't obscure even the minutest detail.

Every centimeter of the speaker's 208 centimeters reflects exceptional design. Forming its essence is an amazingly light Swiss pine frame, a material used to make musical instruments. In the experience of this indefatigable inventor, the material enables a transducer of this type to deliver the especially sublime sound. The supporting base was devised to be dismantled in an instant and transported while having as little mass as possible—a pretty tricky challenge to get a handle on that. ▶



Wurm spent many years fine-tuning the design for his base, modifying, bracing, and reinforcing it in places, before it was able to withstand the Pure Emotion's enormous acoustic pressure with zero vibrations and low resonance.

That might sound like trial and error, but it did, in fact, draw on decades of experience. Born in 1959, Wurm had, at the tender age of 13, already

embarked on that tour de force that had left its mark on so many designers of his generation: Equipped with a handcart, he retrieved old—even defective—tube radios and TV sets from his relatives, from bulky refuse, and from his wider circle of acquaintances then dismantled them, examined their circuitry, and created something new from them. So by the mid-1970s, it had become completely normal for him to meet his high-fidelity needs out of his own sound transducer resources. ▶





Its Agile electronics and a DSP (not pictured) make the 1.0 an acoustic force of nature. Friend and sound consultant Sascha Schweizer (pictured left) advised Wurm on tuning and calibrating the loudspeaker.



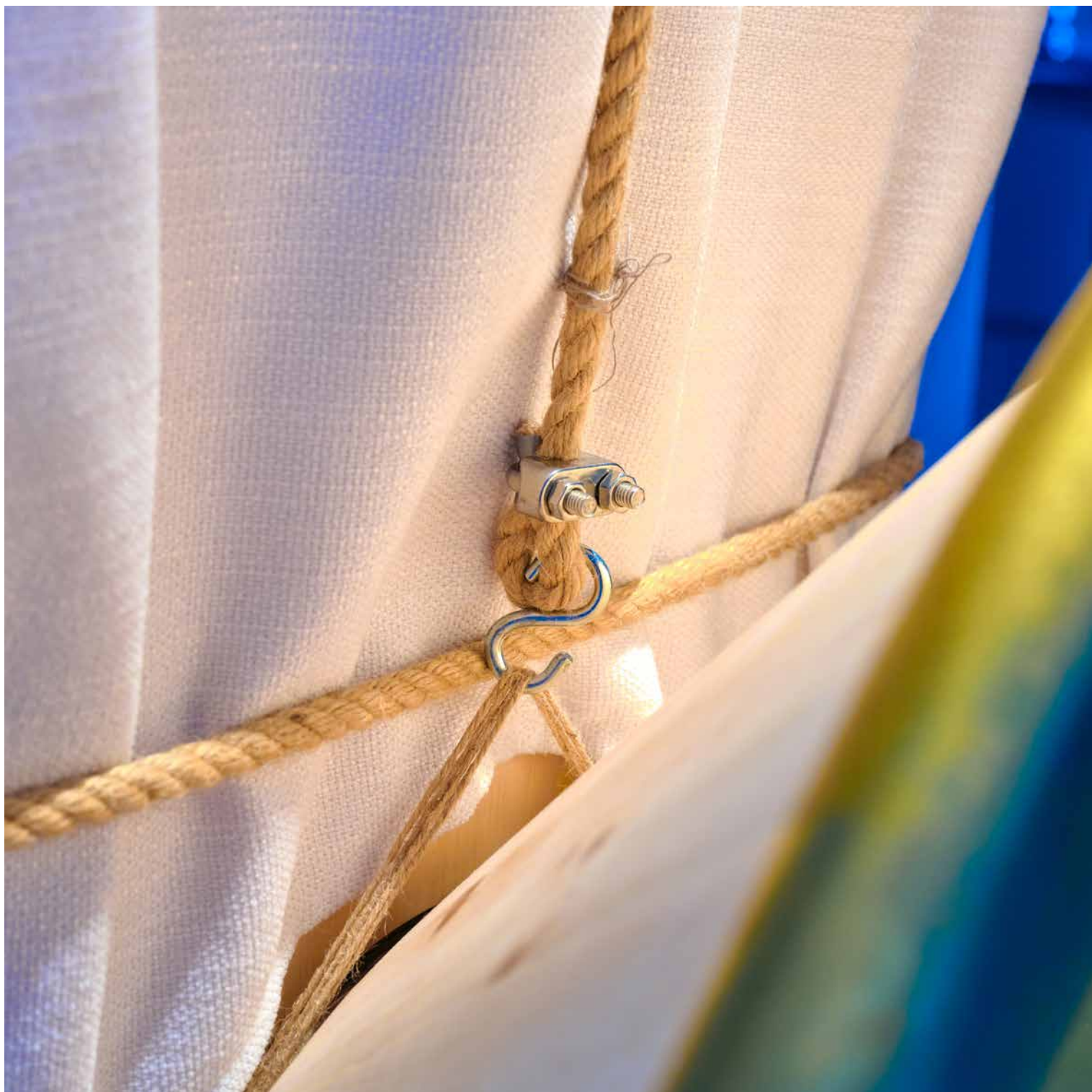


And his passion for high volume had already taken hold back then: Loudspeakers like JBL's resolute 4343 served the music enthusiast as his archetypes.

A birthday gift in 2000 would eventually awake him from his "deep sleep," as he would now describe this key moment. His wife, inspired by a good friend, gave him a set of Focal Beryllium chassis. He promptly tried out these four-inch units as midrange drivers in one of

his loudspeakers and was astonished, flabbergasted, and simply bowled over at how much sound gain these top-class drivers provided. Vocals suddenly seemed so three-dimensional and natural that the experience marked a new chapter in his obsession:

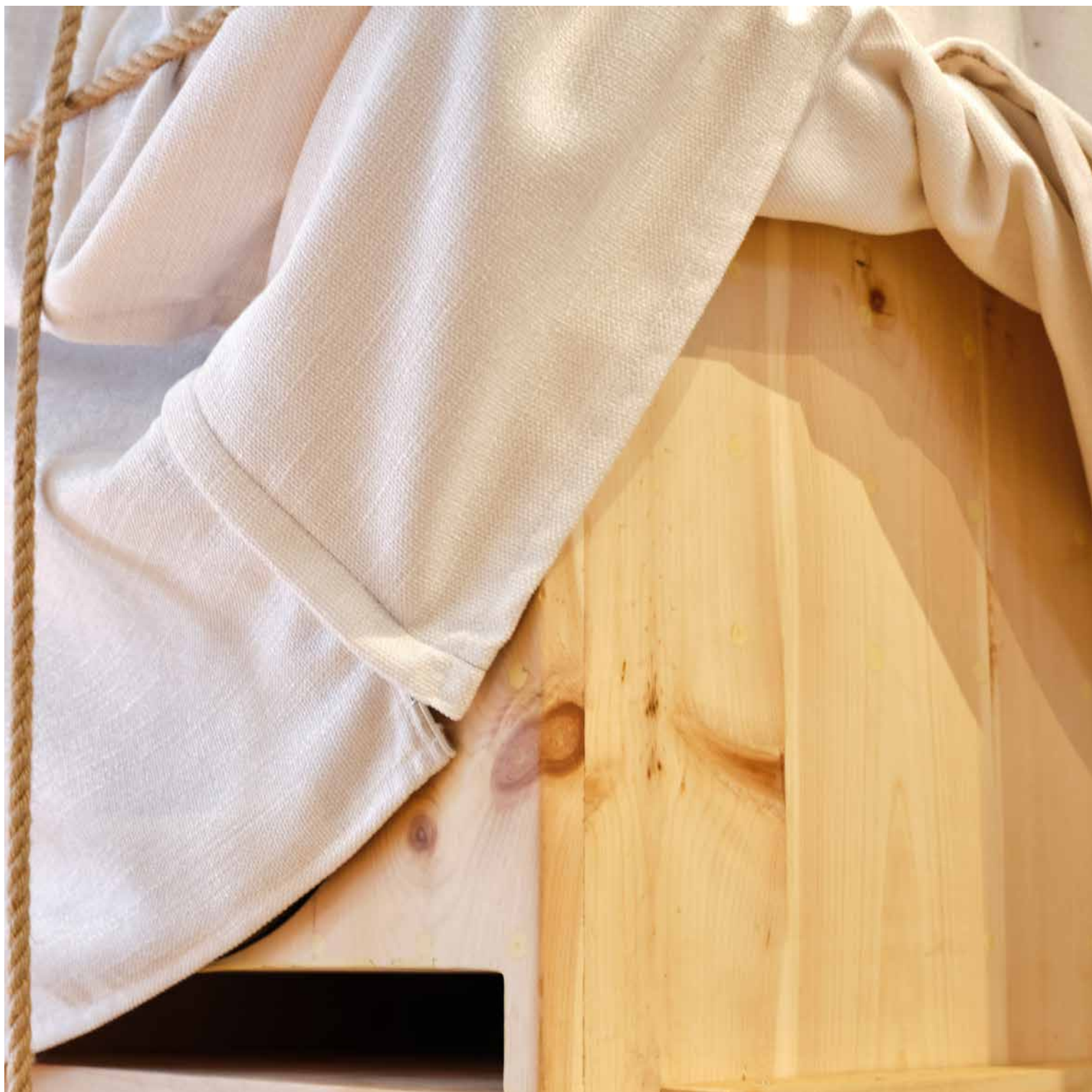
The range of required sound attributes had now grown to embrace linearity, detailing, microdynamics, and clarity. Wurm was, of course, already familiar with these terms, but at that point they became his passion. ▶



## Like a chameleon

Wurm's devotion to design and styling constitutes another constant in the design engineering of his loudspeakers. The veteran do-it-yourselfer loves trying out colors, shapes, and exotic material mixes. So he showed us one of his earliest high-end design studies in his living room: loudspeakers in the form of two giant harps, accompanied by huge furniture-format subwoofers.

In his Pure Emotion 1.0, he has integrated the four bulky 30centimeter bass units directly into the primary frame. In combination with the carefully calibrated flow port, this quartet still achieves an acoustic pressure of more than 100 decibels at a bloodcurdling 18 hertz. To contrast this bass power with a reasonable counterpoint, Wurm decided at some point in the design process to add a horn design to his midrange-tweet arsenal. Devouring the lion's share of materials and working time during the making of the PE 1.0, a spherical wave horn with a 77-centimeter ▶



diameter proved to be the optimum solution. It's made of a complex wood-plastic-iron-aluminum composite. His son took 60 hours to apply the 24-carat gold leaf finish on the demonstration model by hand, which was then further worked on and corrected until the desired "shabby look" was achieved.

One final challenge proved to be the loudspeaker's jacketing: Wurm tried out all kinds of materials, until his wife put the idea into his head of

wrapping the speaker in fabric, analogous to Christo wrapping the Reichstag in Berlin in 1995. What started off as "we can give it a try," turned out to be spot on: It's not just that the fabric, held together by natural cords, gives the 1.0 its unmistakable, unique look. The jacketing proved to be the ideal insulation for the four bass drivers as ideal respiratory control of the reflex apertures, and it has ultimately made the Pure Emotion resilient. Scratches, dust, or fading are alien to Wurm's loudspeaker. And should it get stained, then just wash the fabric by hand and it'll gleam like new. ▶



Besides, the design also has made it possible to visually customize the sound transducer to meet any requirements its owner might have. Wurm had already trialled versions with printed fabric (take a look at the manufacturer’s website), and there have been practically no limits to how the horn can be finished, provided its basic function is not impaired.

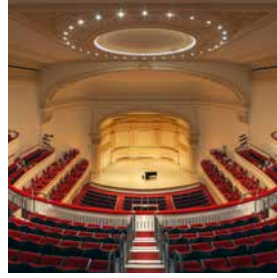
The same applies to fine-tuning the sound quality of the giant columns: The loudspeaker’s incredible performance data has naturally entailed a few problems. A transducer that delivers even the lowest octaves at such pressure only actually functions perfectly in acoustically conditioned and enhanced spaces. Given that, this is something you rarely find in residential spaces. That means the PE 1.0 has to be controlled from a computer like a super sports car so it also performs “on the road.” This job is done by an external DSP that sits in a shallow 43-centimeter housing inserted between source(s) and amplifier. The programmable filters operate on the FIR (finite impulse response) principle, which provides three benefits: limited latency (computational time lags), low computational power,

and, as a result, a potentially very large quantity of bands. As far as the loudspeaker’s physical options are concerned—and in enclosed spaces these are practically infinite—the 1.0 can be fully customized to suit the listener’s preferences. Neutral, colored, no frills, full-bodied: Whatever you like, it’s allowed.

The Pure Emotion thus fulfills all the criteria you would expect of an exclusive super speaker: Its design and construction are unique, every detail on the handcrafted loudspeaker can be customized to meet the requirements of its future owner, and it delivers superb performance in tandem with every conceivable amplifier. Yet that’s not the end of the story: Axel Wurm is aiming to provide his 1.0 with a younger sibling in the foreseeable future—the prototype is already being put through her paces. That means we’ll be hearing a lot more from this resourceful native of Hanau... ■

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Phone +49 171 9558187 | [www.pure-emotion-audio.de](http://www.pure-emotion-audio.de)

Photography: Jeff Goldberg/Esto



Professional musician Stefan Gawlick travels the world and knows almost every major concert hall around the globe. In this series, he reports on the acoustics and other characteristics of famous venues—both in the auditorium and on stage.

# CARNEGIE HALL, NEW YORK CITY

\_\_\_\_\_Carnegie Hall in New York City is certainly one of the few halls where you must have played at least once as a musician. Not should - must! Just as famous are only the Großer Musikvereinssaal in Vienna or the Berlin Philharmonie. And indeed, it causes a tingling sensation to read the name of the iconic house on 7th Avenue in Manhattan in anticipation of the upcoming concert tours.

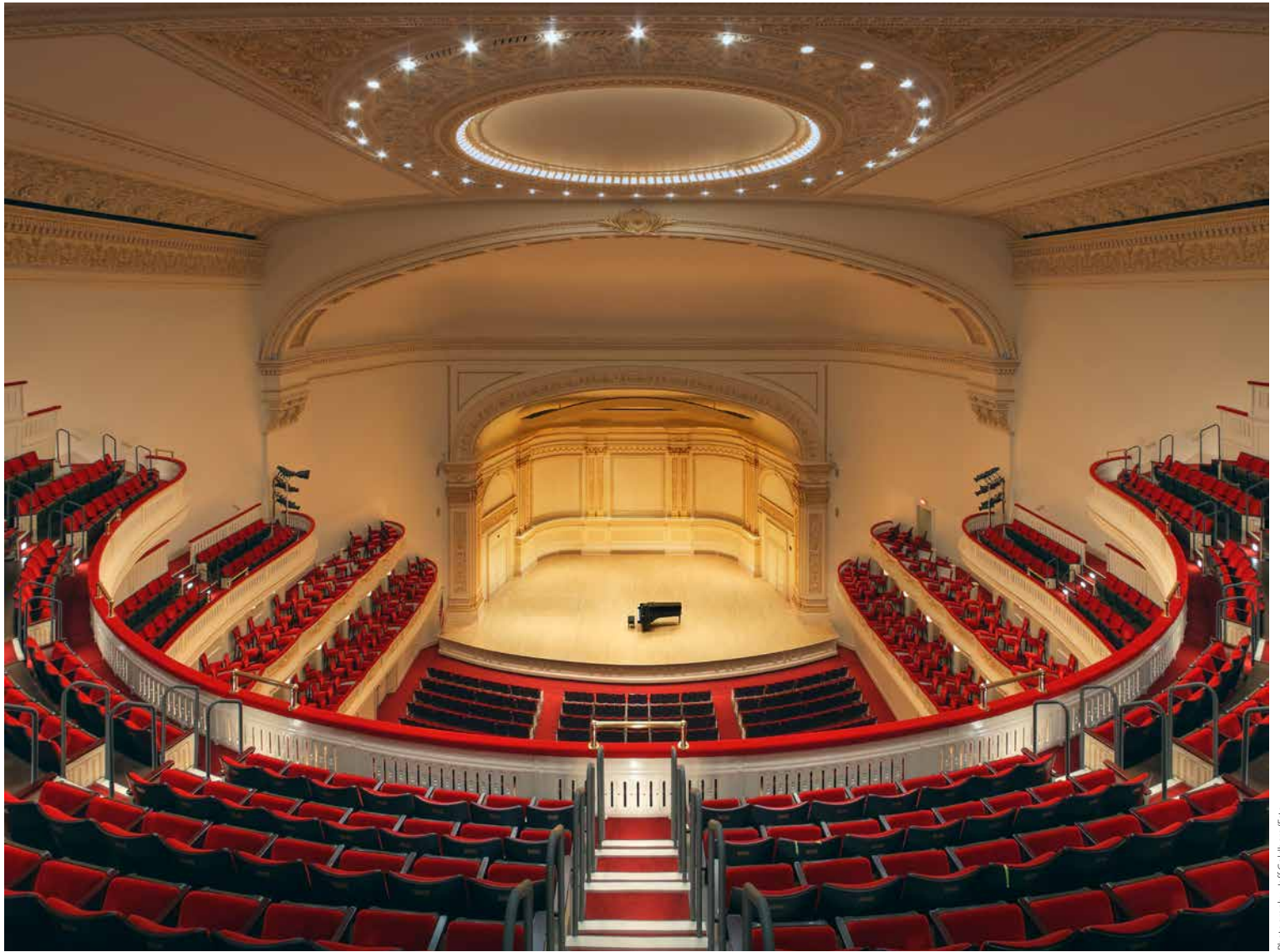
In 1891 it was opened after only one year of construction. However, the construction was not yet finished, and it took another six years to complete. The opening concerts were conducted by Pyotr Ilyich

Tchaikovsky, an election I cannot understand, but probably the name was drawn at the time. In the sixties and seventies, the famous concert hall experienced its decline. Luckily, the violinist Isaac Stern took care of her, founded a foundation and raised money to prevent the planned demolition. He was successful in his work, and so the „Isaac Stern Auditorium“ named after him shines in new splendour since its renovation in 1986.

A total of 2800 spectators can be seated in the parquet floor and on four ranks, the overall structure of the Chicago Symphony Hall (opened in 1904), which comes

from the outside like an (almost) normal building and rounds the stage and auditorium more broadly than deeply—quite in contrast to a classic „shoe box design“.

For the musician, a concert at Carnegie Hall is quite convenient. There are so many hotels around the hall that you will never be far away. If you have passed the entrance controls and the long, winding corridors, you end up in unspectacular wardrobes, which doesn't bother you any further—the stage is waiting. There are concert venues that have a magical fluidity that breathe history, and Carnegie Hall is one of them. Here you feel special even before the first ▶



Photography: Jeff Goldberg/Esto

sound. However, it may take some time before this happens, because the trade unions of the different professional groups sometimes try to play out with their regulations, which can lead to absurd scenes: we came on stage with the orchestra, everything was ready. However, the platforms of the woodwinds were a little too far behind. A brief enquiry revealed that the stage workers were currently in the union-promised coffee break. With regard to the regulations, the idea of the orchestra to move the podiums quickly itself was put in a stop—in this case the union would prohibit the concert. So we had to wait. When it finally got ahead,

however, the lighting and sound technicians had their break—and now our contractually assured rehearsal time was coming to an end...

But at the latest when the concert begins, all unbill is forgotten. The sound that emerges here is like acoustic honey. Not as transparent as in the Berlin Philharmonie, but more detailed than in the Vienna Musikverein, sounds of exquisite size and depth unfold here. Thanks to the rounding of the stage space, there is a first-class acoustic projection into the auditorium. This means that you can estimate very well how your own

sound develops outside. It is really one of those rooms that seem to carry you through the concert, but this is difficult to describe to all those who know the halls exclusively from the other side.

After the concert, the fun of New York City continues: a fast sprint to Columbus Circle, from there take subway A towards Canal Street—and Soho beckons with the promise that the night will be short. ■

**Music tip — recording with characteristic concert-hall sound | Harry Belafonte at Carnegie Hall: The Historic 1959 Concert (Blue Moon) | Vladimir Horowitz Live at Carnegie Hall (Sony)**



...and now for something completely different...



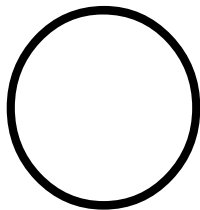
Aavik U-380

# DANISH HOLY TRINITY

By Michael Vrzal. Photography: Ingo Schulz



# IF THE DANISH HIGH-END, SMALL-SCALE MANUFACTURING COMPANY AAVIK GETS TO DECIDE, "INTEGRATED" IS THE NEW "SEPARATE."



ne of Belgian artist René Magritte's most famous paintings shows a pipe with words underneath that read: "Ceci n'est pas une pipe." This is not a pipe. Of course, we all know it's a pipe. So what's the artist trying to say?

I had a chat over the phone with Michael Børresen about the Aavik U-380 integrated amplifier. You can purchase the device, whose analog section was developed by Børresen, from the Danish small-scale manufacturing company for a cool €36,000. I couldn't help but ask the obvious question: "What could possibly make an integrated amplifier that expensive?" To which Børresen replied: "This isn't an integrated amplifier." Well, he didn't use those words exactly. What he actually said was: "It's not about the amplifier at all. Look at the modules! The phono stage! The DAC!" As he said this, he dropped the names of the top-ranking specialists in these fields into the conversation. "The U-380 is on a par with them!"

The Aavik U-380, as Børresen sees it, is a world-class MC phono stage with precisely adjustable impedance, a superb D/A converter with the option of one or two DAC modules for PCM and DSD, and an analog amplifier section with class-D technology that, in terms of sound quality, holds its own against the best class-A amps out there. And it's all

beautifully combined in an eye-catching housing that boasts impressive workmanship.

Quirks abound: The power cable that's not furnished as standard, the flat metal feet actually put there as retainers for the Darkz tuning feet sold separately by the subsidiary company Ansuz, and the remote control supplied by Apple. Børresen has an answer for everything though, turning it back on me with a question that went something like this: When was the last time you plugged in a new high-end component using the power cable that came furnished as standard? Exactly!

## A pleasant case of unequal treatment

Fresh out of the box, the U-380 looked like a sculptural work of audio art and weighed in at just under 17 kilos. On the very top shelf of my rack, where the amplifier belonged not least because of the CNC-milled brand name proudly running the full depth of the housing, the U-380 looked like something straight out of the Batcave or Darth Vader's private listening room. Despite it having numerous inputs, a powerful DAC section, and an adjustable phono stage, my first glance at it didn't reveal any displays designed to provide information on the relevant operating mode. Its only controls consist of three push buttons and one rather prominent large rotary knob (actually a dial) given pride of place right ▶





in the middle of the front panel. That knob is surrounded by a ring of white LEDs—and there you have it: the display. The rotary encoder is the input device. Users can switch between level control, balance, source selection, gain, and phono input impedance by either pressing the buttons briefly or holding them down for longer. This all works very well and you feel a bit like you're in a luxury sedan with iDrive or Command Controller at your fingertips.

The phono stage of the otherwise asymmetrical U-380 has a fully discrete, balanced, floating design. The amplification requires bipolar transistors featuring an ultra-low-noise BISS design (Aavik claims an incredible signal-to-noise ratio of 94 decibels). Børresen prefers this type to field-effect transistors, which he says result in a somewhat sober and muted sound profile. The U-380's impedance-adjustment feature boasts an impressive 18 increments, including the basic parameters of 50 ohms and 10,000 ohms. Thanks to the smooth operating concept, users can switch between options at the flick of a wrist, quite literally. Aavik's built-in DAC processes PCM and DSD formats in a rather unusual manner. Nothing would be simpler these days than sending both through the same converter. But the Danes have opted for unequal treatment and developed two DAC modules: one exclusively for PCM

up to 24-bit resolution and 192-kilohertz sampling frequency with a Burr-Brown 1794A converter chip, and one for DSD that has the analog signal available at the output of a low-pass filter. The customer gets to choose: The U-380 comes fitted with the PCM module as standard and in this setup can even be equipped with two phono stages. Alternatively, the customer can also opt for the PCM-DAC for the DSD circuit board, in which case there'll only be room for one phono input.

As the central class-D amplifier powers the DACs, an armada of voltage regulators on the modules ensures there's absolutely no trace of the switched-mode power supply's high-frequency tinkering there. Four clocks guarantee low-jitter timing: one on the S/PDIF input and two on the asynchronous USB input, with the fourth taking care of the upsampling and the DAC. Without exception, all signals passed on digitally are upsampled in the U-380 to 200 kilohertz. What's the source for this unusual figure? Børresen has an explanation: "The frequency had to be above the highest possible externally supplied sampling frequency of 192 kilohertz. And the Burr-Brown chip accepts a maximum of 200 kilohertz. Hence the 200 kilohertz figure."

The power gain takes place in a component made by the Danish switching amplifier specialist Pascal Audio. Børresen makes no bones that his ►





preferred choice would have been a class-A power amplifier if there had been more space available. But that was never an option with the tightly packed U-380, especially since the power gain featured needs to live up to that description. And so, Børresen opted for the Pascal M-Pro2 module, albeit with a modified input stage.

I found the volume control particularly fascinating. The level is controlled through a resistor network located in the negative feedback loop of the amplifier circuit. As negative feedback and gain are directly connected, the harmonic distortion is reduced when the music is turned down. As a result, every input has an input stage—and the source is selected by muting the inactive inputs.

## Then there are the coils

“Tesla coils”—that’s the name Aavik has given the wraps elaborately made from gray insulated wire that occupy a long circuit board immediately behind the front panel. They have absolutely nothing to do with the Tesla transformers from physics lessons at school that produce spectacular sparks. Børresen did, however, eagerly point out that the great Nikola Tesla was a source of inspiration for his own method for suppressing interference in a high-frequency environment. Only he knows exactly how it works—but in any case, what really matters is this:

Does it sound good?

Oh yes. Very good, in fact. Actually, amazing, to be precise.

Børresen is right: The Aavik U-380 isn’t an integrated amplifier with phono and digital input. At least not the kind of integrated amplifier where you ask if the DAC and the phono input are any good. The U-380 couldn’t be any further removed from that type of integrated amplifier

if it tried. There’s absolutely no doubt whatsoever that any of the three sections would be able to hold their own in terms of sound quality compared with the very best separate components available on the market. Together they form a single device that boasts incredibly spectacular balance. Provided that adequate analog and digital signal sources have been chosen, the seemingly never-ending battle raging on between vinyls and HD streaming has suddenly become a total nonissue, given the high-class setup. Digital and analog playback actually sounded identical, with crystal-clear clarity over a very broad range, where necessary with shockingly impressive dynamics and, best of all, holographic three-dimensionality.

### **FIDELITY: What effect does the Tesla coils produce—they are seemingly not connected with the music signals in the U-380?**

Michael Børresen: In the world of electromagnetic interference, everything is interconnected, even if there is no direct connection. The parasitic frequencies are disseminated through a variety of parasitic capacities across the circuit boards, switched-mode power-supply units, and transformers, etc... As such, however, interference peaks can also be identified and eliminated even by components that are only connected with the rest of the device by means of the shared power supply. Stray radiation is an issue precisely for that reason as it’s easily disseminated through everything: through cables with antenna effect, through the power supply, through streaming and the Internet connection. Especially there.

I placed a jazz vinyl on the platter of the dps 3 and lowered the Lyra Kleos down into the lead-in groove of the A-side of *Sketches Of Spain*. On the left side, the castanets click-clacked so convincingly it felt like a real-life Spaniard was standing behind the speaker. Not long after, bells began to chime in and their whirring silvery tinkling was extremely subtle yet at the same time vivid and easy to pick out. On the right side, a double bass kicked in with rhythmical pinpoint accuracy while first a gently breathing flutist then Miles Davis himself stood between the speakers, greeting me in person. From a musical perspective, I will still ►

Free oscillation allowed here, damping with adhesive achieved there: Aavik's magic machine has resonances firmly under control like no other amplifier. All cables, including those of the 36 oscillating circuits on the left, are assembled and fitted by hand by the Danes in a process lasting dozens of hours.









continue to find this album more entertaining than sophisticated—but, I have to say, even though you may be physically far away from the Iberian peninsula, you can really lose yourself in the virtual Spanish groove! Inevitably, I couldn't resist carrying out a comparison with my Bauer Audio Phono, also a pure MC equalizer. The results were so overwhelmingly positive in favor of the Aavik module that you would be forgiven for thinking that the Danish device had put up some built-in defense mechanisms during the test. I really value the minimalistic Bauer Audio as an especially clean and open-sounding tool that provides plenty of enjoyment. But when used in conjunction with the U-380, it sounded all out of sorts, while the Lyra system sprouted wings and soared as part of the team. My Aqua La Voce DAC similarly didn't stand a chance. Upon initial contact with the Aavik, the Italian DAC was connected to one of the three high-level inputs and fittingly exhausted the output stage (just as a reminder: 600 watts at 4 ohms!) with a staggering level of detail and thrilling dynamics. Quick music tip: the Steve Gadd Band's album *70 Strong*—what incredible-sounding drums! Reconnecting the USB cable from the Innuos Zenith Mk III into the corresponding port on the Danish device grounded the whole affair. The sound profile mellowed, gained breadth and depth, grew more refined, and, yes, more sophisticated. There was no turning back here either—the Aavik DAC is absolutely world class!

But it gets better: Børresen dropped a bombshell by saying the U-380 only reaches around 30% of its potential without the tuning measures. So, a week later, the parcel delivery service dropped off a set of Anszuf feet with titanium balls by the name of Darkz C2t and an Anszuf Mainz A2 power cable. The feet, which simultaneously use hard vertical coupling and horizontal freedom of movement, visibly completed the U-380,

equipped with the fitting counterparts, and audibly announced their presence by providing a more open and airy sound. The power cable, which replaced a large-diameter TMR version in my system, provided an extra touch of elegance—as if some as-yet unnoticed corners and edges of the music had suddenly been sanded, smoothed, and polished.

Whether it's an integrated amplifier or not, the Aavik U-380 is the musical equivalent of a magnifying glass. It extracts maximum information from both digital and analog signals, resulting in magnificent music. But I wouldn't simply recommend the Danish device for anyone and everyone as I have my reservations. If you're definitely not prepared to part ways with your phono preamplifier, then the U-380 is not for you. The same applies if you're especially fond of your DAC. It'd be an absolute crime to buy the U-380 and not use it to its full potential. The Danish three-in-one integrated amplifier wants to be the sole centerpiece in an exquisite, minimalistic analog-digital system. Anyone who grants it this responsibility will not be disappointed. ■

#### Transistor integrated amplifier | Aavik U-380

**Concept:** class-D integrated amplifier with MC phono equalizer and DAC featuring a modular design | **Analog inputs:** 3 x line-in (RCA), optionally 1 x or 2 x phono MC input (RCA balanced) | **Digital inputs:** 1 x USB (PCM 24/192, optionally DSD up to DSD128), 2 x BNC S/PDIF (24/192), 2 x TOSLINK optical (24/96) | **Outputs:** 1 x pre-out (RCA), 1 x loudspeaker (banana-compatible screw terminals) | **Output power (8/4 Ω):** 300/600 W | **Special features:** IR remote control, adjustable phono impedance, 2 x triggers 12 V (remote activation), RS-232 interface, prepared for Anszuf Darkz feet | **Dimensions (W/H/D):** 44/10/37 cm | **Weight:** 17 kg | **Warranty period:** two years | **Price:** about €36,000

**Aavik Acoustics | Rebslagervej 4 | 9000 Aalborg | Denmark | Telephone:** +45 40 511431 | [www.aavik-acoustics.com](http://www.aavik-acoustics.com)



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Göbel High End Divin Marquis

DISTANT

WORLDS

By Stefan Gawlick. Photography: Ingo Schulz and Stefan Gawlick





The very best of the best high-end systems remain beyond the reach of most of us throughout our entire lifetimes. Trade fairs offer us the opportunity to look at them, ogle them, gain a decent understanding of the outstanding technology in use in them, and marvel at the out-of-this-world craftsmanship involved in making them. Yet events like these actually carry a serious, inevitable flaw when it comes to the most important of all aspects pertaining to this kind of equipment: You only gain what's at best a superficial impression of a system's sound quality due to the alien environment and hullabaloo created by all the enthusiastic, excitable visitors. So, as you can imagine, we didn't hesitate for a second when Oliver Göbel asked us if we wanted a bit of peace and quiet to experience his new loudspeaker, the Divin Marquis—an astonishingly compact model by his standards. The experience would come in a setting that not only served as a superb listening room but also a chamber used for adjusting and fine-tuning the sound produced by his gems. Of course we were very keen—so keen in fact that no less than three of us all showed up together: Carsten Barnbeck, editor in chief, and Ingo Schulz, publisher, flanking me in the middle.

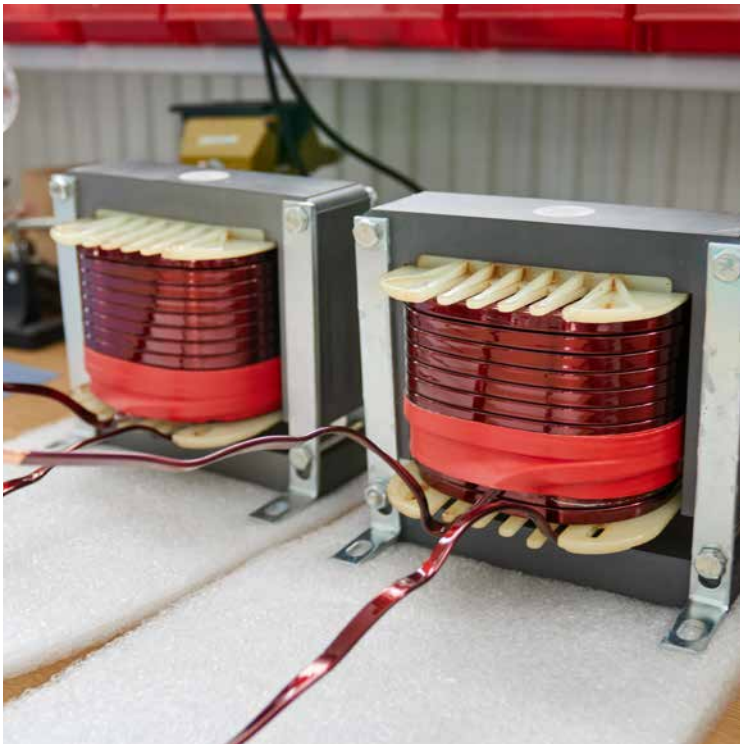
When you think of the kind of human-sized, super-exclusive, high-end loudspeakers popular in

such metropolises as Hong Kong or Taipei, all sorts of surroundings pop into your head. But a farm surrounded by idyllic rural countryside? That probably isn't exactly what immediately springs to mind. Yet our excursion to the western outskirts of Munich took us to just such a place: a farm, albeit a former farm. Beaming a smile in our direction, Göbel greeted us on the premises of what used to be a cattle farm but is now a place for listening to, testing, and monitoring his fascinating loudspeaker systems. I, of course, had tucked a few CDs up my sleeve and was keen to immediately find out what his promising speakers were all about. But I had to remain patient as my colleagues engaged in a deep conversation with our host about his career, his background, and the history behind his company.

Göbel has amassed an impressive CV, and his previous experience helps explain many of his technical decisions. He cut his teeth designing drivers and loudspeakers at Siemens, predominantly of the bending wave variety. Consciously, these developments did not take aim at the small high-end niche market, but instead focused on the larger business found in event-related technology, the automotive industry, and furniture production for which Siemens designed invisible speakers.

However, at some point the young engineer couldn't help but wonder how far the flat diaphragm principle could be pushed. As the company he was working for was concentrating on the mass market, the logical next step was for him to branch out on his own. That was some 17 years ago when his first-ever series of in-house-developed diaphragms was launched under the name Detaille. Since it's very rare for new loudspeaker manufacturers to be able to rely solely on new business to make ends meet, the fledgling company also simultaneously operated as an OEM development office, designing and making products for other manufacturers. Soon, Göbel could boast an impressive list of top clients, including industry giant Grundig for which he created the last incarnation of the Auditorama. In fact, we were lucky enough to see one of these spherical loudspeakers in his workshop during our visit. Bending wave drivers did, however, remain the focus of Göbel's attention. His thoroughly exceptional and visually striking Epoque series is to some extent designed around this key component.

I was especially excited to finally get a chance to saunter up to the ultra-flat mythical creatures and experience them in a setting that guaranteed the proper welfare of the beasts. You can then imagine how surprised I was ▶



as I noticed the loudspeakers prepared for our arrival had been equipped with everything you could possibly imagine except bending wave drivers. They were the Bavarian firm's new "entry-level unit"—the smallest model in the Divin series, the rather wonderfully named Marquis. The lofty dimensions and tender weight of the speakers, which each tip the scales

at just under 150 kilos, made it clear they didn't stem from the company's "bread-and-butter range." A pair of these speakers will set you back €75,000; configuration options relating to the finish can bump up the price even higher.

Our attentive, sharp-eyed host picked up on my surprise and immediately explained the reasons

for using more conventional equipment. Göbel had ruled out the idea of using bending wave drivers early on in the planning stages in order to pursue an altogether different concept with the Divin series. Here, the aim was to achieve maximum efficiency without using any horn constructions. Despite their price difference with the rest of the product range, the new ▶



loudspeakers are on par with the Epoque models and should appeal to both owners of hefty power amplifiers and fans of exotic valve amps. Göbel found a fitting replacement that was able to meet his exacting requirements for airy transparent overtones and distortion-free impulses even in the highest frequencies in the form of an air motion transformer (AMT) that he heavily modified. Only after he had installed the new tweeter in a meticulously calculated waveguide did the AMT meet the necessary requirements. The rest of the Marquis was then literally designed around the AMT.

Göbel developed a customized midrange in the form of a firmly suspended carbon-coated paper diaphragm that covers the range from 140 to 1,600 hertz. To ensure it wouldn't be left behind by the super-fast AMT, he optimized every last tiny detail of the eight-inch driver. Göbel drew, for example, on his knowledge gained from his extensive experience with bending waves and ensured exceptionally high-precision centering and optimum temperature control in the driver's drive section. For the ever-active developer, the goal of these refinements wasn't just phenomenal

transient response and the ability to showcase every little detail—Göbel ultimately attaches the importance to resonance control, as we'll see later on.

He uses drivers in the bass that he's refined and optimized taking a similar meticulous approach. At 12 inches, the diameter here is, of course, considerably larger. As a fan of professional cuts, Göbel also deployed a concept that PR departments and product designers all too often forbid the groundwork-laying engineers from using: a fully symmetrical bass reflex ▶





layout, which gives the Divin models their unmistakable, distinctive appearance. The air volume's spring force, which is uniformly connected at all points, ensures the long-throw diaphragm doesn't get into any difficulty even in the case of larger oscillations. Göbel explained that this was simply unavoidable for achieving extreme precision in the lowest registers.

Ultimately, the housing can't be compared in any way, shape or form with the MDF or HDF enclosures of many other speakers.

The models in the Divin series comprise solid panels of different mixtures of resin and plastic. The material is so dense it would sink like a stone in water. The Marquis's front panel is carefully milled from a single block and is 75 millimeters thick at most points. The interior features numerous struts that have not been positioned at random, but rather on the basis of results from an extensive range of simulation programs and measurements. Interestingly, Göbel broadly refrains from using any insulating material as, in his experience, it tends

to result in a weak, undefined, and therefore often boring sound. Instead, each Divin contains several Helmholtz resonators that have been precisely adjusted in line with the cavity resonances. The rear of the huge housing features an isolated compartment that holds the impressively equipped crossovers.

There's no end in sight to the intricacies of the design. And Göbel had all sorts of interesting stories to share about every single detail of the Marquis, explaining why something was ▶



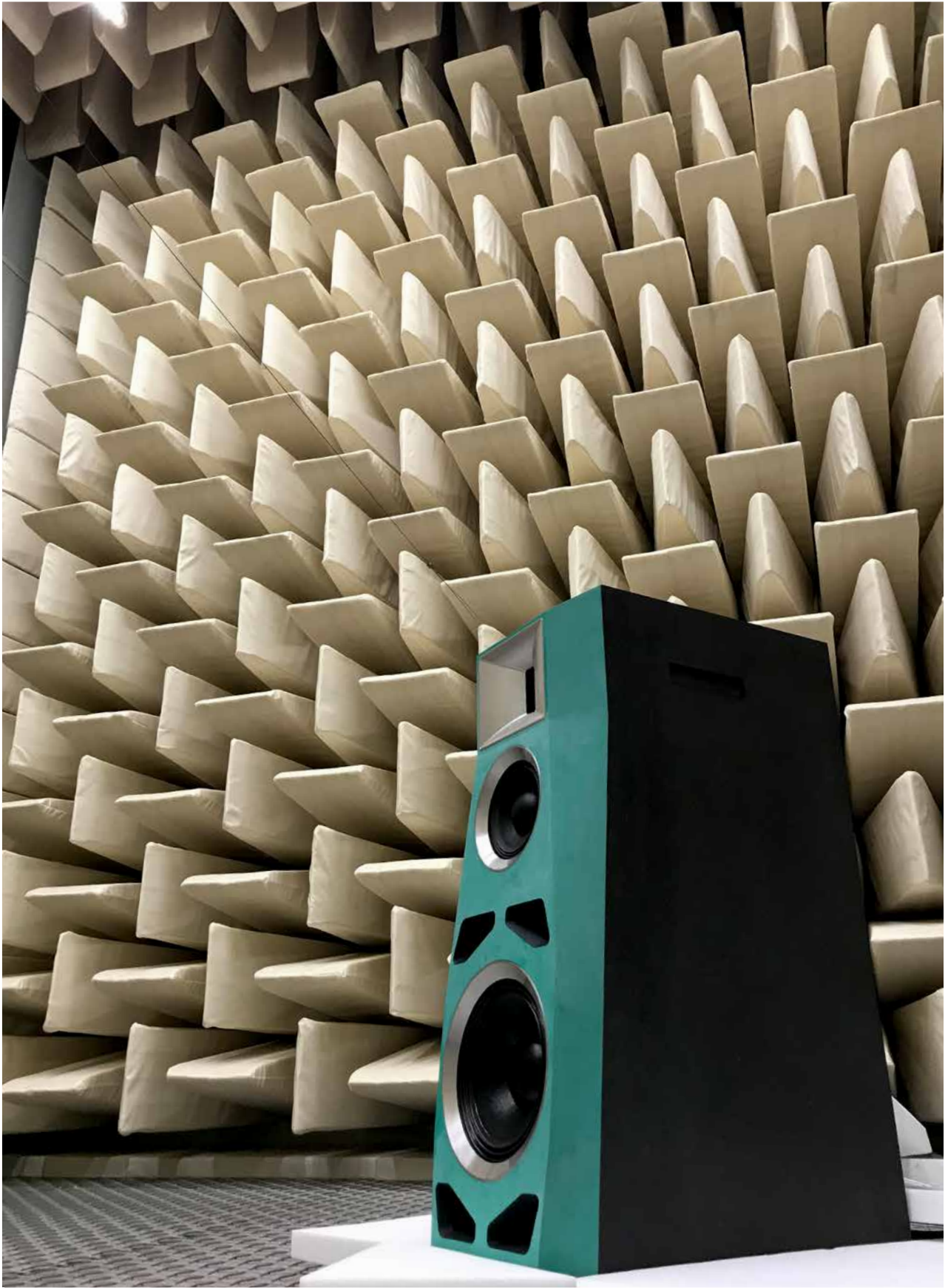
The Divin Marquis may be Göbel's smallest model, but it certainly packs a punch. The image top right shows the separate compartment for the crossover on the back of the loudspeaker. The photo on the left-hand page shows the four symmetrically arranged bass reflex openings that enable the bass driver to vibrate with maximum uniformity.



like this and not like that and producing measurement plots, material samples, and design drawings at the drop of a hat. Little by little, it became increasingly clear the meticulousness of his striving for technical perfection, the keenness of his desire to not have

his products be thought of as “bling bling,” as he would say. We spent several hours at the company's headquarters, were shown around the entire production facility, visited the low-reflection measurement chamber, and learned just how much importance the

company attaches to each and every little detail (right down to the elaborate packaging used for accessories) before the moment we had all been waiting for finally arrived: We got to experience the Divin Marquis speakers live in action. ►

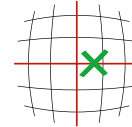


To truly perfect his loudspeakers, Göbel uses the low-reflection fully anechoic chamber (all six walls are lined with absorbers) of the Deggendorf Institute of Technology. Only a measurement chamber of this size (the room measures over 1,000 cubic meters) can create the conditions for exhaustively exploring the omnidirectional sound distribution of a speaker. The huge Marquis almost looks cute here...



Oliver Göbel (top left) is a renowned expert in flat diaphragms. Among his accomplishments, he developed invisible drivers for furniture producers and the automotive industry as well as worked for Grundig on the last Auditorama. As an expert, he also knows the limitations of his innovative developments, therefore he decided to design his Divin series without bending wave drivers.

**Göbel High End Divin Marquis**  
 Oliver Göbel has kept his promise: The Divin Marquis is an uncompromising loudspeaker that can handle all amplifier concepts without any issues. It also can't fail to impress with its out-of-this-world level of precision and detail.



© FIDELITY Magazine



— A component is 100% intuitive if you can exploit its potential to the full intuitively.



The powerful floor-standing speakers delivered on Göbel's promise—and then some. He had stressed time and time again how important it was, in his eyes, to get an even better handle on resonances, to combine faster drivers, and to ideally not allow vibrations to occur in the housing in the first place. And that was exactly what came across when the loudspeakers were playing. After just a few tracks, we

all agreed that we had rarely ever heard such clean, artifact-free yet organically vivid and lively playback before. The Marquis achieved exemplary nuance of sound right down into the deepest ranges, and the spatial placement of the individual sound events below the fundamental tone was absolutely amazing. Many can achieve that above the tone, but such a precisely projected series of double basses was something

we hadn't ever heard before. Göbel, who is a huge fan of classical music, fed his CH Precision electronics with Strauss's Salome, Mozart's Figaro, and Beethoven's piano sonatas, and we wandered from one virtual concert hall to the next all the while feeling like the musicians, singers, and conductors were physically right in front of us. Later on, we opted for more hearty fare with the likes of Fiona Apple, Michael ▶



We were able to enjoy listening to the Divin Marquis (in white) for several hours in the outstanding listening room. While Göbel was explaining the ins and outs of the bass reflex concept to FIDELITY editor in chief Carsten Barnbeck, the larger Divin Noblesse was probably wondering why it wasn't getting any attention.

Jackson, John Coltrane, and Phil Collins to name but a few artists. Heard through the Marquis, the modern productions never once sounded too dense or overstated, not even for a split second. From the most delicate undertone right through to the most brutal volume, the “smallest” loudspeaker in the Göbel range masterfully commanded all registers. Given all its many positive qualities, the Divin Marquis is, well, simply *divine*.

All that was left to do was to find out how the larger models in the new series would

sound. Theoretically speaking, we could have assessed their sound quality as a pair of the Divin Noblesse speakers were parked in the listening room next to the Marquis, but, alas, we had run out of time. Perhaps we'll get another opportunity to do just that one day... ■

#### Loudspeaker | Göbel High End Divin Marquis

**Concept:** Three-way floor-standing loudspeaker with high-efficiency concept and symmetrical bass reflex layout | **Equipment:** AMT tweeter with waveguide, 8-inch midrange chassis and 12-inch bass driver made from carbon-coated paper; all drivers are developed and adjusted in-house | **Housing:**

acoustically optimized, temperature and climate-resistant sandwich construction made from a dense resin and plastic mixture, wall thickness up to 75 mm, integrated Helmholtz resonators | **Impedance:** 4 Ω (minimum 3.4 Ω at 95 Hz) | **Efficiency:** 92 dB | **Crossover frequencies:** 140 Hz/1,600 Hz | **Frequency range:** 21 Hz to 28 kHz (−3 dB) | **Included as standard:** customized flight cases | **Dimensions (W/H/D):** 41/118/72 cm | **Weight:** 150 kg each (180 kg including packaging) | **Warranty period:** Five years | **Price:** from €75,000

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# KORA AUDIO TB140 INTEGRATED AMPLIFIER

By Michael Lavorgna. Photography: Michael Lavorgna



Do you know France-based Kora? Based in Toulouse, the 'Silicon Valley' of France, the company's principals work in the Aerospace industry specializing in power supplies and signal treatment while also building integrated amplifiers that utilize tubes and transistors in an unconventional manner.







The TB140, TB200, and TB400 employ Kora's patented Square Tube Circuit and differ mainly in output power with the TB140's 70 watts per channel, the TB200's 100 watts per channel (I appreciate logical product names), and the TB400's 200 watts per channel. The company uses Motorola transistors in the Square Tube circuit and the number of transistors grows along with output power from four in the TB140 to twenty in the TB400.

**Here's the company on their Square Tube Circuit:**

Four tubes are used to make a single amplification stage, hence the name! The SQUARE TUBE « outputs » a symmetrical signal with respect to the reference ( earth ). In other words, the signal goes alternately in the field of positive voltages (to push the diaphragm of the loudspeaker) and in the field of negative voltages (to pull the diaphragm). This unique capacity with vacuum tubes makes it particularly suitable for the design of audio amplifiers.

In your Kora amplifier, the SQUARE TUBE provides all the functions of amplification and control of the audio signal. At the output stage of the SQUARE TUBE, the signal is identical to the one which is input to the speakers. Complementary power transistors, audio and hyper-linear will give the current required by the speakers, but without interfering in the amplification of the signal.

We are definitely talking about a tube amplifier here!

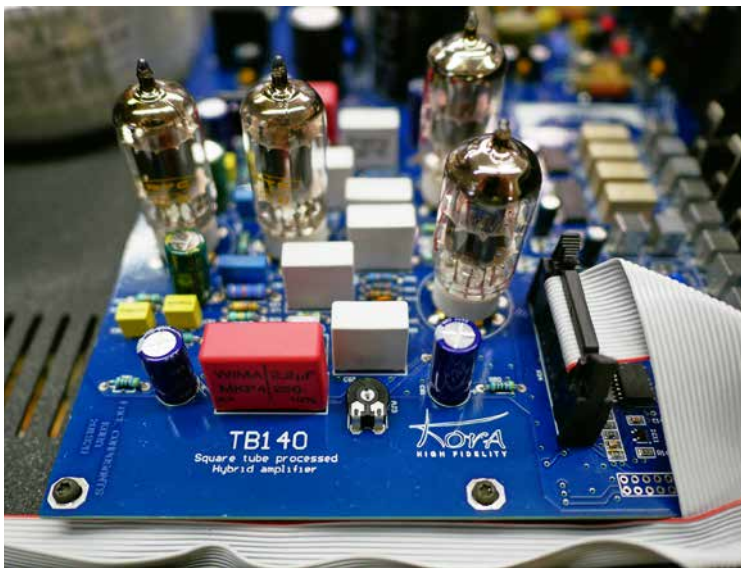
A traditional tube amplifier would replace the 12AX7s found in the Kora's output side with power tubes, e.g. 300Bs, i.e. big tubes, to amplify the small signal tube's voltage, while adding an output transformer to deliver the current required to couple the amplifier's output stage to the loudspeaker. In the TB140 we have the 12AX7s providing voltage amplification and instead of an output transformer, we have transistors providing current delivery.

The company claims this approach avoids a number of issues found in transformer-based amplifiers by offering no phase shifts on low or high frequencies, no bad coupling on low end, and no current limit. This last bit, no current limit, should translate into an iron grip on any speaker load.

The TB140 offers four single-ended (RCA) line-level inputs, a MM Phono input, Pre-Out if you choose to use the TB140 as a power amplifier-only, a pair of speaker binding posts, the IEC inlet, and the power button all located on the unit's back side. The Kora's aluminum & steel chassis is a flecked Mineral Gray, while

the front panel is about 3/4 glass behind which resides the yellow display. Rotating the flecked Mineral Gray circle to the right of the display with your fingertip adjusts the volume level while depressing it provides access to Set Up functions. These functions include adjusting the level of the clic sound that accompanies volume level changes, display brightness, balance, input gain settings for each input so you can level match between sources, display style where you can display balance and offset info, and By-Pass mode when using the TB140 with an external preamplifier. There's an included remote that allows for a number of functions including the usual volume control and input selection.

When you power up the Kora it goes through a short process of heating the tubes to allow them to stabilize and reach optimum operating condition before you play. The review unit was provided by Kora's US Distributor, Prana Distribution, and came loaded with a pair of current production JJ Electronics ECC83s on the input side and NOS Mullard, labelled RTC, EE82s on the output side. ▶



In case you were wondering about tube swapping to alter the sound of the TB140, Kora explains that their Square Tube approach pretty much negates this exercise:

The SQUARE TUBE technology is very different from a traditional tube circuit where the polarization point can vary greatly from one tube to another (tubes can have variations from +/- 30%!). In this case, changing tubes to different brands can bring massive changes in terms of performance and sound characteristics. One of the primary features of the SQUARE TUBE circuit, unlike traditional tube circuits, is it imposes the polarization point on the tube. Therefore the tube itself will not have the latitude to vary to the point of imposing a different sound signature.

The good news is that SQUARE TUBE technology provides very stable sound reproduction regardless of the Tube one may use. While the Kora's insides are not standard, using the Kora TB140 could not be any easier. Make your connections, plug her in, turn her on, and play. For the majority of my listening

time I paired the Kora with the DeVore Fidelity O/93s and totaldac d1-tube DAC/Streamer, while my trusty Rega P3 (2000) mounted with the Nagaoka MP-110 MM Cartridge handled the vinyl.

## Are We Clear? Crystal

Let's forget all about Square Tube circuits, transformerless tube amps, and tubes in general because none of these things will tell you how the Kora TB140 sounds. In a word, it sounds crystal clear. It sounds pure.

If you're thinking these descriptors carry negative connotations, clear your mind of those preconceptions because the Kora TB140 also sounds rich and harmonically right, with nary a hint of leanness. I would say one of the aspects of the TB140's performance that elevates it

to—damn this sounds great—levels is this marriage of crystal clear clarity and timbral richness. Add to that an iron-fisted control of the speakers regardless of the music being pumped through it, and we have all the makings of a musically great time.

Another aspect of the Kora's presentation that came to light when I was spinning some LPs was its ability to pull out every detail in a recording as if it was somehow illuminated from within. I'm not talking about that infamous 'tube glow' of warmth like a blanket over everything, rather the opposite effect of revealing what's on and in a record with a very natural sounding light. "Red Bird Morning" from S.G. Goodman's *Old Time Feeling*, I bought the signed copy, shines with Goodman's radiant powerful voice and every subtle shift and inflection is brought to light by the Kora. ▶



I can't imagine anyone but the most persnickety would find fault with the Kora's phono stage. I've been obsessing over "Es Regnet" as sung by Teresa Stratas on *The Unknown Kurt Weill* and her voice rings out bell-like through the Kora, caressing John Cocteau's words with a charm second to none. Character flaws are on full parade in "I Never Talk To Strangers" where Bette Midler and Tom Waits trade barbs and eventually cosy up and the contrast between Midler's saccharine smooth crooning and Wait's gravel infested beat poète maudit is presented in all its glory through the Kora. We're talking full spectrum sound.

Unfortunately, I don't have any speakers on hand that are ridiculously difficult to drive and the DeVore O/93s are a real pushover when it comes to amplifier pairing with their 93 dB/W/M sensitivity / 10 ohm load. So the only thing close to a torture test was provided by the

Golden Ear BRX standmount speakers whose 90dB sensitivity and nominal impedance stated as being "Compatible with 8 ohms." The Golden Ear / Kora TB140 pairing produced some very sweet sound, at once delicate and detailed while conveying plenty of body and drive. I have to say I am continually delighted with the Golden Ear BRX and the Kora pulled the same illumination trick with the BRX as it did with the DeVore O/93s, making each recording sound revealed through light. Nick Cave's emotive quivering cover of T. Rex's "Cosmic Dancer" was presented with incredible clarity where every nuance in Cave's voice was there for the taking.

The Ayre EX-8, used as just an integrated amp with the totaldac feeding it converted bits, made for an interesting comparison. I would also put the Ayre on the very revealing side of the scale and it provided a superb grip on the DeVore O/93s as well. One immediate

difference when switching to the Ayre from the Kora was an increase in the size of the sound image. Nick Cave and the band had more separation between them as well as a greater sense of scale. By comparison, the Kora presented a tighter sound image. I would also give an advantage to the Ayre in terms of bass impact, where things sounded a bit more physical. In the Kora's corner I found that its ability to illuminate the recording with that sense of sparkle and micro-delicacy made the Ayre sound a bit less fully fleshed out in this regard. The Ayre Ex-8 comes in at \$5990 as an integrated amplifier only, it does not offer a phono input, or roughly \$750 more than the Kora and to my way of hearing the choice between these two comes down to a matter of taste as opposed to better/best.

While I don't want to get all comparison crazy, the Line Magnetic LM845iA (\$4895) is also ▶



here for review and it's a classic tube integrated amplifier with little tubes, big tubes (845s) and an output transformer. Would it surprise you to learn that the LM845iA was the most full-bodied of the bunch? I didn't think so as the LM845iA sounded more muscular and rich compared to the Kora and Ayre. The LM845iA also sounds rather huge by comparison, presenting a big, bold sound image limited only by the dimensions of the Barn.

While the LM can also do delicate, the Kora edges it out in terms of nimbleness and quickness, sounding more able to start and stop on a thin dime. Don't get me wrong, the LM845iA is no slouch, but the fact of this matter is the Kora excels in this area too—the TB140 is a micro-dynamic champ. In terms of illumination—I'm nearly cringing as I write these words while looking over at the LM845iA's glowing

hot 845s but I'm committed to this descriptive, for better or worse—the LM provides a more all-over sense of glowing sonic richness. The Kora, by contrast, appears to caress every last detail in the recording with its own light. Perhaps this quality can also be referred to as a richer sense of micro-detail.

Over the weeks of playing all manner of music through the Kora TB140, I rarely thought about anything other than—what should I play next. This ability, more than any other, is the ultimate gauge of every hifi component and the TB140 passed with topology-defying presence.

## All That and Tubes, Too

Tubes. Just saying the word brings to mind all manner of sonic baggage. When people refer to that “tube sound” I often think they must not

have listened to many tube amps. That being said, I fell right into the tube trap of talking about light and illumination like someone seeing a candle for the very first time. Sheesh. Sometimes you gotta go where the feeling moves you...

The Kora TB140 delivers an addictive and rather unique presentation offering a deep dive into music's inner workings without sounding analytical or contrived. It's ability to bring music back from its recorded slumber in such a revealing and fleshy manner make it a serious contender for anyone searching for an integrated amplifier that leaves thoughts of tubes and topologies behind, obscured by music's living force. ■

**Kora Audio TB140 Integrated Amplifier | Price:** \$5250.00 | **Company Website:** Kora <https://kora.fr/en/products/>

# BROWSER

## Nº 01



### Made for Cadenza

AVM starts 2021 with eye-catching special models: The manufacturer's ROTATION turntables are delivered with the very Ortofon cartridges that were also used in the development of the tonearm. The highlight: the three models Cadenza AVM.3 Red, Black and Blue are delivered with matching lacquered special editions of the R2.3 and R5.3. Depending on the variant, the prices range between 4700 and 9500 euros.

<https://avm.audio>

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# BROW SER N° 01

## Hand screwed

Dynaudio enriches the hi-fi world with a new limited edition. The nordic beauty is called „Heritage Special“, it will be produced in exactly 2500 copies and costs 6000 Euros. The speciality of the hand-made speaker is that its not a refined version of an existing model. Heritage was created as a homage to a number of models. It borrows concepts and technologies from the Crafft, Contour, Special Twenty-Five and other models.

[www.dynaudio.com](http://www.dynaudio.com)

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# BROWSER Nº 01



## A foot that connects

Hopefully you know what a „missing link“ is. Chord’s new „Qutest System Stand“ is an example of this: it makes the components of the series stackable, makes it possible to connect the stylish miniatures and thus ensures that the „Quties“ can feel like a real family for the first time. The stack looks so cool that you would probably put it there if the small DACs and phono pres didn’t sound as incredibly good as they do. The price: around 245 euros per unit frame.

[www.chordcompany.co.uk](http://www.chordcompany.co.uk)

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# BROWSER № 01



## A real „Clinn

The Scots had already confidently announced their new „Krone“ tonearm in September. Finally the aluminium arm has been available since end of November - despite diligent preparation, they were probably not quite sure. The new arm is interesting in that Linn developed it together with Clearaudio. The crane is available exclusively for the LP12, including turntable and comfortable „Karousel“ storage, the party starts at 3450 euros.

<https://linn.co.uk>

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# THE VIRTUAL HIGH END 2020

SINCE WE WERE NOT ABLE TO VISIT ANY TRADE FAIRS LAST YEAR, WE CAME UP WITH SOMETHING SPECIAL FOR THE RECENT ISSUE OF FIDELITY INTERNATIONAL: OK, YOU'RE RIGHT— COMPARED TO THE INDUSTRY'S LARGEST TRADE FAIR IN MUNICH, OUR VERSION OF THE HIGHEND IS COMPARATIVELY COMPACT. BUT TRUE TO THE MOTTO: EXCITING NEW PRODUCTS THAT WE COULDN'T DISCOVER AT ANY SHOW THIS YEAR, WE PRESENT YOU WITH A CHOICE SELECTION OF EXCITING PRODUCTS THAT WOULD DEFINITELY HAVE DESERVED A CLOSER LOOK. OR WILL: IT MAY STILL TAKE A WHILE, BUT THE NEXT SHOW WILL DEFINITELY COME. AND NOW HAVE FUN WITH OUR HANDPICKED MINIATURE EDITION.



## Digitale Audio Systeme HD-Player Model 2

DIGITAL UNIVERSAL PLAYER ENJOYS  
THE BEST OF BOTH WORLDS

\_\_\_\_\_The Vienna-based firm Digitale Audio Systeme (DAS) takes its cue from analog music playback but makes only digital playback devices. Its products combine the sound quality of analog high-end components with the convenience of digital. The aim is to ensure nonphysical media, whether files from a hard drive or files off the internet, sound at least as vivid and enticing as vinyls. The Model 2 is designed as a fully integrated digital playback device and comprises a hard-drive player, a streamer, and a DAC, which play all of today's usual digital audio formats (PCM as well as DSD) with exceptional sound quality. The device can be controlled either the old-fashioned way by using the buttons on the front or with a

smart device. An Apple iPad is actually included in the delivery as standard, but the Model 2 is also compatible with Android devices.

The masterful engineering efforts are readily apparent in the use of exceptionally high-quality components as well as in the 20-kilogram housing construction that employs a chamber system to minimize any interference between the electronic functional units. The various sections of the HD player are galvanically isolated and boast separate power supplies to create optimum interference-free working conditions for each unit. The DAC alone utilizes three toroidal transformers. ▶





Preventing any interference is also a priority for the structural setup with the DAC configured in a dual mono setup with firmly channel-separated converter boards, galvanic isolation, and separate power supplies. That means crosstalk is never an issue. The R-2R NOS DAC chips used by DAS feature integrated current/voltage (I/V) conversion, so no external output stage is required for the Model 2. “Since eight DACs are implemented per channel; they produce sufficient power to drive any downstream equipment,” promises the manufacturer. This ensures easily keeping the signal path to an absolute minimum. All very minimalist and clever. The DAC has a fully balanced layout. But along with the XLR outputs, unbalanced RCA connections that work with high-performance Lundahl transformers are also available.

All this effort results in breathtakingly realistic, natural, and impressively three-dimensional music playback—reminiscent of the sound provided by the best analog playback devices. With its pointer-style gauges and its functional buttons, which are easy to operate even without reading the operating instructions, the Model 2 successfully manages to channel all the charm and allure of the golden hi-fi era.

The music machine’s display shows, for example, album covers, blurbs, and other information about artists and composers, all of which helps to smooth the transition from the world of analog. Anyone who has so far been wary of the idea of listening to music off the internet or from a hard drive will find the Model 2 from DAS to be the perfect partner. ■



Digita Audio System is a small-scale manufacturing company specializing in the design, development, construction, and sale of exceptionally high-quality digital music playback devices. It boasts small production runs, an impressive level of craftsmanship, and a great deal of meticulous development work.

Digita Audio System | Seilerstätte 30 | 1010 Vienna | Austria | Telephone +43 1890 70 30 | office@digital-audio-systems.com | [www.digital-audio-systems.com](http://www.digital-audio-systems.com)

## Nubert X-Room Calibration

# ONE TAP— AND YOUR BASS IS UNDER CONTROL!

Nubert's automatic X-Room Calibration can optimize bass reproduction in any listening room. The smart software already supports eight products.

They rumble, they boom, they flutter: We don't want to go so far as to say that listening rooms represent the most hostile of all enemies standing in the way of sheer undisturbed music enjoyment. But they certainly exert one of the most difficult-to-fathom influences on sound quality. There's a reason why they're referred to as the biggest component in any system. And what's more, people often find themselves helplessly at their mercy.

The uncontrollable buildup of deep bass resonance in particular can only be kept in check with masses upon masses of acoustic modules. But this remains pretty much out of the question if the listening room needs to double as a space to live in. But there is an alternative solution: With a bit of clever thinking and helpful mathematics, spatial room issues can be brought under control even without employing a truckload of absorbers. The Nubert portfolio includes a range of products (details can be found on the next double-page spread) that can be controlled using the X-Remote smartphone app. This is incredibly practical as it connects with ►



the devices over Bluetooth Low Energy (BLE), thereby saving energy and removing the need for any fiddling around to establish a network connection. As I'm sure you've already guessed, the latest version of the remote control software (1.2.1 or higher) provides access to a DSP-based room correction function. All X models made by this southwest German manufacturer are compatible, including: the nuPro XS-7500 soundbar, the nuSub XW-700 and 900 subwoofers, and the nuPro X-3000 RC, 4000 RC, 6000 RC, and 8000 RC active loudspeakers as well as the powerful yet compact nuConnect ampX integrated amplifier. Setting up the bass correction feature couldn't be easier: The calibration process is launched through the app. The smart device then analyzes the room's properties using test tones and calculates how best to correct the acoustic effects. To do this, it positions up to 10 equalizers within the

range of 20 to 160 hertz. In a last step, the specifications derived from the correction work are transferred to the loudspeakers, the woofer, or the amplifier. That's it! There's just one little catch: X-Room Calibration only works with the iOS version of the Nubert app (see info box p. 063).

If you're an Android fan, you just need to invite an Apple user over for a tea or coffee. The calibration process takes barely five minutes but has a dramatic effect. We got the opportunity to test X-Room with the ampX and were quite impressed with how much more controlled, punchy, and precise the bass sounded following the straightforward calibration process. And you don't have to feel tied down either as the app allows you to save various calibrations as presets. Its beauty lies in its simplicity! ■



The nuConnect ampX lives up to its name as it functions as the control center connecting the loudspeakers and the subwoofer. But with its 2 x 110 watts, it can also operate passive speakers and boasts plenty of inputs—including phono (MM/MC) and USB-DAC. And it's available at the affordable price of €689.

# STRONG FAMILY TIES

It's not only the automatic bass correction function that makes Nubert's X devices so special: All the siblings all get along famously.

Just think about the portfolio for a minute: A soundbar, two subwoofers, two different active floor-standing speakers, and two different active compact speakers as well as a smart integrated amplifier. How does that sound? Exactly—it's everything you could possibly need to cover all eventualities in the world of hi-fi and (two-channel) home cinema. X Connect is the name of Nubert's technology for connecting all eight components. And the best thing about it? It works without any irritating wires.

The simplest connection is between the active loudspeakers in the nuPro-X series. All four models are connected to stereo pairs without using any separate cables; in each case, one of the two loudspeakers operates as the master. The sources need to be connected to that speaker's inputs.

The partners communicate over high-bit audio, so their wireless connection is completely lossless.

Things get a little more complicated if the subwoofers also need to be wirelessly connected. This is where the nuConnect ampX comes into play as it takes on the role of the master and supplies the signals—including, by the way, phono MM and MC. The amplifier communicates between the nuPro loudspeakers or the soundbar and a subwoofer. In this case, the room correction function is only available to the woofer—and deliberately so as the frequency range from 20 to 160 hertz is ultimately its domain.

This enables the eight X siblings to cover every conceivable application: From compact teenagers' bedrooms to enormous living rooms, the Nubert devices oversee all types of environments. ▀ ▶



The four active loudspeakers in the nuPro series serve as perfect desk monitors, but can also fill entire halls with sound. The smallest of them is the X-3000 RC (price per speaker: about €645); the top model is the X-8000 RC (price per speaker: about €1,845), which boasts an impressive 840 watts per channel. The other two (the X-4000 RC and the X-6000 RC) bridge the gap in the middle. In addition to USB, they also, of course, offer analog and digital inputs as well as Bluetooth with aptX-HD.

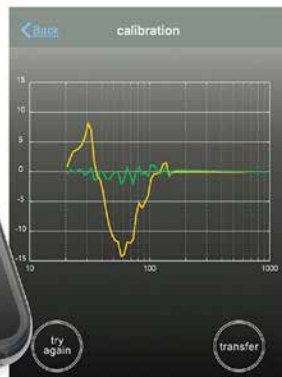




Nubert's beefy nuPro XS-7500 is a complete system wrapped in indestructibly robust housing. Its 4 x 90 watts plus 2 x 110 watts for the integrated woofers really leave nothing to be desired. In addition to digital and analog connections, the system offers Bluetooth with aptX-HD and, of course, HDMI. The price for it is €1,470.



Compact, powerful, and programmable using an app: Nubert's new depth-plumbing nuSub XW-700 (about €495) and XW-900 (about €625) can be controlled from the ampX wirelessly or the traditional way. The wireless option is more exciting though as you can place the woofers precisely where they need to go to achieve optimum performance. An encoder on the rear of the housing grants swift access to the most important parameters.



### Why only Apple?

Nubert's choice is not a matter of preference. The simple truth is that the remote control app requires a calibrated microphone to obtain meaningful and conclusive measurement results for its calculations, and only iOS devices have this. For years, Apple has been using similar microphones in its devices and passing on their relevant data to software developers. In principle, the calibration process would also work with Android devices, but the number of providers alone (HTC, Samsung, and Huawei, etc.) gives you an indication of just how diverse the range of devices and equipment used throughout the Google galaxy is ...

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Kharma Enigma Veyron 2D

# ICONIC LOUDSPEAKER HANDCRAFTED IN THE NETHERLANDS

\_\_\_\_\_Kharma has reached iconic status. The loudspeakers conceived by Dutch developer Charles van Oosterum assist countless companies to demonstrate top-end audio

electronics. The Enigma Veyron collection, the company's flagship line, encapsulates the very best of loudspeaker technology. The Enigma Veyron 2D is the product of an evolutionary

process spanning many years and truly breaks new ground in all the areas most crucial to sound quality. Early on, the developers in Breda turned to using diamond-shaped ►



tweeters that, like the mid-ranges and basses, are manufactured following an in-house recipe. The immense depth of in-house manufacturing operations is clearly paying dividends as Kharma loudspeakers have joined the elite club of super speakers. Van Oosterum's design of the housing using the resonance-free hardened panel material Panzerholz, meant he could both employ curved shapes to prevent standing waves and implement a symmetrical chassis configuration to create a four-way speaker that comes very close to the ideal embodiment of a point source. This much precise three-dimensionality and this level of accurate depth and breadth scaling are usually reserved for compact loudspeakers. At a regal height of just under two meters, the Enigma Veyron 2D is the not-so-little sister of the company's flagship speaker, the Enigma Veyron 1D, and can, thanks to its 500-watt RMS power per

channel and maximum sound pressure level of 120 decibels, unleash some serious musical hurricanes. But this masterpiece of loudspeaker architecture never loses its sophistication and never fails to demonstrate its impressive virtues (homogeneous sound quality, rich spectrum of tones, and clearly defined three-dimensionality) even at room volume.

What's more, when it comes to amplifiers the seductive hourglass-figured Kharma Enigma Veyron 2D doesn't have a wicked bone in its body: Boasting efficiency of 93 decibels and a minimum impedance of 3.4 ohms, the speaker can also be driven with tube amplifiers, which gives it a chance to paint a whole rainbow of different tones. Given its two 11-inch Omega F bass drivers, the deputy flagship model can also build up the kind of bass pressure needed for spirited drum solos as well as for massive

orchestral *tutti* sections in order to achieve an authentic listening experience. Kharma's sophisticated bass driver was, incidentally, the first ever to be designed without any iron to speak of. The carbon cage and the F-magnets prohibit any disruptive magnetic fields. The 7-inch mid-ranges, also manufactured in-house at Kharma, ensure voices are reproduced completely free from any tonal discoloration, setting new benchmarks. Kharma almost manages to square the circle with the Enigma Veyron 2D: It's a very serious speaker that exudes effortless confidence and when fed the right music transforms into a fun speaker—with an ability to get your feet tapping that just shoots right off the scale. And anyone keen on finding corresponding amplifier electronics will definitely not be disappointed with Kharma. This might just signal a successful conclusion to the search for the best-sounding system out there. ■



Kharma was founded in 1982 by Charles van Oosterum. With the company's pioneering technology and traditional craftsmanship, Kharma aims to provide music fans with listening experiences that go "beyond imagination," which, at this family-run company, also means heading away off the beaten track.

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IsoTek PSU 124

## OPTIMAL POWER SUPPLY



\_\_\_\_\_The power supply is, without doubt, one of the choke points of high-end music playback. So you're truly fortunate if your devices have at least a built-in power supply unit and a resilient IEC connector to which a high-quality power cable can be connected. The situation looks very different when a manufacturer has opted for a separate power supply unit in a bid to keep interference low. This can either work wonders or turn out to be an absolute disaster. The power supply experts at IsoTek excel in this field and recently unveiled their new power supply unit, the PSU 124. This model boasts a variable output ranging from 1 to 24 volts as well as a 12-volt power

supply. This gives users the flexibility needed to swap the power supply units they received as standard with their devices for the PSU 124 and thereby achieve new dimensions in sound quality. It's a well-known fact that clean power with stable voltage has a direct positive influence on sound quality. The team at IsoTek puts in a lot of effort to enable audible improvements to be achieved even by those who've been having to make do with the almost inevitable limitations of separate power supply units. The PSU 124 is anything but a cheap plastic box you just plug into a power outlet. It's a fully-fledged device-sized component encased in an aluminum housing that, among ►

IsoTek was founded by British visionary Keith Martin who recognized the influence a clean power supply would have on the sound quality of electronic music playback devices. IsoTek is an award-winning market leader several times over in the field of high-end power filters and power cables.

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other undertakings, helps provide protection against parasitic frequencies and vibrations. High-frequency interference is systematically suppressed in the PSU 124. The transformer windings have been shielded to minimize capacitive cross-talk between the primary and secondary coils and to prevent any stray-field emissions from occurring in the first place.

Permanent temperature monitoring ensures the inside of the PSU 124 maintains an average 20 degrees Celsius so the electronics can benefit from optimum working conditions. In the event the device starts to overheat because, for example, it was incorrectly set up, a control circuit

pulls the ripcord at precisely 60 degrees Celsius and switches the PSU 124 off until it returns to its normal temperature. The positive effect achieved with the up-grade power supply unit is similar to using a power filter; combining both devices is a good idea. The voltage setting configured at the variable output of the flagship PSU 124 model is shown on a sharp and easy-to-read display. This helps users successfully avoid inadvertently “frying any connected devices that might draw up to three amps of current. A second type of protection to counter any inadvertent mistakes is, however, in place in the form of fast-acting micro-fuses that maintain vigilance. ■



## Goya Acoustics Moajaza

## THE FUTURE IS WIRELESS

\_\_\_\_\_ The future has already arrived at Schmidt Acoustics in Marpingen in the German state of Saarland. The Goya Acoustics Moajaza is a prime example of how smart wireless technology can be used to create an active super loudspeaker. Inside the 1.24-meter-tall, 28-centimeter-wide, and 45-centimeter-deep housing lies a sophisticated three-way design: The 30-millimeter Accuton black diamond tweeter, the 16.8-centimeter-diameter Accuton ceramic mid-range, and the three Accuton basses in an aluminum sandwich construction are driven by class-D electronics. The Goya Acoustics Moajaza tackles any disruptive vibrations by employing a housing made from mineral-organic

material. This results in a reassuringly solid weight of about 100 kilos per speaker.

The inner workings are also of the highest quality, with the Goya Acoustics Moajaza boasting a room audio processor that both ensures optimum room correction and guarantees interruption-free playback. This loudspeaker does, of course, feature DLNA and Airplay and is Roon Ready. The manufacturer relies on its in-house-developed PLC wireless technology here so each loudspeaker requires nothing more than a power cable for it to stream music in high-resolution quality. ►



Fans of analog sources, from turntables to tape recorders and tuners, will find a corresponding high-level input. Those who prefer digital sources can make use of the Goya Acoustics Moajaza's DAC, which also handles high sampling rates as well: The door to "hi-res audio" has been blown wide open. Streaming in several rooms is also a breeze with the Goya Acoustics Moajaza.

To ensure the magnificent sound quality doesn't fizzle out en route to the listener, an amplification solution was chosen that's

bound to be a sure-fire hit: The 1,500 watts per class-D structure ensure even high levels and hefty pulsating bass frequencies are reproduced without any distortion. The experts at Merlin are responsible for the internal wiring, and "RevOpod" feet not only ensure a stable setup but also decouple the Goya Acoustics Moajaza from any impact and structure-borne noise. The loudspeaker is available in black or white with a refined sand-blasted or piano high-gloss surface finish. Two special finishes are currently under development. ■

Goya Acoustics/Schmidt Acoustics & Trading GmbH is an owner-run company set up in 2018–19 in Marpingen in the German state of Saarland. Founder Sebastian Schmidt is a qualified audio engineer and spent three years working in production at loudspeaker manufacturer Accuton. He founded the company together with his father, Hans-Joachim Schmidt. The Goya Acoustics Moajaza is an all-in-one system.

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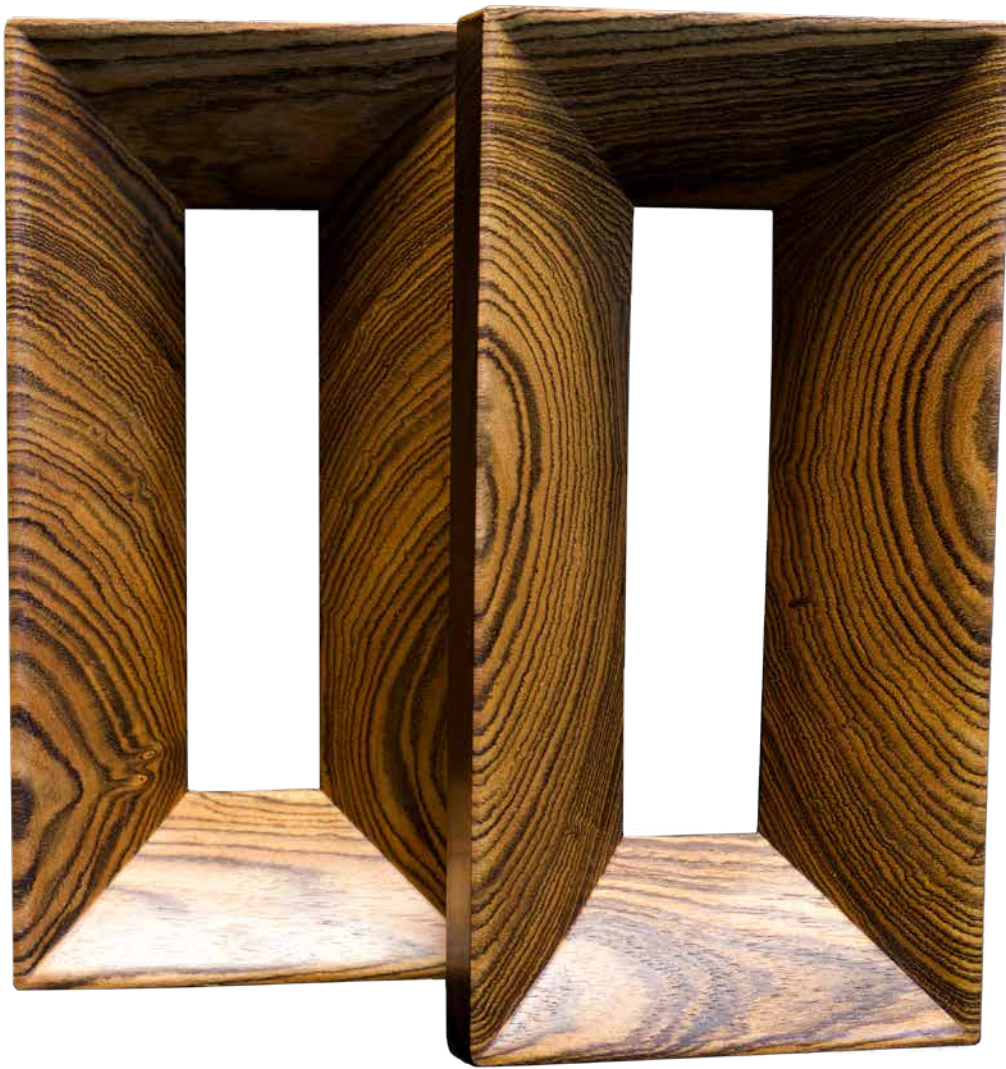
SoundSpaceSystems Pirol

# ACTIVE ALL-ROUNDER



—— If the requisite features for a super loudspeaker encompass 120 kilograms per speaker owing to a ceramic core, partially active principle with robust power amplifiers for the bass, and room correction by means of a DSP (digital signal processor), then the SoundSpaceSystems Pirol has it all. This is a speaker that boasts all the advantages of the horn principle without any of the disadvantages, thanks to the partially active control.

Generally speaking, enthusiastic fans of classical music should be just as happy with this slim floor-standing speaker—available in a selection of colors ranging from a piano finish through to bright blue—as jazz, pop, and rock fans. The Pirol's sensitivity of 97 decibels makes it the ideal partner in crime for tube amplifiers: They can manage to coax vibrant tones and subtle musical details out of this loudspeaker. ▶



SoundSpaceSystems was founded by physicist Dr. Michael Plessmann, who has had a passion for music and audio systems for almost 50 years. The intention behind the loudspeakers designed by this Berlin-based think tank is to combine music, hi-fi playback systems, and technical perfection to provide the listener with an experience every bit as good as the real-life performance.

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The manufacturer promises a truly deep bass that reaches down to as low as 20 hertz generated from a three-way system whose two 30-centimeter bass drivers fire to the sides in push-push operation (impulse compensation). Agility and an impressive dynamic range are the name of the game here: Designed in Berlin, the Pirol is, in the literal sense, a “fast” speaker yet one that doesn’t lack in subtlety—a speaker truly made for the playback of hi-res media.

The tractrix horn assigned to the ribbon tweeter–mid-range works with perfect timing, creates exceptionally stable spaces, and achieves very clean placement of individual sound events. The horn driver also draws on the open baffle principle, which helps minimize distortion. The real crowning glory is the air motion transformer (AMT) ribbon tweeter, which enjoys legendary status in high-end circles: It ensures an extremely delicate and always sophisticated treble while

also reproducing the presence range with pinpoint accuracy using the paper cone mid-range (with prechamber). A rear-firing ribbon supports the AMT tweeter at the highest echelons of the frequency range. Transparency, meticulous reproduction of details, and a total absence of any compression effects were the main development goals; an extremely minimalist crossover design is the unique selling point.

Measuring 1.24 meters tall, 44 centimeters wide, and 48 centimeters deep, the SoundSpaceSystems Pirol is still a suitable option for living rooms. You don’t need a lounge the size of an industrial production hall. And you won’t find any sharp straight edges here—standing waves don’t stand a chance. What’s more, the developers have drawn on ancient Greek music theory and the principles of feng shui. A solid foundation for creating a commanding all-rounder. ■





### WBT PVD PlasmaProtect™ Connectors

# HIDDEN REVOLUTION

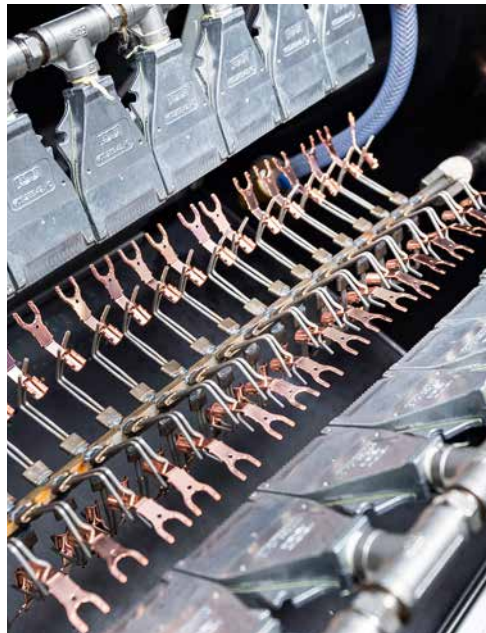
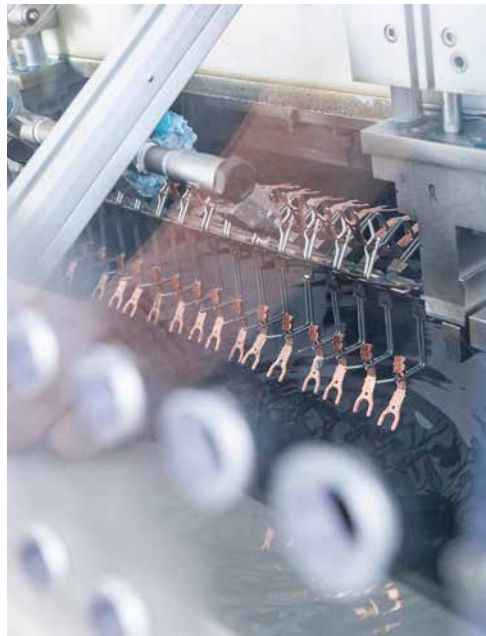
\_\_\_\_\_ Last year, WBT unveiled one of the most exciting developments in the world of audio technology—and it's practically invisible to the naked eye. This plasma coating has all the hallmarks of a revolution. But you don't need the best hearing in the world or a scientific test setup to be able to pick up on the clear improvement it provides in terms of sound quality. PlasmaProtect achieves greater reproduction precision and ensures more clearly defined sound events. It's like taking an

already beautiful photo but magically conjuring up the power to make the image a whole lot sharper. One of the first manufacturers to make the clear switch from WBT's nextgen connectors to the new plasma version was cable guru Hans M. Strassner. His HMS cables enjoy an excellent reputation not only among high-end fans but studio professionals as well. Any stereo chain featuring HMS cables and plasma-coated WBT connectors will sound much more "to the point" and will dish out a

crisper bass and a more refined treble, while the device connections fade into the background to allow the music itself to take center stage. In a direct comparison, it feels almost as if a curtain hanging in front of the loudspeakers were suddenly lifted when the "plasmas" got their turn to shine.

PlasmaProtect signals the end of traditional electroplating at WBT. Instead of using conventional gold-plating baths that give ▶





the copper components of the connectors and jacks a corrosion-resistant coating, the manufacturer now carries out the gold-plating using PVD plasma technology. PVD stands for "physical vapor deposition," and it's a cutting-edge type of nanotechnology: After being carefully cleaned in the high-current polishing bath, the unfinished parts enter a vacuum reactor that coats them with gold atoms by means of a plasma spray. This not only optimizes the sound properties, it also makes WBT PlasmaProtect connectors and jacks extremely hard to counterfeit: The hordes of copycat companies out there are keen to imitate

what WBT has achieved, but fail miserably at carrying out the sophisticated and tricky coating process.

If you compare a connector coated using PlasmaProtect with a counterpart coated using conventional electroplating, you'll notice the coating of the PlasmaProtect connector is significantly more homogeneous. And the reward in terms of sound quality? Even hi-res chains gain an impressive amount of extra detail so that even very familiar recordings sound fresh, new and, in the best sense possible, unusual. With PlasmaProtect connectors, you

feel like you're listening to many recordings for the very first time and you get to rediscover old favorites. ■

WBT stands for Wolfgang B. Thörner who founded his innovative company in 1985, thus heralding the end of cheap connectors. A whole host of renowned consumer electronics manufacturers use WBT products "ex works."

**WBT-Industrie Elektromechanische Produkte GmbH** | Im Teelbruch 103 | 45219 Essen | Germany | Telephone +49 2054 8755250 | sales@wbt.de | [www.wbt.de](http://www.wbt.de)



## HiFi Rose RS150

# INTUITIVE SUPER-SOUNDING STREAMER

\_\_\_\_\_ You can safely forget about having to navigate your way through confusing menus, be proficient in several programming languages, and sign up with no fewer than five music portals in the hope your new streamer will be able to “talk” to at least one of them if you opt for the new RS150 from Korean high-end manufacturer HiFi Rose (part of the Citech Group). Compatibility and the capacity to meet future requirements are just as important as impressive user-friendliness for this device, which has been designed with hi-res playback firmly in mind. Anyone who is *au fait* with using a smartphone won't have any trouble with the RS150, not even for a split second, thanks to its well-thought-out operating structure and high-resolution touchscreen display.

The beating heart of the neatly designed RS150 is the new Verita DAC (model number: AK4499). It can deal with PCM sampling rates of up to 768 kilohertz/32 bits as well as DSD of up to 22.4 megahertz. A signal-to-noise ratio of up to 123 decibels means that the AK4499 currently ranks as one of the very best out there.

The electronic components crucial to sound quality are carefully separated in the RS150 to reliably prevent any reciprocal influence and, as a result, any impairment of the sound quality by stray (high) frequencies. A large toroidal transformer ensures the RS150 is never “brought to its knees” by any application. After all, the slim streamer not only ▶



processes high-resolution audio signals but also video files up to 4K format. The rear of the RS150 features a many different types of connections. High-end fans will notice a range of balanced connections for analog inputs and for the digital AES/EBU input and output on top of USB and HDMI connectors and a slot for MicroSD cards—maximum freedom from interference followed by a generous selection of connection options are the stand-out features here. The touchscreen display on the front of the RS150 can play videos and show video previews in addition to allowing users to operate the device without having to connect an external screen. The HD streamer can be wirelessly integrated into the user's home network.

The RS150's super-solid aluminum housing sits on multilayered absorber feet. The team in Korea is proud of the pristine stats of this

device, which boasts excellent noise performance, linear frequency responses, and precise channel balance. The real icing on the cake though: You can even rip CDs with the RS150 and operate it from your smartphone. The open system architecture means that, where necessary, the RS150's software can be updated to meet the latest requirements imposed by music and video portals. The future of streaming is a blossoming rose. ■

Based in Seoul and a member of the South Korean high-tech company Citech Co, HiFi Rose is a firm specializing in the production of HD streamers and other digital sources.

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## MUTEC REF10 SE120

# PERFECT TIMING!

—Clock generators are immensely important in digital signal processing as jitter can significantly impair the listener’s enjoyment of the music. In 2017, Berlin-based MUTEC unveiled the REF10, a reference clock generator that became hugely popular among music professionals and audiophile home users alike. Suitable for use both in professional studio environments and as part of high-end playback chains, the REF10 reference clock boasts exceptionally low phase noise and significantly improves playback quality.

Holding true to the old adage “there’s always room for improvement,” the MUTEC developers decided to tinker with their digital clock again and have now launched the “beefed-up” REF10 SE120. From a metrological perspective, the new version actually manages to surpass the REF10.

All this was possible thanks to the use of an even more sophisticated and carefully selected oven-controlled crystal oscillator (OCXO) that was chosen after hours and hours of testing ▶



employing high-precision metrology. At  $-120$  decibels relative to carrier (offset: 1 hertz from the carrier frequency of 10 megahertz), its phase noise is incredibly low and responsible for a significant increase in the precision, transparency, three-dimensionality, and dynamics of the sound profile.

The improvement is audible even with a hi-fi chain comprised of only the very best components. ■

## The MUTECH REF10 SE120's capabilities at a glance:

- A 10-megahertz reference clock generator with extremely low phase noise of  $-120$  decibels relative to carrier at 1 hertz
- Very carefully selected oven-controlled crystal oscillator (OCXO) with incredibly low noise levels as a clock base
- Rectangular output signal with extremely steep slope for incredibly precise synchronization of the receiver
- For maximum compatibility with various manufacturers' audio devices, 50-ohm and 75-ohm outputs that can be used in parallel
- Eight galvanically isolated, individually switchable outputs
- For every part of the circuit, extremely low-noise voltage supply optimized into the subfrequency levels
- Integrated, high-quality linear power supply (for international use)
- Highly efficient power input filtering
- Streamlined, intuitive, and straightforward user interface
- Rack-mountable with optional mounting set for studio use (two rack units)
- MUTECH provides a three-year manufacturer's warranty for the REF10 SE120. The recommended retail price is €5,498. The clock generator is available now.



Founded 30 years ago, MUTECH is well known primarily in the world of professional audio production for its clock generators and digital audio devices. MUTECH's audio clocks draw on the proprietary 1G clocking and reclocking technology also used, for example, in radio stations. The Berlin-based company has also been making products targeting home users for several years now.

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## Elac Concentro S 509

## FROM THE TOP DOWN

Concentro is for ELAC what Lexus is for Toyota and Maybach is for Mercedes. Concentro is the Kiel-based company's top-of-the-line brand. ELAC launched the organically designed original Concentro to commemorate the company's 90<sup>th</sup> year in business, and it remains a statement piece in many respects. It is, of course, a design piece. But it's also a hive of technology, wonderfully combining all the ELAC attributes such as the patented "JET 5" tweeter-mid-range coaxial chassis and the crystal-shaped bass diaphragms in a housing that weighs over 150 kilograms and boasts stunning craftsmanship. Just under two years ago, ELAC followed it up with an almost identical-looking but slightly more "manageably sized" model, the Concentro M, that still weighed in at a hunky 90 kilograms. It became clear at this point that the Kiel-based company was establishing its own premier league and eventually a whole team of Concentro players would be on the playing field.

Next came the Concentro S 507 that, on account of its shape and design, headed off in a different, yet still distinct direction. Unlike its two larger teammates, the Concentro S dares

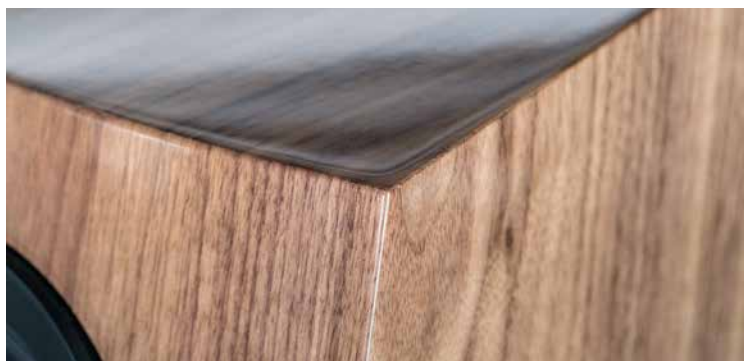
to have some "edge" and makes a unique visual impact with its slightly backward-tilted and tapered frame. ELAC has now unveiled its new teammate, the S 509. The company's 500 series, which has made a real name for itself and established firm roots, has now become an integral part of the Concentro team. A bottom assembly, which the product designers say creates a "high heel" effect, accentuates the new models' striking look. You'll immediately notice it as soon as you catch a glimpse of a Concentro S from the side. In any case, this provides complete stability and ensures the loudspeaker is efficiently and effectively decoupled from the floor underneath.

The Concentro S 509 does, of course, also feature the sophisticated Step X-JET coaxial driver in the center of which the new JET 5c foil tweeter gets to work. The aluminum mid-range chassis is configured as a ring radiator. Its dispersion characteristics can be modified by means of magnetic aluminum rings (known as "directivity control rings" or "DCRs" for short). This alters the ratio between direct sound and diffuse sound, thus enabling users to

make adjustments in line with their own room acoustics and hence find the optimum listening distance.

The "large" Concentro is also not the first model to feature the crystalline-shaped bass-mid-range driver. The compound chassis made from aluminum and cellulose remains very lightweight yet extremely rigid, in the process ensuring impressive dynamics with minimal distortion. To help it reach the very lowest frequency ranges, the Concentro S has four 18-centimeter-diameter woofers in push-push-pull-pull configuration that work with a downfiring bass reflex tube to provide the user with plenty of flexibility in terms of where they can position the loudspeakers in the room.

A modern high-end floor-standing speaker with a timeless design, the Concentro S 509 leaves nothing to be desired in terms of technical features and is every bit as impressive as its larger teammates. At the same time, though, it doesn't come with the same kinds of requirements in terms of room size. This means the wonderful world of Concentro sound quality will now be accessible to a wider audience. ■





ELAC celebrated 90 years in the business back in 2016. The Kiel-based company is predominantly known these days for its loudspeakers, but it actually initially began with the development of sonar equipment in 1926 before launching its first turntable, the PW1, in 1948. ELAC subsequently made a name for itself on the turntable market, and in the 1960s and 1970s added electronics to its portfolio. This even included designer radio alarm clocks, which continue to exchange hands among their fans even to this day. It wasn't until the start of the 1980s that ELAC began properly developing loudspeakers, and in 1985 it unveiled its legendary 4 Pi chassis, which the company has continuously redeveloped ever since then. In 1993, ELAC launched the first JET tweeter, still the trademark feature of all its top loudspeakers.

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Höffner H10 loudspeaker

# EXCEPTIONAL HANDCRAFTED LOUDSPEAKERS FROM AACHEN, GERMANY

With its timeless design, the H10 two-way active loudspeaker can't fail to impress you as soon as you lay your eyes on it. The inside of the main body is, of course, elaborately reinforced and designed to prevent standing waves right from the outset. The stands manufactured with 10-millimeter thick aluminum integrate with the loudspeaker housing made of smoked or natural oak to form a unified look. The stands also allow the user to arrange the loudspeakers to perfectly accommodate the listening position. The customer may specify the color of the loudspeaker housings, stands, and loudspeaker covers.

Although the speaker features a two-way bass reflex design, the H10's baffle boasts three chassis: A 17-centimeter diameter bass-mid-range with a powerful and precise long-stroke drive and sandwich diaphragm shares the top part of

the housing with a 26-millimeter textile dome boats enormous frequency response linearity and zero resonance. The lower beveled section of the baffle features a 22-centimeter-diameter passive diaphragm. This supports the bass range as well as the perfectly timed playback; and since it's located on the front of the speaker, the H10 can be placed near a wall.

A class-D amplifier unit in each case provides 2 x 250 watts of power per speaker for the H10's dynamic and thrilling musical performance—with enough reserves for huge shifts in dynamics and powerful thrust as well. An active amplitude, phase-optimized DSP crossover distributes the frequencies to the different chassis. This ensures realistic spatial reproduction and provides an authentic-feeling musical experience with impressive attention to detail. Three presets on the amplifier unit provide the

user with acoustic room correction options. For a reasonable surcharge starting at €400, Höffner will send a technician to adjust the H10 to the specific acoustics in your room.

In terms of inputs, the H10 boasts the following: analog unbalanced and balanced inputs as well as AES and S/PDIF coaxial connectors. You can order the “development-stage remote control” if required, allowing you to adjust the volume, select the input, and choose the room correction preset all from the comfort of your sofa instead of having to go over to press the buttons on the loudspeaker.

The development, design, and craftsmanship are all Made in Germany. The price for a pair of these exceptional and technically ingenious loudspeakers, including the loudspeaker stands, is €9,450. ▶







Höffner Audiosysteme was founded in Aachen, Germany, in 2006, however the story behind the company dates back much further than that: Having grown up in a home where music was revered (his father produced professional concert recordings), Markus Höffner developed a love for high-quality music playback at an early age. His own creations using a variety of different loudspeaker concepts were both his passion and hobby. They proved so popular that he began to develop customized loudspeaker systems to meet customers' personal requirements.

These days, the team at Höffner Audiosysteme consists of engineers, constructors, and designers who create loudspeakers for music fans who demand authentic music playback. The current product portfolio comprises two ranges of models: H1 (passive or partially active), H10: (active or passive)

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ACCUSTIC ARTS AMP IV and more...

# NEW AMPLIFIER HEAVYWEIGHTS UNVEILED

ACCUSTIC ARTS recently announced the launch of two new high-performance amplifiers based on the company's very own "classic," the extremely well-regarded stereo power amplifier the AMP II. The AMP IV is a bridgeable stereo output stage that is systematically configured as a dual mono power amplifier.

This means each of the two amplifier stages, from the voltage supply to the amplifier boards, is constructed completely separately. This guarantees optimum channel separation and maximum signal-to-noise ratios. Very short signal paths and a wealth of hand-picked components are par for the course at ACCUSTIC ARTS. The AMP IV also serves as a

current-controlled power amplifier, demonstrating a high current delivery capacity in all situations thanks to a whole army of MOSFET transistors. This also makes the AMP IV especially well suited to operating low-impedance or impedance-critical loudspeakers. The sophisticated circuitry of the "current mirror" also means that no servo controllers for the DC offset are required in the new generation of power amplifiers, as DC voltage errors and music signal errors are corrected simultaneously and effectively.

The company specializes in switchable damping factor linearization, a well-known feature of the AMP II. The prevailing opinion says a high ▶





damping factor is beneficial for controlling the loudspeaker but at the same time also has a negative effect on its decay behavior. According to ACCUSTIC ARTS, the best solution consists of positioning the damping factor within a defined range that is ideal for the loudspeaker and to ensure it is broadly linear. This enables the best possible relationship between the loudspeaker's control and decay behavior to be achieved in terms of the resulting sound quality.

ACCUSTIC ARTS Managing Director Joachim Voss says the new stereo and mono power amplifiers feature, "completely redeveloped electronics including new transformers," adding: „This means the output stages are even more powerful and even more musical than their predecessors and can control loudspeakers with two ohms or less without any problems.” ■

Made up of an amalgamation of the words Accurate Acoustic Arts, the company name ACCUSTIC ARTS is fabricated. Among the employees of this high-end, small-scale manufacturing company located in the southwest German town of Lauffen, accuracy and precision hold a sacred status. This not only relates the craftsmanship carried out exclusively in Germany, but also manifests in the choice of exceptionally high-quality technical components and the meticulous product testing of each ACCUSTIC ARTS device prior to delivery. The tests can take as long as two weeks to complete, but this ensures customers are guaranteed nothing but the very best. The company's goal is "Absolute Sound Fidelity Through Reproduction," an aim reflected in the natural and highly detailed emotional sound profile its equipment achieves. "Warmth in the sound profile is desirable," says Voss, but is "not tolerated in the form of artificial gimmickry." This is a challenging balancing act that ACCUSTIC ARTS products always master convincingly.

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# OUR STORY, OUR TRADEMARK.



# solidsteel

HI-FI RACKS, SPEAKER STANDS, WALL-SHELVES AND FURNITURE

 MADE IN ITALY SINCE 1990

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Innuos Statement

NEVER  
LET ME  
DOWN  
AGAIN

By Carsten Barnbeck. Photography: Ingo Schulz



innuo  
**S T A T E**

os  
M E N T



"INNUOS STATEMENT" SOUNDS LIKE AN EXTREMELY PROMISING NAME. AND WHEN PUT TO THE TEST, THIS HEFTY SERVER NOT ONLY PROVED IT'S WORTHY OF SUCH A NAME, IT ALSO SURPRISED US WITH SOME OF THE INNOVATIVE AND LOGICAL APPROACHES TAKEN IN ITS DESIGN. A MUSICAL TOUR DE FORCE WITH AN UNUSUAL SOURCE SETUP.







\_\_\_\_\_Tssss.—and with a soft purring sound, the first CD disappeared into the server’s designated slot. Just a few minutes earlier, I had found myself downstairs in the cellar rummaging through various moving boxes, frantically trying to put together a representative pile of optical media. I hadn’t seen sight nor sound of any physical vinyls or discs for years with the exception of a modest yet select record collection. I looked at the iPad for a second and wondered why the display wasn’t giving me with any feedback or asking me what the drive should start doing with the shiny disc. I was at the point of wanting to dive deep into the device’s setup structures when I picked up some quiet but familiar sounds...the ripper was starting without any input from me. A few minutes later, I heard another “tssss” as the device spat out the CD, which was still warm to the touch.

I repeated the process around 20 times, a task that, to my surprise, took scarcely two hours. Still, I didn’t detect so much as a whiff of superficiality or flippancy about the whole thing. The Statement can even handle discs that have taken a real battering. For just such occasions,

I always keep a handful of discs on hand that have had a chance to “mature” over the years in various car CD changers. Countless such devices have thrown in the towel when confronted with such a bruised and battered pile—and who could really blame them? The Innuos, on the other hand, took its time and read these discs, too, with uttering any complaints at all, although I didn’t have too many high hopes for the results. After all, it’s not a magician.

“We had plenty of opportunities to optimize our software,” explained the colossal device’s creator, Nuno Vitorino, the next day during a telephone interview in which I fired off questions while sitting in the Ismaning, Germany, editorial team’s office and he answered from the comfort of his office at home in Portugal. The Statement’s intelligence and routine processes are deeply rooted in the custom-made “innuOS” operating system, which the manufacturer has been refining, polishing, and improving ever since the company was founded back in 2009. Once the server has recognized a medium, it consults a whole range of prespecified online databases, browses through FreeDB, MusicBrainz, Discogs, and GD 3 looking for

identical, contradictory, or additional meta tags before then makes all the decisions itself. It has an impressive success rate, I later found out. The tags both matched and were detailed. Only the genres involved a bit of tweaking here and there—but, hey, we each have our own ideas and opinions when it comes to that topic. After all the tags had been found (in a matter of just a few seconds), the server started the ripping process without losing a beat, stripped the binary data from the optical medium at the perfect speed, converted the bit-perfect PCM signal into the desired audio format, and stored the lossless copy of the CD in its SSD memory.

The basic version of the music computer boasts 1 terabyte, which is sufficient for around 2,000 uncompressed (WAV or AIFF) albums. In FLAC format, which was preset for our test device, you can save an additional 30% to 40% of memory space, allowing you to store the content of up to 2,800 CDs. But if that’s still not enough, fear not! The manufacturer’s flagship model boasts up to 4 terabytes—and even that amount of storage capacity can be expanded in various ways. I have previous experience with the highly respected TEAC drive and ▶

“Please don’t separate them!”: Ripping server and power-supply unit together form a visually cohesive whole and work exceptionally well without any isolating rack shelves in-between.





even own some external USB versions. It's known for being solid, durable, and extremely accurate. The version in the Statement is not, however, the standard model, but rather the industry-grade spin-off version issued to OEM partners. This drive was even a little more feisty, Vitorino informed me and, most especially, so readily available that, if necessary, it could still be replaced even years down the line. At the end of the optical era, this is nothing to scoff at. The drive is also a shining example of the server's many well-thought-out details.

But before we take a deep deep into other intricate details, I have something to confess: I was rather pleased with the sound quality achieved from my ripping experiments. I have around 6,500 CDs stored in my cellar, which, over several sittings, I've copied to hard drives using various drives and programs and now comprise my primary source for music. They involve several years of blood, sweat, and tears that I'd be reluctant to repeat if it turned out the Statement would be an altogether superior beast. And, of course, my fears were confirmed: Later while listening and comparing tracks, I had to admit that the Statement works brilliantly and

really lives up to its name in terms of reading discs and archiving tracks. The sound came across slightly more vivid and transparent than with my own hard drive and seemed more composed. I was, however, saved the dilemma of considering the launch of a new all-out ripping attack as the server's main strength actually lies elsewhere:

While the Statement was still busy reading my CDs, I discovered an entry in the remote interface for supported web services—the server's streaming bridge boasts internet radio, Tidal, Qobuz, and Spotify playback. I quickly entered my Tidal account details and launched a random list using a second app, which I'll explain in more detail later. As luck or fate would have it, I not only ended up with a perfect description for my first impression of listening to the device but also got a fantastic headline for this article: The first song the Innuos server graced my ears with was Depeche Mode's "Never Let Me Down Again" from their album *Music For The Masses*. The resonant guitar compressed beyond all recognition that features in the track's intro conveyed such a phenomenal impression of depth, managed to fill the room so well, and sounded so engaging that I was left speechless.

I pressed "Play" again to relisten to those precious two or three seconds I just described. Anyone who knows that track will be able to imagine how direct, vivid, and amazing the hammering kick drum, the lashing snare drum, and the fanfare-like sampler sound that immediately follows came across. The music was expressed so naturally and freely in the room—as if no speakers or system were involved. Shortly after, I also activated Qobuz and bathed in the sounds from the high-resolution version of the first Black Sabbath album. Although musically speaking it might not be to everyone's taste, the Brits' debut album is, for me, one of the best-produced rock albums of all time. The guitars featured in the epic final track "Warning" brushed against my ears from left and right yet seemed to emanate from outside the room, while Mr. Osbourne, sounding super focused and crystal clear, stood front and center stage. If I've ever, in any of my tests, incorrectly asserted that, from a sound-quality perspective, online streaming is in any way inferior to physical media, then I hereby revoke that statement with three exclamation points: !!! I have never heard Qobuz or Tidal sound so fascinating, natural, or thrilling. ▶

Separate but not isolated: The hefty power-supply unit (right) contains the transformer and the preparatory filtering. The eight actual power rails are located in the server (left), where they have been stowed in two clear-to-see phalanxes at the edge of the housing—this means ensuring both short paths for the low active currents as well as appropriate distance to the server components.





## The hard hardware of it all

“Bingo!” exclaimed Vitorino, congratulating me as I told him about my experience. He confirmed I had done exactly the right thing by starting off with an online streaming service as it was the only way to discover all the great features the hardware has to offer. Let’s look at this in more detail:

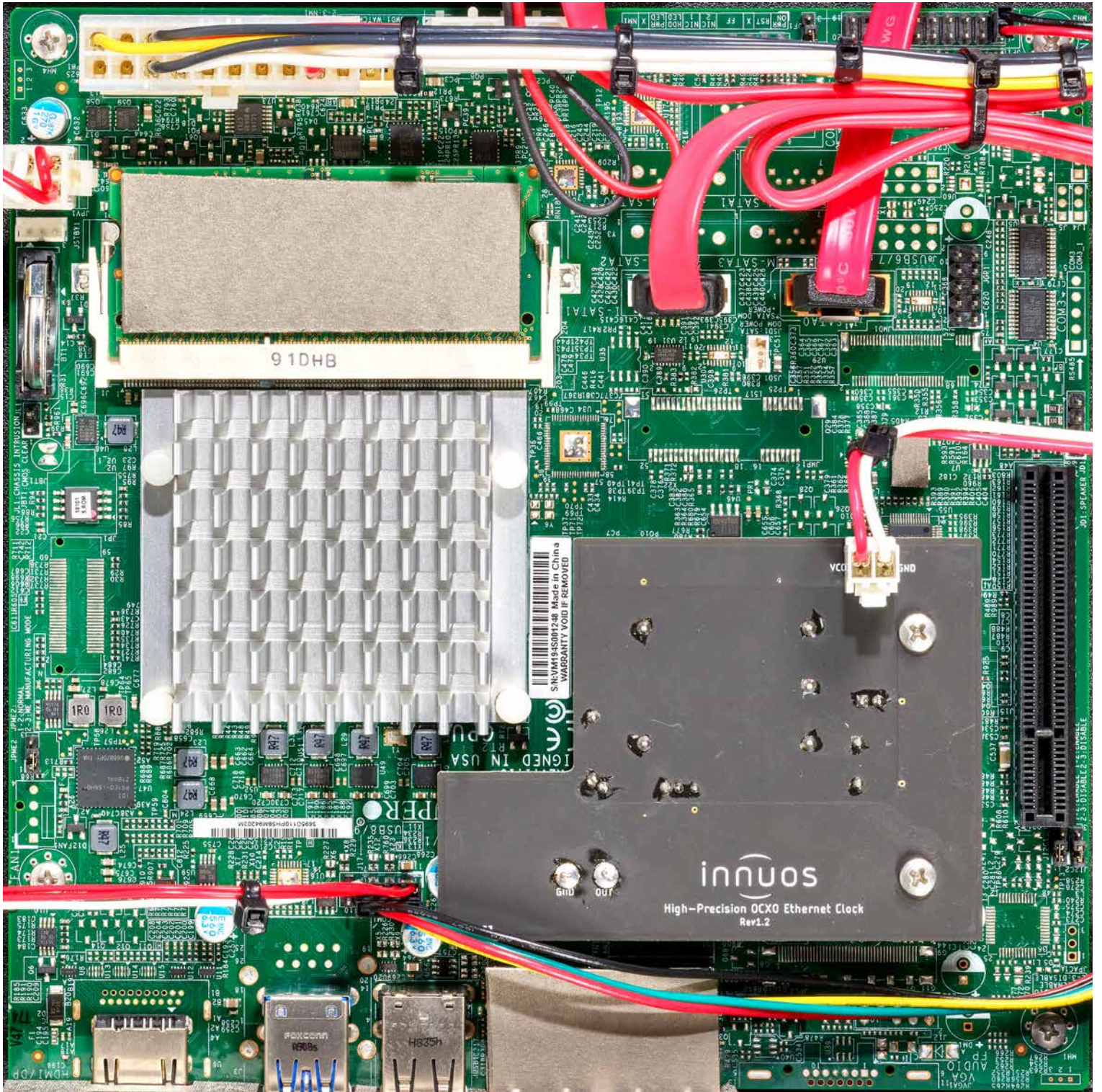
The Statement is divided into two housing units, which prompted me to pose a specific question right at the start of our interview: The standard connection cables supplied with the device are very short, so I wanted to know if longer versions were available that would allow me to place the components on separate levels of my rack. “Yes, they’re available, and they can be ordered. But please don’t!” he responded, a surprising sense of urgency in his voice. Apparently, the housing units have been specifically designed and harmonized so their thick front panels would feature a complementary line. One should therefore be placed directly on top of the other in order to achieve the desired visual effect. What’s more, the fact they’ve been split in two has absolutely nothing to do with vibrations so you can safely cast aside any audiophile concerns. The aluminum walls of

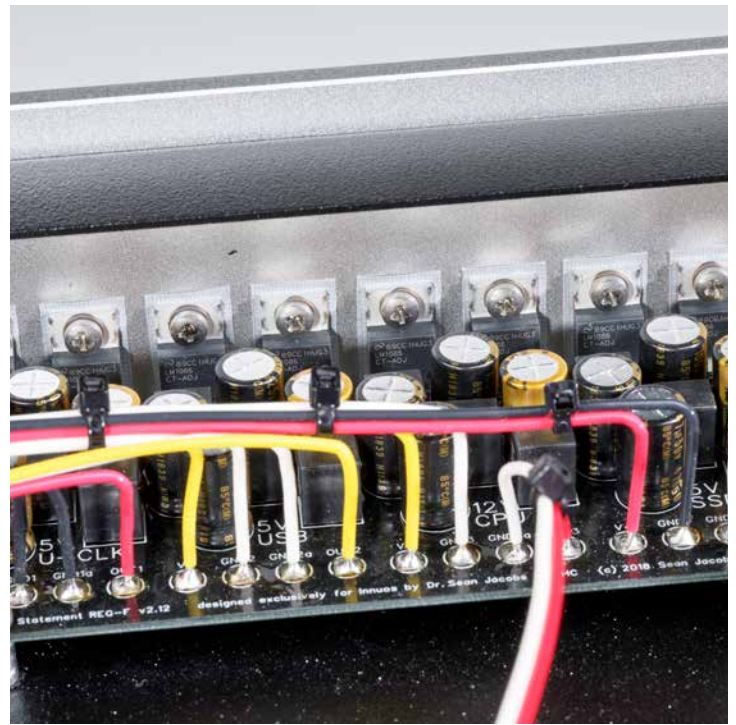
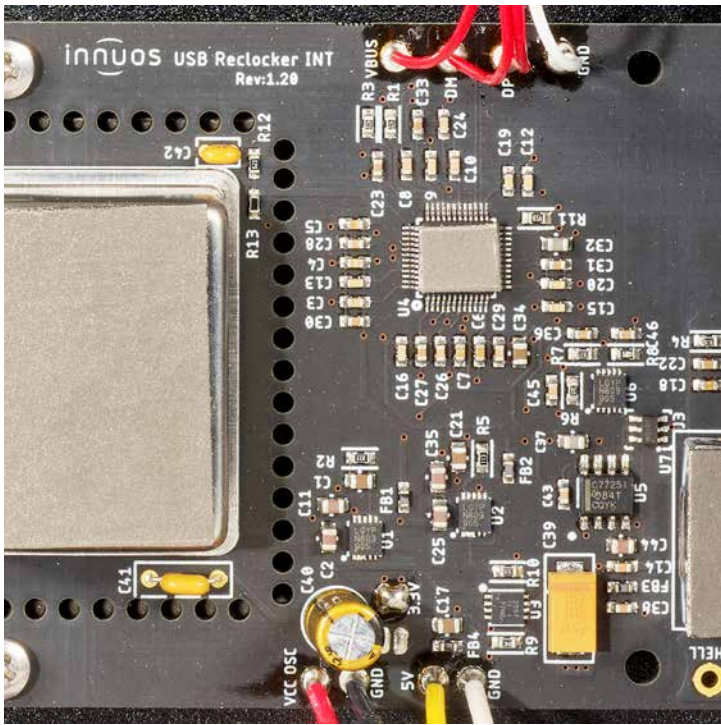
both device chassis are 10 millimeters thick with asymmetric isolation feet also helping. This brings the total weight of the Statement to a solid 22 kilos. Absolutely nothing’s going to rattle, vibrate, or resonate there—guaranteed! The bottom and decidedly heavier device contains eight separate transformers, which remain deliberately unfiltered. The power is transferred over the aforementioned cables into the server’s main unit. Here’s where you’ll find eight filtered power rails located on (or, better still, “in”) the components they feed. With this approach, the comparatively low active currents no longer have to cover any distance, which, in turn, reduces any susceptibility to interference. The motherboard alone has four supply cables. The other components that benefit include the USB output, the SSD hard drive, and the reclockers for both the USB controller and Ethernet controller.

This design aims to not just achieve clean, discrete power, but, above all, “the suppression of EMI” (electromagnetic interference); and thanks to the design, the hefty transformers do not disturb the more sensitive signal-processing components. And even more crucially, the high-frequency (HF) noise from the built-in computer doesn’t negatively impact the transformers as the filters also work in the opposite

direction. Vitorino doesn’t think much of separately enclosing individual components, which he says confines HF noise within the components to a certain degree. He prefers to prevent dispersion from the outset. In a bid to minimize HF noise, Innuos has its own small-batch series of motherboards manufactured, which must cost a fortune. They’ve been slimmed down and pared back wherever possible and what’s left is a powerful Intel quad-core CPU (N4200) with corresponding (8-gigabyte) RAM as well as a network controller and a USB controller. And that’s precisely where the hardware’s next impressive feature can be found: Both controllers have been additionally fitted with ultra-precise OCXO clocks (by separately enclosing temperature-stabilized crystals) that reclock the Statement’s LAN input, USB line tap, and signals as well as clean up any jitter and interference. In the case of online streaming, both reclockers work on the signal, first at the LAN input and in the end at the USB output, which was usually connected with Auralic’s Aries G2 during my testing.

In addition to its Ethernet port, the Statement also possesses two main line taps for audio components: One (LAN) is reserved for a streamer that’s addressed over a built-in ▶





It looks like a normal motherboard (left-hand page), but in fact it's custom-made: Innuos has the motherboard produced in a streamlined small-batch series. Anything to do with redundant or superfluous processes (graphics or sound or the like) is removed by the supplier. This page features a few wonderful insights into the superb craftsmanship that goes into the luxury device.





mini-switch expressly for that purpose. This ensures the home WLAN router doesn't get in the way of the signal path, and the other (USB) can communicate directly with DACs. The Statement accepts "class-compliant" devices and should therefore work seamlessly with most DACs. The server can certainly supply data over its LAN input to other streamers dispersed throughout the network—and achieve excellent quality, too. In addition to UPnP and DLNA, the server also supports Sonos's ever-popular Multi-Room protocol. Additional USB ports are provided for memory expansions. They accept every type of hard drive with any amount of capacity. A particularly fast USB 3 port is also provided for backups, also making the server state of the art in terms of the logical separation and allocation of its connections.

## System operation

The manufacturer splits control of its innuOS in two. The first half is located directly within the Statement itself. If you type "my.innuos.com" into any web browser, you'll be taken straight into the clearly laid out tabular back end. This is exceedingly practical as it allows you to configure your sometimes complex settings on a computer's large monitor. The

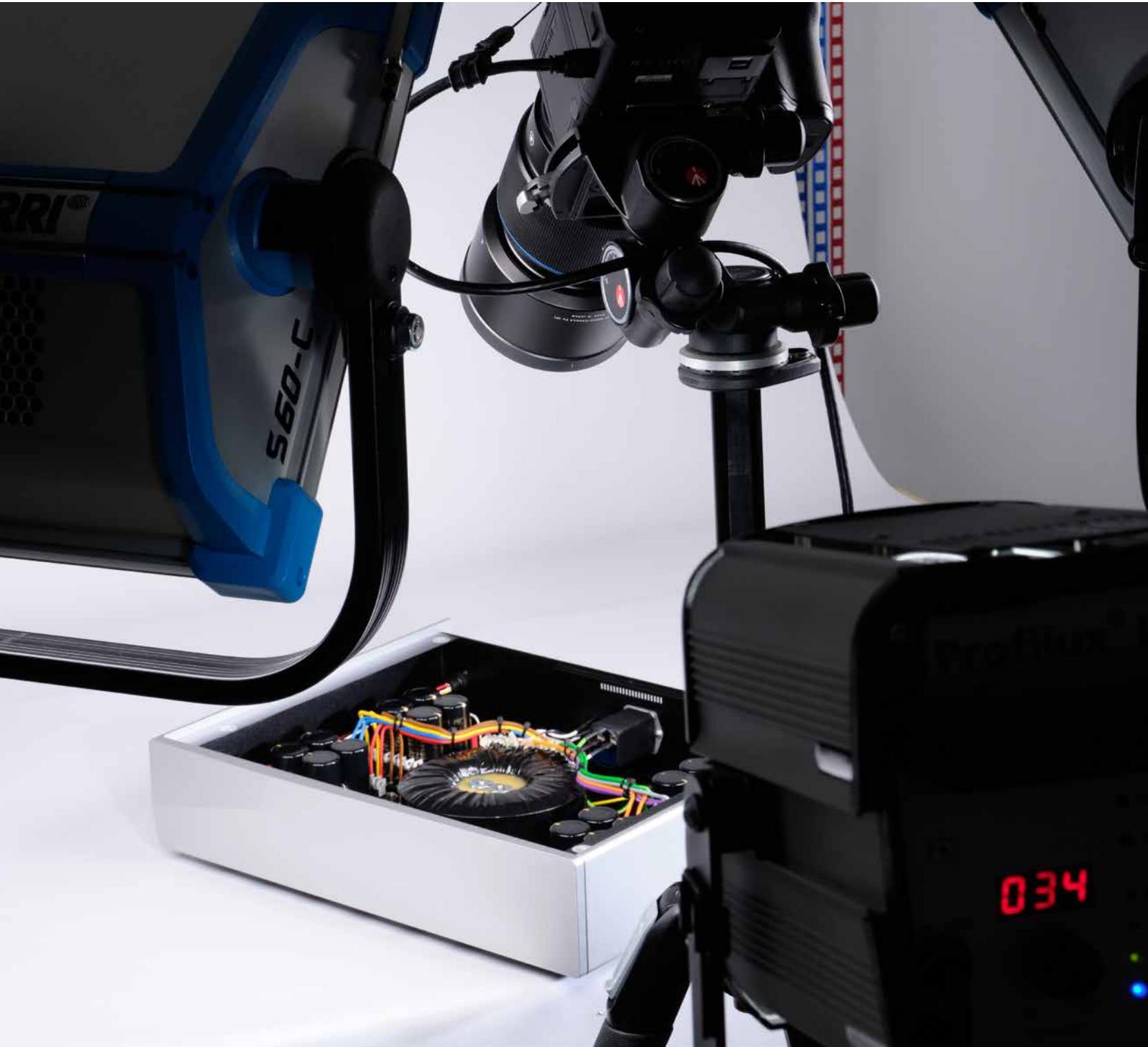
web interface is fundamentally responsible for the basic settings: What audio format should be used for ripping tracks? Which streaming services should be activated and displayed? In fact, you can also view information about the remaining memory you have or define external NAS and USB hard drives as backup media or register them as additional capacity. Conversely, you can import existing music collections from USB or LAN storage media. And, lastly, the server also has a library view (without playback function) where you can check meta tags and, if necessary, edit them then and there. The USB latency setting—which can be used to achieve subtle, yet sometimes audible, differences in the interplay between server and DAC—deserves special mention here: Usually, the preset short latency is perfect, but longer buffering can sound softer, smoother, and more velvety depending on the converter. A bit of trial and error is needed here, but it works and is really worth it as the Statement immediately adopts any changes you make.

Playback is controlled using third-party apps. Innuos recommends Orange Squeeze (Android), Squeeze Control (Windows), or iPeng 9 (iOS), which we used. Insiders will immediately spot that the manufacturer has

drawn from Logitech's Squeezebox concept as a basis. It's an excellent choice as this interface was considerably faster and more fluid than the extremely open UPnP standard. As expected, the app proved to be reliable and crash-proof, and it responded unbelievably quickly in conjunction with the Statement. Admittedly, getting the hang of controlling such a complex server takes a bit of time at first—after all, it can rip CDs, stream online music, play Internet radio, and play media from the SSD. And, in addition to all that, it also boasts the Multi-Room function. Something we found helpful in this regard, however, was the fact the iPeng 9 interface is freely configurable. The inputs and functions can be arranged any way you'd like. In the meantime, Innuos is currently planning to release its own remote app across all platforms in the next few months, these apps will cover everything (setup and playback). Alternatively, the Statement is actually already Roon Ready. It can be used as the Roon Core (the thinking nerve center of a Roon network) or serve other cores as a data source to produce an attractive sound.

Which audio formats can it handle? Basically, it understands the well-established codes, most notably, of course, FLAC, Apple Lossless, ▶





Here you can see the “streamer” line tap as well as the separate USB port to the left of the connector panel. Both are equipped with their own reclockers that clean up the timing and provide a particularly decent data situation for DACs and streamer. For audio prowess, this puts the real icing on the cake for Innuos’s binary music machine.



The **Innuos Statement** is an exceptional CD ripper that, as a streaming bridge, also masters all facets of digital music playback at the highest level. It has also been perfectly designed to handle all future requirements. The only digital source you will need for a very long time...

© FIDELITY MAGAZINE

CHALLENGING = A component is 100% intuitive if you can exploit its potential to the full intuitively.  
INTUITIVE =

MP3, AAC, WAV, and AIFF. Its resolution capability ranges from 16 to 32 bit, and the sample rate can extend from 44.1 to 384 kilohertz. The high-bit format MQA as well as DSD are real treats. The Statement either natively passes the SACD format on to capable converters or ties it up in DoP packages (DSD over PCM). No conversion takes place in the process, as is often incorrectly assumed. The USB inputs of many DACs are simply unable to process the continuous 1-bit streams. To address this, the server packs the DSD stream into bite-sized 16-bit packages. The USB port thinks they are WAV or FLAC and passes them on to the converter, which unpacks the packages and plays them losslessly.

## Conclusion

Ultimately, the most important question is who Innuos plans to target with its server. Just looking at the raw data, facts, and figures, I would have said a few weeks ago that the Statement is presumably an excellent ripping server boasting impressive craftsmanship and a smooth and supple design—precisely the right device for supplying a high-end chain with data at the right level and for covering all (and I really mean *all*) aspects of media management. In that assumption, I would have essentially

been correct. And yet I now feel as though that definition is anachronistic and on the verge of insulting.

Don’t get me wrong: The Statement can meet all the aforementioned demands perfectly and it’s even an exceptional, meticulously bit-precise CD ripper. Its focus is not, however, just on handling “media from yesteryear,” but in fact lies even more squarely on the future: Its two reclockers, the playback buffer memory of a rather fabulous 4 gigabytes, and the exceptionally pure signal currents that never get in each other’s way are primarily designed to ensure optimum-quality web data source playback. The target audience is, of course, primarily Qobuz and Tidal users—and we’ve never heard these services sound so polished or sophisticated.

And the hefty heavyweight lives up to its name in other ways, too: Innuos designed the superb operating system as an open interface, which means the manufacturer can respond quickly and flexibly to future changes and upgrade the design as well as remove any outdated or unwanted dead weight. This leads me to feel confident (which is very rarely the case with such systems) that the computer will still serve as an outstanding and reliable partner for all facets of

digital playback, even many years down the line. And now I’m afraid you’ll have to excuse me ... I want to get back to listening! ■

### Music server | Innuos Statement

**Concept:** Ripping-capable UPnP music server with integrated streaming bridge | **Connections:** 2 x LAN (one reserved for streamer), 2 x USB 2 (one reserved for DACs), 1 x USB 3 for backup media | **CD ripper:** TEAC drive, reads CDs, CD-Rs, and CD-RWs; encodes data as WAV or FLAC | **Meta data:** FreeDB, MusicBrainz, Discogs, and GD3 | **Online streaming:** Qobuz, Spotify Connect, Tidal, and Internet radio | **Formats supported for playing:** WAV, AIFF, FLAC, ALAC, AAC, MP3, MQA, and DSD; 16 to 32 bit; 44.1 to 384 kHz | **Hardware:** Intel CPU (N4200 quad core), 8 GB RAM (4 GB reserved for playback buffer), custom-made motherboard, external power supply, internal SSD memory with 1 to 4 TB | **Control:** Web interface (only basic settings and tag editor), app for Android, iOS and Windows, Roon Ready, Sonos Multi-Room compatible | **Power consumption:** between 20 and 35 W | **Dimensions (W/H/D):** 42/11/35 cm (power-supply unit), 42/9/35 cm (server) | **Weight:** 22 kg (total) | **Warranty period:** two years | **Price:** about €11,000 (1 TB), about €11,500 (2 TB), about €12,100 (4 TB)

**Innuos, The Venture Centre | University of Warwick Science Park, Sir Williams Lyons Road | Coventry, England CV4 7EZ | Telephone:** +49 800 724 4538 | [www.innuos.com/de](http://www.innuos.com/de)

#### ACCOMPANYING EQUIPMENT

**Sources:** T+A MP1000E, Audiodata MS II, Melco N1A, Auralic Airtair, and Aries G2 | **Amplifiers:** Naim Uniti Nova, Trigon Exceed | **Rack:** Creaktiv Midi Reference, Solidsteel Hyperspike | **Cables:** AudioQuest, Chord Company, Wire World

Now available:

# Mainz8 D-TC SUPREME Power Distributor!

**NEW**



## d-tc | SUPREME

### THE VERY HEART OF YOUR HIGH-END MUSIC SYSTEM

- that is exactly what this NEW power distributor is designed to be. The Mainz8 D-TC SUPREME power distributor is a further statement of the amazing innovative prowess of Ansz audio technology. This power distributor is equipped with the latest state-of-the-art Ansz technologies and reflects the accumulated experience that emanates from the development of all our other Ansz audio components - SUPREME quality power distribution has invariably been at the forefront of our audio engineering endeavors.

*Soft lines and organic shapes*



Mainz8 D-TC SUPREME power distributor has 8 dedicated mains outlets and features Ansz's extremely low impedance star grounding system, which is a unique hallmark of all our power distributors.

The visual design is extremely appealing; soft lines and organic shapes will make this power distributor blend in ideally with your other audio components.

Features:	Low impedance star grounding system Noise-reduced 110/230 power supply with 8 outlets (EU/US) Designed with outstanding mechanical grounding Massive Ansz NSC & ATC technology Highly efficient shielding
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Weight:	8.2 kg / 289.25 ounces

Go to <http://www.ansuz-acoustics.com> to learn more.

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FinkTeam Kim

# SIZE ISN'T EVERYTHING

By Roland Schmenner. Photography: Ingo Schulz and manufacturer

FINKTEAM HAS DESIGNED A LOUDSPEAKER JAM-PACKED FULL OF SOPHISTICATED VISUAL AND TECHNICAL FEATURES AND HAS LEFT US ALL SCRATCHING OUR HEAD WITH ITS QUIRKY NAME.





Really it ought to be “Team Fink.” On several occasions during our conversation, Karl-Heinz Fink highlighted that he sees his loudspeaker as a joint effort. Many hands were involved in creating this complete work of art—from the concept and product design stage through to development of the electronics and fine-tuning and all the way through to the masterful veneering work.



For a long time, the thinking in the loudspeaker industry was that big was beautiful and compact speakers might be a reasonable compromise for a secondary backup system. For sometime now, though, designers have been taking the plunge and experimenting with smaller dimensions while not wanting to put up with any loss of sound quality. Karl-Heinz Fink's team has also adopted this approach as they've followed up the statuesque floor-standing speaker Borg with the rather adorable Kim. Die-hard Trekkies will have no doubt already realized that the name Borg is a reference to the TV series *Star Trek*. After the colossal Borg cube provided inspiration for the name of the other loudspeaker, it was only fitting for the name of this loudspeaker to be a lighthearted reference to Ensign Kim from the *Star Trek: Voyager* series. During our conversation,

Fink confessed to being an authentic Trekkie. In his opinion, you can certainly bring a bit of humor to the table when assigning names to your device.

## Floating body

Ensign Kim, incarnated as a pair of loudspeakers, had been teleported into my listening room and looked as light as a feather, primarily due to the stands that had been firmly attached to their bodies. The Kims really looked liked they were floating. As always with loudspeakers, I started my investigation by caressing the bodywork and examining the quality of the carpentry work with my hands. It was exceptionally exquisite. In responding to my questions, sales director Martin Klaassen explained ▶



How do you design a stand that doesn't sound like a stand? The firmly fixed pedestal may seem trivial but, with its small surface area, it makes a crucial contribution to the transparent, relaxed tone of the well-proportioned mid-sized speaker. It also ensures that Ensign Kim adopts a proper stance and posture.

**FinkTeam Kim**  
 Uncomplicated, melodious, and musical: The Kim demonstrates with incredible sophistication just how mature and full compact loudspeakers can sound. Mission accomplished, Ensign Kim!

CHALLENGING = ■ A component is 100% intuitive if you can exploit its potential to the full intuitively.  
 INTUITIVE = ■

© FIDELITY Magazine



The duo of drivers is based on the specifications of the larger Borg model. Why change a winning formula? The conventional bass mid-range and the AMT work together brilliantly as a two-way duo.

that Fink and his team have their own in-house carpentry workshop complete with its own master carpenter who carries out the final inspection of every single housing. For the size of the housing, FinkTeam had swiftly agreed early on that the loudspeaker should reach “roughly the height of a window sill.” But the result should of course still be a real head-turner as well. In retrospect, it looks like the developers succeeded in their mission—and then some.

What I first noticed about the Kims was what a dream they were both in terms of positioning and the sweet spot. With some loudspeakers, you feel the urge to reposition them in the room after hearing just a few tracks. And then you experiment by toeing them inward or outward and adjust the distance between them and the walls around them, and so on and so forth. I had none of that here: I simply set them in place, toed them in slightly, roughly positioned them along a line, and eyeballed the right distance from the wall behind them. And it worked like a charm! A bit of care and attention never harms, but I was surprised at how well the Kim speakers played regardless of their positioning: I found they had a wonderfully broad sweet spot that enables the listener to sprawl out and wriggle around on an armchair without a change in head position

immediately impacting the central focus of the sound waves. According to Fink, the fact these loudspeakers are broadly unaffected by spatial influences comes down primarily to the cabinet construction that, for speakers of this volume, boasts a generously sized baffle. Then there’s the super quiet, reinforced housing, which was developed on the basis of exceedingly accurate calculations made by a computer. At FinkTeam, nothing is left to chance. The company strives for absolute perfection, which I especially noticed in the Kim’s seamless linearity. Anyone who’s ever heard the Borg before will know about the qualities inherent in the air motion transformer (AMT); a modified version it was also ordered from Mundorf for the Kim. A 20-centimeter diameter chassis served by a Mundorf air-core coil is responsible for frequencies below 2,200 hertz.

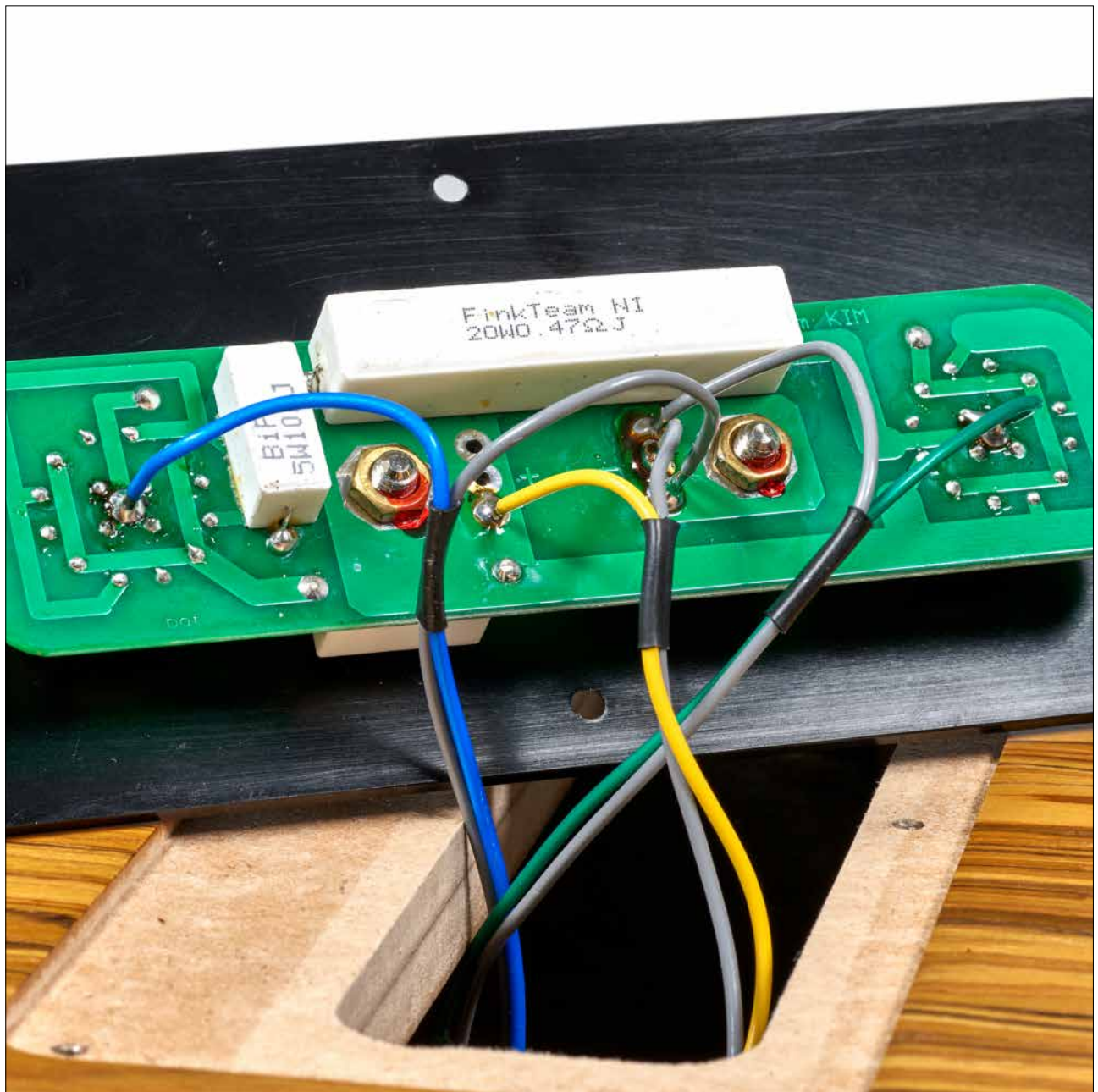
## Unlimited musical prowess

The longer I zigzagged from genre to genre listening to music from my collection, the more I got the impression Ensign Kim would never run out of steam. Whether the long crescendo in the prelude to Wagner’s *Tristan and Isolde* with Carlos Kleiber or the frequent, abrupt shift in dynamics typical of the guys from Brandt Brauer Frick—everything ▶





The Kim's delightful bass reflex rear boasts a renowned special feature of FinkTeam loudspeakers: The damping switch on the left of the terminal adapts the crossover for powerful transistors, weak vintage amps, or tube amplifiers. The "HIGH" setting on the right enables the user to slightly, but sometimes more noticeably, accentuate or reduce the highs.



Cooking following the in-house recipe: Even the input circuit board shows that FinkTeam doesn't like fast food. As can be seen from the large resistor in the center of the image, the Essen-based loudspeaker specialist uses bespoke ingredients even down to the tiniest of details.

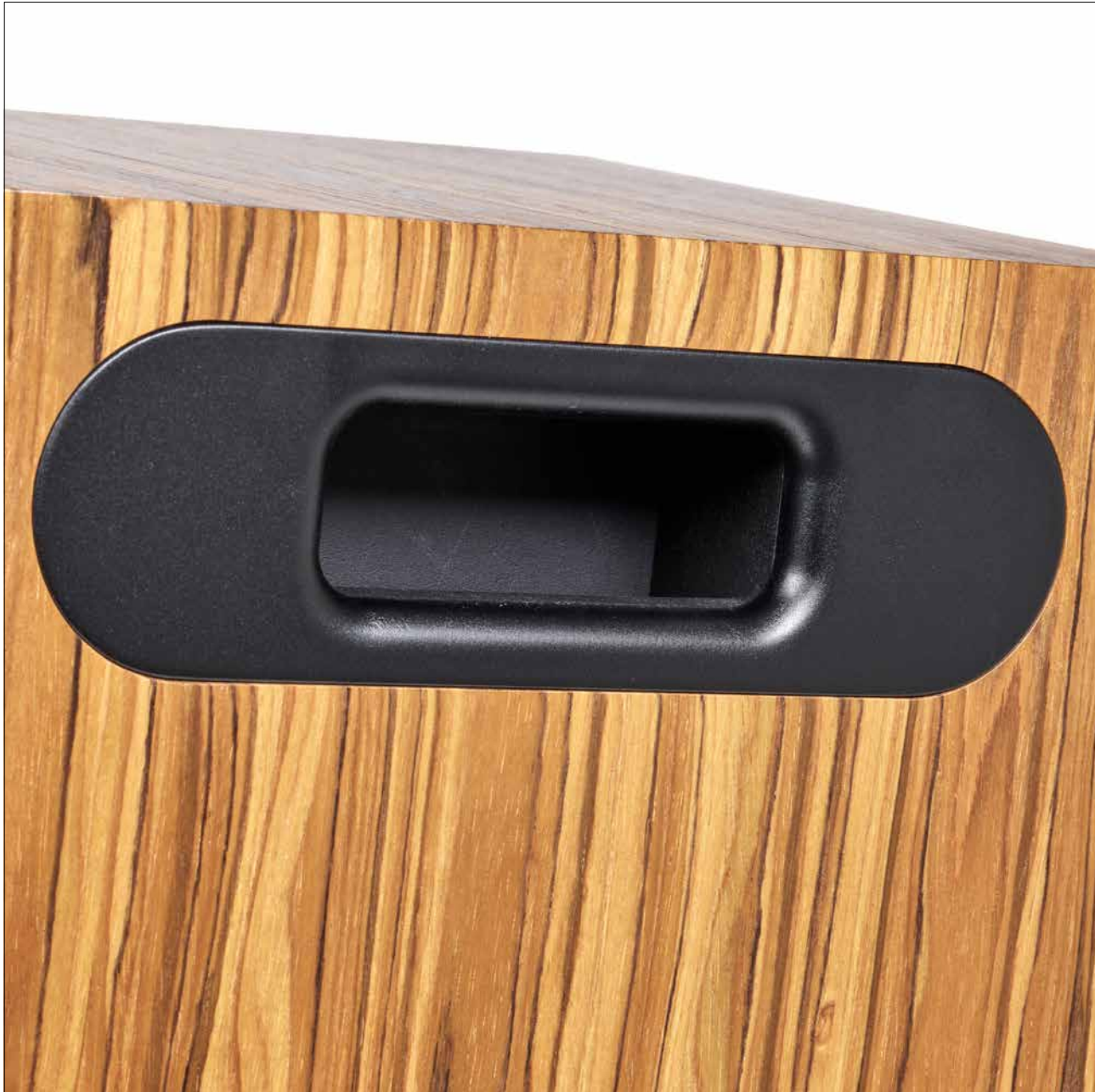
worked seamlessly. Not even orgiastic orchestral climaxes or brutal beats could throw the Kim off course. It always gave me the impression that, even in the case of the most impressive dynamic peaks, it always still had some gas left in the tank—even given the speaker's rather snug volume. These impressive audio properties arrive in tandem with unbelievable precision. As I listened to the string quartet Berner Streichquartett perform the broad range of different experimental musical techniques in Helmut Lachenmann's String Quartet No. 1, I heard them as individually nuanced and identifiable with sound events that never grew blurred or indistinct. The speakers occasionally reminded me of fully-fledged active studio monitors but without the kind of technical sterility that these sometimes demonstrate.

The musical flow exerted itself too prominently in the foreground for that. Even Marcus Miller's hardest bass slaps were ever so slightly

cushioned so that, despite all the dynamics and precision, the individually emphasized musical parameters never became isolated individual events, but instead always remained part of a meaningful and, above all, sensual broader musical context.

## Pure enjoyment

I admit the musical examples mentioned so far are rather heavy going and not exactly fitting for your average lighthearted tea-time get-together. Anyone wanting to experience an opulent display of the aforementioned qualities by the Kim should listen to the outstanding recording of Sergei Rachmaninoff preludes by Boris Giltburg. Magnificently dark with the left-hand notes and breathtakingly masterful with the treble notes, Giltburg and the Kim formed such a great partnership that even I, who am usually quick to class Rachmaninoff as a bit of kitsch, listened ▶



to his preludes all in one go. As such, FinkTeam's smallest loudspeaker is now a member of a rather exclusive group of devices that have managed to get me to enjoy music I would ordinarily find to be rather objectionable. It deserves a serious pat on the back because that's no mean feat!

But if you extensively listen to your favorite music with an unknown component, you run the risk of becoming very disappointed very quickly because your high expectations might not be met. So, full of anticipation, I placed David Sylvian's latest album *Manafon* on the turntable—released shortly before Sylvian went mysteriously quiet, it's a peculiar masterpiece that uses experimental guitar sounds and sonorous *Sprechgesang*. I've listened to this album on many systems and, most notably, with lots of different, very large loudspeakers but never have I felt so convinced that Sylvian was there playing right in front of me, as if the sound was not the result of a technical reproduction. It was actually quite eerie the way

his voice from deep within his chest emerged almost out of nowhere yet managed to boom throughout the room.

## Unrestricted choice of amplifier

When it comes to the best choice of amplifier, the Kim really isn't fussy. A rotary switch on the rear has three settings to enable the user to adjust the loudspeaker to the amplifier's damping factor. As such, FinkTeam has managed to minimize dependency in terms of the power amplifier section and, thanks to this versatility, both double-digit wattage amps fitted with EL34 or KT88 tubes and exotic vintage amplifiers can be used without any issues. The Kim is not a diva with fancy tastes or fussy diets. Even a run-of-the-mill mainstream heavyweight from the late 1980s can bring out all the playback qualities described above, though admittedly ►



Our version of the Kim (matte white front with olive wood) was initially intended as a one-off eye-catcher but seems to be very popular on the market. What may not be immediately apparent from the images is the incredible accuracy with which the veneering work has been carried out.

a modern pre/power combo brings out a touch more nuanced detailing and dynamics., That said, there's no need to empty your wallet to be satisfied. Even more important for me to point out is the fact the speakers will form a truly symbiotic bond with whatever amplifier is used. In the case of an analog chain with a tube preamplifier, you'll instantly detect a certain amount of baby fat in the mid and low frequency range, whereas with neutral amplification the Kim tends to adopt the qualities of a studio monitor.

## Teamwork matters

Teamwork really pays off. A modern loudspeaker construction is not the product of a single mastermind but rather the sum total of the efforts exerted by various creative and highly qualified experts who jointly work together on a project. This exquisite, perfectly formed loudspeaker is proof this is very much the case at FinkTeam. Ensign Kim definitely has the qualities to take command of any listening room. And regardless of which crew is assigned to assist with the mission, the musical journey is bound to take you to new unexplored galaxies. ■

### Loudspeaker| FinkTeam Kim

**Concept:** two-way bass reflex "midi" loudspeaker | **Frequency range:** 35 Hz to 25 kHz | **Impedance (average):** 8 Ω | **Minimum impedance:** 5.9 Ω at 160 Hz | **Sensitivity:** 86 dB at 2.83 V/1m | **Distortion:** 0.2% distortion factor at 1 W | **Crossover frequency:** 2,200 Hz | **Equipment:** 20-cm bass mid-range with 378-mm voice coil, 110-mm tweeter (AMT) | **Connections:** screw terminals for banana plugs or cable lugs | **Dimensions including stand (W/H/D):** 30/85/31 cm | **Weight:** 25.1 kg | **Finish:** white/walnut, matte black/black, matte white/white, black/amarra | **Warranty period:** two years (five years after registration) | **Price:** approximately €9,950

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### ACCOMPANYING EQUIPMENT

**SACD player:** Denon DCD 2000AE | **Turntable:** Technics 1210 Mk II (modified) | **Tonearm:** SME 309 | **Cartridges:** Clearaudio Concept MC, Clearaudio Jubilee MC, Ortofon Concorde Century | **Phono stages:** Audionet PAM, ifi Phono | **Streaming:** Mac mini with Audirvana Plus | **DAC, headphone amplifier, preamplifier:** Grace Design M 903 | **DACs:** Schiit Bifrost, Grace SACD | **Headphone amplifier:** Schiit Valhalla | **Power amplifiers:** Luxman M-03, Yamaha P2500S | **Integrated amplifier:** Cyrus Straight Line | **Passive loudspeakers:** Magnepan 1.5, KEF LS 50, Triangle Zerius | **Active loudspeakers:** KRK VXT 8 | **Headphones:** Focal Utopia, Beyerdynamic T5p | **Cables:** Van den Hul, Vovox, Sommer, Guerilla Audio | **Accessories:** Oyaïde, Oehlbach



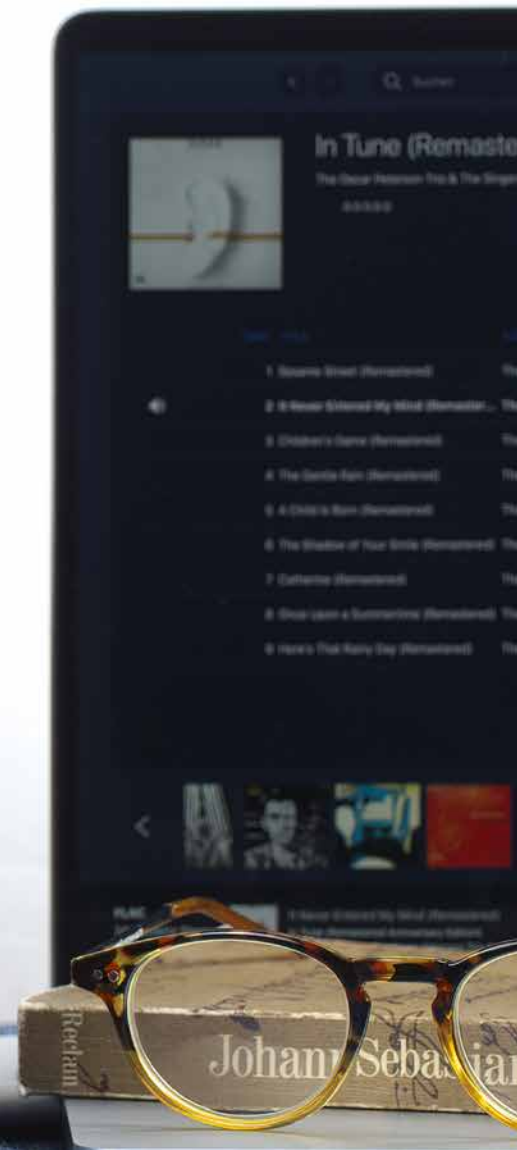
...and now for something completely different...

MUTEK REF10 SE120

# THE ULTIMATE OPTIMIZER

By Harald Wittig. Photography: Harald Wittig

The MUTEK Tower of Power™ in the studio: Mixing, mastering, and even just listening to music is a real joy with this dream team.



# THE SPECIAL EDITION VERSION OF MUTEK'S INCREDIBLE REF10 BENCHMARK-SETTING MASTER CLOCK GENERATOR IS NOW AVAILABLE. THE NEW MODEL FROM THE BERLIN-BASED COMPANY, APTLY NAMED THE REF10 SE120, IS THE ULTIMATE PIECE OF EQUIPMENT FOR OPTIMIZING DIGITAL MUSIC PLAYBACK.

**M**UTEK has enjoyed a solid reputation on the studio scene. Back in mid-2017, the Berlin-based manufacturer delighted fans of digital high-end devices with the launch of its 10-megahertz benchmark-setting master clock generator, the REF10, and the positive reviews flooded in. And, in fact, the accolades have never stopped. When combined with the superb MC-3+ Smart Clock USB audio interface and reclocker, this hugely impressive device provides listeners with a digital music playback experience that leaves nothing to be desired. But let's face it: High-end fans and their sharp ears are always after that little bit extra to try to help satisfy an insatiable appetite. They are constantly chasing the next audio high, which keeps manufacturers on their toes.

And MUTEK mastermind and CEO Christian Peters along with his team of developers are no exception: "Thanks to the incredibly well-designed circuitry of our REF10, we were able, when requested, to replace the oscillators in our customers' devices without restricting the improved performance of the new oscillators in any way," Peters explains. "This means our customers get to fully enjoy their REF10, which now boasts even better performance." MUTEK customers continue to be thrilled

with the modified REF10, so the "logical next step" for the Berlin-based team was to provide the REF10 with a beefed-up big brother in the form of a special edition version. Referred to as the SE120, it boasts a different oscillator and, after undergoing a series of very extensive tests and measurements, represents the ultimate upgrade for the well-established benchmark-setting master clock generator. And the final price reflects all the additional work that has gone into this sophisticated beast: While the standard REF10 carries a price tag of approximately €3,600, the SE120 will set you back a cool €5,500. But, as I quickly discovered, this is wholly justified.

## Huge effort, incredible stats

Each REF10 SE120 undergoes extensive testing and measurement. As Peters points out, "The measurements actually take a quite a long time as we're really pushing boundaries and exploring the limits of what's technically feasible. We've determined the varying load of the power supply that feeds the measurement equipment we use for testing can influence the results." Consequently, there's no getting around the need to carry ▶

The “Special Edition” of Mutec’s outstanding 10 MHz reference clock generator REF10. Like the REF10, the REF10 SE120, equipped with selected oscillators, is manufactured by hand in Germany.



The eight outputs can all be used in parallel, however any unneeded outputs should be deactivated. The correct wave impedance needs to be ensured: either 50 or 75 ohms.





out measurements again and again and to scrutinize, check, and recheck readings in order to ultimately be 100% certain that each and every device is worthy of the REF10 SE120 name.

Every benchmark-setting master clock generator sold under this name comes with an exclusive measurement data sheet that indicates the number of the built-in oscillator, states the device's serial number, and, of course, contains the detailed measurement diagram that provides all the necessary information regarding the device's phase noise. The latter is at least  $-120$  decibels relative to the carrier at 1 hertz offset from the carrier frequency of 10 megahertz. This is how the device gets its new name. By way of comparison, the already impressive standard version of the REF10, which, for good reason, is part of MUTEK's Empyreal Class series, features  $-116$  decibels relative to the carrier. The new model does, however, offer much more than the impressive  $-120$  decibels relative to the carrier, as Peters explains: "In the crucial 10 to 100 hertz range, the new oscillators achieve better readings than the standard oscillator." This means a jitter value in the 1 to 100 hertz range with an average reading

of less than 15 femtoseconds is significantly lower than the standard oscillator with its less than 22 femtoseconds (fs). To pull this all together and put it in context, this kind of jitter value is currently unparalleled and unrivaled anywhere in the world.

This means that phase noise and jitter, which are notorious for having an undesirable negative impact on sound quality in otherwise fantastic digital audio settings, satisfyingly don't show up, even for a moment, with the REF10 SE120.

Other than that, the REF10 SE120 is very similar to its brother in that it's beautifully put together and boasts some seriously impressive craftsmanship. Thanks to the tried-and-tested, high-quality signal distributor and driver circuitry combined with voltage supplies, which are optimized to ensure they're exceptionally low-noise even in the sub-hertz range, transportation of the clock signal to all eight galvanically isolated outputs is completely lossless. Outputs 1 and 2 have a 50-ohm terminal for connecting consumer devices whereas ►



outputs 3 to 8 have a studio-standard 75-ohm terminal. All eight can be used simultaneously, but the connected devices must be designed to receive a 10-megahertz reference clock signal. The MUTECH MC-3+ Smart Clock (with or without USB interface) is, of course, the preferred choice and the perfect candidate.

Once the connection has been established with a BNC cable, operating the REF10 SE120 couldn't be easier: After the power button has been pressed, the corresponding LED lights up red and the crystal oscillator's oven starts to warm up. Once the bright blue "READY" LED comes on and stays on, the operating temperature has been reached. It's actually worth giving the REF10 SE120 another half hour at this point as this will ensure the oscillator is fully warmed through, thereby guaranteeing maximum frequency stability. Any outputs that are not needed should be deactivated using the large, easy-to-use push/rotary encoder knob.

## From night to day

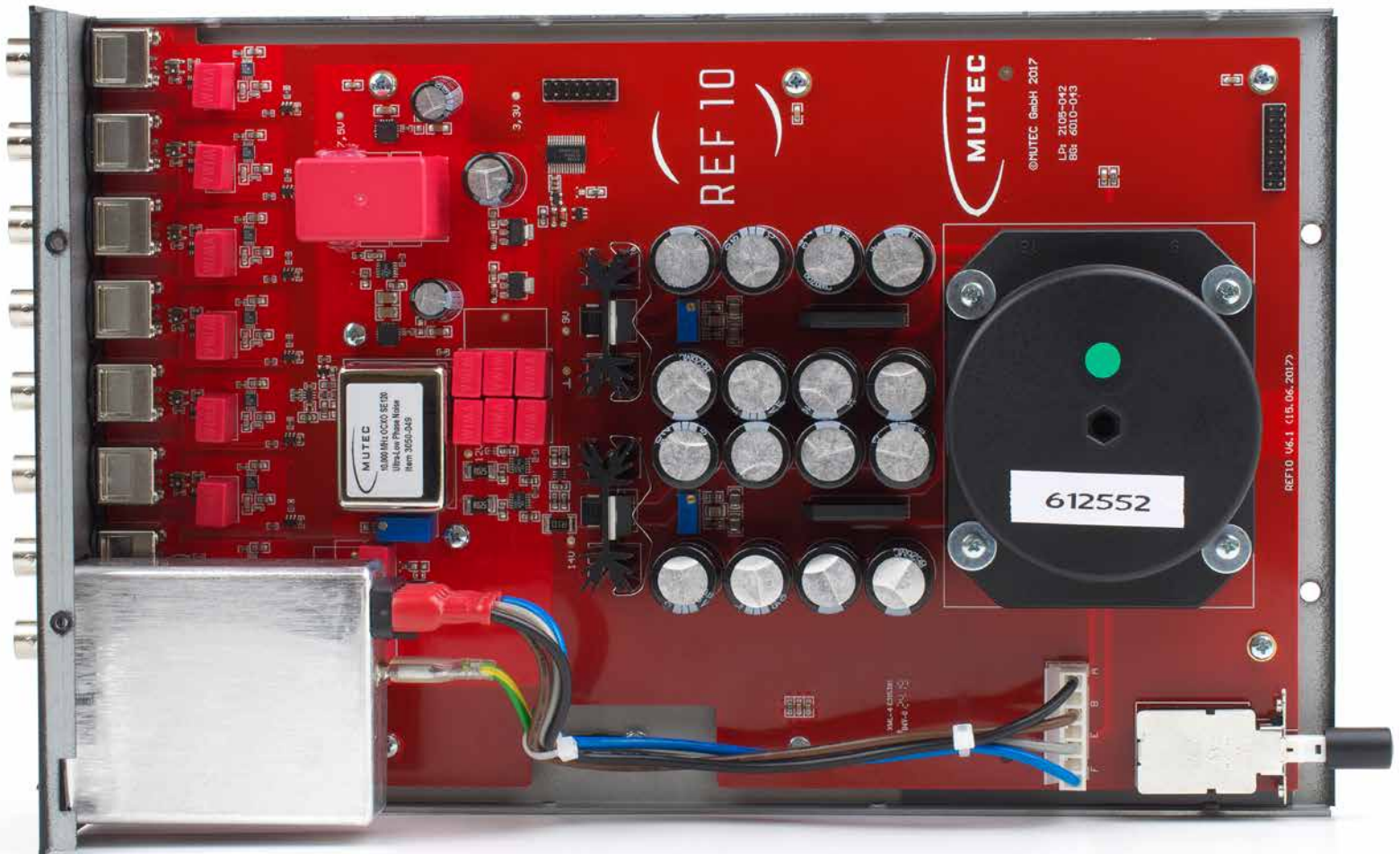
The MUTECH MC-3+USB has been numero uno and calling all the shots in my computer-based studio for three and a half years now. I use it as a monitoring device as part of my own projects and simply for listening to music in conjunction with the outstanding Audirvana playback software. When I tested the REF10 back in 2017, it really knocked my socks off, so I was excited to see what the über-optimized special edition version could pull off. I really wanted to put the duo of audio devices

through their paces, so I decided to kick things off with The Oscar Peterson Trio and The Singers Unlimited and their magical version of "Here's That Rainy Day" (from the flawless MPS Records production *In Tune*).

While the MC-3+USB was set to "INTERN," it sounded just like it usually does: At 0:33, right after Peterson's inspired intro, the voices of The Singers Unlimited swept in and demonstrated the artists' ability to achieve the tightest of harmonies. Anyone who fails to cry from the sheer joy at hearing this type of musical perfection is probably the kind of person who refers to The Rolling Stones' frontman as a "singer." I set the MC-3+USB to "EXTERN," skipped back, and pressed "PLAY"—I couldn't believe my ears. It sounded practically like a completely different arrangement. The breadth and depth scaling developed a holographic quality and the separation of the deep voices was improved thanks to a distinctively audible increase in precision and definition. At the same time, the sound grew softer and more rounded and managed to shake off that last little bit of digital harshness I had still felt was present even with the remastered 24-bit/88-kilohertz version. Then, as Peterson caressed the Steinway, the MC-3+USB plus REF10 SE120 dream team reproduced the transients perfectly, proving they are a real force to be reckoned with.

When I combined the MUTECH Tower of Power with the Audiodata MS II music server and selected the 24-bit/192-kilohertz high-resolution version of the immensely popular and ever-impressive classic track ▶

A LOT OF EFFORT HAS GONE INTO THIS TINY COMPONENT: THE REF10 SE120 IS, ESSENTIALLY, NOTHING MORE THAN A LARGE POWER-SUPPLY UNIT. THE REAL MAGIC HAPPENS UNDER THE SHINY EXTERIOR IN THE CENTER OF THE LEFT-HAND SIDE OF THE HOUSING WHERE THE HIGH-PRECISION MASTER CLOCK IS FOUND. THE RELAYS FOR THE EIGHT PARALLEL OUTPUTS ARE FOUND TO THE LEFT.



Together, the MUTEK MC-3+USB and the REF10 SE120 make a formidable team capable of taking digital music playback to new heights.

**Mutec REF10 SE 120**  
Thanks to ultra-precise 10-megahertz clock signals, the special e3dition version is the ultimate sound-quality optimizer for any compatible digital system

CHALLENGING = A component is 100% intuitive if you can exploit its potential to the full intuitively.  
INTUITIVE =

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“Yours Is No Disgrace” from *The Yes Album*, which never seems to grow old, the whole thing sounded as crisp and as fresh as a spring morning. This is exactly how digital audio should sound, with all the zeros and ones in perfect formation. All the digitally encoded information was decoded, producing the most wonderful sound quality. The optimized music playback achieved thanks to the expertise and skills demonstrated by the SE120 created a shift in the space-time continuum. When I found myself still sitting in front of the system the following morning, I had enjoyed a full 10 high-res albums and was still wide awake. I tip my hat to the impressive REF10. It’s a prime example of how exceptional engineering can produce top-quality music playback—and turn night into day—at the flick of a switch. ■

#### Benchmark-setting master clock generator | MUTEK REF10 SE120

**Interfaces:** 2 x BNC unbalanced (50 Ω), 6 x BNC unbalanced (75 Ω) | **Signal format:** square-wave output signal with extremely steep slope, 10,000 MHz | **Basic clock generation:** 10,000 MHz oven-controlled crystal oscillator (OCXO) | **Compatible devices:** all digital audio devices with a 10-MHz input | **Dimensions (W/H/D):** 20/9/38 cm | **Weight:** 4 kg | **Warranty period:** three years | **Price:** about €5,500

**MUTEK Gesellschaft für Systementwicklung und Komponentenvertrieb | Siekeweg 6/8 | 12309 Berlin | Germany | Telephone +49 30 7468800 | [www.mutec-net.com](http://www.mutec-net.com)**

#### ACCOMPANYING EQUIPMENT

**USB interface and DACs:** MUTEK MC-3+USB, Mytek Digital Stereo192-DSD DAC, Vioelectric V800 | **Computer:** MacBook Pro 16" | **Software player:** Audirvana version 3.5.33 | **Music server:** Audio-data M2 II | **Active loudspeakers:** nuPro A-200, ME Geithain RL 906 | **Cables:** Vovox, AudioQuest

## In the best tradition

B&O's Beolit series has been around for over sixty years. Apart from the concept of a handle man, the current Beolit 20 (around 500 euros) no longer has much in common with the traditional mobile radios - the handy gem prefers Bluetooth to classic radio reception. The six built-in speakers emit room-filling „True360“ (degree) sound, there is a charging function for smartphones, and two units can be combined to form a stereo set with sample accuracy.

[www.bang-olufsen.dk](http://www.bang-olufsen.dk)

+++

nomad

# BROWSER № 02



# BROWSER № 02

## Make room!

Innuos is increasing the capacity of its premium (ripping) servers ZENith mk3 and STATEMENT to 8 terabytes - previously the upper limit was 4 TB. In principle, one would think that such a doubling of capacity is no longer a big deal today. However, those who are familiar with the manufacturer's concept know that fixed storage is special SSDs that work without fragmentation and offer an extremely long life expectancy. The prices of the new storage giants are 6000 (ZENith) and 13 600 euros (STATEMENT). Upgrades are possible for older models.

[www.innuos.com](http://www.innuos.com)

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# BROWSER

## № 02



### The Meta and the Two

KEF renovates its compact range with the LS 50 Meta (passive, around 1200 Euro) and LS 50 Wireless II (active, around 2500 Euro).

Both speakers share a new absorption material that significantly improves the internal damping and ultimately the stability and low distortion of the cabinets compared to their predecessors. As usual, the small coaxial speakers jump out of the box in colourful versions. And here's a fun fact for the end of the day: the former Anniversary compact has been able to hold its own on the market for so long that in a few months it should already be called „LS 60“.

[www.kef.com](http://www.kef.com)

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# BROWSER № 02

## Legendary status

You only need to breathe the name „Rupert Neve“ to send studio professionals into raptures. With no less than three products from the Felice series, the tradition-steeped noble forge now recommends itself to hi-fi fans: a high-precision digital audio converter (around 5800 euros), a headphone amplifier (around 1400 euros) and a phono equaliser.

[www.rupertneve.com](http://www.rupertneve.com)

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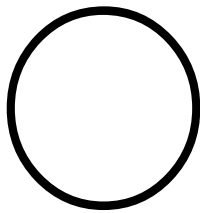
Vimberg Tonda D

# LOVE AT FIRST KICK

By Carsten Barnbeck. Photography: Ingo Schulz, manufacturer



EMOTIONS EXIST INDEPENDENT OF SPACE AND TIME. THEY SIMPLY UNFOLD, TOTALLY OUTSIDE THE CONTROL OF OUR CONSCIOUS MIND. IF YOU'RE NOT CONVINCED OF THIS AND YOU STILL BELIEVE YOU'RE THE ONE IN CHARGE, THEN ARRANGE FOR A THERAPY SESSION WITH THE VIMBERG TONDA D—IT'LL TEACH YOU OTHERWISE.

 Our noses only need a fraction of a second to decide whether we'll surrender ourselves to the charms of another person or remain aloof. All too often, so scientists tell us, it's simply chemistry that decides—and it performs this job skillfully and underhandedly, letting us think we're the ones sitting in the driver's seat making all the decisions. The only natural phenomenon I know of that can achieve something similar is sound. Whether the snarl of a saber-toothed tiger (unlikely in modern times) or the sharp-edged shouting of a supervisor (heard much more frequently), both will prompt a burst of adrenalin to flow through our veins. And an impetuous brass drum, a swirling sound tapestry, or a human voice that seems to take on a physical shape between the speakers can send shivers down our spines. It takes just a

second for a person to become totally and helplessly immersed in the music. Sound doesn't need to have a game plan or worry about tactics. When everything comes together, our brains don't even try to interfere.

## Reason

I can't blame chemistry for the fact I adored the Vimberg Tonda D from the first moment I laid eyes on it. Wafting over to me from the recently unpacked unit was that typical new speaker fragrance—a hint of fresh varnish laced with a trace of foam padding. But the Vimberg's appearance rather than its aroma is what immediately caught and held my attention. It's a pretty massive unit that still manages to not seem overwhelming. Besides bringing in acoustical benefits, the faceted edges on the front ▶





panels soften the speakers' proportions and lend them more elegance. The unit's gray diaphragms and black feet, which give the 1.4-meter-tall boxes the stability they need, create a sharp contrast to the brilliant white of our test units. In short, exemplifying design at its very best, Vimberg's tallest speaker is a functional object that could also be an furniture item or even a sculpture.

Feeling extremely lonely at the office (due to certain current circumstances we all know about), I had just spent an hour removing our two objets d'art from their packaging, before heaving them upright and placing them into the desired positions. I'm using the work "packaging" somewhat loosely here. The D speakers were shipped in two enormous, padded flight cases that looked like they could survive a drop from the top of a multistory building. Despite my back reminding me with a twinge or two that boxes this big should really be hoisted around by two people (at the very least), setting them up went remarkably fast. Each of the gigantic speakers weighs in at 96 kilos.

To make it a challenge, the setup required first having to attach aluminum-coated supports for the adjustable feet, a step that can prove a little tricky with speakers that slant slightly backward, like these. So I laid the boxes on the floor and raised up the bottom using foam padding. All accessories came stored in a separate section of the delivery case that opened with a loud and satisfying click when pressed. I was amazed to find the gliders so heavy that I had to use both hands to remove them from the case.

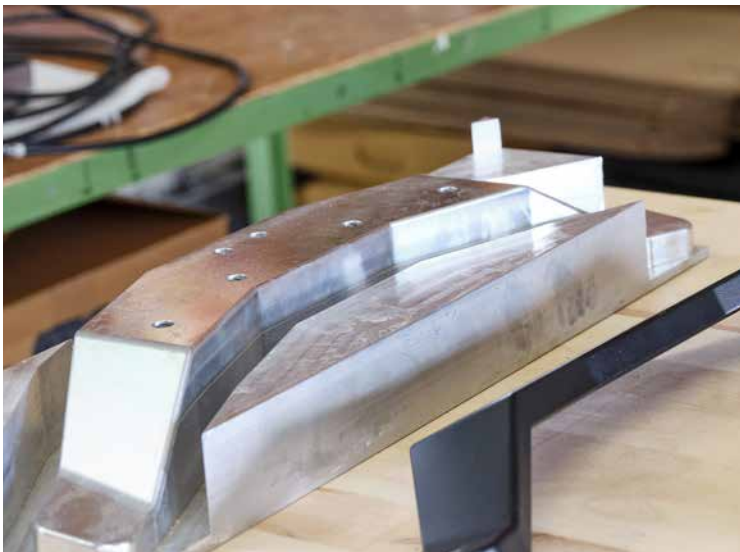
"We tried everything else first, including casting and bending," stated Jörn Janczak, who founded Vimberg two years ago as a spin-off from his main Tidal Audio brand. "But we were only satisfied with the brackets after milling them from a solid block of aluminum." Under the Ultimate Audio Systems motto, Tidal has been striving to create the finest hi-fi systems in the world. And they're definitely on the right track. Tidal's exclusive electronics and loudspeakers are setting benchmarks in sound, design, and craftsmanship. Unfortunately, however, these superb systems are way beyond the means of most audio fans. Vimberg is now transporting this technology into more affordable territories—that is, into price brackets allowing many more people to at least dream of owning a system. While speaking to Janczak on the phone, I could pick up between the lines that he's now really hooked. He told me that Vimberg was something of an experiment to begin with. His wanted to try out and investigate new things then determine how efficiently (in terms of cost) his speakers could be manufactured. But each time he came back to the solutions he was already implementing in his Tidal models.

The gliders are a case in point: The incredible investment in material didn't stop at milling them from solid blocks. To make the threads practically indestructible, Vimberg uses stainless steel inserts in each drill hole—the screws will remain firmly in place even after the thousandth assembly and disassembly. Each Tonda D rests on four tiny knobs attached to long, finely adjustable M8 screws. These can't usually be seen from the outside during setup because they disappear into small metal holders that are Teflon-coated on the bottom. This smooth ►



The Tonda cabinet is made of HDF, a more refined variant of MDF. The material is coated with a blind veneer and waterproof sealed. There will be no edge movements under the paint work even after decades.

At the top left you can see the front foot boom of the heavy stand box, which is milled from a solid aluminium block. The spikes (center) disappear into teflon-coated metal caps after assembly. On the bottom right, a look at the wonderfully configured crossovers.



surface means I can easily pull the heavy units across the carpet and make painstaking final adjustments. The company boss assures me this is also possible on parquet flooring without causing any unsightly dings or scratches.

“We briefly connected up your test speakers beforehand to make sure everything was okay,” Janczak reminded me later on in our call. The test version, in particular, required a longer break-in process. The D in Tonda D stands for diamond. Enthusiasts need no explanation about where this expensive material comes into play. The top Tonda speaker version has a 30-millimeter synthetic diamond. Its excellent stiffness-to-weight ratio brings atmosphere, transparency, and wonderful detail to the treble range. But the Vimberg also exemplifies why such luxury drivers are not encountered more often: The Accuton chassis upgrade will set you back an extra €7,000. The smaller C models come with a ceramic tweeter that

produces outstanding results but not quite of the same stellar quality as the D. Janczak also pointed out that you don't have to start out with Vimberg's top-of-the-range option, and you could upgrade to the diamond tweeter at any time. But because this tweeter upgrade involves changes to the crossover, it can only be performed at company headquarters in Hürth, Germany.

Vimberg uses an approximately 17-centimeter ceramic midrange woofer. Like the tweeter, the driver has a protective grille and, together with the treble unit, is anchored in a decoupled, resonance-absorbing, waterproof frame made by combining several different materials (including aluminum and cork). This frame sits in an HDF (high-density fiberboard) cabinet sporting a complex network of internal bracings to create the serene environment necessary. And, as with the Tidal units, the cabinet's piano lacquer also plays an important role in resonance damping. ▶



Ceramic is good, honeycomb even better. Like all custom-made drivers from Accuton, the Tonda D's powerful bass drivers are toughened by means of an aluminum honeycomb sandwich diaphragm.



Although the Tonda may not have quite as many layers of color as its more expensive relatives, it has a higher-quality finish than anything else in its price category. And there's a whole load of competition! The interior wiring comes from Mogami. The one-of-a-kind Argento binding posts are molded entirely out of a polymer that avoids any kind of magnetic interference with the conductor itself.

The bass is supplied courtesy of three 19-centimeter woofers with aluminum-ceramic membranes. The layers of the sandwich diaphragm are stiffened by a honeycomb structure clearly visible from the outside stiffens the layers of the sandwich diaphragm. These super, ultralight chassis are made by Accuton, the company that also provides all the drivers for Tidal. For the Vimberg products, however, Janczak uses drivers from Accuton's outstanding standard portfolio.

When I asked him to name the greatest difficulty in developing the Tonda, he responded without any hesitation at all: "Integrating and tuning the drivers." Building loudspeakers always involves compromises. On their own, frequency response and timing can be addressed perfectly well. The problems come when trying to achieve a similarly high level for both at the same time. As with the Tidal systems, Janczak refused to compromise on the quality of the Vimberg units, so he tinkered around with drivers, cabinet stiffeners, and crossovers until the Tonda obtained the superb frequency response and timing he craved. Achieving such an "amazingly accurate frequency response" proved an incredibly intricate and complex task., but for Janczak, it was simply "part of the homework we need to do."

That's quite an understatement I'd learned from a visit last year. Janczak is one of those developers who scrutinizes every single component of

a speaker, knows every stat by heart, and is prepared to go many extra miles to bring everything together optimally. For example, he's been using Mogami cables since the earliest days of Tidal. Not necessarily because they're the very best, but because he's familiar with their every aspect and he can exploit their characteristics in his top-class crossovers. The same applies to the cabinet materials, chassis, gliders, and all other details. "Don't put that in your article though," he joked during our phone call. He's already been accused of approaching an emotively charged subject like hi-fi much too matter-of-factly and analytically. But it's beyond me how anyone can seriously employ that notion as a criticism after listening to the products Janczak builds.

## Emotion

I originally intended to spend some time burning in the Tonda D and waiting one or two days before making any initial judgments. Luckily, I had SPEC's excellent RPA-MG1000 integrated amp on hand to deliver more than enough power. It turned out to be a match made in heaven. I picked a random track from my Boards of Canada playlist, intriguingly titled "Amo Bishop Roden." Delightfully wistful ripples that could've come from a mellotron were soon joined by velvety synth tones. Up and running! I'd just left where I'd been sitting when the first deep wave from the kick drum spread through the room. It wasn't finished reverberating before I was back in my chair experiencing the shivers I mentioned at the beginning of the article.

I could now tell you about all the other tracks I played as my "just ten minutes" turned into a whole afternoon. But that wouldn't really help—I find it extremely difficult to express the key characteristics ▶







**Vimberg Tonda D**  
The Tonda D sets benchmarks in its price class in terms of timing, spectral purity, material quality, and finish—no easy feat for a system in the €35,000 category. An absolutely fantastic loudspeaker system!

© FIDELITY Magazine

CHALLENGING = ■ A component is 100% intuitive if you can exploit its potential to the full intuitively.  
INTUITIVE = ■

and sophisticated perfection of the Tonda D in words, despite all the practice I've had. If you asked me to come up with one word that sums up Vimberg's top model best, I'd instantly say "timing." The Tonda is so incredibly precise, has such wonderful impulse stability, and is so lacking in reverberations it has the listener immediately and totally in its grips by its performance.

All parameters that depend on accurate timing and clean phases benefit from the speed. This particularly applies to spatial reproduction, depth gradation, and the unbelievable dimensional flair pervading from the speaker. Whether it's voices, instruments or percussion, the Tonda D reproduces everything as precisely as it was recorded, projecting the actors onto an incredibly plastic and holographic stage. What's more, the degree of precision that has reverbs and echoes melting and vanishing into the speaker's seemingly endless depths is downright outrageous.

I realize it's shabby of me to have not already touched on the Tonda D's totally uncolored frequency response, but that's a natural consequence of its perfection. After all, you only really notice the tonal tuning when you detect inconsistencies. And that's certainly not the case here. From the lowest bass depths right through to the highest spheres, this speaker does everything right without pushing its way into the foreground. Its restraint should be a lesson in point for most other loudspeaker manufacturers. Sophistication and objectively reproducible finesse unite to create an emotionality that's difficult to describe in words. The captivating spell the Tonda D exerts on the listener is impossible to escape—at least for the members of our editorial team. Over the following weeks of putting

ACCOMPANYING EQUIPMENT  
**Amplifiers:** SPEC RPA-MG1000, Aavik U-380, Trigon Exceed | **Sources:** T+A MP1000E, Audiodata MusikServer MS II, Melco N1A, Auralic Altair, Naim Uniti Nova | **Loudspeaker:** Wilson Audio Sasha DAW | **Rack:** Creaktiv Midi Reference, Solidsteel Hyperspike | **Cables:** AudioQuest, Chord Company, Wire World

the Tonda-SPEC pairing through its paces, I heard one sentence (or one very like it) several times over: "That's the best performance we've ever experienced in this listening room." And, to put this into context, we've had an awful lot of equipment in there over the years.

One final point we need to consider here: Do the development effort and material outlay we've discussed actually justify the hefty price tags of €28,000 (for the Tonda C model) and €35,000 (for the Tonda D)? Although we believe that's something each person has to decide for him- or herself, we would definitely answer such a question with an enthusiastic "yes"—and highlight that with a yellow marker pen! Practically everything about the Tonda is one step ahead of most competitors and has been more rigorously implemented. The developers haven't compromised one bit. In addition to all this, the Tonda D has a close visual and technical resemblance to Tidal Audio's Akira, the Holy Grail of many hi-fi fans and just as unattainable. And, from the very first second on, its sound provokes pure emotion of precisely the same kind, elevating the Tonda D into the elite league of "super speakers." ■

#### Loudspeaker | Vimberg Tonda D

**Type:** Three-way floor-standing loudspeaker with dual bass reflex channel | **Cabinet:** elaborately stiffened HDF with decoupled mid/high unit | **Drivers:** 30-mm dome tweeter with Accuton artificial diamond diaphragm, 168-mm mid-range woofer with Accuton ceramic diaphragm, 3 x 190-mm woofers with Accuton ceramic-aluminum sandwich diaphragm plus honeycomb structure | **Interior wiring:** Mogami, pure silver binding posts from Argento; on request, installation of desired speaker cable from terminal to crossover (about 10 cm) | **Impedance:** 4 Ω (minimum 3.4 Ω at 100 Hz) | **Efficiency at 2.83 V/1 m/1 KHz:** 90 dB | **Color:** Summit White and Jet Black (high gloss); Summit White, Jet Black, Slate Grey, Sonoma Orange, Amethyst, and additional colors on request in silky matte "Velvetec" | **Weight:** 96 kg per unit (142 kg with flight case) | **Dimensions (W/H/D):** 44/144/63 cm | **Warranty:** 10 years | **Price per pair:** about €35,000 (Tonda C about €28,000; upgrade available from C to D)

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# ANSUZ SPARKZ TC2 HARMONIZER AND ANSUZ MAINZ A2 POWER CABLE

By Michael Vrzal. Photography: Ingo Schulz





Accessories specialist Anszu has an excellent reputation all around the world in the field of high-end power supply. In terms of the technology it deploys, the Danish manufacturing company prefers not to follow the herd, instead forging its own path. Rather unusually, the descriptions for its cables contain no information about the composition of the conductor material or any of the special metallurgical processes involved. Nor are details regarding the mechanical construction any more forthcoming. However, the technology responsible for the great sound quality they achieve isn't hidden from curious prying eyes by a hefty dose of casting compound, and for that the manufacturer gets a big thumbs-up. The sound-efficient plug-in modules called "Sparkz," for example, let users have a good

nose at what lies beneath their black plastic cover. There, curious audiophiles will find the beating heart of Anszu technology: the "Tesla Coils." These skillfully handcrafted wire wraps don't fit the traditional description of a "Tesla Coil" you'd find in an online encyclopedia, namely that of a "resonant transformer for producing high-frequency alternating current voltage." Rather, Anszu masterminds Michael Børresen and Lars Kristensen have said they took inspiration from the great Nikola Tesla and came up with their own way of influencing mains power interference: the process they developed in-house generates vibrations and feeds them into the device powered with mains voltage. This is where Michael Børresen's expertise as an authority on all types of resonance and vibrations was really able to shine.

The plug-in Sparkz module and the A2 power cable are part of a whole range of Anszu products designed to optimize mains power supply. The Sparkz TC2 ("TC" stands for "Tesla Coil") consists of a two-pin grounded "Schuko" plug, the contact pins of which are connected to a small circuit board which boasts a total of six Tesla Coils, as well as a small handful of other electronic components. When you insert it into an empty socket of your system power strip, or even directly into a wall socket, you shouldn't expect any of the usual effects from the circuitry (whose operating principle can't be identified in any greater detail), such as suppression of direct current components or filtering of high-frequency interference. The manufacturer describes what happens instead as follows: "The suppression of interference in the Anszu ►



Sparkz is fundamentally different from the technology used in power conditioners in that it acts in parallel with the current flow and adds ‘counter-signals’ to any detected interference.” Why not use traditional filtering methods? “We are not prepared to accept the negative effects of elevated inductance (compression, reduced dynamics and reduced energy).”

The entry-level power cable is part of the A2 cable series and features the kind of impressive physical properties and craftsmanship that you would expect from a cable manufacturer’s top-of-the-range products. There is no information available regarding conductor material, cross section or configuration. Instead, the focus is once again on proprietary technology, namely Direct Ground Connector (DGC) technology and Double Inverted Helix Coil (DIHC) technology. Ansz cable specialist Lars Kristensen considers earthing/grounding to be hugely important. Here, the manufacturer’s Mainz 8 power distributors (components featuring equally interesting technology which cannot be conclusively grouped either in the series of filtering power strips or in the category of power conditioners) also represent a logical

progression of the company’s in-house technical approaches.

So, did I see sparks fly with the Sparkz? I decided to listen to the *Kind of Spain* CD by the exceptional German drummer Wolfgang Haffner accompanied by a string of other talented jazz players. The track entitled “El Vito” starts with a trumpet intro by Sebastian Studnitzky via the right-hand channel, to which the guitar of Daniel Stelter responds via the left-hand channel. Only then does the band strike up with a funky, jazzy flamenco groove. When I inserted the Sparkz TC2 into a free socket in my power strip (plastic housing, star cabling and no filters), I was initially confused because something was definitely happening but it wasn’t what I had expected at all – no larger space, no deeper bass, and no higher resolution. I plugged it in and pulled it out several times until it finally hit me: the three-dimensionality of the instruments was being traced as if with a precisely configured contour filter. With the Sparkz, the trumpet’s physical presence seemed less wide and more direct. The guitar sounded more concise and the musicians seemed more focused. I also noticed similar changes with

piano recordings. Listening with the Tesla plug-in module, the pianist seemed to edge ever so slightly towards the front of his stool and in doing so played the keys more deliberately. The sound became a touch more precise. The Sparkz is an extremely interesting gadget which will no doubt be able to show off its qualities in terms of three-dimensionality and resolution to the fullest when used as part of an ambitiously configured system. The power cable, on the other hand, gives sound quality a serious, immediate boost. There’s no need to listen for a long time, reflect and make comparisons. The Ansz A2 injects energy, a sense of presence and dynamics—even drama into the system. But I don’t want to give too much away. It’s a magnificent cable that makes a real statement. This may be a glowing recommendation but don’t just take my word for it—check it out for yourself! ■

**Ansz Sparkz TC2 harmonizer:** approximately €1,000 | **Ansz Mainz A2 power cable:** approximately €2,700 (2 m)

**Ansz Acoustics | Rebslagervej 4 | 9000 Aalborg | Denmark | Telephone +45 40 223102 | [www.ansuz-acoustics.com](http://www.ansuz-acoustics.com)**

**KIM,  
I'M YOUR  
FATHER.**

**BORG**



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Wilson Audio Specialties / David A. Wilson (†), Daryl C. Wilson

# WORLD CLASS GUARANTEED

By Cai Brockmann (†). Photography: manufacturer and Ingo Schulz

NO OTHER LOUDSPEAKERS IN THE WORLD EPITOMIZE "HIGH-END AUDIO" QUITE SO UNEQUIVOCALLY AS THE SUPERB YET PRICEY DEVICES FROM WILSON AUDIO SPECIALTIES—WHILE SIMULTANEOUSLY ENRICHING THE TERM WITH MUSICAL EXUBERANCE.

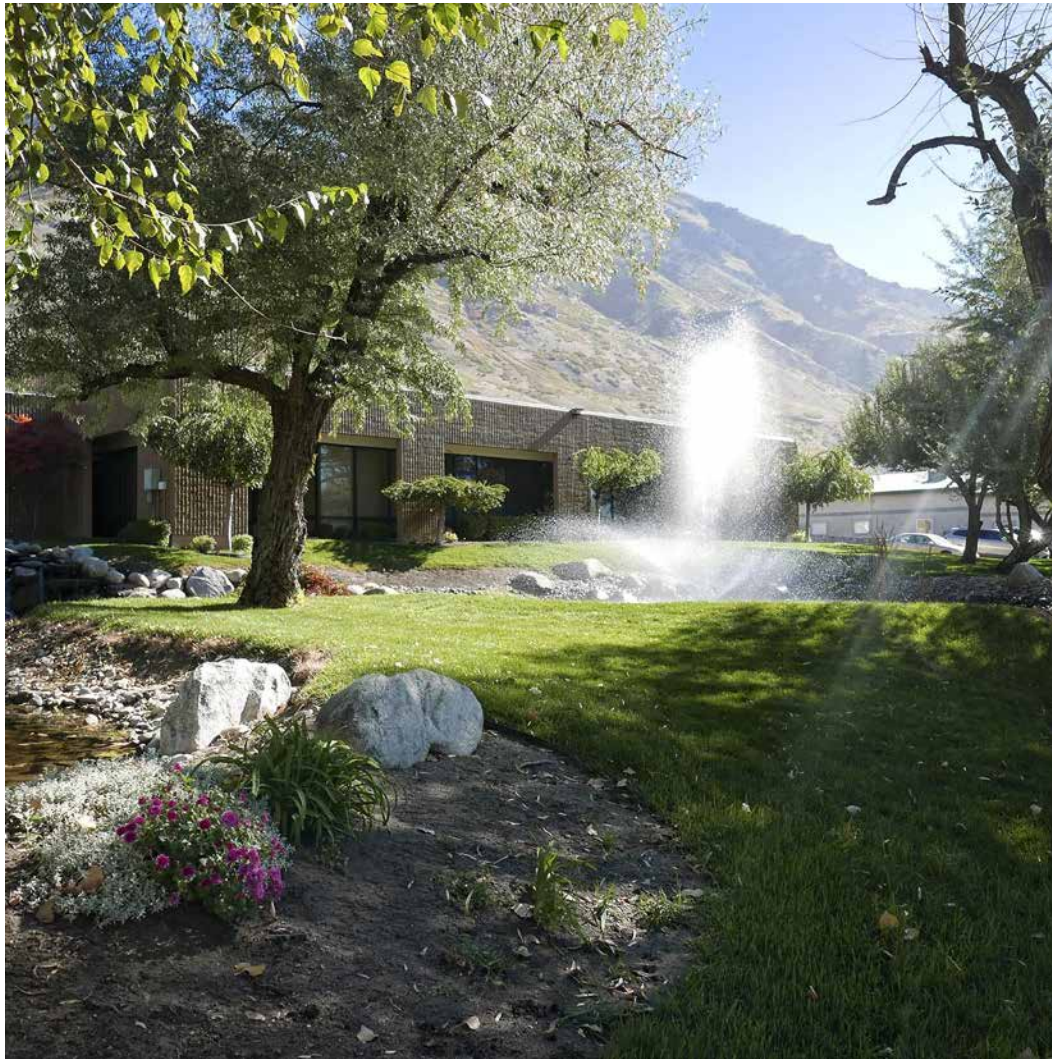


The following article is a reprint from the book *Who is Who in High Fidelity*—Vol. 2, the compendium from FIDELITY MEDIA GMBH, 2017









\_\_\_\_\_ Since its inception in 1974, the Wilson Audio Specialties brand has been inextricably linked with the name David A. Wilson. According to the company's founding father, however, his passion for music and sound quality goes back a lot further—to the Christmas Eve of 1957, in the Californian town of Glendale. Aged twelve at the time, what young Dave really wanted to do was “go to sleep as quickly as possible so that Christmas Day would come around sooner” and he'd be able to play with the chemistry set he was so hoping for. But one of the neighbors had other ideas. He had set up a large loudspeaker in front of his house and was playing Christmas carols to spread some festive cheer. Unable to sleep, Dave decided to look out of his bedroom window to see who all the singers were, and why they seemed to be performing non-stop. What he saw astonished him—instead of a large choir, the only thing in sight was his neighbor's Klipschorn speaker. This was a formative experience for the young boy, one that would eventually lead to the establishment of Wilson Audio Specialties some seventeen years later.

Although David Wilson's professional career in the 1970s was spent in the medical and pharmaceuticals sectors in the Bay Area, he had long since been bitten by the music bug. But hi-fi was more than a pure hobby even then, and he was already turning a small profit from his activities. In the early 1970s, he created a product christened the “SM.ART” by

adding an SME tonearm and a customized sub-chassis to an Acoustic Research turntable. This creation, however, quickly disappeared from the market. By this time, David Wilson had already started to write articles for *The Absolute Sound*. Using a modified Revox A77 tape machine and minimal microphone setups, he had also published his own recordings under the “Wilson Audiophile Recordings” label. The range was broad—small and large line-ups, performed by choirs and orchestras, recorded in concert halls or cathedrals—but always featuring acoustic, unplugged music. The label released its first record, an organ concert featuring James Welch, in 1977.

But, because the sound on his home stereo system wasn't comparable to that he had experienced during the recording, David Wilson began to experiment with the construction of loudspeakers. By combining a Dahlquist DQ-10 with an array of JansZen electrostatics and a Braun mini-monitor, Wilson achieved such promising results that he decided to experiment further in this direction. He discovered, almost by accident, that the distances between the individual speakers have a significant impact on the sound produced. This is a phenomenon that the sound engineer Ed M. Long had noticed a short time beforehand. Called “time alignment”, it was the realization that a good overall sound can be achieved when the individual signals all arrive at the listener's ear at precisely the same moment. ▶





Wilson determined that good time alignment is a factor in discernibly enhancing sound quality in general, and particularly in improving the localization of individual sound events.

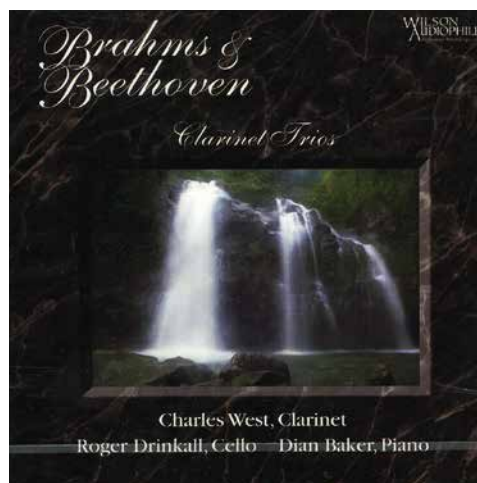
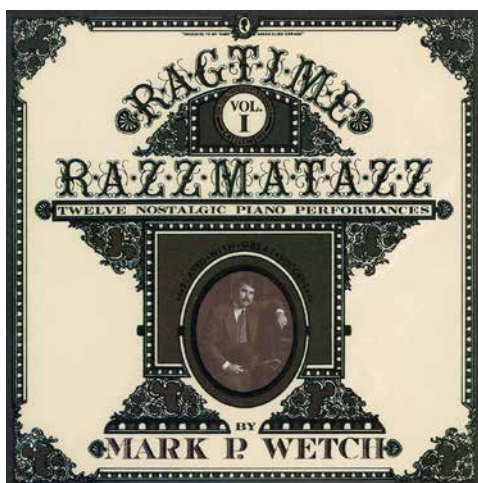
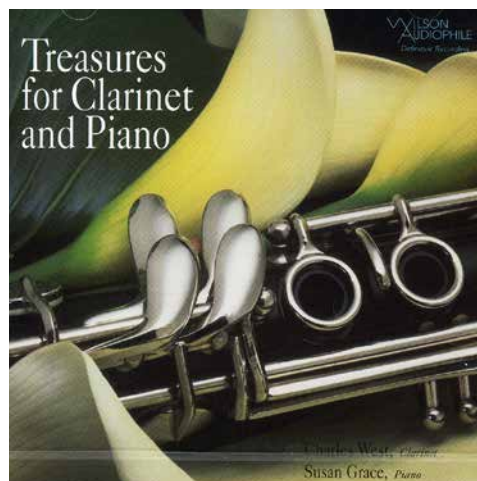
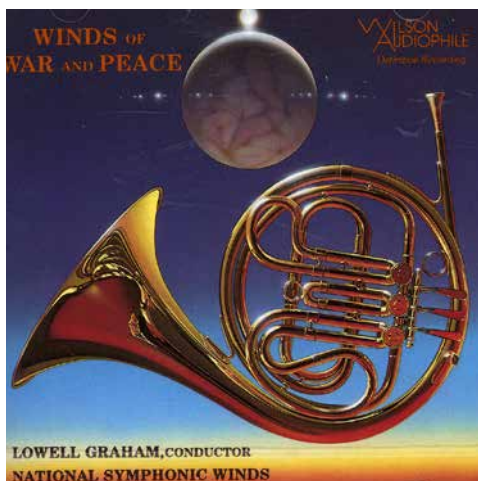
Encouraged by this discovery, David Wilson now began to refine the tonal and dynamic range of his speaker system as well—always benchmarking against the original sound experience. The result of his efforts was the “Wilson Audio Modular Monitor (or WAMM), the first-ever Wilson Audio brand loudspeaker, and the first speaker at all to feature mechanically adjustable time correction. The WAMM was unveiled for the first time at the Winter Consumer Electronics Show (WCES) 1982 in Las Vegas, causing an immediate sensation. The WAMM system was made up of six individual components: two over six-foot high subwoofer towers (with the tremendous bass chassis from Magnat), two similarly tall full-range array towers (equipped with the already legendary KEF B139 woofers, Braun mini-monitors and electrostatic arrays from JansZen), a modified professional-class equalizer for controlling the full-range array towers and an active crossover for the subwoofers.

As you might expect, the WAMM project was masterminded by David Wilson. However, the person who played the most important role in driving it forward was his wife Sheryl Lee Wilson, whom he had met while studying at Brigham Young University in Provo, Utah. It was Sheryl Lee who finally convinced Dave to pursue his interest in audio as a

full-time job. What clinched it was a question: “Dave, do you really want to wake up at the age of 50 and wonder how things could have gone if you’d taken the plunge?”

This was precisely the question David Wilson didn’t want to have to ask himself, and he went on to create the WAMM, a speaker that broke completely new ground. At the time of its launch, the WAMM was way ahead of the competition. It was richer, closer to the original sound experience and generated a higher level of sound pressure. It’s regarded as the first speaker to reproduce something approaching the original dynamism of live music. This is much more than just pure volume, it’s the capability of reproducing sophisticated precision dynamics even at high sound levels. Already iconic on its unveiling in 1982, the WAMM speaker was to remain part of the Wilson Audio portfolio for over two decades. Its continuous refinement and upgrading was reflected in both the series number (Series 1 to 7) and the steadily increasing price. Costing \$35,000 dollars when it first appeared, the price had already risen to \$42,000 dollars by the second year of manufacture. Eight years and 25 installed WAMM systems later, the asking price was \$88,000 dollars, climbing to around \$240,000 dollars by the time production was discontinued in 2004. The only features common to all series are the modular design, the adjustable mechanical time alignment and the KEF B139 as bass driver. All other components have been continuously improved, down ▶





to the tiniest detail. The developers soon realized that the material used for the cabinet had an enormous impact on the speaker's performance. This quickly led to major quality enhancements, accompanied by price increases to cover the rising costs for materials, tools and working hours. By 2004, a total of 53 WAMM systems had been sold worldwide. David Wilson always regarded the WAMM as the perfect instrument for assessing the quality of recordings—an opinion that was shared by unbiased hi-fi testers. All agreed that there was no other loudspeaker better able to reproduce the live concert experience. Despite all this, the WAMM project almost ended in disaster for the Wilsons and their fledgling company. Once the initial hype was over, and the new orders started to come in at a much slower pace, David and Sheryl Lee Wilson were forced to sell their house in order to continue operating. In this period, they focused their creative activities once again on Wilson Audiophile Recordings.

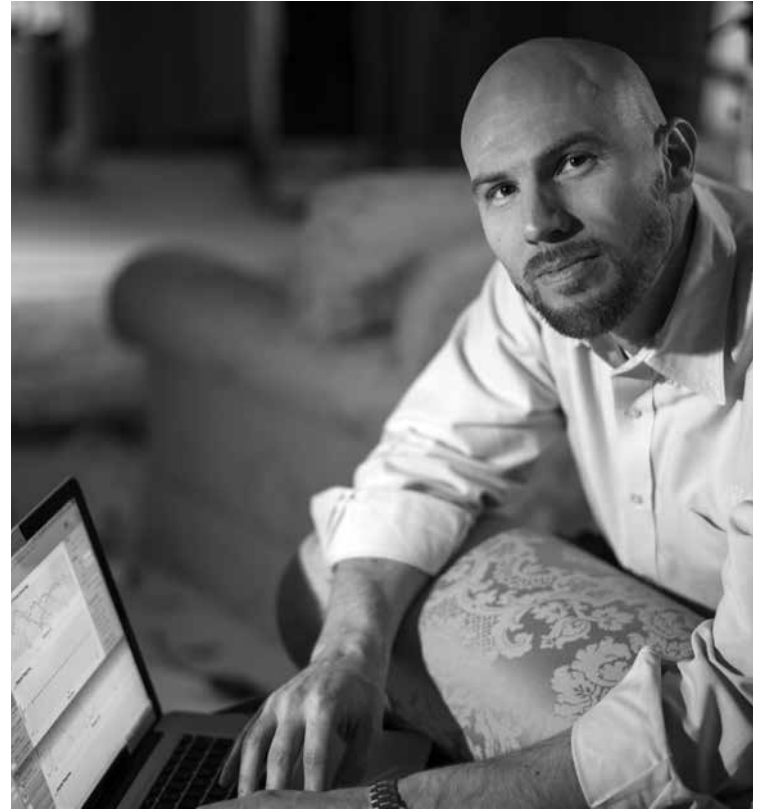
The breakthrough for Wilson Audio as a speaker manufacturer came in 1985 with its second product, the WATT (Wilson Audio Tiny Tot). Its development was due to David Wilson's need for a small monitor he could easily take with him to recording locations, but one that was still capable of delivering the desired sound quality. Satisfying both requirements, the portable WATT (just like the WAMM), was initially designed purely to help with recording work. Unlike the chief developer himself, dealers of his acquaintance immediately realized that the "tiny tot" was

capable of delivering a great performance as part of a hi-fi system as well. Once again, it was Sheryl Lee Wilson who overcame Dave's reluctance and persuaded him to market the WATT as a product. And this proved to be a great decision. Despite being by far the most expensive speaker of its size, the WATT became a best-seller in audiophile circles. Later on, the WATT was given a bass sidekick called Puppy, and this WATT/Puppy duo enjoyed sales success worldwide, establishing Wilson Audio's primary reputation as a speaker manufacturer.

The original WATT benefited experience gained during development of the earlier WAMM, particularly with regard to the driver delay times. This resulted in the tweeter being mounted separately behind the bass driver on a backward-angled baffle. In later versions, several spacing positions were selectable depending on the individual listening environment. Alongside all the driver variants, cabinet materials and innovative technologies, all Wilson Audio speakers have continued to illustrate the groundbreaking principle that time-coherent propagation is fundamentally important to optimum reproduction. This is part of Wilson Audio's DNA.

Although the first 20 years of the company's history were shaped by only three speakers—the WAMM, the WATT and the Puppy—in the two decades that followed, David Wilson and his growing team of handpicked experts developed no fewer than 16 new mechanically time-aligned products, of which the larger models were additionally adjustable. ▶





Some ten years after production of the WAMM Series 7 had been discontinued, David Wilson and his son Daryl, a permanent company fixture since 2002, began to look at ways of putting the company's 40 years of know-how into a further product that brooked no compromises. The lessons learned in the fields of materials, driver technology and mechanical time alignment were ultimately brought together in a speaker that—just like the original WAMM—set a completely new benchmark in music reproduction. With the WAMM Master Chronosonic, officially launched in 2017, David and Daryl Wilson were able to create a further paragon of technical sophistication and sound quality.

It's a modular system. But, unlike the original WAMM, this six-way loudspeaker requires no separate subwoofer and equalizer. (Anyone still looking for more power in subsonic regions can opt for Wilson Audio's flagship subwoofer, known as "Thor's Hammer".) The seven drivers on the front side of the Master Chronosonic are distributed across a total of six modules. The five tweeters and mid-ranges on the front side are equipped with an extremely flexible mechanical time alignment mechanism, making it possible to adjust the speaker system's timing for any listening position. A further tweeter and mid-range are mounted on the rear side. Weighing as much as a concert piano, the speaker is over half

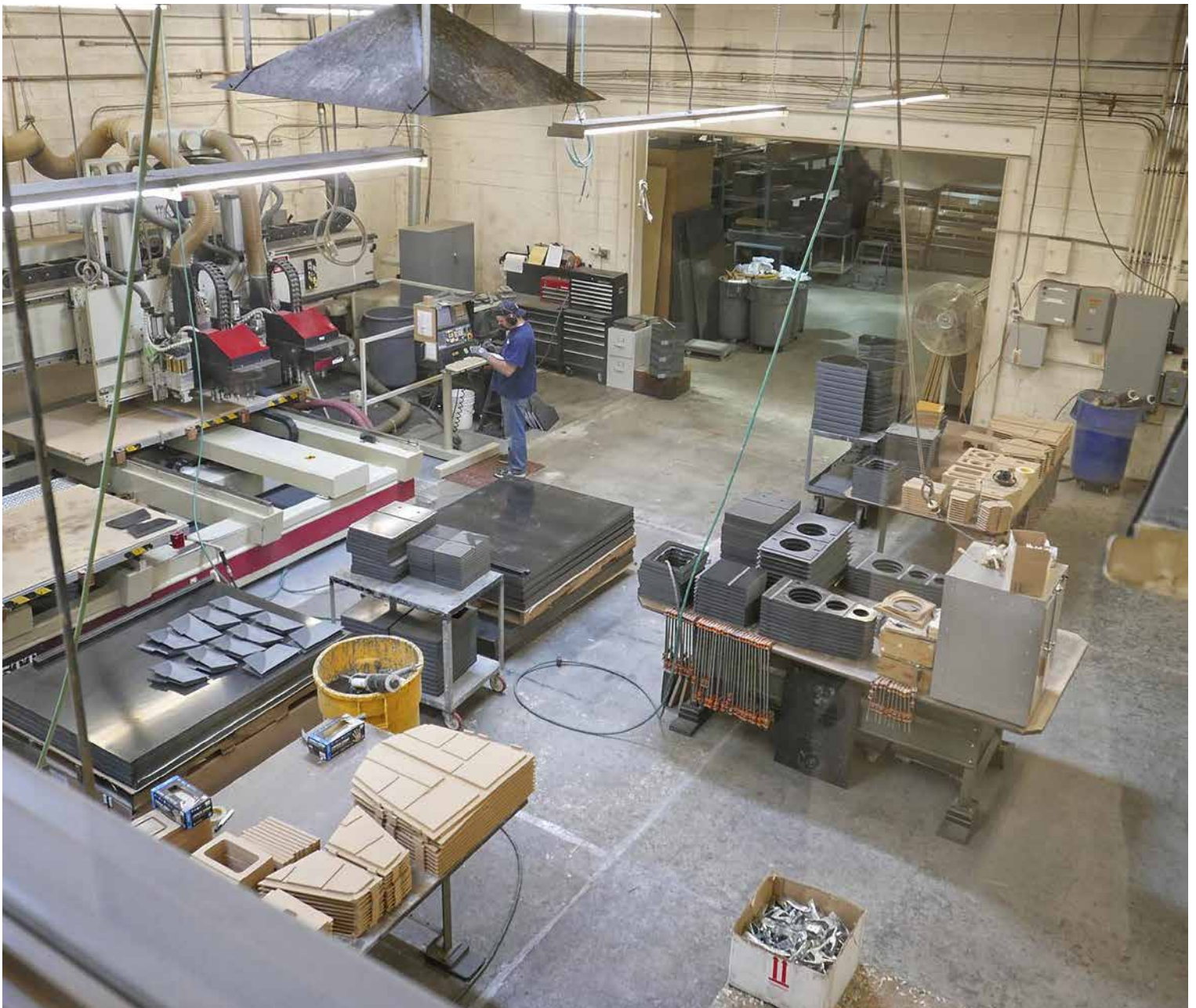
a meter wide, more than two meters high and almost a meter deep. The WAMM Master Chronosonic is a Limited Edition product. Only 70 pairs will be produced altogether, each going for a price approaching seven figures.

The qualities that have turned Wilson Audio into arguably the most famous (but unquestionably the most iconic) speaker brand of the past 40 years are all demonstrated in the spectacular WAMM Master Chronosonic—but definitely not in this new flagship alone. The company's experience and expertise is reflected in every product it manufactures, with truly excellent workmanship right down to the tiniest details. Thanks to its internally developed X, S, and W materials, even the smaller models are astonishingly heavy, resulting in practically zero cabinet vibrations. All the drivers have been specially produced for Wilson Audio and arranged into perfectly aligned sets, always in combination with the sophisticated and molded crossovers.

Since moving its base to spacious, new premises in 2006, Wilson Audio has around 2,300 square meters at its disposal in Provo, Utah. All 50 members of staff in development, production and distribution work under one roof. With labs, development departments, workshops and assembly stations, measuring and listening rooms, an in-house paint ▶







shop, and even a huge, professionally equipped photographic studio, Wilson Audio boasts an extremely high depth of vertical production. Wilson Audio's full range of service also includes training dealers to provide expert advice to customers. And anyone who has the opportunity to attend one of the events held by Peter McGrath (Wilson Audio's brand ambassador), should definitely jump at this chance to hear a range of "live" demo tracks.

The Wilson family is imbued with a deep-seated passion for music, and the decisive role this has played in the development and fine-tuning of the company's speakers shouldn't be underestimated. For decades now, David Wilson has spent two weeks every year in Vienna, attending every single one of the Musikverein's daily rehearsals as well as their evening performances. He is particularly fond of the works of Gustav Mahler, and Mahler's music has already been responsible, at least indirectly, for the development of a new midrange driver at Wilson Audio. The current tweeter can also trace its origins back to Mahler's compositions. This is

because the Wilsons, senior and junior alike, are constantly striving to identify the essence of a live concert experience—and pinpoint what tends to be lost when recording the same event. So they continue their almost obsessive search for the elusive magic of a live concert in order to capture it in their own speakers. And whenever a new midrange or tweeter brings them a little closer to their ultimate goal, it becomes the natural driver of choice. It is possibly this positive obsession that makes the speakers from Wilson Audio so very special.

At the end of 2016, David A. Wilson (born in 1945) stepped down from his leading management role and turned over the reins to his son, Daryl Conrad Wilson (born in 1978). As new President and CEO, Daryl is now responsible for day-to-day company management, along with COO Korbin Vaughn. The wheel has now turned full circle, with both the beginning and end of Dave Wilson's active career in high-end audio being closely linked with the name WAMM—the original WAMM establishing his reputation and the WAMM Master Chronosonic representing his ▶





final crowning achievement. Although the legendary company founder has passed on control of business operations to his son, he will continue to be involved in the company as Executive Board Chair and a member of the design team. His wife, Sheryl Lee Wilson, formerly Wilson Audio's Vice President, and Dave's valued business partner from the very beginning, will continue to serve the company as Executive Board Vice Chair. The Wilson's have achieved something that many family-owned companies can only dream of—an absolutely seamless hand-over to the next generation.

Inspired by the company's motto of "Authentic Excellence"—and together with the 50-strong team at Wilson Audio Specialties—David, Sheryl Lee and Daryl Wilson are determined to continue building the best

speakers in the world for unamplified music, delivering a reproduction quality that is almost impossible to distinguish from the original performance. — David A. Wilson passed away in 2018 ■

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This is a reprint from "WHO IS WHO IN HIGH FIDELITY"—Vol. 2, the compendium from FIDELITY MEDIA GMBH, to highlight the heavyweights as well as the little guys who still pack quite a punch, and to introduce you to the people behind, to bring some order to the ever-expanding high-end business. Ask for your copy.



Floyd E. Toole's Sound Reproduction

# ABSOLUTELY VOODOO- FREE ZONE!

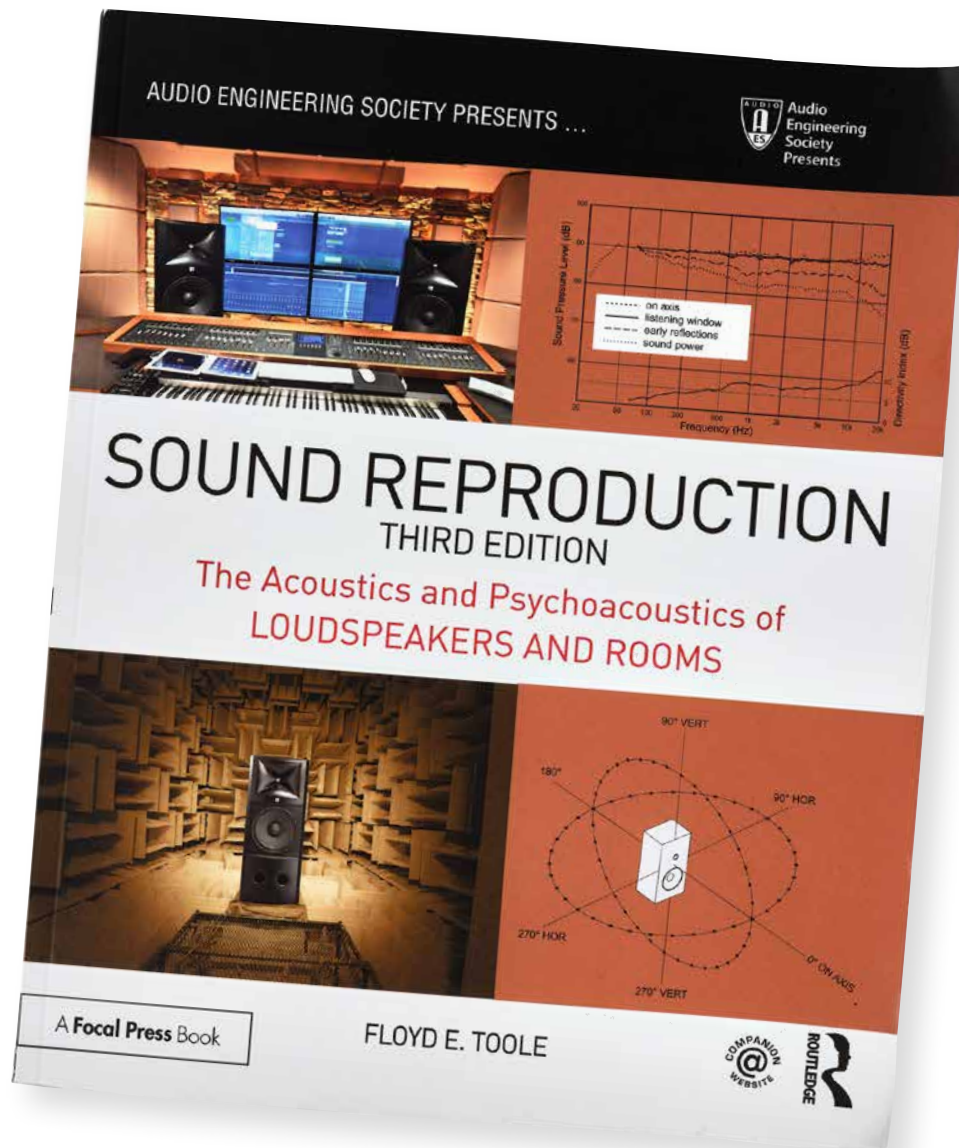




FIGURE 7.19 The author's "classical" stereo fabricating room, ca. 1980. The stereo itself was just a bit off of the camera location. The Black "microbush" amp appears Mirage M1s.

Over the years, a parade of loudspeakers went through that room, and all designs reflected sounds exhibited different spectra, and conventional forward-facing loudspeakers drew attention to themselves. With many common, frankly primitive, room-averaging techniques, entire sections of the orchestra inappropriately emerged from a slight apparent source width (ASW) is an important ingredient of the design of a good listening room. Some blaring and expansion of the soundstage in those cases was noted. It was also a large room, so significant acoustical output was required to provide the rewarding sound level. That eliminated many otherwise good consumer products. Then, in 1989, a new loudspeaker came on the scene: the almost omnidirectional, bifurcated-in-phase "bipolar" Mirage M1. They performed well in double-blind listening tests in the small NRCC room, and also in this large one. They simply "laced" the orchestra. Figure 7.20a and b show that the direct sound and the sound power was similar, with a slightly lumpy but low DR.

A loudspeaker that approaches omnidirectional radiation should show good agreement between sound power and steady-state room curves. In (b) the steady-state room curve was measured at a single location, the prime listening position. No spatial or temporal averaging was used, so the curve is not smooth. One parametric filter was used to tame a room resonance at 42 Hz (see Figure 8.11). Figure 7.20c shows the result compared to a measurement made at a different place and time, and because of

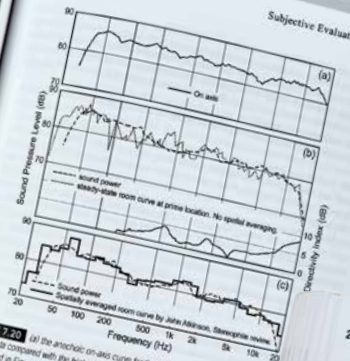


FIGURE 7.20 (a) the anechoic on-axis curve for the Mirage M1, (b) the calculated sound power curve compared with the high-resolution room curve measured at the prime listening position (see Figure 7.19 for spatial averaging), (c) the calculated sound power compared against a 10-octave resolution, room curve measured by John Johnson for a new publication, June 1989 (later with permission).

the spatial and spectral averaging the agreement is seen to be good. The measurement has been substantially predicted by anechoic data. I had experienced other omnidirectional and multidirectional loudspeakers, and they could do some spatially interesting things, but not with the speakers isolated being quite close ( $\approx 0.6$  to  $1$  m) to room boundaries, especially to the side and rear walls (see adjacent boundary issues, Chapter 10, California). A key factor was that all of the many reflected sounds when the direct sound. The acceptable listening area was quite large (distance of 22 ft (6.7 m)). The human precedence-effect processor is especially pleased because the soundstage and imaging were surprising

224 CHAPTER 8 Below the Transition Frequency

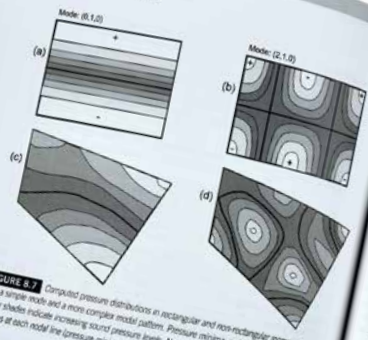


FIGURE 8.7 Computed pressure distributions in rectangular and non-rectangular rooms, showing in each a single mode and a more complex mode pattern. Pressure minima, nulls, are shown by heavy lines. Lighter shades indicate increasing sound pressure levels. Note that the instantaneous polarity of the pressure reverses at each modal line (pressure minimum).

8.2 SOLUTIONS FOR THE REAL WORLD

All of the topics to be discussed are in the peer-reviewed literature, some of it for a decade or more. There is nothing new here, but new generations of audiophiles need to become aware of it and learn how to use it to their advantage. Internet forums continue to have debates over issues long settled, and those with business interests continue to appear to their advantage. The old expression: "If all you have is a hammer, everything looks like a nail" has an audio parallel: "If you sell acoustical materials, all listening rooms need extensive acoustical treatment." Maybe, maybe not. Acoustical materials are important ingredients in the solutions, but where historically they were the only solutions, there are now some interesting options.

- There are three audible problems related to modes:
1. Frequency: The amplification or attenuation of specific sustained bass notes (e.g., bass guitar, synthesizer, organ) at different frequencies. Pitch shifting is another subtle possibility, as a rapidly decaying mode at one frequency is replaced by a mode with a slower decay at an adjacent frequency.
2. Time: The prolongation of brief bass sounds, like a kick drum, by ringing that can occur at one or more resonance frequencies (bass "booms").

- 3. Spice: The variations in (1) and (2) that occur at different seats in the room. No two listeners hear precisely the same bass.
4. Beating: A lesser-known effect that occurs when two modes are very close in frequency. It can cause uneven decay of sound near the resonance frequency.

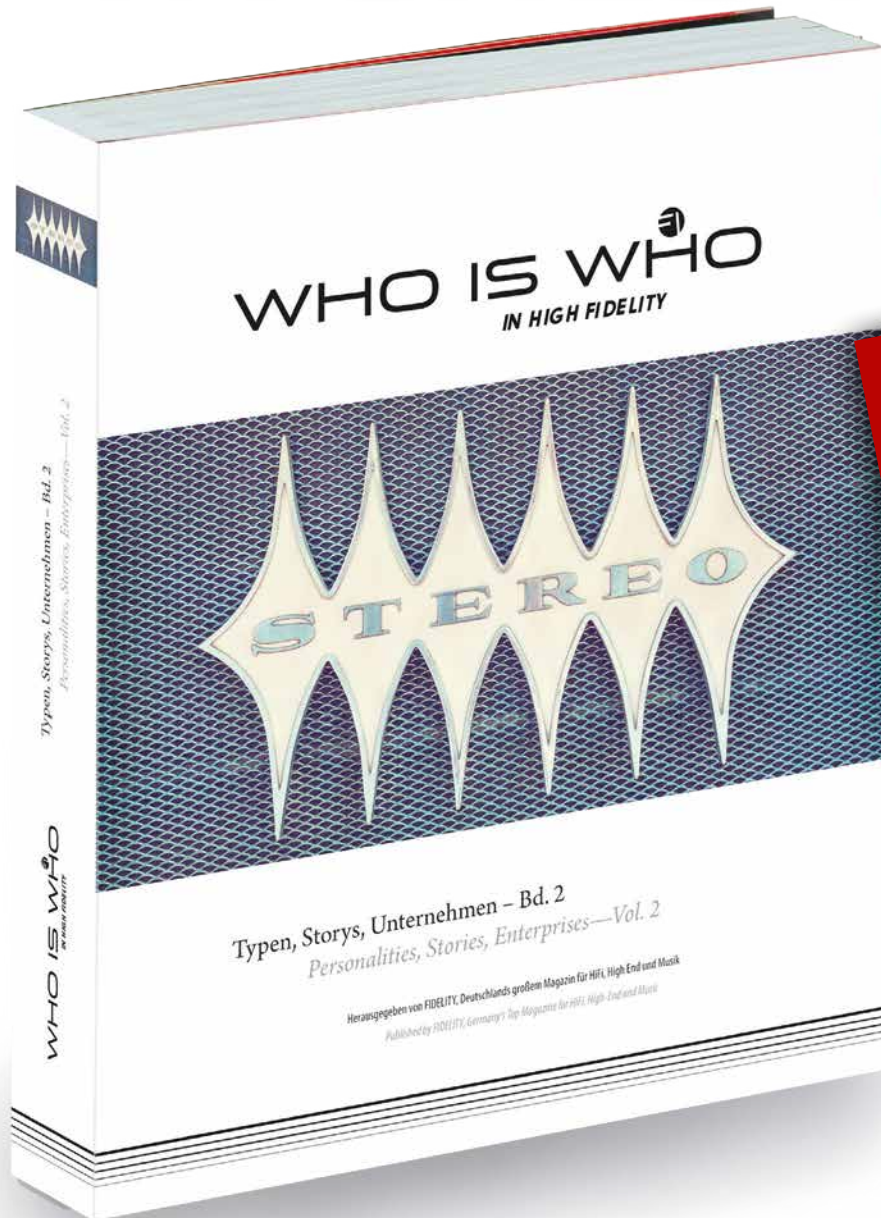
The audible degradation depends on:
• The amount of energy transferred from the woofer/subwoofer(s) to the standing wave pattern, how many there are, and the specific nature of the signals in the room. Those factors determine which room resonances are energized and the extent to which they are energized.
• How audible individual resonances are to listeners. This is determined by where the listener sits. The standing waves associated with the room modes cause large seat-to-seat variations. As you move around a room, substantial variations in bass level and quality can be heard—different modes are audible at different locations. At very low frequencies, loudness changes by a factor of two with a mere 5 dB sound level change (see Section 4.4), compared to about 10 dB at middle and high frequencies. Therefore, small changes in bass level seriously influence impressions of spectral balance; a deficiency of bass is often perceived as an excess of treble, and vice versa.

For decades the only way to improve bass sound in small rooms has been to employ low-frequency absorbers or bass traps to damp the resonances. These are necessary in studios or control rooms, or even in dedicated stereo listening rooms or home theaters. However, high-quality reproduced sound is also desired in rooms that serve as normal living spaces, where visual appearances, even style, are a high priority. Consequently, it will be seen, the author has been motivated to find alternatives to the traditional methods.

- The decision of which method to employ depends on your circumstances, balancing the factors of appearance, performance, and cost. The good news is that there are alternatives here are some of the popular options to addressing the "room boom" problem:
1. Deliver energy to the modes and dissipate some of that energy with absorbers.
2. Deliver energy to the modes and reduce the coupling of that energy to the listener by optimizing the listening location.
3. Reduce the energy delivered to a bothersome mode by optimizing the subwoofer location.
4. Reduce the energy delivered to a bothersome mode by using high-resolution measurements and parametric equalization (matching frequency and Q) to attenuate the mode.

Sound Reproduction is nothing less than a comprehensive life's work on acoustics. Floyd E. Toole spreads his accumulated expertise on acoustics, psychoacoustics, loudspeakers and the behavior of rooms on 490 pages. The current retiree worked in research at the National Research Council of Canada and, in his capacity as a consultant to various audio companies, received the Gold and Silver Award from the American Audio Engineering Society. If you have always wanted to delve deeper into the subject matter of acoustics, you will find probably the most comprehensive and well-founded compendium that exists at the moment. Toole guides you through the individual chapters with great safety and always stays within the framework of his scientific background. In doing so, he succeeded in explaining all the topics of acoustics in an easy-to-understand way. The only downside: The book is unfortunately only available in English. For more information about Sound Reproduction (Third Edition), see

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# MY WAR ON LPS

By Steven Bryan Bieler

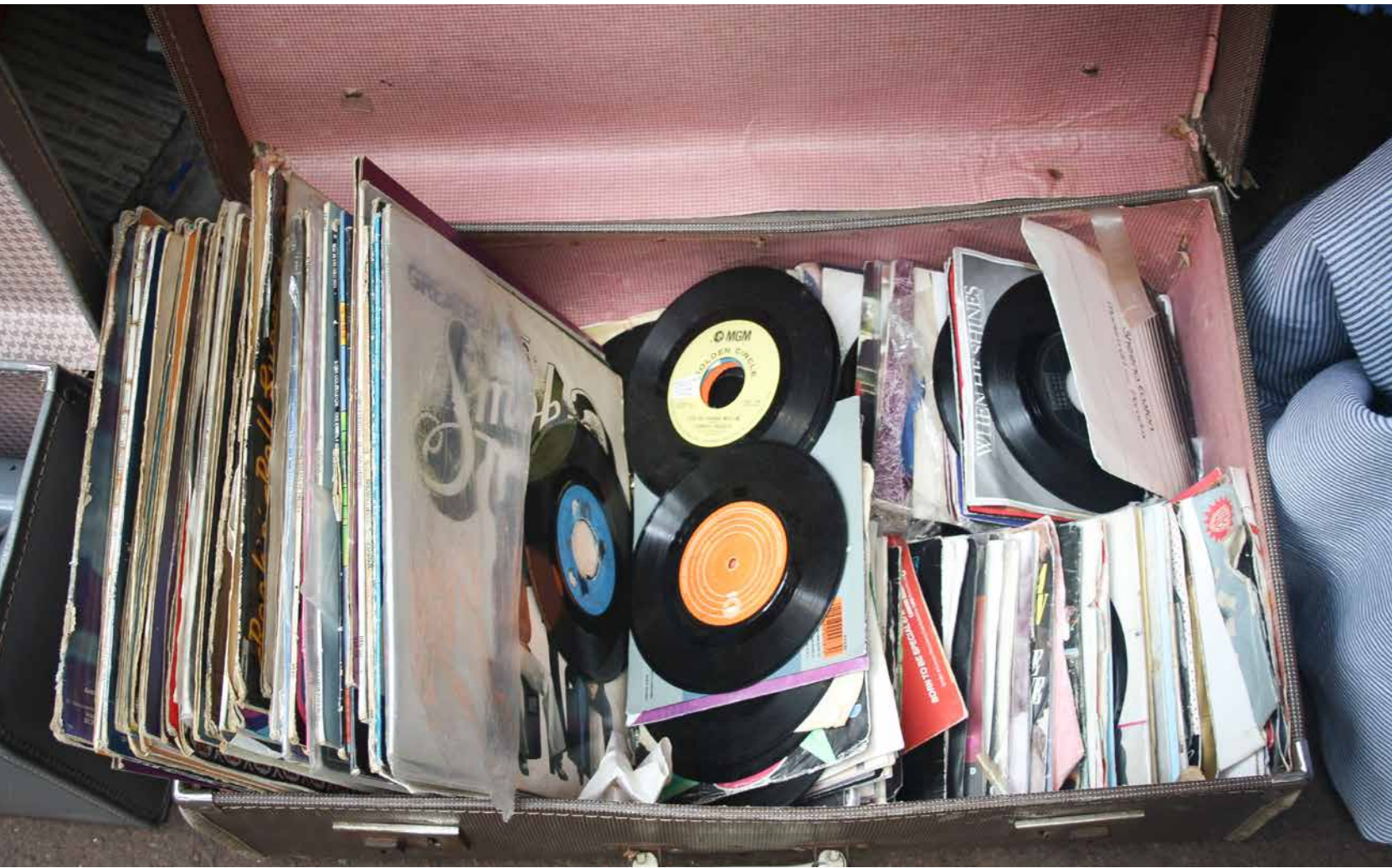


image courtesy of Pixabay/Nathan Copley



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Read this article also in *Copper*: <https://www.psaudio.com/article/my-war-on-lps/>







\_\_\_\_\_My life took a swerve in the summer of 1974. Did I have an affair with an older woman whose husband was away in a war? Did I learn that love means never having to say you're sorry? Was I picked by the Red Sox in the first round of the amateur draft?

None of the above. I spent the summer earning money for college by working in a record warehouse, filling orders for record stores in Southeastern Massachusetts and Rhode Island.

This sounds like a good swerve, doesn't it? A music-obsessed teenager surrounded by sky-high shelves of long-playing records, all current. What else could I ask for?—Aside from the paychecks, a lot!

There was no air-conditioning in this cavernous space in the middle of suburbia. No place to

eat lunch. The only music they played while we worked was a tape loop of 1950s pop. I heard the Coasters' "Yakety Yak" three times a day. There was no employee discount because there was no need for one; most of the employees were Portuguese immigrants with an imperfect command of their new language. They weren't in the market for Pink Floyd records. The tiny population of teenage boys on the job who were in the market for Pink Floyd records was, to use the technical corporate term, too small to f\*ck with.

But the main drawback to this job was the astonishing weight of the LPs en masse.

After pulling orders for various music shops, I had a stack of records on my two-wheel hand truck that weighed 16 tons, by my estimate. The stack grew so high that I had to cinch it

down with a seat belt. I pushed and pulled this captive mass of vinyl through the warehouse to the loading dock, where I unloaded the records into bins. Walking the empty two-wheeler back to my starting position and accepting the next list of orders gave me a few moments of rest. And then I resumed pulling orders.

My sweat-soaked days in the warehouse (I particularly loathed double-record sets such as Yes' *Tales of Topographic Oceans* and Chicago VI and VII and I thank the gods of audio engineering that Chicago's four-record live album was before my time) were reinforced the following year in Boston. I worked for a moving company that specialized in transporting students' stuff in and out of their dorms and apartments. My specialty within this specialty was moving their record collections. I was assigned this duty for my own safety, to keep me away from the ▶



Part of **Frank Doris'** vinyl collection  
(Copper Magazine): "Hey Steven, I think  
I know where some of those records went..."

...or maybe they went here!"  
(**Michael Fremer** of Stereo-  
phile and Analog Planet)



furniture. You get trapped in a stairwell once by a runaway couch and nobody forgets it.

Every day I schlepped plastic and wooden crates packed with LPs in and out of elevators or up and down stairs. (The two albums I saw the most: for the girls, Carole King's *Tapestry*; for the boys, Aerosmith's *Toys in the Attic*.) I swore an oath that I would never own a roomful of these things.

## How to Get Along Without Vinyl

Cassette tapes seemed like the perfect alternative to LPs, being light and compact. My first collection of cassettes sat snugly on the shelves of a spice rack I had made in my junior high shop class. LPs demand that you create a shrine in your house and then sit your ass

down and stay there. Cassettes were the go-anywhere, power-to-the-people format. The first time I fired up *Born to Run* on a boom box outdoors, I cried out, "Democracy is in the streets!"

Ray Chelstowski wrote about his life with cassettes in *Copper* No. 123 ("Tale of the Tapes"). I enjoyed cassettes until I could no longer ignore their drawbacks. My tapes got jammed in the cassette deck in the car. Tape rolled off reels and had to be rewound with the high-tech tool of choice, the point of a Bic pen. The cover art was too small and it rarely appeared on the back of the cassette.

But most importantly, when I wanted to find a song, or when I wanted to skip a song that wasn't a favorite, I had to fast forward again and again and again, testing the air each time, then rewind because of course I had fast-forwarded

my way into the next song. At one point I owned a cassette deck with a counter, which was useful, but I had to write down where each song started and find a place for this list inside the cassette case, which was a chore. I wanted to rawk, not take notes.

In the 1990s, a friend bought himself a new CD deck and gave me his old one. My life swerved again with the impact of a Corinthian column of vinyl busting through the bottom of the bin I was trying to lift. ■

(Special thanks to Frank Doris, *Copper* magazine 125)



**About Steven Bryan Bieler**  
Steven Bryan Bieler is a novelist living in Portland, Oregon, with his wife, his dogs, and his CD collection. He blogs about music at [www.rundmsteve.com](http://www.rundmsteve.com)

thx to twitteringmachines.com

# LINE MAGNETIC AUDIO LM-845IA INTEGRATED AMPLIFIER

By Michael Lavorgna. Photography: Michael Lavorgna



What does the 22 Watt per channel, point-to-point wired, pure Class A Line Magnetic Audio LM-845iA Integrated Amplifier sound like? Perhaps surprisingly, it doesn't sound like much of anything except pure power.





Line Magnetic Audio was established in Zhuhai, China in 2005 by brothers Zheng Cai and Zheng Xi. Both passionate audiophiles, the company offers a wide range of products from amplifiers, preamplifiers, integrated amplifiers, a DAC, and loudspeakers. They are also well known for their replicas of classic drivers and electronics from companies like Western Electric, Altec, and Jensen. As with every product from Line Magnetic I've seen, the LM-845iA is built to a very high standard. Think world-class.

The LM-845iA employs 2x 12AX7 input tubes, 1x 5AR4 rectifier, and 2x 6P3P driver tubes driving a pair of 845 triode output tubes. As we were reminded in my recent review of the Kora TB140 Hybrid Integrated Amplifier, in a classic tube amplifier like the Line Magnetic, the output tubes deliver the output voltage while the Japanese Audio Grade EI output transformers provide the current needed to control your speakers. The LM-845iA's specified 22 Watts of output power should provide enough juice for most sensibly designed speakers but other factors are at play in any amp/speaker pairing puzzle including room size, distance between you and your speakers, and how loud you like to listen. When in doubt, try it out.

The LM-845iA offers three speaker connectors with 4, 8, and 16 Ohms taps, 3 line level (RCA) inputs, and Pre-In if you'd rather use your own outboard preamplifier. I often wonder why anyone would buy an integrated amplifier only to use it as an amplifier but my mind is filled with wonder. Since the LM-845iA ships with the tubes seated in place, getting music playing is simply a matter of lifting this 77lb beast from its double box, putting it where it's going to live (ideally once), connecting your sources, plugging it in, and turning it on. The LM employs a SoftStart, time-delayed circuit which takes about 30 seconds to complete before you'll hear your music. The included and nicely made aluminum remote controls volume and mute.

I never needed to adjust the LM-845iA's top-mounted bias controls because it ran dead silent from the get go, which is kind of a shame because I didn't get watch that glowing VU Meter's needle bounce.

If you're thinking those lovely glowing 845s must put off some heat, they do and it's enough heat to hurt if you touch one after its been running so you'll want to place the LM-845iA in a place with plenty of air around it and out of reach of anyone who may be drawn like a moth to a triode. ▶



I kept the included tube cage in place during the duration of the review period except when taking the nudie pics.

I've had the opportunity to see and hear a number of amplifiers and integrated amplifiers from Line Magnetic and they share outstanding build quality and an obvious love of and respect for classic HiFi. I also have to share that their LM-212PA monoblocks (US version), which employ a 300B as a driver tube for the massive 212 triodes, is one of the craziest amps I've ever seen as those honking 212s can be lowered into the chassis, as if on an elevator, when not in use. I can hear the theme from 2001: A Space Odyssey playing when those 212s rise up from their protective womb. I spent my time with the Line Magnetic LM-845iA paired with the DeVore Fidelity O/93s and totaldac d1-tube DAC/Streamer as source.

## Let's Dance

In HiFi, control is a good thing as is the case with ballroom dancing where a firm grip and confident movement make for a balanced pairing with seamless unified movement. Like Fred and Ginger, the Line Magnetic Audio LM-845iA Integrated Amplifier led the DeVore Fidelity O/93s to dance-inducing heights.

Music through the LM-845iA was as big, bold, and authoritative as I've heard in Barn making music that much more physically involving. When

a drummer hits a drum, you can feel the amount of force. This kind of thrill led to many a listening session with volume levels going up and up again until "Since I've Been Loving You" from Led Zeppelin III rattled my bones with Bonham-pounding delight. Coupled with the LM-845iA's explosive power was a sound image that engulfed the DeVore's like some fairy tale giant barely fitting inside the Barn's rather spacious dimensions. Think big, bold, and beautiful or this thing should come with a seat belt!

Marc Ribot is among my favorite guitar players for his work as a solo artist as well as his work with Tom Waits and The Lounge Lizards. On the latter's Voice Of Chunk album, Ribot rips a solo on the title track that sees him digging way down into classic blues-rock riffs with mostly bass and drum accompaniment and it is one thrilling ride. With the LM-845iA, "Voice of Chunk" sounded downright dangerous.

Do you remember the old Batman TV show starring Adam West? If you do, you'll also recall those nice Pop Art captions that accompanied the fight scenes — "Pow!" "Thwack!!!" "Blam!!!" When listening to "Siren" from John McLaughlin's Devotion I could easily envision these flying around the Barn following Larry Young's monster organ. Kapow!! Blam!! Splat!!! If you enjoy your music served up on the physically engaging side, the LM-845iA has got your number. Pow!! When the first big bad bass notes throb on African Head Charge's "God Is Great" from Songs of Praise, the LM makes them sound ominous with the amount of sheer force on tap. Blam!! ▶



The Line Magnetic LM-845iA also does delicate and when I finally forced myself away from Monster Truck music mode, there was plenty of nuance and texture to capture my attention. Nick Drake's guitar and vocals on "Pink Moon" were crisp and clean and when the piano enters the scene it had the right amount of body and sparkle. While the recently reviewed Kora TB140 sounds lighter on its feet, offering up a faster-sounding presentation with more apparent micro-detail on display, my proclivities had me preferring the LM-845iA's more powerful punch.

The resident Ayre EX-8 came closer to the Line Magnetic's physicality but even the Ayre sounded less full bodied and less just plain big. On the other hand, the Ayre edges out the LM-845iA in its depth of clarity and fine-grained detail while never sounding overly harsh or artificial. The Line Magnetic by comparison sounds smoother and less interested in micro-detail and nuance but I consider the Ayre a stand-out in this regard. It's also worth noting that the Ayre EX-8 adds more than a grand to the LM's asking price.

I've been on a Maurizio Pollini jag since the 1980s due to his willingness to play contemporary and challenging classical music. Of late, I've been devouring his take on Chopin, most notably the Nocturnes, Mazurkas, Berceuse, Sonata, Opp. 55-58 on Deutsche Grammophon from 2018,

and during one late night in the dark listening session the feeling crossed my mind that the LM-845iA wasn't an amplifier as much as it was a projector, giving larger-than-life presence to Maurizio Pollini and his piano right here in the Barn. Living 3D with its beguiling balance of power and delicacy.

If you were waiting for the part of this review where I talk about warmth, big bloated bass, and a soft glow covering the music like fog, you've got the wrong tube amp. The Line Magnetic LM-845iA is a tube integrated amplifier for people who think they need massive megawatt solid state monoblocks to get real beastly power. At less than 5 grand, the Line Magnetic LM-845iA walks the walk.

## Beauty And The Beast

The Line Magnetic LM-845iA doesn't have a sound so much as it has a force. Of course it imparts a sonic fingerprint, every amplifier has sticky fingers, but its touch in this regard is rather light. What you get out of the LM845iA feels like what you put in with every last ounce of energy in tact from the refined to the ferocious. Bravo! ■

**Line Magnetic LM-845iA | Price: \$4895.00 | US Distributor's Website:**  
<http://www.toneimports.com/>



...and now for something completely different...

Audio Note Cobra

# LASTLY THE BEST

by Udo Pipper. Photography: Ingo Schulz





# AUDIO NOTE HAS RIGHTLY EARNED ITS PLACE AMONG LUXURY BRANDS. BUT WITH AN ENTRY PRICE OF €3,950, THE LONG-AWAITED INTEGRATED VALVE AMPLIFIER COBRA HAS ALSO SPARKED CURIOSITY AMONG MUSIC AFICIONADOS WHO NORMALLY WOULDN'T BE ABLE TO BUY EQUIPMENT FROM THE BRITISH PREMIUM BRAND. IN THE END, IS THE DEVICE PERHAPS EVEN TOO INEXPENSIVE?

\_\_\_\_\_Hardly any other manufacturer has so resolutely worked its way up to legendary status in the field of tube-driven playback technology as Audio Note. Declared dead by many, tube technology just doesn't seem to want to give up the ghost, and the amplifier-makers from England have been passionately making their own decisive contribution to this specialized area. Rarely does such agreement prevail—even among competitors—in an industry that inseparably melds technology and art. But who'd find that surprising, one might ask rhetorically: If a company applies this kind of relentlessness to designing its products both in terms of the components it uses to build them and the vertical range of manufacturing know-how it possesses, that company can hardly help but find itself at the top some day. In this way, Audio Note has grown synonymous with a particularly effusive form of development zealotness and can prove its success by simply pointing to the price tag. This, of course, makes it easy to bestow such accolades on their flagship amplifier, Ongaku, as “best integrated amplifier on the planet.” After all, just a few products end up in costing as much as the British valve legend—which also means only very few people have ever experienced it live. Exclusiveness is rare indeed!

Peter Qvortrup and his team have been proving the nay-sayers wrong for quite some time now. With their many models priced in the mid-four-figure range, they've been proving that embracing the art of development and, loosely worded, “having a clue about playing back music” are not the result of pure extravagance; rather, this can be explained solely by recognizing the British company's ability to combine technical expertise with good ideas and an especially subtle auditory alignment skills. Qvortrup is an outstanding example of this philosophy: This kind of success isn't born on the drawing board or in any computer program. At Audio Note, the musical experience guides design, a process Picasso once so wonderfully described in these words: I don't seek. I find!

Against this background, it seems almost sacrilegious to depict the new integrated amplifier Cobra only in terms of technical data. Yes, of course, a proper hi-fi journalist would carry out due diligence here; but in this particular case, focusing on the engineering details would do little to help us draw a conclusion about the result. A product photo or the technical features could even lead tube connoisseurs down the primrose path. Four visually tame EL34 pentodes glow in the power amplifier. They're said ▶



The Cobra uses Russian EL34 from Electro Harmonix (left) as power valves as well as 6AU6 double triodes (right) and 5670 driver pentodes (center). The latter are quite exotic as they were mainly developed for small appliances such as jukeboxes and car radios. However, none of the three valve types is really spectacular. But they are inexpensive and available in large quantities, which allows for the attractive price of the Cobra and helps with its maintenance. In case of unlikely damage: Regarding the smaller tube types, the British company relies on indestructible and durable JAN versions (military versions).





to be reliable and clean, but also help produce a sound that's somewhat "tedious." No exaggerated vintage nostalgia to be found in the design either. So what, then, is new about this design? Or, to be even more blunt: You might even find it strange that an innovative company like Audio Note is pretty much the last one out there to launch an EL34 integrated amplifier on the market.

## Beautiful functionality

Despite providing an initial impression of understated austerity, the Cobra does blend harmoniously and comfortably into everyone's living space. Its simple, functional grace neither clashes with modern black-and-white ambiance nor with colorful, nostalgic opulence. It deliberately lacks chrome ornamentation and any hint of burl wood Mannerism! In contrast to company's higher-level OTO, the Cobra is deeper than it is wide, but it fit nicely into my equipment rack, which has a quite common depth of 47 centimeters. When viewed longitudinally, its case even reminds me a little of the "larger" Jinro, Tomei, and Ongaku. Source and volume controls are located on the device's slanting

front. The rear features three identical line inputs with silver-plated sockets as well as three digital connections for TOSLINK, coax, and USB-B, which holds the data cable. And with that, we've arrived at the Cobra's first genuine special feature: a DAC unit that allows this model to process all imaginable binary sources of input. The developers opted for the proven Philips TDA 1543 chip. Operating at 16 bits and 48 kilohertz, it induces a bit of nostalgia, but does contribute significantly to the sound experience. This DAC chip has already garnered a legendary reputation from its use in PlayStation 1, but Qvortrup and his team were hardly impressed by this: They made their selection on the basis of the results from countless listening sessions during the Cobra's development.

The Cobra's dark, silk-matte anthracite color prompted one visitor to my listening room to exclaim: "Hey, a stealth bomber!" Personally, I find it less dramatic than that. Its color and simplicity barely create any contrast to the adjacent iPhone or the streamer positioned one level down in the stand. In this regard, nearly all British hi-fi products have always looked modern. ▶

TRICKY OPERATION? NOT AT AUDIO  
NOTE: THERE'S A BUTTON FOR CON-  
TROLLING THE VOLUME AND ANOTHER  
ONE FOR SWITCHING THE SIX INPUTS.



The connector panel features three analogue inputs as well as one optical, one coaxial, and one USB input—this mixture is a complete novelty for an Audio Note amplifier. For the D/A converter, the designers relied on a deliberately plain but sonically outstanding NOS chipset.



A total of eight tubes protrude from the housing cover. The four EL34 power amplifier pentodes from Electro Harmonix are located as usual at the rear. In front of them, two 6AU6 double triodes, seemingly almost tiny in comparison, are flanked by the only slightly larger 5670 driver pentodes. This selection may invoke surprise at first glance—after all, components of this type are usually combined with the popular preamp classics of the ECC family. But the background here may be that these tube types gained a solid reputation in the past for their use in jukeboxes or to power tube microphones due to their small size. These extremely reliable NOS types from General Electric (“Made in the U.S.A.”) are available in sufficient quantities and, above all, at low prices. In addition, they’re JAN (Joint Army Navy) versions that have been developed to meet the highest demands in terms of tolerances, robustness, and durability.

The developers tried to keep the retail price of the amplifier down by testing all kinds of standard transformers, but it didn’t work out. They were only satisfied after having extended their search into the pool of in-house hand-wound types associated with larger amplifier models. This certainly makes for a unique selling point for an amplifier of this class. The small remote control in a simple plastic housing may not be a gem, but it does allow source selection and volume control from a listening position, thus contributing to a pleasing level of comfort.

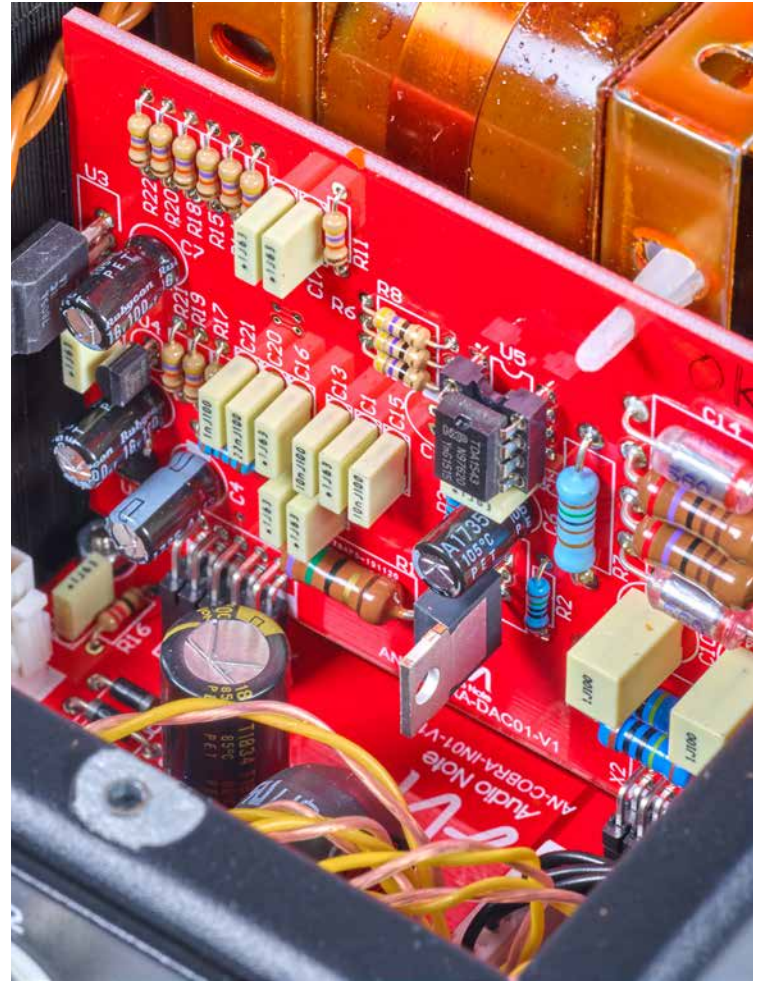
## Explicit harmony

It’s hard to imagine just how excited a person, including even me, can get once an iMac is connected to a tube amp through a USB cable right before starting a listening test. The built-in DAC is the special feature ▶



According to Audio Note, the secret of enabling a wide bandwidth and a low distortion, even at the lowest of volumes, lies in the output transformers (the large orange blocks). For optimal sedation of all electronic parts, the manufacturer dips both transformers in a special lacquer that isolates them and prevents vibrations and resonances.





that finally captured my curiosity—especially if you’re used to listening in a recording studio where newly mastered songs are rarely fed directly into a tube amp without a detour through an audio interface.

Here I need to explain that although I have many years’ experience as a hi-fi writer, my roots reach back to the area of production. I always subject my evaluation to the sound of the original because I’m usually already a “listener” when the music is still playing in front of the microphone. And the longer you carry on like that, the more archaic you become as a listener. Music then resembles sound waves in temporal dependency colored by character. An instrument or a voice, on the other hand, sounds only as pleasant as the musician or the surroundings in which the sound was once generated allow it to be. And, in my opinion, a playback system is only as good as its ability to reconstruct and reproduce all these properties especially harmoniously.

But when it comes to these crucial key indicators, tube audio gear is often subject to ridicule. Tubes are said to provide beautiful coloring, to be slow or to artificially distend the sound. Tube-powered amplifiers are at best good for aesthetes who enjoy easy-listening Muzak or nostalgics befogged by having indulged too much in their favorite red wine, so

the saying goes. Whether this expresses prejudice or justified criticism should remain irrelevant at this point. The Cobra easily succeeds in liberating every “modern” and thus critical music listener from this conviction. The listening experience with the integrated British-made device was not only incredible because the amplifier rebuked all these prejudices, it also proved downright overwhelming and engaging in its accuracy.

In the far too short period of time that Audio Note’s Cobra enlivened my listening room, I happened to get a call from an experienced sound designer—someone who works in recording studios around the world to develop sounds and noises that are either inserted into movies to emphasize certain acoustic moods or cut in imitations of certain original sounds into recordings or dubbings. And these days nobody in the studio scene happens to be more critical than a sound designer. The reason he called me was to tell me he’d just returned from a studio job in Tokyo and had come across an amplifier there that had brought even him—an old recording hand—to his very knees. When I asked him about the manufacturer of this marvel, he replied: “I don’t know! It was a little tube amp called Cobra.” Sometimes things just happen! Why did I take the long way ‘round, you might ask. Of course, I could tell you now ▶



that the Cobra sounds so beautiful that I've once again rediscovered my entire music collection. I could celebrate its ability to play in a league that makes many competitors look ordinary. And I could praise its firm, imperturbably thundering bass foundation or the resolution it produces in the high frequency range. All of this would correctly describe what it's all about; but it wouldn't do justice to the pivotal experience: Frequencies and impulses rendered in the correct chronological order—that's what counts! My sound designer friend found the Cobra could release torrents of enthusiasm, especially because it reproduced exactly what occurred in terms of timbre and timing in front of the microphone. In addition, it sounds almost identical at any volume. It's neither thinned out and lifeless when you kick back to enjoy music, albeit very quietly, at night, nor bloated and booming at higher levels as is typical for tube amplification. This is, by the way, one reason why tube amplifiers with this kind of price tag usually don't make their way into recording studios. Since I often listen at quiet volumes, I've always longed for a button on valve amplifiers that offer a "mild" loudness function.

When idling, the Cobra happens to not only remain quiet like most of its competitors, but literally dead silent. There's no humming, no cracking noise—not one bit. If there's one drawback, it's the fact the Cobra only starts to perform at full power after having reached operating temperature. This, however, follows after a warm-up period of about half an hour. It always seems to straighten up the music. Sounds and grooves

are effortlessly arranged within frequency and time in such a way that the accuracy in carving out detail becomes eminently apparent even in complex orchestral arrangements or in fat electric guitar thunderstorms. I deliberately describe this sensory experience in visual terms: One can almost see the orchestra, the position of each violin, where the drummer has placed his drum set.

The maturity of these capabilities may be even more impressive with the larger Audio Note amplifiers. Though I listened to the Ongaku in a trade show demo, I'm not able to evaluate this since I have far too little experience with such products. In any case, throughout the entire period I was allowed to enjoy the amplifier, I couldn't identify any shortcomings. With its 28 watts per channel, it was powerful enough to manage the 25 square meters of my listening room. And, to my surprise, it appeared to be patient enough to handle any combination of speakers I could think of, including the B&W's 805 monitors in my studio and some old Saba Greencones as well as small Auratone full-range speakers. And it did it brilliantly. Those days are behind me when I would have bought an amplifier to then spend five years looking for the right speaker. I want to have hassle-free fun when listening to music while simultaneously knowing that the source events and, above all, the timing are in their right places. And this is exactly the prime discipline in which the Cobra feels at home: This amplifier steps out to conquer high-end territories with almost playful ease and without taking any detours. ▶

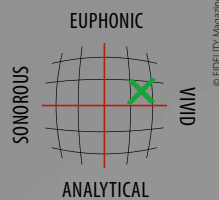


A SIMPLE BACK VIEW WITH EVERYTHING YOU NEED FOR MODERN MEDIA LIFE. THE BINDING POSTS ACCEPT BANANAS, WIRE STRANDS, AND SPADES; THE GROUNDING SOCKET IN-BETWEEN DOESN'T BELONG TO A PHONO SECTION, BUT RATHER SERVES AS A PROBLEM-SOLVER SHOULD GROUND HUM OCCUR IN COMBINATION WITH OTHER COMPONENTS.



**Audio Note Cobra**

An integrated amplifier with excellent musicality and solid (for Audio Note even outstandingly comprehensive) features.



CHALLENGING =  A component is 100% intuitive if you can exploit its potential to the full intuitively.

INTUITIVE =  A component is 100% intuitive if you can exploit its potential to the full intuitively.

I only want to mention that the built-in converter has made me a streaming aficionado. No matter whether operating the top-class JRiver or using iTunes; All audio formats were simply fun to listen to through this amplifier. After a few minutes, I completely forgot about the seemingly antiquated bandwidth of the DAC chip. I was even able to enjoy my former bogeyman MP3, as the British amp meets the esprit and character of the songs here as well. While using top-level formats like FLAC, I hardly saw a reason to continue operating my old Sony SCD-1 vault. And that's a small miracle!

## Summary

To classify the Cobra as a mere downgrade product within the portfolio of the British hi-fi equipment manufacturer would fall far short of the mark. Although it doesn't live up to the extraordinary vertical range of manufacturing know-how exhibited by its big brothers, it appears to be a convincing development in and of its self as a proven power amplifier. It draws its genuine persuasive nature above all from the fusion of top development expertise and technical accuracy. Valves, D/A converter,

transformers—everything was carefully fine-tuned and guided to perfect harmony. The result is a performance rarely seen in this price range. ■

### Integrated amplifier | Audio Note Cobra

**Concept:** integrated amp valve amplifier with D/A converter | **Valve complement:** 4 x EL34 (power amp valves), 2 x 6AU6 (double triodes), 2 x 5670 (driver pentodes) | **Analogue connections:** 3 x Aux In (silver-plated RCA sockets) | **Digital connections:** USB-B (16 bit/48 kHz), TOSLINK (24 bit/96 kHz) and coax (24 bit/176 kHz) | **D/A converter:** Philips TDA1543 (16 bit/48 kHz), the signals from TOSLINK and coax are downscaled for the DAC | **Input impedance:** 100 kΩ | **Input sensitivity:** 300 mV | **Channel equality:** ±0,3 dB | **Power rating (4-8 Ω):** 28 W per channel (Class A push-pull) | **Other features:** remote control | **Dimensions (W/H/D):** Matte black | **Dimensions (W/H/D):** 34/45/18 cm | **Weight:** 13.6 kg | **Warranty period:** two years | **Price:** about €3,950

Audio Note Germany | Soltauer Str. 44 | 29646 Bispingen | Germany | Phone +49 51945050599 | [www.audionote-deutschland.de](http://www.audionote-deutschland.de)

### ACCOMPANYING EQUIPMENT

**CD players:** Sony SCD-1 | **Digital sources:** iMac, Steinberg Cubase 10, iTunes | **Integrated amps:** Octave V-40, Lua 6060, Accuphase E-370 | **Loudspeakers:** B&W 805, Dynaudio Contour 20, Yamaha NS-10, Auratone Super Sound Cube | **Cables:** Audio Note AN-VX | **USB:** AQVOX | **Power bar:** Ensemble Power Point, Feldmann mains balancer

The 25 best tips for better listening—Part IV

# HAVE A LISTEN TO THIS!

By Jochen Reinecke

# RELAX!

## OR: GETTING ALONG WITH THE NEIGHBORS.

Of course, anyone who knows a thing or two will immediately ask: Why 25 tips? Why not 100, 1000 or some other number that looks much cooler than this arbitrary 25? Why not 1001?

It goes without saying, that for a true high-ender, when it comes to getting a better sound from a hi-fi system, no expense is too high, no explanation is too abstruse, and no wallet is too thick. It is easy to get lost among all the temptations.

Now and then, it's simply time to approach this incredibly cool hi-fi-system thing "from scratch" (once again). But perhaps you also want to introduce a brand-new hi-fi acquaintance to the basics of your hobby without immediately scaring them off with crazy sums or bizarre rituals. That comes later. Maybe. Hopefully.

This 25-part quick guide for better listening is intended as a brazen, entertaining (re-) introduction to the topic. Here, even those

who think they already know it all are given fresh food for thought, things to discuss, and suggestions. Of course, we are aware that as you get deeper into this topic, each new experience also raises new questions and demonstrates new aspects. Eventually you reach a point where not even 1000 tips are anywhere near enough.

On that note, have fun! And welcome to the second-most important topic in the world. Here is part four: tips 7 and 8. ▶



If you are interested in buying the bi-lingual booklet with all the 25 tips feel free to contact us: [info@fidelity-magazine.com](mailto:info@fidelity-magazine.com)



Tip 7 Size Matters

Laufsprecher

### 7 Size Matters

#### KOMPAKT-ODER STANDBOX?

Angenommen, eine gute Fee kommt vorbei, drückt Ihnen 2000 Euro in die Hand und fordert Sie auf, sich speziellen Gegenwert zu entscheiden, Was nehmen Sie: Die Standbox, oder? – Reinefall.

Viele Menschen glauben, dass große Lautsprecher mit vielen Treibern besser klingen als kleine. Oft genug ist es im gleichen Preissegment – exakt andersherum. Je größer ein Gehäuse, desto schwieriger und teurer ist es, dieses frei von ungewünschten Vibrationen zu halten. Je größer das Gehäuse, desto teurer ist es in der Herstellung – und desto weniger Geld bleibt übrig, um den Rest (Treiber, Frequenzweichen, Innenverkabelung, Dämmung) zu finanzieren. Und wenn Sie vier statt zwei Treiber mit dem gleichen Budget einkaufen müssen, dann leidet logischerweise die Qualität der Treiber.

Dies ist kein Generallösungsgriff auf Standlautsprecher, sondern ein Plädoyer dafür, auch Kompaktlautsprecher eine Chance zu geben. Das kann nämlich sehr lohnend sein. Bei Kompaktlautsprechern erleben wir – zusätzlich zu den oben genannten Vorzügen – auch häufig eine kohärentere Mischung, desto geringer sind die Laufzeitunterschiede, werden Phasenschieber zwischen den einzelnen Treibern. Standlautsprecher haben selbstverständlich auch eine hörbar höhere Lautstärke können sie im Tiefbass schlicht und Abstrahlverhalten ab Kompaktlautsprecher. Auch können sie oft den Raum gleichmäßiger und flächiger mit Klang füllen. Und wenn Sie Kinder haben: Nicht zuletzt reagieren sie etwas stoischer auf das Anprallen eines Bobblycars als ein Kompaktdesign auf einem fragilen Stand. Der Ständer, das sind wir gerne zugeben, müssen Sie natürlich auch in Ihr persönliches Gesamtbudget mit aufschreiben, wenn es denn eine Kompaktdesign sein soll.

Fazit: Gehen Sie unvoreingenommen an die Boxenfrage heran und legen Sie sich nicht schon zuvor auf Stand- oder Kompaktdesign fest. Das sollten Sie erst tun, wenn Sie ausgeübte Probe gehört haben – und zwar beide Varianten.

Size Matters. Compact or tower speakers? Let's assume for a moment that Lady Bountiful stops by and hands you 2000 euros and challenges you at that level. Which do you go for? The tower, right? – Foodie!

A lot of people believe that large, multi-driver loudspeakers deliver a better sound than small ones. Often price exactly the opposite applies – in the same segment. The bigger a cabinet, the harder and more expensive it is to keep it free of unwanted vibrations. The bigger the cabinet, the more expensive it is to the rest (drivers, crossover, internal cabling, insulation). And if you have to purchase four drivers instead of two with the same budget at your disposal, then obviously the quality of the drivers will be compromised.

This is no all-out attack on tower speakers, but rather a plea to give compact loudspeakers a chance too, because they can be very much worth your while. In our experience compact loudspeakers also frequently provide a more coherent sense of spatial expression – in addition to the above-mentioned benefits. The fewer the number of drivers that need to be "coordinated", the lower the run-time differences and phase shifts between the individual drivers.

Of course tower speakers also feature a range of benefits: Starting at a certain size and listening volume, they can simply deliver a deep bass sound better than compact loudspeakers. They can also often fill a room with a more uniform and extensive sound. And if you have children, but not least they can take the impact of a Bobblycar more to their stride than compact speakers on fragile pedestals. Admittedly you still have to factor the pedestals into your total budget, if compact speakers are what you want.

Conclusion: Approach the matter in an unbiased way and don't decide on tower or compact speakers before you even get started. You should only do that once you have conducted an extensive number of listening tests – and indeed on both versions.

Die 25 besten Tipps für besseres Hören – 013



© Martin M303, fotolia

## SIZE MATTERS. COMPACT OR TOWER SPEAKERS?

**Let's assume for a moment that Lady Bountiful stops by and hands you 2000 euros and challenges you to decide between tower and compact speakers priced at that level. Which do you go for? The tower, right?—Fooled you.**

A lot of people believe that large, multi-driver loudspeakers deliver a better sound than small ones. Often enough exactly the opposite applies—in the same price segment. The bigger a cabinet, the harder and more expensive it is to keep it free of unwanted vibrations. The bigger the cabinet the more expensive it is to produce—and the less money there is left over to fund the rest (drivers, crossover, internal cabling, insulation). And if you have to purchase four drivers instead of two with the same budget at your disposal, then obviously the quality of the drivers will be compromised.

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**Conclusion:** Approach the matter in an unbiased way and don't decide on tower or compact speakers before you even get started. You should only do that once you have conducted an extensive number of listening tests—and indeed on both versions. ▶



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# A MATTER OF PRINCIPLE

## THERE ARE MANY WAYS OF PRODUCING A GREAT SOUND

**Do you recall Tip No. 5? That was all to do with the style(s) of music that you like listening to. By choosing the right type of loudspeaker, you can exercise a major influence on the quality of music reproduction you get.**

If you want to make your living space echo to a more-than-decent sound, if you attach importance to powerfully seductive bass reproduction, you can't avoid the good old dynamic loudspeaker. In this case it is usually advisable to opt for a tower or standing loudspeaker.

Things are different if your preference is more acoustic music—irrespective of whether orchestral and chamber music or even jazz combos are involved. In this case it's worth experimenting with electrostatic loudspeakers (ESLs) too, because they are characterized by superb musical transparency, subtle sonic detail, good impulse response and a high degree of resolution clarity. Furthermore the large panel surfaces also deliver decent instrument sound imaging reproduction.

Horn loudspeakers can also give so-called “hand-made” music a fascinating edge. These are usually above-averagely efficient, which however allows for the use of low-power tube amplifiers that nevertheless deliver a colorful sound.

If you attach particular importance to comprehensive spatial imaging or don't want to get pinned down to a specific “sweet spot” within your living space, then omnidirectional loudspeakers can provide you with an authentic aha moment.

If on the other hand you mainly listen to small-ensemble, vocals music, then maybe you should try a full-ranger. Whilst you can't annoy your neighbors with it, you are instead rewarded with an especially subtle tonal and spatial performance.

The moral of the story is: Why not try out something that's not out of the box—it could be the start of a lifelong friendship! ■

Photo Credit: © SONY Deutschland

Why is it that old analogue recordings radiate so much dignity, depth and fascination? Perhaps this photographic photograph says something about this: ▶

1942 - Streisand is born in New York City

1961 - First Broadway engagement

1964 - The debut album wins two Grammys

1972 - Streisand's most successful film appearance in "What's up, Doc?"

1940

1950

1960

1970

1980

1957 - Career start as a nightclub singer

1962 - Record deal with Columbia Records

1969 - Oscar for "Funny Girl"

1977 - Second Oscar for the soundtrack to "A Star Is Born"

Photo Credit: © SONY Deutschland

...it shows Barbra Streisand in the late 60s—at its peak, but far from the zenith of her career. The singer, actress and director is a true all-rounder and ranks among the world's top in all disciplines. Incredible 18 of her albums have been awarded platinum several times. Only the Beatles, Elvis and the Stones have outperformed this. In addition, there are two Oscars, three other Academy nominations, and moving boxes full of Emmys, Golden Globes and Grammy Awards. Mrs Streisand should not be bothered by it any more that she sometimes ended up on the list for the Golden Raspberry.

1980 - "Guilty" becomes Streisand's most commercially successful album

1980

1985 - Return to the musical

1986 - Streisand increasingly dedicates itself to charity projects

1990

2000

2010

2012 - Last film appearance in "The Guilty Trip"

2020



# PREVIEW

FIDELITY international No. 17

Dear readers,

There are no coincidences, at least not for **Børresen**. Every little detail on the Danish manufacturer's loudspeakers is the result of years of material research and tedious sampling from the hearing rooms of the busy physicists. ▶





This meticulousness and infatuation with detail makes the compact **Z1** a completely extraordinary loudspeaker, whose driver is completely iron-free and whose feet can be seen as a sound-forming base. Look forward to reviewing the exceptional converter in FIDELITY International Nº 17. FIDELITY international issue 17 will be available by May 2021. Or whenever it is ready.



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# THE END

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