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# STEREO

**THE GERMAN HI-FI MAGAZINE**

**ISSUE #16 2018**

**> T+A TALIS S 300**

**A WORK  
OF ART**



**> STRONG COMPETITION**

**HIGH END  
HEADPHONES**

**REVIEWS: CANTON GLE 496.2 +++ KEF Q550 +++ ELAC UNI-FI F 05  
+++ FOCAL CHORUS 716 +++ WHARFEDALE DIAMOND 11.4 +++  
AVM PA 8.2 AND MORE!**



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# BRIDGE BUILDER



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**W**hat kind of hi-fi guy are you? Do you see yourself as a classic analogue-fan, who thinks everything that came after records and tapes is completely superfluous? Or are you more of a digital-freak with the “DSPs, DACs, App remote control and multiroom - how cool is that?” kind of attitude. Both are appealing in their own way and in each of the complementary groups there are likeable nerds who take their hobby “HiFi” to its peak with lovable meticulousness.

For the manufacturers, however, this polarization can be hell on earth: Those who prefer analogue often associate it with uncompromising purism that demonizes any unnecessary function in advance. The digital fraction, on the other hand, swears by multi-layered possibilities. If the new Streamer has integrated web-streaming, then support for all, and not just a few, providers is usually expected! In short, it seems almost impossible today to design components that are met with love and interest in both factions. For years, therefore, differentiated product strategies were required.

Thanks to bright minds in the development departments, this rigid course seems to be loosening at the moment: High-End 2018, one of the world’s largest trade fairs for high-quality music reproduction, showed many bridge building approaches:

manufacturers such as Pro-Ject and Rega presented record players that have the phono stage, an integrated amplifier and in some cases even USB audio and Bluetooth on board. On the other hand, we discovered several streamers where the question of supported sound formats did not even have to be asked: more and more providers integrate universal interfaces such as Chromecast and Play-Fi into their machines. This allows data and streaming services that have not been implemented directly into the device to be fed in from external sources such as computers and tablets - often without any loss whatsoever. The converter chips of the current generation all work with high resolution anyway. The best part is that you don’t have to deal with these and other abilities at all - if you have compatible players, it just works. Another example is Marantz’ 8006, which merges a CD and network player with an integrated amplifier that features a newly developed phono stage with outstanding sound quality. Due to such thought-through concepts, there could indeed be hi-fi-systems in the foreseeable future that representatives of both camps can love.

**Carsten Barnbeck**  
 editor@stereo-magazine.com

All prices listed in this magazine are German retail prices incl. VAT valid at the time of evaluation.



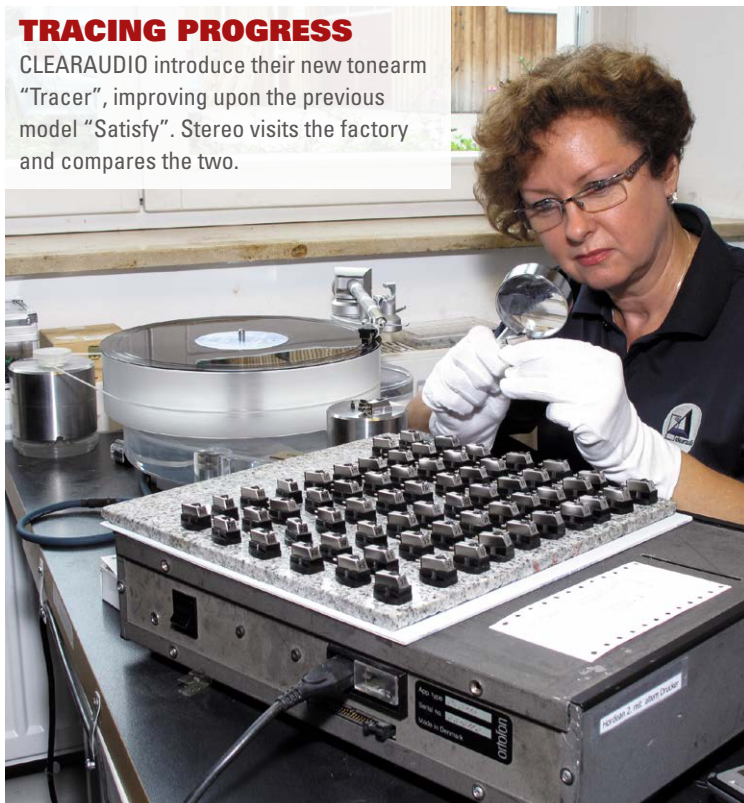


**MODESTY LEAGUE**

These five floorstanding speakers don't brag with preposterous price tags. Instead they convince with great sound on a budget.

**TRACING PROGRESS**

CLEARAUDIO introduce their new tonearm "Tracer", improving upon the previous model "Satisfy". Stereo visits the factory and compares the two.



**ALL IN ONE**

T+A's aluminum clad Talis S 300 is as appealing to fans of great design as to even the most demanding listeners.





**WHEN ALL HOPE SEEMS LOST**

Stereo tells you who can help if the cantilever or stylus of your turntable breaks.

**AS YOU LIKE IT**

AVM's PA 8.2 preamp leaves the decision up to you what it is to be or not to be.



**HIGH END 2018**

The HighEnd trade fair in Munich showed itself at its best and delighted exhibitors and visitors alike

**NEW - AND BETTER?**

Innovations and new ideas are the common ground for these five high-end headphones. Let's see if new equals better.





FULL

# METAL JACKET

Aluminum makes it possible: thanks to its metal cladding, the eye-catching T+A TALIS S 300 floorstanding speaker looks both comfortable and elegant in the living room.

**T**+A can still spring surprises: after a firework of innovations coming from its electronics department in the HV and R series, now it's the turn of the loudspeaker section again— and with the compact R 300, and the 33kg TALIS S 300 floorstander discussed here, it's delivered almost sculptural speakers.

The special – and most eye-catching – feature of the duo is the cabinets, which are made of pure aluminum, giving the

TALIS S 300 such impressive elegance and beauty that we could hardly wait to get it into action with some high-quality electronics.

First we headed for the small STEREO listening room, where the extreme rigidity of the aluminum housing proved partly responsible for the authority and potency on offer, and giving it properties more similar to those of the spectacular Criterion TCD 110 S stablemate than one

might have expected. It makes the speaker much more delicate and elegant than a comparable wooden cabinet. Assuming a material density of about 500-650 kg per m<sup>3</sup> for the MDF used in most high-quality loudspeaker construction, that figure would be 2700 kg for aluminum, which is easily four to five times as much – and we better not talk about the resulting additional costs for processing.



However, the higher sound transmission of the material must also be considered, which can, in the case of aluminum, presumably only be significantly influenced and optimized by internal coating and profiling. In fact, developer Jochen Fabricius revealed to us that both the S 300 and the R 300 are lined with 4mm of bitumen heavy foil and additional damping material, without which the enclosure would probably ring like a bell. We've seen measurements showing the vibration behavior of undamped and damped versions of the cabinet, and the damping brings 10-20dB of attenuation, especially in the midrange to low frequencies!

With the damping, the enclosure here seems to keep itself largely out of the music – on the contrary, it asserts its 33kg mass in a reassuring way.

### Three-way split

In the TALIS S 300, we have before us a real three-way design with bass reflex tuning. The lower frequencies are handled by two long-stroke 17cm bass drivers with 5cm voice coils, whose combined surface can definitely contest a much larger driver, while delivering better speed and a slimmer baffle. The specially designed midrange driver is also a cone driver with a 12cm diaphragm, while a 25mm dome tweeter handles the high-frequency range. The cleverly designed and well-equipped crossover separates the drivers at 250 and 2200 Hertz.

### Slim, but oho!

“The speaker will blow your mind,” Jochen Fabricius prophesied – with a touch of unvarnished pride – just before the test and it turned out that he was right.

Of course decades of listening experience have taught us to approach attractive, but rather slim and not overly large speakers with cautious expectations. That makes it even more delightful if a speaker can excel these expectations!

The authority and controlled bass power of the new T+A proved easily enough for the large – more than 40m<sup>2</sup> – STEREO listening room, which prompted us to change the listening situation. With the S 300, there are no serious problems when it comes to filling a space with music, although in an extreme emergency the bass reflex ports can be closed with the included plugs – in our big room this was absolutely not required!



„THE ALUMINUM HOUSING  
COMBINES PHYSICS AND PLEASING  
LOOKS, TURNING THE SPEAKER  
INTO A SCULPTURE.“



The solid base is bolted to the cabinet and provides stability. ▶



expected from a comparatively medium-sized speaker.

Katja Maria Werker’s “Here Comes the Flood” or Adele sound superbly focused and with natural height, detached clearly above the upper edge of the cabinet, while the soundstage reaches noticeably beyond the dimensions of the speakers. The power of the performance, for example when Adele’s “Lovesong” uses the bass, inspires us and immediately lets us switch to Johnny Cash via Vivaldi’s “Four Seasons” and AC/DC’s “Back in Black”, listening through each title completely in turn.

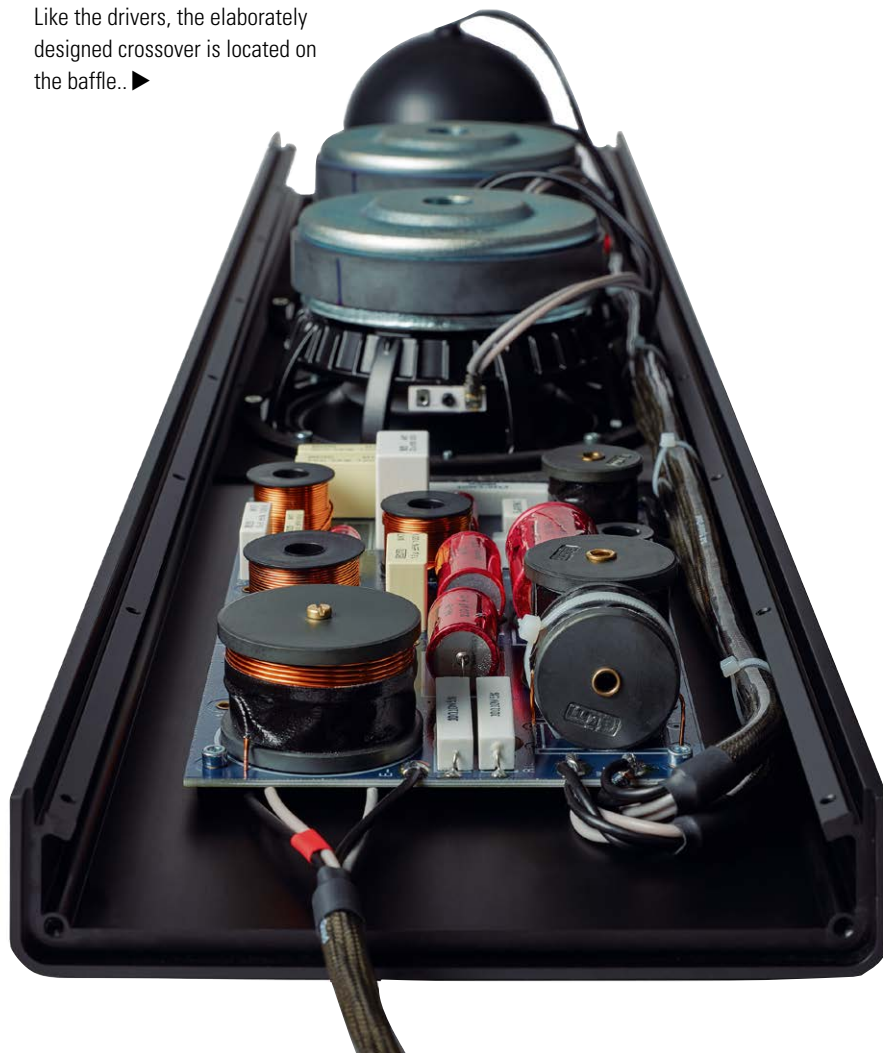
What dynamism and vibrancy! Whether with the strings on the Vivaldi or the guitar on the instrumental “Stairway to Heaven”, the emotional temperament never goes at the expense of objectivity, and even the timing, the rhythmically driving element, is superb. The characteristics of the instruments, the dimensions and last but not least the depth of the soundstage always remain credible.

In fact the TALIS has so much of that certain something, you find yourself

In addition, the S 300 makes every improvement in the electronics with which it is used clearly audible, meaning it benefits enormously from the amplifier chosen. Yes, it sounds convincing and full-bodied even when played quietly thanks to relatively high sensitivity, but more power can never do any harm. After all, you can easily hear, even with an ultra-sensitive horn speaker, whether an amplifier is working hard or has power in reserve, and so it is here, too. In simple terms, T+A’s PA 2500 R or even its PA 3100 HV are fantastic ways to drive this superb loudspeaker, whose coarse and fine dynamic abilities are absolutely outstanding: never does it get lost in detail, and nor are there any signs of compression.

The TALIS S 300’s performance is captivating, sometimes almost shockingly clear, accentuated, extremely precise and detailed, all being paired with a naturalness and solidity, and topped off with an ability to reproduce the scale of a recording far beyond what one might have

Like the drivers, the elaborately designed crossover is located on the baffle.. ▶



### **Dynamic, and captivating**

Even with more complex instrumentations such as Michael Bubl e’s Big Band, the TALIS S 300 retains a consistent overview despite all the explosive colors, and follows the cleanly focused protagonist in “Feeling Good” with incorruptible precision. It never sounds overly analytical, but rather draws the listener into the action, conveys emotions and even lends the performance a pleasant color with a small dash of warmth and charisma. Not so many speakers this side of the €10,000 barrier can do all of that.

I must admit that this aluminum column impresses me, as does its sister the Criterion TCD 110 S – even though the two are technically completely different, and only share their common ancestry.



This gives an impression of the stability and coating of the enclosure. ▶

almost desperately looking for the chink in its armor – without success. Yes, there are better speakers, and not just in T+A’s own portfolio; but for 9000€?

True, that’s no small money, and in this price range, one is already among very demanding buyers, even lovers; but the range of similarly successful complete works of art is quite slim – this speaker sounds unbelievably good, and is also exceptionally room-friendly.

**Better living?**

So far we have not mentioned the notorious WAF factor (Woman Acceptance Factor), which is more dominant in the

choice of speakers for the living room than it would be for those destined for the separate “Man Cave”. And indeed I only raise this slightly archaic consideration now because this T+A has sufficient elegance to slip under that particular radar in streamlined manner; if not in an oak-lined rustic room, definitely in a modern home. It plays, and fills a room, but won’t dominate it.

T+A knows exactly who has a say in a purchase, and with this speaker, the compromise is ultimately no compromise at all. The TALIS is a beauty, and yet –or more precisely because of it – good. Terribly good.

*Tom Frantzen*

**T+A TALIS S300**



€8990

Dimensions: 21 x105 x28 cm (WxHxD)

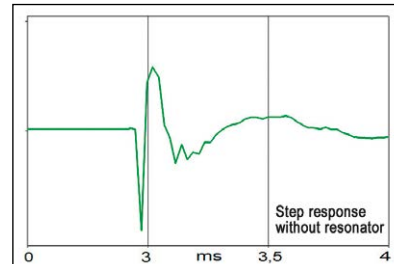
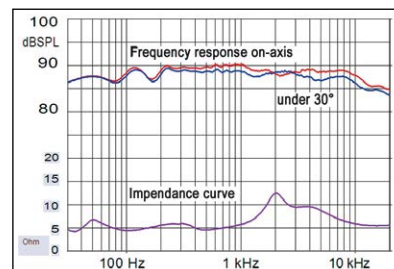
Warranty: 5 years

Contact: T+A, Phone: +49 5221 76760

www.ta-hifi.de

The new T+A TALIS S 300 floorstanding loudspeaker astonishes with its combination of an elegant, sculptural silhouette and the kind of high-end, superior sound image one would expect from much larger designs. It’s a sound that inspires, and a major part of the secret is the all-aluminum housing.

**MEASUREMENT RESULTS**



DC resistance	4 Ohm
Minimum impedance	4.5 Ohm at 35 Hz
Maximum impedance	12 Ohm at 2000 Hz
Sound pressure level (2.83 V/m)	89 dB SPL
Power for 94 dB SPL	14 W
Lower cut-off frequency (-3dB SPL)	29 Hz
Distortion factor at 63/3k/10k Hz	0.3/0.1/0.1 %
Weight:	33000 g

**LAB COMMENTS:** The balanced and neutral frequency response, the timing that is exemplary not only for a three-way construction, the almost identical on-/off-axis dispersion characteristics and the low level of distortion – all are great testimony to the development team, and the speaker is also easy to operate.

**STEREO-TEST**

**SOUND QUALITY 91%**

PRICE/PERFORMANCE

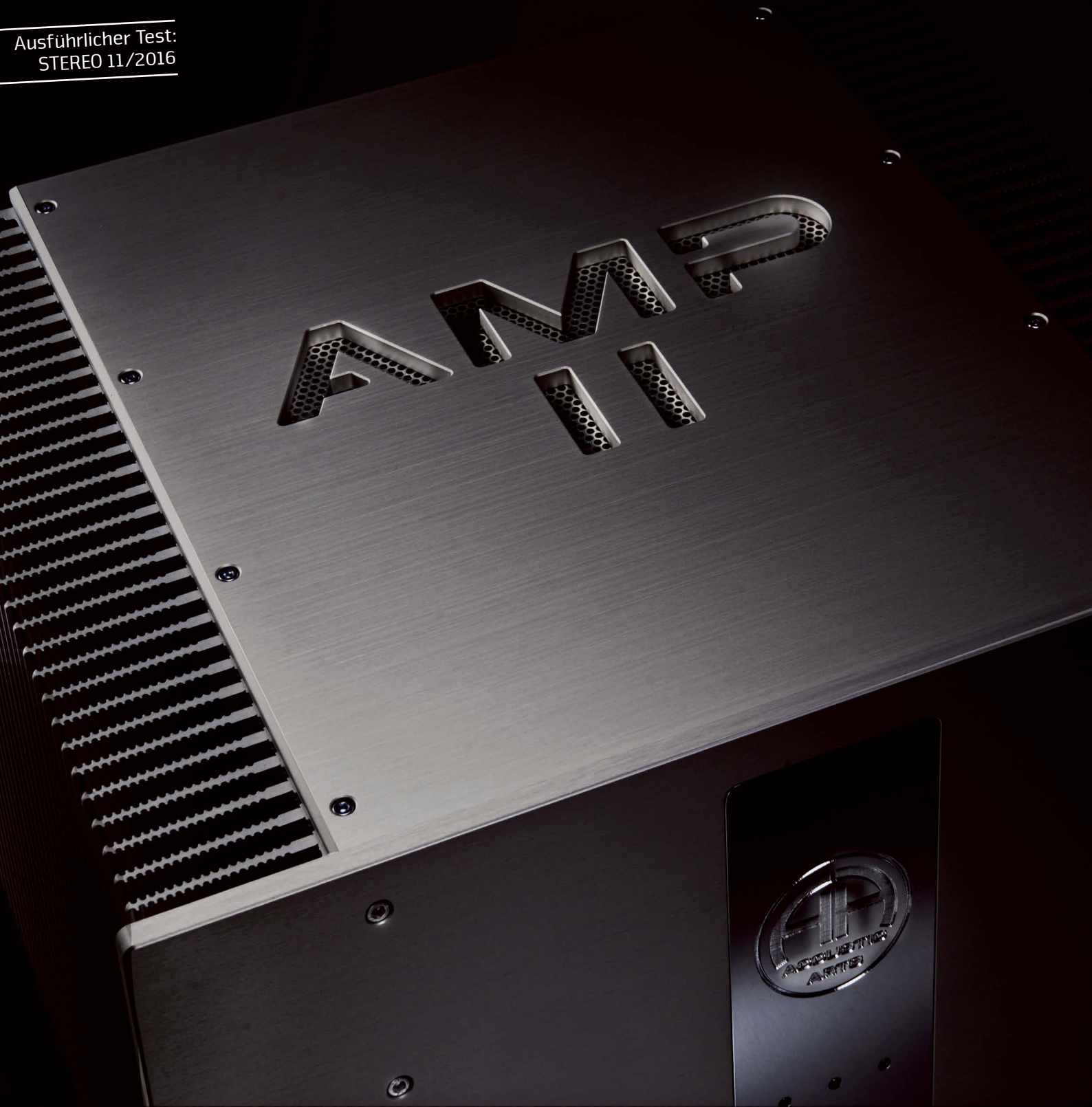
★★★★☆

**EXCELLENT**



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FONO FORUM, STEREO and QOBUZ were Media partner of the „Kopfhörer Bar“, which was hosted by the High End Society in front of Hall 4. At 20 booths you could enjoy the playlists of Fono Forum and Stereo in the highest resolution of the streaming service Qobuz via different headphones of all price ranges - if you managed to get a place.

# GET HIGHER!

Once again, the HighEnd trade fair in Munich showed itself at its best and delighted exhibitors and visitors alike.

It is the most important trade fair for the audio community even beyond Europe's borders, and while hastening from record to record in terms of exhibitors and amount of space, even starting to show capacity limits, visitor numbers declined minimally. A total of almost 20,000 made their way to Munich for the HighEnd and the cooperating headphone fair CanJam, almost 7,600 of them from the trade.

There was a sense of optimism, with some exhibiting companies having spoken of an increase in quality lately, meaning there must have been a surge in orders and demand. The future looks promising, with the most obvious trends being evident in wireless active speakers and high-quality audio streaming. A successful fair altogether!



## ▲ THE ULTIMATE TWO-WAY SPEAKER

Fink's team around leader Karl-Heinz Fink has surpassed itself this year. With the „Borg“, soon available at a pair price of around 24,000 euros, they made a lasting impression. Ten-inch woofer and AMT tweeter seem to have merged into a perfect sound unit. Available from July.

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







▲ **SAME GUY, NEW BRAND**

With high standards, but in prices well below the brand Tidal from the same developer, boss Jörn Janczak now also wants to conquer the German market. Prices: from about 22.000 Euro for a pair. [www.vimberg.de](http://www.vimberg.de)



▲ **AUDEZE LCD-4z**

Please touch: At the CanJam, which was held in parallel for the first time, headphones such as Audeze's „LCD-4z“ (around 4000 Euro) could be compared to your heart's content. [www.audeze.com](http://www.audeze.com)



**ROLAND GAUDER**  
Gauder Akustik

» People will continue to love music in the future. As loudspeaker manufacturers, we want to further improve music reproduction. The DARC series shows: The future belongs to small, very powerful loudspeakers that are easy to position. They offer the most value for our customers. The evolution will always go on! «



▲ **ACTIVE AND WIRELESS**

The in Munich presented „Vento3“ from Canton is to be available for the competitive price of 2300 Euro a pair. The two-way speaker is active and can be controlled wirelessly, even „Virtual Surround“ is possible. [www.canton.de](http://www.canton.de)



▲ **SLIM WAIST**

Dynaudio unveiled the new „Confidence“-series, which has been significantly modernised - also visually. We are already waiting anxiously for the first test samples. [www.dynaudio.com](http://www.dynaudio.com)



▲ **NEW INSIGHTS**

With the „Fenestria“ PMC sets one of the fair's highlights. The loudspeaker, which uses technology from earthquake research to eliminate harmful vibrations, will cost 54,000 euros - and sounds breathtaking. [www.pmc-speakers.com](http://www.pmc-speakers.com)

◀ **WILSON ON THE TABLE**

A surprise from the USA: Wilson Audio showed a desktop speaker with the genes of their older siblings - the „TuneTot“. Price: from 13.000 Euro a pair. [www.wilsonaudio.com](http://www.wilsonaudio.com)







▲ **HIFI-VIRTUES**

In the foreseeable future Denon will launch its new 800 series: classic components in hi-fi standard size with unit prices around 500 euros.

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



▲ **BURMESTER ADAPTS**

CEO Andreas Henke showed the series-production-ready mono power amplifier 159 with numerous patents, adjustable damping factor and almost unlimited power. [www.burmester.de](http://www.burmester.de)



▲ **NEW HEGEL-AMPS**

The new Hegel integrated amplifiers for 2500 (top), 5500 (bottom) and 10,000 (not in the picture) Euro with interesting feedforward-technology will be available soon. [www.hegel.com](http://www.hegel.com)



▲ **SWEDE DREAMS**

Supra Cables CEO Jørgen Wahlsberg announced a revised flagship loudspeaker cable „Sword II“. The biggest difference to the low inductance predecessor will be the cable shielding. We are curious. [www.jenving.com](http://www.jenving.com)



▲ **ANALOG & DIGITAL**

Musical Fidelity showed the brand new phono stage and the converter of the 6-series. Price: 1500 Euro each. [www.musicalfidelity.com](http://www.musicalfidelity.com)

▶ **KEN ISHIWATA'S NOVELTY**

„KI Ruby“ are CD/SACD players and integrated amplifiers from Marantz, which are to score with essential borrowings from the large 10 Series models - at half the price. [www.marantz.co.uk](http://www.marantz.co.uk)



**SIEGFRIED AMFT**  
T+A

» The trend in our company is clearly towards multifunctionality, because it gives us the opportunity to use several digital sources with the highest quality converter architecture, the price of which then no longer matters. «



▲ **PROUD FATHER**

Cambridge Audio owner James Johnson-Flint posed for us next to the streamer/preamp combination of the new „Edge“ series, garnished with many exciting details. The corresponding integrated amplifier (around 5000 Euro) is already on its way to us. [www.cambridgeaudio.com](http://www.cambridgeaudio.com)



▲ **MONOLITH**

On the occasion of the company's 40th anniversary, T+A presents itself and us with the sensational monoblocks M 40 HV Mono with tube technology, which will soon be added to the HV flagship series in a limited edition. [www.ta-hifi.de](http://www.ta-hifi.de)









▲ **COCKTAILS NEW TOP**

With the „X45 Pro“ Cocktail Audio continues to make its way towards the top range. The equipment-beast can stream, rip and can be upgraded to a server by installing a hard disk. The comprehensive features require the built-in quad-core processor and the ES9038Pro DAC, which processes 32 bit and 768 kHz. The housing is made of solid aluminum and it costs 4000 Euro. There is also a model without the „Pro“-suffix available at a much lower price. [www.cocktailaudio.de](http://www.cocktailaudio.de)



▲ **AUDIODATA'S ENTRY LEVEL**

Combining the hardware of the „MS I“ and the know-how of the „MS II“, Audiodata now offers a particularly affordable music server. It is called „MS I SE“ and costs 1080 Euros in the basic version - exactly half as much as its big brother. More news from the Aachen-based server specialist: The devices are now optionally available with pre-installed Roon software and a one-year Roon licence for an additional 230 euros and with the new WLAN module (+110 euros). To get these Options, booking of the support package (180 Euro) is necessary. In the future, a linear power supply unit will also be offered.

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

**D/A-CONVERTER INSIDE ▶**

Optionally, X-odos can deliver its excellent ripping server with „xo|one“ playback function with a newly developed HighBit DAC. The circuit board transports the excellent all-in-one talent into the 9000 Euro sphere, but in return the customer receives highest quality: Like all components of the xo|one, the customized D/A converter comes entirely from the pen of company owner Christof Poschadel.

[www.x-odos.com](http://www.x-odos.com)



Good mood in the dealer centre: **BENOIT RÉBUS** from Qobuz (l.) and **JÜRGEN TIMM** from Pioneer/Onkyo (r.)

Web-streaming is in a good position and constantly getting stronger. The integration of as many streaming services as possible is consequently development focus of many manufacturers.

As is the case at Pioneer, where our appointment coincided with that of Qobuz' "Head of Global Hardware Partnerships" Benoit Rébus: The Japanese company has been pursuing a diversified strategy for several years, supporting Tidal, Deezer and Spotify, while services of all other providers can be integrated via DTS Play-Fi, Chromecast or Airplay.

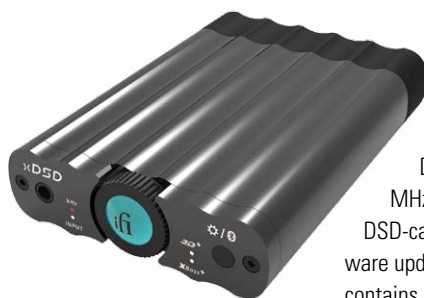
This makes things easy for product manager Jürgen Timm: "No matter what the customer wants and what quality requirements he has, our network devices are ready to do the job".



▲ **FROM SMALL TO HUGE**

Last year Naim presented the new „Uniti“ series. Based on their optimized streaming cores, this time the big models ND 5XS (around 2500 Euro), NDX 2 (fig., around 5500 Euro) and the huge ND 555 were on the agenda. The top model will cost 13,000 Euro, but does not have its own power supply and is therefore absolutely dependent on one of Naim's PSU power supplies. [www.naimaudio.com](http://www.naimaudio.com)

◀ **IFI'S NEW DESIGN**



With the new Porti-DAC „xDSD“ (around 450 Euro) iFi introduces a fresh design and supplements the connectivity with Bluetooth reception. Burr-Brown's DAC chip can handle frequencies up to 768 kHz and 22.6 MHz with DSD. It can also decode MQA files - like all DSD-capable D/A converters from iFi Audio thanks to the firmware update. The almost ten centimetre long metal housing also contains a battery that is supposed to last up to ten hours. It is charged via a separate USB micro-port. [www.ifi-audio.com](http://www.ifi-audio.com)







◀ **KEEP ON TURNING**

With Okki Nokki's compact record washing machine „Go“, the disc is stationary while the arm rotates over the vinyl. The cleaning liquid is applied from a tank and the „waste water“ is sucked off into another one. In Munich, the fascinating thing happily made its rounds. The price for the three-part set could be as low as 130 Euro. [www.okkinokki.com](http://www.okkinokki.com)



▲ **DUAL IN SHINING ARMOR**

People who buy fully automatic turntables often attach great value to a dignified appearance. Dual is addressing this issue with two new veneers for the proven „CS460“. In addition to the light walnut, the flat turntable is now also available in the elegant Makassar finish (photo) at a price of just under 770 euros. [www.dual-plattenspieler.eu](http://www.dual-plattenspieler.eu)



▲ **SOLID, FLEXIBLE, PRECISE**

Transrotor junior Dirk Räke presented the proven „Fat Bob“ with new, swivelling arm base for tonearms of different lengths. The flat wheel on the base should allow the finest adjustment of the arm height even while playing. [www.transrotor.de](http://www.transrotor.de)



**JEAN-LUC RENO**

Mulann SA and the brand Recording The Masters

» For quite some time we have been registering a growing interest in recording on tape - from

the studios as well as from hobbyists. This encourages us to serve the virtually unclaimed blank-cassette market again. We have the material and the technology. This means that listeners will continue to be offered an analogue alternative. ◀◀



▲ **THE RETURN OF THE TAPE**

In the USA there is a small demand for music on cassette. In Munich, the French manufacturer Recording the Masters showed new tapes with iron oxide tape. If successful, chrome and even pure iron substitutes could soon follow. [www.recordingthemasters.com](http://www.recordingthemasters.com)



▲ **CLEARAUDIO CONCEPT - NOW WITH „PLUS“**

The Franconian manufacturer Clearaudio has upgraded its entry-level record player. The plate bearing of the „Concept Plus“ is now mechanically supported by magnetic force. A pulley opposite the motor prevents one-sided belt tension. A steel plate increases the stability of the flat turner. Price of the MM version: around 1980 Euro. The optional battery power supply (I.) should allow up to 15 hours of operation and costs around 590 Euro. [www.clearaudio.de](http://www.clearaudio.de)



◀ **THREE NEW PHONO-PRES**

„Premium“, „Reference“ and „Statement“ are the names of three Silent Wire phono-preamps, costing from 2500, 3500 and 10.000 Euro. The two large models offer an outsourced power supply. Even the entry-level pre can be ordered with balanced input. [www.silent-wire.de](http://www.silent-wire.de)

**WORTH THE SIN ▶**

From Metaxas Audio's „Sins“ series comes the excitingly extravagantly designed Stellavox-based tape recorder „GQT“, which we used for the photo with STEREO coils. The first copies should be available in late summer. The price could be 30,000 euros.. [www.metaxas.com](http://www.metaxas.com)









# Lebenslänglich



unique high end audio

[www.mbl.de](http://www.mbl.de)



◀▼ In a functional building in Buckenhofen near Erlangen, some of the finest jewels of the analog world are created, and Clearaudio founder Peter Suchy is proud of his company, now run by his three children. And his „gem“? The „Goldfinger Statement“ moving coil cartridge, with no fewer than 12 magnets, 24 karat gold wire in its coils, and the company’s world famous Micro HD diamond stylus on a 14 karat solid gold body adorned with a diamond on the front – yours for €12,000.



# CLEAR ADVANTAGES

Peter Suchy founded Clearaudio in 1978, and still all of the company’s production is in-house, from cartridges, tonearms and turntables to phono stages.

A picture is often worth more than a thousand words, and at Clearaudio the images are abundant. Walk through the corridors and rooms, and you become aware of the concentrated working atmosphere, from the huge CNC machines used for the metalwork of turntables and tonearms to the equipment that

winds the tiny coils for the MC pickups. All of this requires the highest precision, which is why checks are carried out in many places in the factory in Erlangen, north-west of Nuremberg. Does the tonearm move freely or do the bearings bind? Is the stylus placed just so on the cantilever? Are the surfaces flawless? The aim is

simple: to deliver a product that lives up to the claim “Made in Germany”, especially as 95 percent of the production is exported, meaning every complaint is annoying.

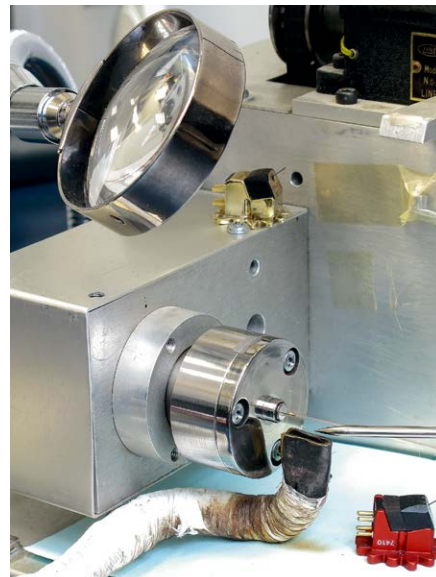
Getting it right is the task of 50 adept employees with experience, knowhow – and “gold fingers”. **Matthias Böde**





◀ Simone Cimander takes care of the fine grinding of spindles and bearings as well as custom-made products on the lathe, because building a turntable requires not only detailed work, but sometimes also some more 'heavy metal' engineering.

Peter Suchy introduced us to this machine, which he says is „the smallest coil-winding machine in the world“. The coil, designed for MC cartridges, is barely visible on the minute former, being made from gold wire and just 0.3 microns thick. The MCs Goldfinger Statement (above) and Da Vinci V2 give an impression of the proportions. ▶



◀ No cartridge goes out of the door without Natascha Woskoboinikova taking a close look: from inexpensive moving magnets – here in abundance on her bench – to Clearaudio's true treasures, she's always looking for any possible error. In addition, every completed model is tested, immediately revealing any distortions.



◀ Cantilevers are delivered with styli already installed – one of the few processes Clearaudio doesn't do in-house – but checked and adjusted in Erlangen. Under the microscope it can be seen whether the cut has been made correctly and the diamond applied cleanly. Here we see the elliptical stylus of the lower-end Concept MM.



# TRACING PROGRESS

The latest Clearaudio innovation is the „Tracer“ tonearm, but what sets it above the „Satisfy Kardan“? We checked it out.

Seen in the foreground below, the „Tracer“ looks dazzling: with its matt aluminum parts and the silver-colored tube made of carbon fiber, as well as the extremely fine workmanship throughout. Also available in gloss black, it sells for just under €1900 – or €500 more than the „Satisfy Kardan“ arm seen behind it. However, you can already have the latter model from just €1200, but then it comes with an aluminum arm-tube instead of the carbon fiber.

Unlike the Satisfy, whose freely swivelling headshell proves quite fiddly during adjustment, the Tracer has a headshell firmly fixed to the end of the arm. Both models have extremely low-friction sapphire bearings, but on the Tracer this is 90 degrees to the angle of offset instead of to the arm itself, which is said to be beneficial for accurate tracking.

And while the magnetic anti-skating setting on the Satisfy looks rather rustic, the Tracer has a small knurled wheel to compensate for the force that pulls the angled arm inwards on the rotating record. Also its bell-shaped coverage is supposed to protect the sensitive bearing from dust more effectively than the open design of the Satisfy. In addition, the suspended counterweight ensures a low centre of gravity for the Tracer, while another knurled wheel to the rear allows very

sensitive adjustment of the tracking force. On the Satisfy all this seems simpler and coarser, but admittedly in the end it works just as well.

Both arms have the same, permanently installed and acoustically first-class cabling, which runs out into two RCA plugs as well as a ground line. We set them up on Clearaudio’s „Innovation Compact“ turntable, and fitted both with a €750 „Concept MC“ cartridge, the alignment of each being identical in terms of overhang, downforce, tonearm height and anti-skating. Any differences, therefore, would be down to the construction of the tonearms.

The performances turned out to be very similar, and that Satisfy and Tracer have the same origin was unmistakable. Using the Tracer makes it clear it’s in a higher league, as both the feel and the mechanical impression are simply better, but in terms of sound it doesn’t really distance itself from the less expensive Satisfy – whose name, after all, is self-explanatory.

Yet there are subtle differences in the depths of the sonic images they deliver that can be heard, for instance, on Scottish 80s band Deacon Blue’s live disc: in the middle of the evergreen „Chocolate Girl“, singer Ricky Ross talks to the audience, which reacts, calls along and answers. Using the Tracer arm, the hall

acoustics of Glasgow’s Barrowlands, where the concert took place, come across more clearly, the image is deeper and the sense of the audience and the dialogue are easier to feel.

In Chadwick’s „Jubilee“, the large orchestra has more air and scale via the Tracer; using the Satisfy it does not spread quite so comfortably. Yes, the Satisfy is still a very good arm, but with the new Tracer Clearaudio offers even more.

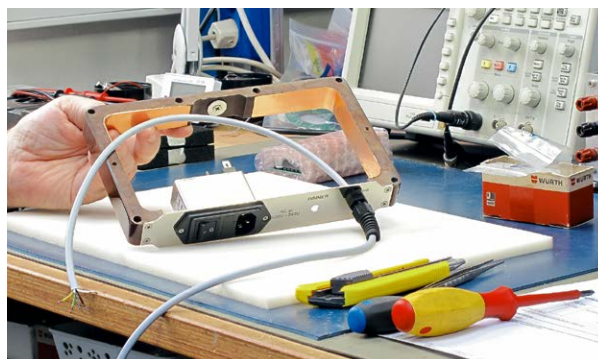
*Matthias Böde*



Giuseppina Schmeisser needs a sensitive touch to adjust the bearings of a tonearm. The arm must swing out at least 16 times to show the friction is low enough – and the bearing must be free of play.



▲ In 1987 Peter Suchy bought US tangential tonearm specialist Souther and continues to optimize and refine its techniques: today Clearaudio offers a whole range of tangential arms as an alternative to their conventional designs.



▲ Electronics are also manufactured and measured in-house, all the way through to the housings: here is the power supply unit of the top-end „Absolute Phono“ two-box equalizer/preamplifier, which uniquely locates the moving coil phono stage in the headshell of the tonearm, to be seen.





▲ Trust is good, but control is better. Here Robert Kenner lets his trained eye – he’s been with Clearaudio for six years – wander over a series of inexpensive „Concept“ turntables. That’s why over the recent years quality of workmanship, including the flawless finish, could be advanced even further.

We turn a corner – and suddenly face Clearaudio’s monumental „Statement V2“ turntable. Ralf Rucker is working on it, mounting the company’s high-end tangential tonearm. The turntable uses a massive pendulum to stabilize it using gravity – aligning it to the centre of the Earth – and weighs around 300kg. Costing upwards of €150,000, this one is on its way to Asia, where a rich analogue fan is already eagerly awaiting it. ▼



▲ Claudia Lux is working on the inside of a record cleaner, tightening the suction fan. When finished, the „Double Matrix Professional Sonic“, which cleans both sides of the record simultaneously, looks as classy and dignified as Clearaudio’s high-end turntables. Record cleaners are an important side of the business.

Inside the aluminum pivot of the tonearm is a low-friction sapphire bearing mounted at a 90-degree angle to the headshell. Further features are its hanging counterweight and magnetic anti-skating. ▼



▲ Clearaudio mills virtually all metal parts in-house, using a total of five CNC machines with state-of-the-art computer control for maximum consistency. Still, a critical glance has never done any harm.



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**WE HAVE TESTED FOR YOU:**

- Canton GLE 496.2 26
- Elac Uni-Fi FS 05 23
- Focal chorus 716 24
- KEF Q550 22
- Wharfedale Diamond 11.4 27

# STAND & DELIVER!

The floorstanding speaker formula is a familiar one, so not much room for variation, you might think. Our test group shows designers know otherwise

In the €1000 price class, you might expect all contenders to be much the same. But the candidates, gathered here for testing, prove there's room for innovation, variation, and different approaches to sound. But which manufacturer knows best how to make its floorstanding speakers deliver?

*Michael Lang*

# Q FOR THE EIGHTH TIME

KEF has been building the Q series since 1991, and the 8th generation has been with us since last year. How does the British company stay up to date?

The idea of trickle-down technology, where innovation in flagship models finds its way to lesser-priced stablemates, is nothing new – but Chinese company GP, which has owned KEF for around two decades, trickles faster than most. Only last autumn it launched the second evolution of its all-aluminum sculptural "Muon" speaker, which sells for more than €150,000, and almost in parallel presented the latest Q series, incorporating much of the flagship model, without inappropriately inflating the price. Not only has the design of the Qs been refreshed in this eighth generation, but also the coaxial Uni-Q driver has been optimized for a more even dispersion and reduced coloration, while at the same time distortion has been minimized with a new conical tweeter tube.

The effort involved in the coaxial driver is really enormous: it uses more than 20 components, precisely matched to one another and assembled with the highest precision. The woofer, the only one in the test group to work on a closed cabinet, also has a stronger "motor" than before, plus a new aluminum diaphragm, modified suspension and a stiffer chassis basket, and is supported by two passive diaphragms located above and below it. The result, according to KEF, is better midrange reproduction, less distortion at higher levels and a more precise response, with both midrange quality and lowered distortion also at the heart of the crossover component selection.

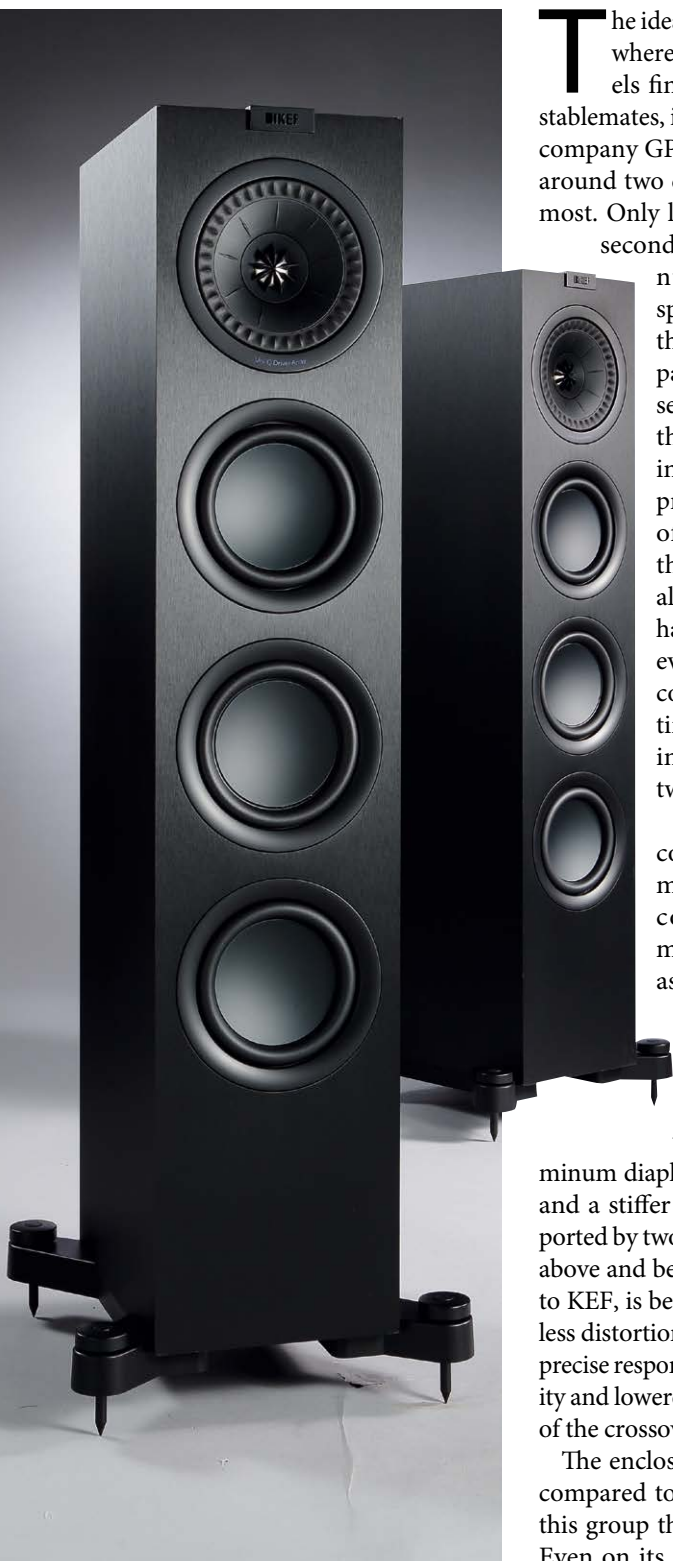
The enclosure volume has also grown compared to its predecessor, and yet in this group the Q550 is still the smallest. Even on its standard spiked stabilizing

outriggers it remains below the one-meter mark, and weighs just less than 15 kilos.

## Warm and round

Warmth and generosity were the first impressions during the listening: the soundstage extended backwards into the room, giving a very relaxed sound, absolutely suitable for long-term use. The KEF isn't an obvious hit and run thriller, but rather shows its ability in a more refined manner, never likely to irritate. That said, it would benefit from a little more dynamism and attack, as became clear with Rodrigo y Gabriella's take on "Stairway to Heaven", one of over 100 cover versions of this classic. On the other hand, it sounded sparkling on piano recordings, albeit still a touch more reticent than the competition.

With the T+A MP 1000 E feeding Octave's V 110 amplifier, it was clear that the KEF slightly blurred many tiny details in "Take Five", although various choral recordings were presented with a wonderfully wide soundstage and real insight into the multitude of voices. At higher levels it can compress, but it was absolutely coherent at "living room" volume and below.



▲ The coaxial chassis in the Q550 has been further optimized and benefits from the large models.



# ELAC'S SECOND WAY

German company Elac is famous for its JET tweeters, but in the USA a second development center is going its own way.

**E**lac has been spreading its development of late: the traditional side of the company, based in Kiel on the Baltic Sea, has been developing and producing record players and loudspeakers for decades, while Andrew Jones and his team of developers have been working in the USA for the past three years, thinking about how music enjoyment can be brought into the house at a reasonable price.

And with Jones on the case, it's no surprise that the state-side team went for a coaxial driver for midrange and treble – after all, he designed and tuned the globally acclaimed TAD loudspeakers before joining Elac. But whereas then he had the financial freedom to develop state-of-the-art loudspeakers for the Pioneer subsidiary, he has now risen to the challenge of producing enchanting sound on a tight budget.

In addition to the coaxial driver, which combines a silk dome tweeter and an aluminum ring radiator, designed to ensure very even dispersion and high imaging accuracy, Jones has also used three 13cm woofers, each working with its own bass reflex port at the rear.

Also impressive are the stable, height-adjustable and spike-reinforced outriggers for increased stability, while the design is made neater by the completely concealed driver fixings. In spite of the tight budget, solid single-wired terminals of fairly high quality are provided. Only in terms of the glued reflex tubes, the crossover equipped with "normal" components, and the drivers that are not magnetically shielded, which is anyway almost entirely superfluous today, the budget restrictions

become apparent. Standing just under a meter tall, the speaker weighs about 18kg, which is another small sign for the Elac's rational price.

## Hardly noticeable compromises

In the listening room, the FS U5 delighted with a bass that was nicely contoured, but somewhat more brittle and less agile than that of the Focal, or the visually very similar Canton. The coaxial tweeter/midrange driver made sure that the Elac also resolved complex sound structures very finely, which was particularly apparent in Berlioz's "Symphonie Fantastique", where it gave the best insight of all the speakers in this test group.

Tonally the Elac was very balanced, without ever sounding reserved, showing how well Andrew Jones and his team have balanced the presentation. Wide dispersion ensures that two people can sit next to each other on the sofa and experience the precise graduation in width and depth as well as the wide-ranging image, while, in common with the other speakers in this group, the maximum achievable volume is more than sufficient for a rented apartment. The top-quality craftsmanship with the stable outriggers is another argument in favor of the speaker.



▲ The concentric driver, combining midrange and tweeter, is at the heart of the Elac Uni-Fi series.



# FOCAL'S EVERGREEN

The Chorus 716 has been in production for five years, and remains very popular. What's the secret of its success?



**A** long, fiery kiss, full of passion – talk to owners of Focal's Chorus 716, and you often get the impression of a close relationship between owner and speaker. The descriptions of the qualities are highly enthusiastic – and perhaps that's the reason for the unusually long production life of the Chorus series in our fast-moving world.

Focal relies on a mixture of manual and automated production, and consistency is an important building block for its sound success, which is why they not only develop but also manufacture in-house, in St. Etienne. With Focal's legendary inverted-dome tweeter, currently called TNV2, the Chorus benefits directly from the insights gained in the costly Utopia series: its surround uses a special foam, called Poron, to halve the distortion in the range between two and four kilohertz – with the precision of its implementation ensuring this will remain so even in long-term use and under varying conditions.

## Man & Machine

The two 16.5cm "Polyglass" drivers – the upper of which is a mid/bass unit, and the lower used for bass alone, tuned using a front-venting reflex port – have been seen in various forms in Focal speakers for three decades. They use a cone made from light but well-damped cellulose fibers, its surface treated with microscopically small beads of quartz glass, further increasing stiffness without adding significant weight, resulting in a particularly detailed midrange reproduction. The crossover is tidy, and the cabinet both solid and internally braced and

stiffened. Its lacquered side panels add to the visual appeal in combination with the leather-covered top panel of the Black Style finish – rosewood and walnut are also available.

In the listening room, the 716 started like the fire brigade, sounding extremely lively and dynamic and already "there" with little amplifier power. In terms of tone, it showed minimal concealment effects in the upper bass range, these only noticeable in direct comparison to the Canton (which is exemplary in this discipline, but lost out on sheer musicality). The bass is clean, but with a touch of bite and taste, creating a frisson: the Michael Wollny Trio sounded absolutely coherent, even in the applause, which too often resembles rain hitting a tin roof – but not here!

Changing to Ray Brown's "Blues for Groundhog", we again noted the clarity of the bass – of course absolute extension was missing, as was the case with all our participants here, and yet this absence was well covered. The drums were clearly outlined on the right behind the bass, the piano sounding dynamic and with a clean touch – everything was very well audible and swinging, the sax splashing powerfully in between.

Simply, music lives through the Focal – that's the way it should be.



▲ Fine leather on the top panel – in the Black Style finish – and shapely side panels make the Focal look appealing.



# CANTON'S CLEAR LINE

Large-scale production and attention to detail are by no means mutually exclusive, as Canton proves again with the GLE 496.2.

There's no great secret to Canton's success: the family-run business has been prospering for decades, partly due to them drawing their inspiration from direct and close customer contact. The company exhibits at a number of trade fairs and listens very carefully to what clients want. This thinking has informed the use of the aluminum/manganese tweeter in the GLE 496.2, which has previously been reserved for more expensive models. It offers high resolution, promises Canton, but suppresses any overemphasis on the high notes. This ability should inspire both the detail freaks among you and those of more moderate temperament, who simply want to enjoy music for hours at low volume.

The tweeter is partnered with an 18cm midrange driver and two 20cm woofers, tuned with a reflex port. All use aluminum cones, redesigned suspensions and a triple-folded surround from the third hence newest generation. This enables them to offer a larger maximum excursion with symmetrical force distribution (in both inward and outward movement).

If that sounds to you like lot of high-tech for the money, you won't get any argument from us, especially since the crossover is also well-designed with 12dB and 18 dB slopes, the 20kg cabinet is braced and stiffened several times and decoupling feet are included. As further evidence of attention to detail, the grille can be attached to the back when not in use, while – in common with other designs by Canton head developer Frank Göbl – the GLE 496.2 doesn't lack practicality. That comes in the form of wide radiation of all frequencies, good utilization of the supplied amplifier power and, if necessary, party suitability.

## Joy on the grand scale

The sound was lively, with the aluminum/manganese dome sounding clean and distortion-free, without any sharpness – as was clearly audible with all kinds of brass instruments. The speaker also scored points with drum rolls, delivering them with impressive power, while not concealing the wealth of other detail the music had to offer.

How much joy a €1000 speaker can bring was also shown with pianist Michael Wollny accompanied by Eva Kruse and Eric Schäfer on "em", one of the countless artistically and sonically convincing ACT CDs: what was heard was so intense that sideline activities were immediately stopped, simply because one was drawn so entirely into the music. Even though, as expected, not all of the trio's fascination was reproduced in the listening room – for that one would need a much more accomplished (and expensive) speaker –, it was almost impossible not to be captivated by the atmosphere of this live recording from 2010.

The grille can be fixed to the back panel when not in use; the design is bass reflex, with single-wire terminals ▶



# BRITISH HEAVYWEIGHT

The Diamond 11.4 is no featherweight, but offers a sound as mature as it is remarkable at the price.

**W**harfedale's Diamond 11.5 weighs some 24kg, about 25% more than most of its competitors in this test, and yet there's nothing hefty in its appearance: indeed, the speaker looks relatively slim and room-friendly.

The developers led by Peter Comeau weren't keen to slim down the technology either: the bass drivers have a very stiff, ribbed basket and a flow-optimized design, improving their vibration behavior and thus the impulse response, while also reducing early reflections hitting the cone. Powerful magnets should ensure clean bass reproduction and proper sensitivity, while the voice coil has also been worked on, resulting in reduced inductance, controlled magnetic flux density and low distortion. Also clever is the "progressive suspension" – the very lightweight foam driver-surrounds, in conjunction with the particularly long-stroke voice coil construction, should ensure an impeccable midrange and absolutely unusual linearity and reproduction precision in this price range.

All this only works, says Comeau, because the Kevlar cone material is also specially treated to ensure optimum harmony with the foam surround. Meanwhile, the fabric dome tweeter is driven not with standard neodymium in the "motor", but ferrite magnets for smoother reproduction.

spe- cially treated to ensure optimum harmony with the foam surround. Meanwhile, the fabric dome tweeter is driven not with standard neodymium in the "motor", but ferrite magnets for smoother reproduction.

## Impeccable manners

In the listening room, neither the Octave V110 amplifier nor the Exposure 1010 had a problem with the Diamond 11.4,

which played unobtrusively and harmoniously from the start. There was nothing pushy about the sound, the speaker showing its good manners with every kind of music, thanks to a decent bass, a very natural midrange – as was obvious with various voices from opera to rock – and relaxed and stress-free appearance at all neighbor-placating levels.

So it's no wonder that the unanimous opinion was that the Wharfedale is a very good all-rounder, with a very distinguished sound, but never lapsing into that stereotypical British nobility and restraint, sometimes perceived as a certain lack of temperament. It's somewhat less lively than the fiery Focal, which sounds extremely captivating, but the Wharfedale is anything but lame. It encourages you not to rush to the "highlight arias" of an opera, but instead to be shown that it is a complete work of art and not just a collection of songs. Consequently the Wharfedale may not really be suitable for the youthful "instant gratification" listener, but it is definitely a solid choice for the mature music lovers, especially those who can't – or don't want to – spend a fortune, yet nevertheless strive for musical accomplishment.



▲ Wharfedale uses Kevlar diaphragms and foam surrounds for midrange and bass drivers.





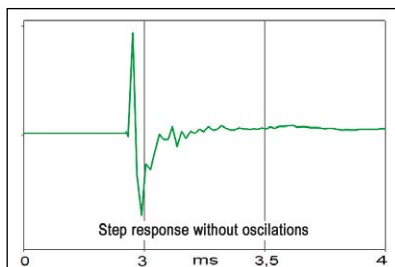
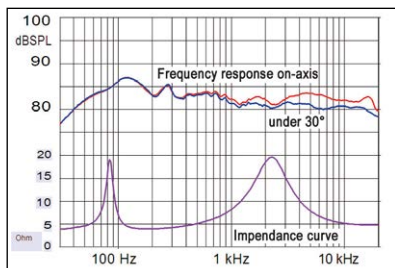
**KEF Q550**



around €1000  
 (Available in black or white)  
 Dimensions: 30 x 93 x 31 cm (WxHxD)  
 Warranty: 5 years. Contact: Kef  
 +44 1622 672 261, uk.kef.com

The Q550 is the smallest floorstanding speaker in the eighth-generation Q series: the 21/2-way design uses two passive bass radiators to amplify low frequencies. The sturdy outriggers are equipped with height-adjustable spikes, and the sound is extremely warm, which is ideal for a rather sparsely furnished environment.

**MEASUREMENT RESULTS**



DC resistance	4 Ohm
Minimum impedance	3.9 Ohm at 190 Hz
Maximum impedance	19.5 Ohm at 2300 Hz
Sound pressure level (2.83 V/m)	84.2 dB SPL
Power for 94 dB SPL	37 W
Lower cut-off frequency (-3dB SPL)	55 Hz
Distortion factor at 63/3k/10k Hz	1.0/0.1/0.1 %

**LAB COMMENTS:** Moderate efficiency, requiring a bit more amplifier power, but the impedance curve is uncritical and the coaxial driver almost distortion-free. The bass cut-off is quite high, and the frequency response gradually decreases towards the treble. Step response good.

**STEREO -TEST**

SOUND QUALITY **62%**

PRICE/PERFORMANCE



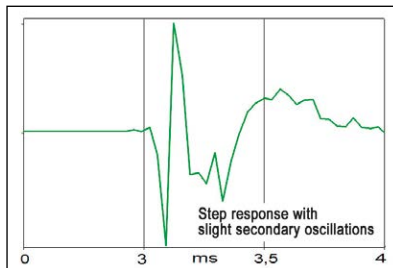
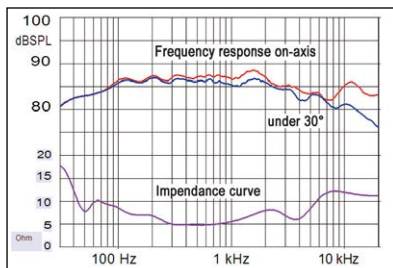
**ELAC UNI-FI FS 05**



around €1400  
 (Available in black or white)  
 Dimensions: 18 x 98 x 29 cm (WxHxD)  
 Warranty: 2 years  
 Contact: ELAC  
 +49 431 647740, www.elac.de

A very well made three-way bass reflex floor-standing loudspeaker, with coaxial midrange/tweeter. The sound is neutral to warm, and imaging very good when the speaker is toed-in toward the listening position, but it shouldn't be placed too close to the wall.

**MEASUREMENT RESULTS**



DC resistance	4 Ohm
Minimum impedance	4.8 Ohm at 430 Hz
Maximum impedance	17 Ohm at 30 Hz
Sound pressure level (2.83 V/m)	86.2 dB SPL
Power for 94 dB SPL	12.5 W
Lower cut-off frequency (-3dB SPL)	44 Hz
Distortion factor at 63/3k/10k Hz	0.3/0.3/0.1 %

**LAB COMMENT:** Average efficiency, non-critical impedance response and very low distortion. Frequency response with slight midrange emphasis and quite good bass extension. Step response with slight secondary oscillations.

**STEREO -TEST**

SOUND QUALITY **63%**

PRICE/PERFORMANCE



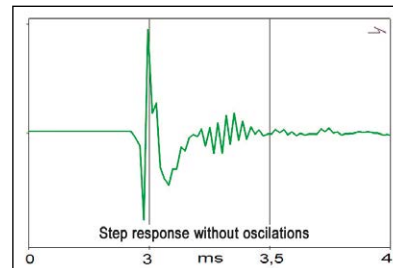
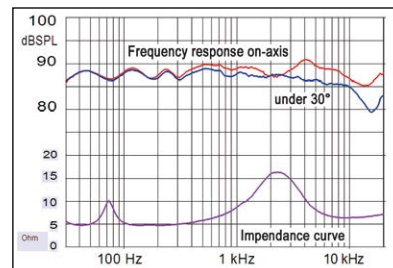
**FOCAL CHORUS 716**



around €1200  
 (Available in black, rosewood and walnut)  
 Dimensions: 22 x 95 x 31 cm (WxHxD)  
 Warranty: 5 years  
 Contact: Focal  
 www.focal.com

Incredibly dynamic and spirited 21/2-way speaker that comes with free goosebumps! Easygoing when it comes to amplifier matching and installation. The finishes make it very décor-friendly; the grille is removable, spikes and protective floor-cups included.

**MEASUREMENT RESULTS**



DC resistance	4 Ohm
Minimum impedance	4.5 Ohm at 150 Hz
Maximum impedance	16.4 Ohm at 2350 Hz
Sound pressure level (2.83 V/m)	89.4 dB SPL
Power for 94 dB SPL	5.8 W
Lower cut-off frequency (-3dB SPL)	40 Hz
Distortion factor at 63/3k/10k Hz	1.0/0.3/0.1 %

**LAB COMMENTARY:** Quite balanced frequency response with good extension. Sensitivity is very high, impedance response is uncritical and distortions are very low, especially in the midrange and high-frequency range. Step response with secondary oscillations.

**STEREO -TEST**

SOUND QUALITY **64%**

PRICE/PERFORMANCE



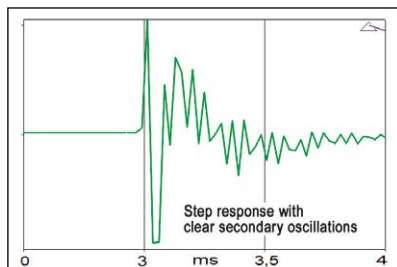
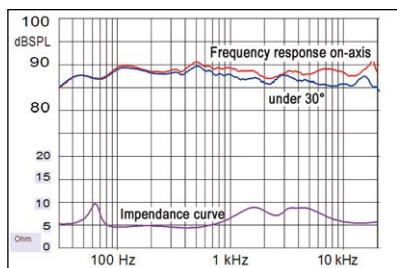
**CANTON GLE 496.2**



around €1050  
 (Available in Black, White, Makassar)  
 Dimensions: 21 x 106 x 31 cm (WxHxD)  
 Warranty: 5 years, Contact: Canton  
 +49 6083 28730, www.canton.de

The Canton is a three-way bass-reflex speaker with a rear port, and a sound that's neutral but still full of joy. It's crisp, dynamic, and stable if required – impressive for the money. It delivers generous bass, and also works well with less powerful amplifiers – just don't use it too close to the wall. Single-wiring terminals, and the grille can be attached to the rear for storage.

**MEASUREMENT RESULTS**



DC resistance	4 Ohm
Minimum impedance	4.2 Ohm at 440 Hz
Maximum impedance	10 Ohm at 63 Hz
Sound pressure level (2.83 V/m)	91.2 dB SPL
Power for 94 dB SPL	3.2 W
Lower cut-off frequency (-3dB SPL)	33 Hz
Distortion factor at 63/3k/10k Hz	0.8/0.3/0.1 %

**LABORATORY COMMENT:** Quite linear frequency response with deep bass, high efficiency and low distortion. The impedance curve is also uncritical, and only the step response shows clear secondary oscillations.

**STEREO - TEST**

SOUND QUALITY **64%**

PRICE/PERFORMANCE



**OUTSTANDING**

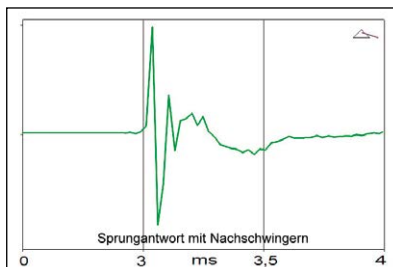
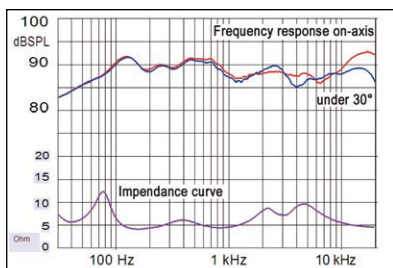
**WHARFEDALE DIAMOND 11.4**



around €1000  
 (Available in black or white)  
 Dimensions: 22 x 99 x 32 cm (WxHxD)  
 Warranty: 5 years  
 Contact: Wharfedale  
 www.wharfedale.co.uk

High-quality three-way floorstanding loudspeaker downward-venting reflex port, which means the Wharfedale is suitable for installation close to walls, and toe-in isn't required for the best imaging. Spikes are included, the grille attaches magnetically, and the foil wrap looks amazingly similar to veneer.

**MEASUREMENT RESULTS**



DC resistance	4 Ohm
Minimum impedance	4.2 Ohm at 160 Hz
Maximum impedance	13 Ohm at 68 Hz
Sound pressure level (2.83 V/m)	92 dB SPL
Power for 94 dB SPL	3.1 W
Lower cut-off frequency (-3dB SPL)	46 Hz
Distortion factor at 63/3k/10k Hz	0.3/0.1/0.3 %

**LABORATORY COMMENT:** Slightly unstable frequency response with high-frequency boost on axis, which disappears beyond 30°. Good efficiency, uncritical impedance curve. Low distortion in all frequency ranges.

**STEREO - TEST**

SOUND QUALITY **63%**

PRICE/PERFORMANCE



**OUTSTANDING**

**VERDICT**



**MICHAEL LANG,**  
 Managing Editor

Amazingly, the speakers in this group deliver sound quality one might not have expected at this price level, and also show that skilled designers can work wonders even on a tight design and production budget.

Impressive, too, is the variety of solutions those engineers found: the pricing may be similar across the group, but the technology is anything but – and for that all the manufacturers involved deserve praise. KEF and Elac use coaxial drivers to create an authentic spatial image while tackling the earlier tonal weaknesses of this technology, while Canton, Focal and Wharfedale are convincing with their implementation of, and variations on, classic design thinking.

Of course, that also means each of the five pairs of speakers has its own tonal characteristics. The KEF is particularly warm, while the Elac and the Wharfedale are inconspicuous and honest, even at moderate levels, but shy away from party mode. However, the Focal and Canton speakers are the proof of the qualities you can bring together at this price level: they sound as natural and neutral as possible, reveal an enormous wealth of details, are tight and fast in the bass, and acoustically disappear as far as possible, if set up correctly.

What's more, if you want to get your neighbors hammering at your front door again, either of these designs is up for the sport, and will do so with a lot less complaint than you're about to hear!

The fact that the Focal, the oldest participant in our group, is still very much on the pace speaks for the French company's ability, and thus earns extra praise. But the ability of all the development departments concerned to create good – or even great – sounding speakers on limited budgets commands our respect, and is also testament to the power of modern development tools and measuring equipment when it comes to excluding undesirable characteristics and optimizing performance.



# QUIETER AND STRONGER



In many audiophile circles, it is commonly believed that power conditioners and various other power-line accessories often do more harm than good, robbing the music of its vitality, color, and that oh-so-important, wildly intangible “boogie factor.”

AudioQuest’s **Niagara Low-Z Power Noise-Dissipation Systems** are designed to do the exact opposite. Niagara kills the noise while *honoring* the music, so that the listening experience can be exactly as it should be: compelling, immersive, *fun*.

“The difference was huge. AudioQuest’s Niagara 1000 not only cleaned up the power, it did everything that is the *opposite* of killing the boogie.... It was as if my system had gotten a heart-shot of adrenaline.”

— Herb Reichert,  
*Stereophile*,  
April 2017



**audioquest**®



# OUCH!

That cartridge sounded so nice a minute ago, but just a moment of clumsiness can turn it into a piece of junk, with the stylus or cantilever so easily damaged.

So now what? HiFi analog tells you what to do and where to get help.

**T**he shock runs through the vinyl listener like lightning, but by then it's too late! Just a moment of carelessness – it's enough to accidentally move the arm over the disc or to suffer a moment of tiny clumsiness during installation or adjustment – is all it takes to damage the sensitive cantilever or even tear it off completely, thereby seemingly destroying the cartridge. No guarantee covers such damage, and the danger is omnipresent.

While many hi-fi fans are concerned about possible wear of the stylus, in practice the vast majority of cartridges “die” through damage long before they reach their wear limit – and this is usually due to clumsiness. In fact, if there were statistics on such things, it would probably turn

out that the majority of such accidents involve styli getting caught in dusters when the turntable is being cleaned. Done that? Thought so...

Of course, with many moving magnet cartridges, the damage is usually repaired quickly: slide out the insert carrying the trashed stylus, and slide a new one in – job done! True, with older models the search for the suitable exchange stylus can take some time, but somehow you will find what you are looking for. Almost all MM-cartridges, with the exception of Clearaudio or the pricier models from Grado and Rega, offer this option for “flying change”.

Even so, many old or damaged moving magnet cartridges also end up at the repairers, as customers refuse to accept

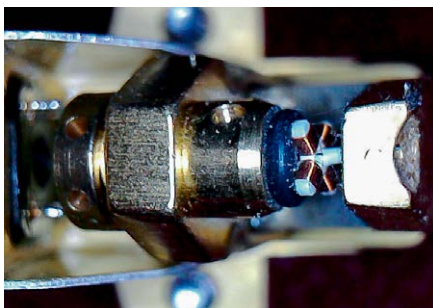
third-party inserts for their AKGs, ELACs or Shures. Many prefer to have the original rebuilt, whether it is worn out, hardened or otherwise damaged, usually meaning that the old dampers, which have become crumbly over the years, have to be replaced as well.

However, things get really annoying when it's a moving coil cartridge, perhaps costing hundreds or even thousands of

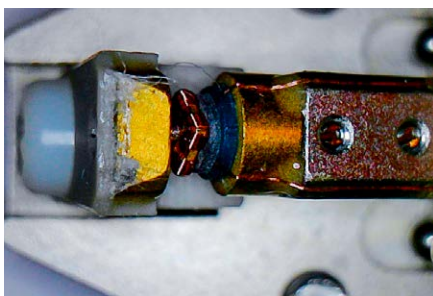
## LINKS

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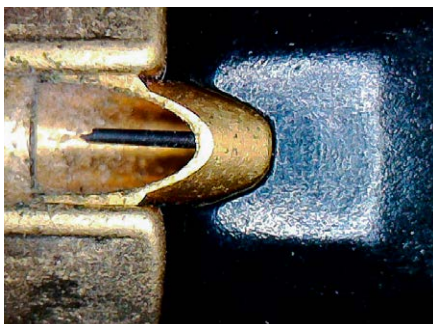




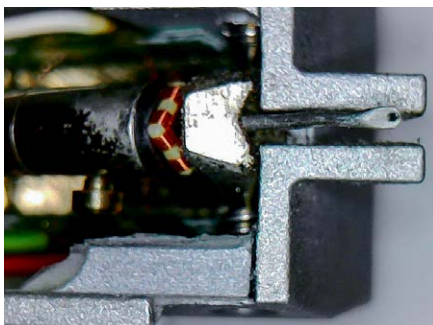
▲ The cantilever is missing on this Benz Micro Glider, and the coil carrier has warped. The repair cost, including boron cantilever and Shibata diamond, is just under €500.



▲ This Lyra Kleos had to be completely overhauled, because the rubber damping was shot. This „total loss“ cost around €550 to repair and save.



▲ Although it was already old, the customer wanted to have this Technics EPC-205 MKIV repaired with a new cantilever. Franz-Josef Schulte made it.



▲ In addition to the bent cantilever, the damping on this EMT also had to be renewed. FJS charges €530 and upwards.

Euros, being cried over: here the stylus/cantilever, suspension and coil “signal generator” are a single unit, and repairs are going to be expensive, if possible at all. For the analog fan bent like the aluminum cantilever tube on the left in the lead picture – don’t worry, it’s just a photomontage – there are two options: either buy a complete new cartridge or have the damaged one repaired, which is what insiders call “retipping”.

Depending on the damage, a new diamond is attached to the cantilever or – more often – the whole assembly is replaced. If you’re really unlucky, the cartridge is designed in such a way that the coils also have to be replaced. The prices for retipping thus vary depending on the effort, manufacturer and price of the defective cartridge.

Our research showed that this procedure is not an exception for many suppliers, but an everyday occurrence: for example, the studio equipment specialist EMT,

which recently celebrated its 75th anniversary, retips around 600 of its moving coil cartridges per year, which should easily support a full-time position.

### Small group of specialists

If the effort is too great because the producer is based in Asia – for example, Dynavector or Audio-Technica – the customer is often offered a new or repaired cartridge at a preferential price when the defective unit is submitted as proof of ownership and damage. So no, claiming damage to get a discounted cartridge usually doesn’t work: consult our list of the most important suppliers and rules they enforce for more information.

If the cartridge is returned to the factory for repairs, you can assume it will be returned in what is, in all practical terms, new condition, simply because it’s not unusual for the entire inner workings to be replaced with original parts. This is also interesting for owners of fully functional,

## „ALMOST ALL CARTRIDGES CAN BE REFURBISHED“

**When it comes to repairing defective cartridges, Franz Josef Schulte is a master in his field.**

What some might treat as a hobby or leisure activity after work turns out to be **FRANZ-JOSEF SCHULTE**’s full-time job – and the demand is so great that his profession and passion is to repair not only moving coils, but all types of cartridges. His FJS cartridge service, based in Büren, east of Dortmund, is currently even employing two extra staff, mainly to provide Schulte with logistical support, and therefore is moving into new, larger premises.

Schulte’s commitment to reconditioning B&O cartridges is the origin of his operation: due to their special plug-in system, they cannot simply be exchanged for others, and so for customers worldwide spare parts are manufactured in Switzerland. Schulte’s suppliers are mainly located in Japan, but also here or in Scandinavia: from there, for example, ready-fitted aluminum or boron cantilevers are supplied, but also individual styli, some of which feature exotic cuts, as requested by customers.

Anyone who thinks Schulte only gets his hands on elitist cartridges would be wrong, and often he wonders what the postman will bring. For the cost of a repair, the customer could often buy a new cartridge, or maybe even a better one, but many listeners seem to be attached to their “pride and joy”, associating

memories and emotions with it. He regularly receives AKG or ELAC cartridges whose rubber dampers are finished after decades, and which require a new stylus.

Since Schulte’s price list starts at just €99 for inserting an aluminum cantilever with an elliptical stylus, the effort is also worthwhile for cheaper cartridges, while prices range up to about €800 for complete overhauls with precious parts. But Schulte knows that the sum becomes secondary when a vinyl listener holds his favorite cartridge, returned to pristine condition, in his hands. And the chance of that is high because, as he says, „98 percent of all defective cartridges can be repaired“.



# CAN THEY FIX IT?

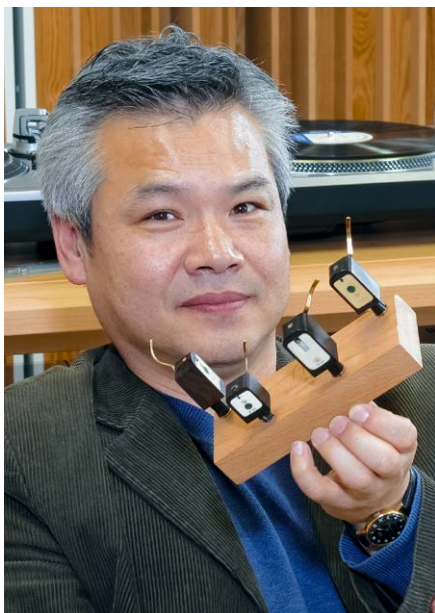
This is what the leading moving coil manufacturers offer in the event of damage

MANUFACTURER	SERVICE IN THE EVENT OF DAMAGE
<b>AIR TIGHT</b>	Defective cartridges are refurbished in Japan by the manufacturer: only the housing and magnets are retained, meaning the cartridge should be returned to 'as new' condition. The price is around 75 percent of the new price.
<b>AMG</b>	Replacement: identical model with 20 percent discount on the return of the defective cartridge. When switching to more expensive models the price discount of the defective cartridge will be credited.
<b>AUDIO-TECHNICA</b>	Approximately 30 percent discount on new cartridge purchases when worn; in the event of a destroyed cartridge, the calculation depends on goodwill, and retipping is also possible, carried out by a partner company.
<b>BENZ MICRO</b>	No exchange procedure, but repair at the manufacturer in Switzerland.
<b>CLEARAUDIO</b>	No repair possible, exchange prices for new cartridge (eg €2080 for a Stradivari V2 instead of €3200, with special upgrade prices), defective cartridge must be submitted.
<b>DENON</b>	No flat-rate arrangement: to be decided on a case-by-case basis in conjunction with the dealer/specialist workshop.
<b>DYNAVECTOR</b>	No repair: the customer buys either a new cartridge or one rebuilt in the factory from old parts, each at a preferential price.
<b>EINSTEIN</b>	Depending on the OEM supplier (EMT or Ortofon), different service offers.
<b>EMT</b>	Retipping at a fixed 45 percent of the new price.
<b>EXCALIBUR</b>	Replacement cartridges at a preferential price (35 percent), overhauled models will be available later, defective cartridges must be submitted.
<b>GOLDRING/ TRANSROTOR</b>	Replacement cartridge at a special price (e.g. Figaro €1480 instead of €2500 Euro on return of the defective cartridge to the manufacturer).
<b>GRADO</b>	Cartridge exchange prices minus 25 percent; when switching to more expensive models the price reduction of the defective cartridge is taken into account.
<b>HANA</b>	Exchange for identical model with 20 percent discount, defective cartridge must be submitted; price discount of the defective unit will be credited when upgrading to more expensive models.
<b>KOETSU</b>	Defective cartridges refurbished in Japan by manufacturer, retaining only the case and magnets, to return the cartridge to new condition, at between 35 and 65 percent of the new price.
<b>KUZMA</b>	Retipping offered at a fixed 85 percent of the new price.
<b>LYRA</b>	Either exchange discount (eg Kleos at €1900 instead of €2490), or a defective cartridge goes into the "Rebuilt" program, where the entire inner workings are exchanged. This is also available for intact but aged models.
<b>ORTOFON</b>	Certain models factory repair possible, otherwise special price for new cartridges, special offers on manufacturer's website for mostly older, generally overhauled scanners in the "Treasure Trove".
<b>REGA</b>	Replacement cartridges at a 35 percent discount, overhauled models will also be available, defective cartridges must be submitted.
<b>SHELTER</b>	No repair; replacements 15 percent below the normal price with return of the defective cartridge.
<b>SOUNDSMITH</b>	No exchange offers, repairs at fixed prices by manufacturer in the USA. Soundsmith dealers have the details.
<b>SUMIKO</b>	No repair, replacements with up to 50 percent discount depending on the model, the defective cartridge must be submitted.
<b>VAN DEN HUL</b>	No exchange prices; factory repairs, also for older models, prices depending on effort and model, €250-800.
<b>YOSEGI</b>	Exchange procedure as Sumiko (above).





▲ Older EMTs often suffer from ailing, porous rubbers, Schulte observed. After the exchange, this one sounded like new, to the joy of its owner.



▲ Berlin-based cartridge maker Hyun Lee and his company Tedeska also service third-party moving coils. Among these, however, exclusively historical models, which are his hobby.

but very old, cartridges who want to remain faithful to their gem, but need, for example, new dampers in the suspension. If these are dried out, cracked or crumbly, as a result of age or use, the coils often also have to be replaced: their wafer-thin wire has been glued to the rubber and can't be separated from it, as "old master" A. J. van den Hul reports from his repair experience.

But a factory service should be the exception: instead, a small group of specialists has established businesses to repair defective moving coil cartridges. The best known is probably Franz-Josef Schulte, with his FJS cartridge service. Having learned the business from Axel Schürholz, Schulte took it over in 2016 when Schürholz retired. Since then some 1000 cartridges have been through his experienced hands. Nevertheless, he says, his job never gets boring, because almost

## STARTING FROM €80

Having learned the trade from scratch, Martin Göttmann has been repairing cartridges since 2003.

Before becoming self-employed as „The Needle Specialist“, Martin Göttmann worked for a good two decades for a company producing and selling replacement styli for a large number of moving magnet pickups. Together with Hans-Georg Petry, he founded his company in Veitsrod, near to Idar-Oberstein, which is a jewelry and diamond-grinding centrum close to the Luxembourg border. Here he repairs all types of cartridges with new cantilever/stylus assemblies. He says that more than 80 percent of the approximately 500 cartridges submitted for service each year are the result of damage rather than wear. Most often the fatal error happens during installation. Depending on the grinding and effort required, prices for retipping are between €80 and €200 – and „repeat offenders“ may even hope for some goodwill!



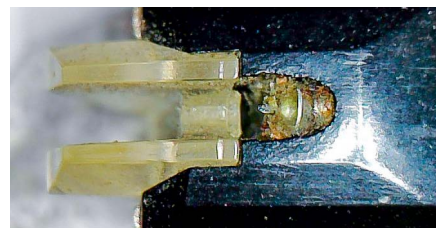
▲ Also have 25 micrometer needles for mono pickups: "needle specialist" Martin Göttmann (hi.) and colleague Hans-Georg Petry.

every cartridge presents a new challenge.

Surprisingly, he says that even supposedly "hopeless cases" – in which, for example, the suspension has dissolved over the years and the cantilever and stylus have been lost – can generally be repaired. Repairers unanimously report that synthetic rubbers in particular are sensitive to oil and grease, but also to UV radiation. A record player in direct



▲ The stylus had come loose from the cantilever of this high-end Mark Levinson MLC-1. Difficult, but in this case Schulte could help – price: €195.



▲ With this very old Technics 310 MC, the cantilever was simply „crumbled away“ at the base. This was remedied for an affordable €125, and the customer was happy.

sunlight is not a good idea anyway, partly for this reason.

## Keeping prices in check

The material suppliers for these specialized repairers are the same as those used by the regular cartridge manufacturers, and are mainly small Japanese engineering businesses. These provide prefabricated aluminum – or harder, lighter and even stiffer boron – cantilevers, with diamond styli in various cuts already attached, but inserting, aligning and anchoring them requires a great deal of skill and experience. The main tools of Schubert, van den Hul and others are delicate forceps and a high-magnification microscope.

When it comes to pricing, both emphasize that they want to keep costs in check because they know that customers will vanish as soon as the gap between a repair and a new purchase becomes too narrow. Reduced exchange prices on the part of manufacturers and distributors put additional pressure on service providers, yet none of them seem to be afraid of the future. After all, the analog business is buzzing, which includes cartridges. Analog fans are attached to their precision devices – and the opportunity for clumsiness is always there!

*Matthias Böde*

## FOCUS ON QUALITY

**A.J. van den Hul not only builds cartridges, but also repairs them, including those from other brands. While some of these only require a new stylus, others need a complete revision. In many years he has experienced countless things and developed his precise craftsmanship into a fine art.**

**Stereo:** *Mr. van den Hul, you're 80 years old. Are you still having fun fixing cartridges?*

**vdH:** Absolutely, otherwise I couldn't manage to repair between 800 and 1000 a year. Often I even work into the late evening or through the weekends.

**Stereo:** *Does it really make sense to send your old cartridge for service, or is it better to buy a new one?*

**vdH:** There's no general answer – a whole series of factors play a role. Many listeners are attached to their cartridge and want it repaired in any case: a Koetsu moving coil, for example, remains in the family and is inherited – just like a valuable watch. I receive so many moving magnet cartridges, because exchangeable stylus inserts are of inferior quality. The listeners have no fun with those, and so prefer to have the used original reworked.

**Stereo:** *In principle, can everything be repaired?*

**vdH:** Basically yes, but I don't accept old Deccas anymore, because they are highly complicated and fragile, and I also reject Audio-Technica and Denon's 1000 models due to their thin wires. Otherwise, almost anything is possible, right up to the fine-tuning of the sound by means of damping. I have a large number of different rubbers that can be used to make the sound dynamic or homogeneous.



▲ Despite his advanced age, Dutch analogue pope A.J. van den Hul is not sitting in a rocking chair, but at the workbench with his magnifier, examining cartridges daily.

**Stereo:** *You serve customers all over the world!*

**vdH:** That's right! I've already got tons of exotic stamps, and I've seen all sorts of packaging – the way some people send their cartridge on its way makes one doubt that they care about it. Recently, one was sent to us only in an envelope around half the world to the Netherlands, and time and again the details of the sender are missing! Then we have no choice but to wait for someone to ask what has become of his cartridge – sometimes it's really adventurous, and entertaining.

**Stereo:** *You're the inventor of the fine profile Van-den-Hul-stylus. Do a lot of customers want it for their cartridges?*

**vdH:** Yes, quite a lot of people contact us for this. Though I also have other cuts, wherever possible and desired, a VDH diamond type 1, as it's called, is fitted to the cantilever. Looking through the microscope – I've always filtered the UV components from its light, which

has kept my eyes healthy – I often see that the outer edge of the curve is more worn than the inner one, indicating excessive anti-skating compensation. The test discs – with their 80, 90 or even 100 micrometer signals, which almost provoke the use of too much anti-skating – are to blame for this. These are extreme passages that have nothing to do with usual LPs; they hardly ever get above 50  $\mu\text{m}$ , which is why you shouldn't get too sharp here! The listeners should be made aware of this.

**Stereo:** *We weren't even aware of that. What other typical mistakes do you notice?*

**vdH:** Although every instruction manual warns against soldering on the connecting cables, this happens again and again; with the result that the fine coil wires inside burn out. On top of that, we see wet cartridges, in which suspended dirt is deposited as a drop of fat – not very appetizing, I must say! And cartridges from China, Southeast Asia or Hong Kong show strong oxidation of their soft iron parts due to the climate and air pollution.

**Stereo:** *How much do your repairs cost?*

**vdH:** That depends on the individual case, and bear in mind that when orders are placed through retailers and our distributors, intermediaries have an influence. For example, the €150 I charge for a stylus on a boron cantilever can easily double or even triple up to the customer – I find that sad, but I am powerless. Indeed, if good cartridges actually go into the garbage because the owners find the repair too expensive, it hurts my soul.



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# Next-gen attitude.



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You take care of the music.**



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# MIGHTY SOUND IN THE SMALLEST SPACE



**WE HAVE TESTED FOR YOU:**

HiFiMan Sundara 38  
Focal Clear 39  
Ultrason Edition 15 40  
Crosszone CZ-1 41  
Audeze LCD MX4 42

Though sales figures may be declining a little bit of late, headphones have long been an integral part of many a hi-fi system. What does the top class have to offer?

*Michael Lang*



# GRACE AND BEAUTY

That's the translation of „Sundara“, which originates from Sanskrit: is the name an omen for these HiFiMan headphones?

**W**ith his American-Chinese company HiFiMan, Dr. Fang Bian has achieved in just a few years what others could only dream of for decades: to gain worldwide reputation for innovative and exceptionally good-sounding products. The Sundara should help to consolidate that good reputation, as the technical design is entirely aimed at improving the sound.

Thanks to almost unbelievably 80 % lighter diaphragms than those in the company's HE 400i, which received an excellent rating in a previous STEREO test, HiFiMan says it has been possible to further increase its ability to reproduce even complex pieces of music in an effortless and detailed manner. Although the sensitivity has been increased to 94 dB, this Headphone is, despite its low impedance of 37 ohms, not a recommendable partner for mobile phones, even if the brochure wants to make other beliefs. Used with a phone, music sounds too strained, and also rather quiet: listening is neither fun nor does one even begin to sound out the listener's abilities this way.

In fact using these headphones exclusively with a phone would be a pity,

because the Sundara, which weighs just less than 400 grams, is really comfortable to wear thanks to its new, stable and lightweight temple/headband construction. The workmanship looks very high quality, and the earpieces and their hangers are made of aluminum instead of plastic. The cables are removable and come with a 3.5 mm jack plug, and a 6.3mm adapter included.

## Out of silence

Used properly, however, there is very little to criticize about the sound of the Sundara, which deserves a good headphone amplifier like a Lehmannaudio or Sennheiser HDV 820 – the latter also being suitable as a DAC for the demanding. Why a headphone amplifier makes sense is explained starting on page 42.

Playing classical music, the Sundara explains why its creators make it a highlight in its price range. Without any sharpness the sound of Mozart's "Magic Flute" comes out of the membranes, voices are reproduced finely articulated and reverb components are depicted clearly audible. While the timing is right, we could imagine – and have experienced before – even more in terms of rough and fine dynamics. The midband is the Sundara's strongest métier, and while it lacks the ultimate strength and power of the absolute top class, it stays close on their heels. Certainly, Dr. Fang Bian and his team have a firm grip on the magnetostatic principle of the drivers, and we can't wait to see what refinements they will surprise us with in the next few years.

◀ Visual appeal: Sundara wrapped in satin



### HIFIMAN SUNDARA

€500

Warranty: 2 years  
Contact: Hifiman  
+1 201 443 4626,  
www.hifiman.com

The team of HiFiMan has succeeded in creating an extraordinary piece of craftsmanship. The Sundara has very good timing, yet remains as neutral as possible in spite of all the fine detail, resolves even complex passages cleanly and delineates the soundstage, revealing weaknesses only in dynamic terms, where we would occasionally have wished for a little more temperament. It has limited suitability for use with mobile devices despite the low impedance of 37 Ohm, due to poor sensitivity of 94 dB.

### STEREO-TEST

SOUND QUALITY **88%**

PRICE/PERFORMANCE

★★★★★  
**OUTSTANDING**

# LOUDSPEAKERS ON THE EAR

Focal thought about differences and similarities between the worlds of headphones and speakers.

Sometimes product descriptions for headphones read like a cooking recipe written down in keywords, as it would seem obvious that one can't say profound things about every development. If that's the case, no-one told Focal: the French company has produced a 16-page "White Paper" on the „Clear“ model we have here and its big brother „Utopia“, which costs €4,000.

However, they were clever enough not to waste this space with advertising prose, but to fill it with technical facts and development background. For an extra €500 the Clear is a fine-tuned version of Focal's bestselling "Elear". For example, the voice coil has been lightened by a few windings, but the excursion is longer, while the ear-cushions have also been changed: except for the color, they are now of the same standard as those used on the Utopia.

The transducers of the Clear are mounted at an angle, Focal aiming for optimized sound quality for almost every listener due to an equal distance between diaphragm and ear regardless of the head size, and better imaging. The extremely light and stable diaphragm is made of an aluminum-manganese mixture, which is also found in various loudspeaker drivers, rather than the extremely expensive beryllium of the Utopia. This material still is hardly cheap, but it's far less cost-intensive and complex to produce.

New in the package are the various high-quality cables included, including one with a balanced plug, which means a small gain in sound quality. Further the newly designed voice coil has reduced the impedance, which simplifies the operation with mobile devices, but again these headphones are really only worth a serious hearing test on the move with really high-quality personal music players, if at all. The wearing comfort is very high due to an almost ideal contact pressure and the soft padding of the temples and breathable ear pads.

### Ultra-thin front

The sound of the Clear shows the qualities expected after the grandiose performance of the Elear: whether it's a dynamic orchestra, large choir, intimate jazz ensemble, big band, blues or hard rock, even at a manageable volume the precisely adjusted Clear shows what makes listening to music a pleasure. The timing and tonal balance of the Tingvall trio are first-class, and with The Boss's „My Hometown“ the sound is body-tingling – whatever comes, the Clear not only delivers, it inspires.



◀ Breathable, comfortable pads. The only one in the test field optionally with an XLR balanced cable

### FOCAL CLEAR

around €1500  
Warranty: 2 years  
Contact: Focal  
[www.focal.com](http://www.focal.com)

With the Clear, Focal offers a consistent enhancement of the already outstanding Elear. While there was little to criticize about the previous model, the finely honed Clear is characterized by a little more pressure in the bass, and with the balanced connection it delivers even better in that respect. Further the Clear's workmanship is further refined, for example in the ear cushions. The price has risen sharply from €1000 to €1500, but several high-quality cables are also included.

### STEREO-TEST

SOUND QUALITY **92%**

PRICE/PERFORMANCE

★★★★☆  
**EXCELLENT**



# BAVARIA'S BEST

Ultrasone's top model, the Edition 15, costs €2500 – and demonstrates the company's skills.

€ 2500 Euros for headphones? With all due respect to local handicraft from a small Bavarian manufacturer, such pricing raises expectations: the best sound isn't enough, and buyers will want first-class workmanship and a sparkling clean service. You certainly get the last of those, in the form of a five-year guarantee, which is very much a confidence-building measure.

The patented S-Logic EX technology that is used here for the first time in open headphones offers, according to the manufacturer, a particularly good stereo image with clear depth graduation. The use of gold and titanium are also intended to give the sound a boost. The dome of the driver is made of titanium and coated thinly with gold, which combination should ensure the highest degree of transparent, detailed and lifelike sound, both for the music lover at home and for the sound engineer in the studio. Edition 15 also features everything that is good and expensive in an openly designed

headphone, such as four-core high-quality cables with professional Lemo connectors. The drivers are in housings of American cherry wood, the cushion on the rigid aluminum headband is covered in merino leather and the ear cushions, with breathable micro velour, are magnetically attached. To underline the exclusivity, the edition, delivered in an elegant leather case, is strictly limited to 999 copies, which gives rise to expectations of increased value stability.

## Sound merits

The comfortable to wear Edition 15 delivered sound quality we have never heard before from Ultrasone, even if, again, using them with a mobile phone or computer will only scratch the surface of its ability. With the Lehmann amplifier, however, it drew sound images that deserved the title „credible“. While not quite managing to overtake the higher-priced competition, it delivered on realistic soundstaging – sometimes more („The Power of Equality“ by the Chili Peppers) and sometimes less (Suzanne Vega's „Tom's Diner“).

With a dynamic and lively sound and a rather slender bass, Vega's voice sometimes lacked a bit of chest volume. While we wouldn't classify this as an obvious discoloration, it does show a slight lack of purity. However, it sounded much more impressive with Kraftwerk's "Autobahn", sounding taut and agile, even if we couldn't hear any significant advantages in spatial resolution when compared to more classical designs.

John Coltrane, with whom we dedicated ourselves for jazz music, also sounded quite authentic despite slight tonal incongruities, and tempted us not only to listen to „Soul Eyes“, but to the entire album.



A sturdy headband and very solid workmanship distinguishes the Edition 15.

## THE ULTRASONE EDITION 15

around €2500  
(Limited to 999 pieces)  
Warranty: 5 years  
Contact: Ultrasone  
+49 881 901150 0  
[www.ultrasone.audio/de](http://www.ultrasone.audio/de)

By far the best headphones yet from Ultrasone, delivering a credible sound with very good dynamic qualities, despite a rather light bass. It's not completely free from coloration, but it is tonally neutral, with excellent impulse response, and the 320g weight makes it comfortable for extended use. The workmanship is excellent and allows us to expect many years of trouble-free operation. Despite an impedance of 40 Ohm, it's still less suited to use with mobile devices, as the sensitivity is only 94 dB.

STEREO-TEST	
SOUND QUALITY	91%
PRICE/PERFORMANCE	
★ ★ ★ ☆ ☆	
VERY GOOD	

# THE NEWCOMER

Japanese company Crosszone is trying to stir up the headphone scene with new approaches.

**C**rosszone was founded just two years ago with the aim of developing an ‘out of the head’-sound from headphones without resorting to digital tricks, thus delivering a presentation closer to that of good loudspeaker. The subsidiary of Taiwan-based EMS Aisa Optical has integrated many new and unconventional ideas in their CZ-1 model, to create a sound image that is supposed to appear in front of the listener, and thus create a very relaxing experience.

## Triangulated design

The basic idea is that one ear perceives not only the signal of one channel, but also the other channel with a time delay – in other words, when listening to speakers, or real-life sound, we experience natural crosstalk, which is enhanced by sound reflections, for example in a room. To reproduce this effect, the CZ-1 uses separate beryllium-coated drivers for the bass/midrange and the treble in each triangular earpiece. Another driver that delivers signals from the opposite channel with a time delay to the ear supplements them. This is achieved by a mechanical solution based on resonances in the earpiece.

For best localization, the manufacturer recommends placing the comfortable ear cushions slightly behind the ear, and if

you are wondering why the shape of the earcups is triangular, it actually results from the arrangement and tuning of the three drivers. The manufacturer fortunately supplies neat cables in various lengths.

The Crosszone undeniably delivers a different sound from that considered usual via headphones: at first it is a bit irritating, but you get used to it quite quickly. Whether the „room representation“ is now more correct than with classical designs is open to debate, but this is certainly an interesting approach – and other acoustic qualities such as lack of coloration, dynamics and resolution are on the level one can expect at this price.

Thus Janis Joplin sang her soul out of her body touchingly and convincingly in „Cry Baby“, while Lyn Stanley’s fine, ironic note in „Makin’ Whoopie“ was no less enthusiastic. A large orchestra like that playing the „Magic Flute“ overture pushed the illusion of space to its limits, but nevertheless brought joy through natural timbres. Johnny Cash’s „Won’t Back Down“ sounded as if the singer, who died in 2003, was serious about his intent, while the crowning finale was John Coltrane’s „Soul Eyes“ – a real goosebump experience!

Crosszone has certainly succeeded with its debut, the CZ-1: this is a headphone you should definitely experience.



▲ Three diagonally mounted drivers in a striking triangular earpiece characterize the CZ-1.

### CROSSZONE CZ-1

around €2600  
 Warranty: 2 years  
 Contact: Crosszone  
 Phone: +81 48 940 3852  
[www.crosszone.jp](http://www.crosszone.jp)

This is a very successful début for the Japanese newcomer, with its interesting approach to placing the music in front of your head without using DSP trickery. Whether this sounds better or more natural than other headphones is open to discussion, but you should listen to it and make your own judgment. Other aspects of the sound quality are absolutely price-competitive in all disciplines - tonally correct, dynamic and with good timing. This headphone performs well with all styles of music – quiet and loud.

### STEREO-TEST

SOUND QUALITY **92%**

PRICE/PERFORMANCE

★★★★☆  
**VERY GOOD**



# NOT ONLY FOR PROFESSIONALS

The Audeze LCD MX-4 is primarily designed to make sound engineers happy. Can it please music lovers too?

**A**udeze is also still relatively young, with less than ten years of history, but in that short time the Californian company has caused quite a sensation and stirred up the market for high-quality headphones.

When founders Sankar Thiagasamudram and Alexander Rosson teamed up with NASA engineer Pete Uka, the goal was immediately clear: to create not „Me too“ products, but aim as high as possible. To help the team Dragoslav Colic, who had already had decades of experience with headphones at the time, joined them. Together they swiftly decided to develop magnetostatic drivers, aiming at neutral-sounding headphones that are extremely low in distortion, able to work even with inexpensive amplifiers or mobile devices, and shine through good reliability. Thus steps were taken to eliminate resonances on the wafer-thin foil and take into account the interaction between chamber and ear. Neodymium magnets were used for high efficiency and the impedance was pushed into pleasingly low double-digit ranges, while the power handling was increased to a record-breaking 15 watts. The MX-4 benefits from this in-house “DNA”, and has also been carefully lightened gram by gram thanks to the use of carbon and a perforated headband – that’s an important advantage for

professionals using them continuously, and no disadvantage at home either.

## High expenditure

The MX-4 is no featherweight despite the slimming measures, but it is surprisingly comfortable to wear and fortunately sounds just as well. It is clearly designed for a warm sound, but we did wish for a bit more liveliness when Freddie Mercury was singing about his best friend. As much as the lowest registers convinced us with their cleanliness and impact, we sometimes missed some openness and joy to send us on a musical journey of discovery and to uncover the last details of the recording, especially in view of the price. However, the Audeze then revealed above-average qualities in the depiction of the soundstage: vocals and instruments were staggered from left to right, and John Coltrane’s saxophone sounded just as full-bodied as Martha Argerich’s masterfully struck piano keys. The bottom line, however, is that Audeze has deliberately deviated from the usual sound ideal with the MX-4: STEREO’s reference model LCD4 has proven that they can do differently as well.



◀ Carbon, leather, stainless steel and a connecting cable with lockable plug: the ingredients of the LCD MX 4.

### AUDEZE LCD MX 4

around €3600  
 Warranty: 3 years  
 Contact: Audeze  
 Phone: (714) 581 8010  
[www.audeze.com](http://www.audeze.com)

The most expensive model here is both excellently crafted and delivers an emphatically warm sound, meaning that what it lacks for those wanting every single detail, it gains for those who are looking for pure relaxation. There’s extremely low distortion even at high volume, while the high efficiency of 105 dB and low impedance of 20 Ohm allow it to be operated on mobile devices, even if we don’t necessarily recommend this in terms of sound. The LCD MX 4 is still comfortable to wear despite a weight of 560g, but the headband adjustment is unfortunately only relatively coarse and not infinitely variable..

### STEREO -TEST

SOUND QUALITY **90%**

PRICE/PERFORMANCE

★ ★ ☆ ☆ ☆  
**PLEASABLE**

HEADPHONE FEATURES					
	HiFiman Sundara	Focal Clear	Ultrasone Edition 15	Crosszone CZ-1	Audeze LCD MX-4
Acoustically open/closed	●/-	●/-	●/-	/●	●/-
Over-/on-ear	●/-	●/-	●/-	●/-	●/-
Earpad cover	Polyester	Leather	Leather	Velour	Leather
Interchangeable earpads	●	●	-	●	●
Folding	-/-	-/-	-/-	-/-	-/-
Jack plug	3,5 mm	XLR	3,5 mm	6,3 mm	6,3 mm
Cable feed	two-sided	two-sided	two-sided	two-sided	two-sided
Detachable cable					
Standard cable: length	1,50 m	3 m	3 m	3,5 m	3 m
Headset cable: length	-	-	-	-	-
Remote control:					
Start/Break/Skip	-	-	-	-	-
Volume/Accept call	-	-	-	-	-
Nominal impedance	37 Ohm	55 Ohm	40 Ohm	75 Ohm	20 Ohm
Bluetooth/with AAC/with aptX	-	-	-	-	-
Battery life	-	-	-	-	-
Active noise cancellation	-	-	-	-	-
Weight (w/o cable)	370 g	450 g	320 g	485 g	560 g
Case included	●	●	●	●	Transportkoffer
Jack adapter included	●	-	●	●	●
Available colors	Black	Gray	Cherry wood/ Stainless steel	Black/Gold	Black
Other	Planar drivers, headband artificial leather	Leather-covered headband, 6.3mm cable (3m) and 3.5mm cable (1.2m)	3,5-mm-Kabel 1,2m; SX-Technologie	3.5mm cable (1.5m), three-driver design	Planar drivers

## VERDICT



**MICHAEL LANG**  
Managing Editor

Innovation seems to be the constant companion of our headphone tests: the development departments of the manufacturers are busy experimenting and turning over every stone. There are new materials for the diaphragms, different materials for the housings are experimented with, shapes are varied in order to influence the resonant behavior, and ideas are developed to tackle the problem of limited spatial imaging. Even details such as the material and shape of the ear cushions are also becoming more and more important.

Fortunately, however, it is not news that people are worried about proper cables and sensible headphone contacts, but what has struck us of late is how blatantly the young generation, seemingly thought to enjoy music exclusively via mobile phone, is courted. All manufacturers like to claim that their headphones work well with such phones.

Sorry, but in our opinion this is quite outrageous nonsense: why should someone spend hundreds or even thousands of Euros on a high-end headphone when they don't even have the topic of quality differences in music reproduction on their radar? And why should someone who is aware of the qualities of expensive headphones mercilessly hobble their capabilities with the source?

I am aware that the clientele for expensive „mobile phone accessories“, as I now call the headphones disparagingly, is much larger than the classic hi-fi audience, but as our listening experiments have shown quite clearly, the investment in a high-end design is worthwhile

itself only if one feeds it from a reasonable source. And that means high-quality music from CD, hard drive, good streaming or download, played via a suitable headphone amplifier – if you don't want to do this, not even as the next step, you should stay away from the headphones in this test group and look around for models optimized for mobile use. Yes, such designs will sound worse than the candidates gathered here, of course, but only if the high-end headphones are able fully to exploit their potential, and the „mobile phone accessories“ will offer facilities better suited to the mobile life, such as in-line remote controls for your phone.

However, if you're a quality fanatic with the highest standards, you'll find very interesting suggestions for the most diverse hearing tastes in our selection here. Put on, listen and enjoy is the motto. And when you have chosen your favorite you can listen to music with satisfaction, confident that the excellent workmanship and the likes of exchangeable cables and ear cushions will ensure pleasure for many years.





# THE SPECIALISTS

Low on watts, superfluous and overpriced? Headphone amplifiers are an often underestimated species in the hi-fi cosmos.

Is a headphone amplifier an important device in the chain or is the 3.5mm or 6.3mm socket that is integrated in amplifier or preamp sufficient? In fact, what distinguishes a specialist headphone amplifier from a „normal“ amp?

The power requirements of headphones and loudspeakers vary. The former has small diaphragms that usually only need to move the air in the ear canal, while the latter has large diaphragms and has to move air throughout a room to make music or speech audible. Of course, a normal amplifier can also operate headphones without any problems – after all the principle is exactly the same. So before we connect the headphones, let's have a look at their function:

## Dynamic headphones

A coil located in the air gap of a permanent magnet drives the diaphragm of a dynamic headphone. If a music signal flows through this coil, a magnetic effect is created, which causes oscillation.

The coil is pulled into the air gap or pushed out a bit. These vibrations

## GLOSSARY - THE MOST IMPORTANT TERMS

### IMPEDANCE

Alternating current resistance, defined as the ratio of voltage to current. For audio equipment, input impedance and output impedance are particularly important (>adjustment).

### ASSIMILATION

When interconnecting devices, the output impedance of the first device and the input impedance of the following device must be matched. When connecting headphones to amplifiers, voltage matching is sought, i.e. the output impedance of the amplifier is small and has a higher voltage delivery capability.

### LEVEL

Logarithmic value of a physical quantity, expressed in dB. Examples: Voltage level, sound pressure level.

### NOMINAL LOAD-BEARING CAPACITY

Nominal power handling is the electrical power that, according to the manufacturer, can be continuously supplied to the head-

phones without damaging them. According to DIN 45500 Part 10, the nominal power rating must be at least 100 mW. The test is performed with a special noise signal that is fed to the headphones over a period of 100 hours.

### DISTORTION FACTOR

The distortion factor of an audio device indicates to what extent undesired harmonics are added to a sinusoidal input signal (measuring tone) due to non-linear distortions. It is therefore a measure of the harmonic distortions that occur. The value is given as a percentage of the total signal.

### CROSSTALK

In stereophonic transmission, signal components of one channel get unintentionally into the other.

### CHANNEL SEPARATION

With a stereo signal, crosstalk causes signal components of one channel to reach the other. The higher the channel separation (measured in dB), the lower the disturbing effect.

generate sound waves. With a dynamic headset, the mass of the entire system is as low as possible in order to achieve high pulse accuracy. Speakers work in exactly the same way.

### Electrostatic headphones

In contrast to dynamic headphones' ring-shaped voice coil, in electrostatic headphones the entire surface of the diaphragm is moved by clamping a wafer-thin conductive polymer film between two surface electrodes, which reacts to the slightest changes in the audio frequency voltage. The sound is transmitted through a honeycomb-shaped perforation; a polarization voltage generates an electrostatic field. If the highly transformed signal voltage is applied, charge shifts occur, which cause the membrane to oscillate: sound waves are thus generated. The elliptical shape of the membrane prevents partial oscillations, which can occur due to regular (circular) shapes at the edge. The low mass of the membrane contributes substantially to the resolution true to detail. An electrostatic headphone surprises again and again by its spatial width and depth.

### The Power Amplifier

An amplifier for loudspeaker operation must apply force to move the diaphragm sufficiently. This power can be expressed in watts. A loudspeaker usually has a relatively small resistance (four to eight ohms) and therefore requires a relatively large current for its power.

With loudspeakers, the efficiency is usually used as a unit and it is measured by feeding 1W of power and matching the sound pressure achieved. This sound pressure is expressed in decibels, a logarithmic value from audio technology (dB/1W). Good speakers reach values of about 90 dB, which are then called dB SPL for DecibelSoundPressureLevel.

### Acoustic pressure level

The same is true for headphones, but here the most common parameter is dB/mW, i.e. the achieved sound pressure level at 1 milliwatt power, i.e. 1/1000 watts. Additionally there is the specification in dB/V, i.e. dB at 1V applied signal level.

This characteristic sound pressure level, often also referred to as sensitivity, indicates the sound pressure level generated by a headphone under certain measurement conditions. According to DIN 45500 Part 10, the sound pressure level of hi-fi headphones should be at least 94 dB SPL at an electrical power of 1 mW and a sound frequency of 1 kHz. The measurement is done with the help of an „artificial“ ear (special microphone for measuring headphones). The power requirement of different headphones is extremely diverse, and varies in term of power up to the factor 500 and in terms of voltage up to the factor 10. This does, however, not take into account the new and immensely sensitive In Ear-models, whose efficiency is often described in dB/100mV.

### What does the impedance do?

The previously mentioned „resistance“ of the loudspeaker is called impedance, because it is an AC resistance. Although you can measure the loudspeaker resistance with a standard ohmmeter, you will only get the DC resistance of the voice coil. More correct is to measure it with alternating current, which corresponds to an audio signal. This is why STEREO always gives the „impedance curve“ with the specification of min. and max. values over the entire listening range for loudspeaker measurements.

Headphones also have impedance. It is specified at 1 kHz as the so-called „nominal impedance“. As with all resistors, the unit of measurement is the Ohm. Headphones have impedances from about 32 to about 800 ohms, while

speakers – as mentioned above - have low impedances.

Since headphones are available with very different impedances, they also behave very differently when connected to „normal“ amplifiers. The speaker output of an amplifier „expects“ a low impedance (four or eight ohms of the loudspeaker) and supplies the corresponding current. Final stage outputs are not current sources (high-impedance) but voltage sources (low-impedance).

The current is a result of the voltage supplied and the impedance of the connected transducer, so no high current is available! If high-impedance headphones are now connected, which in principle expect only a low current but a higher voltage level, the volume control may have to be turned up quite a bit. The power supply capability of the output stage therefore literally „runs empty“. This is sometimes associated with a narrowing of the dynamic range; the signal-to-noise ratio is wasted, which can result in the loss of subtleties of the musical information.

If low-impedance headphones, requiring more power, are connected, it is quite possible that an amplifier may have to be turned down very far. Especially with headphones, there is a risk that the amplifier's own hum/noise becomes more prominent, resulting in a poorer signal-to-noise ratio.

### The headphone amplifier

Its task is to provide a voltage corresponding to the audio signal. In combination with the higher impedances usual with headphones, there is no danger of running „into the void“. A very good dynamic response can therefore also be achieved with higher impedances. In addition, the commonly set listening level is possible when the volume control is in a favorable position (between noon and two o'clock).

*Uli Apel*





# Brinkmann Audio Nyquist Mk II

## *One Step Closer*

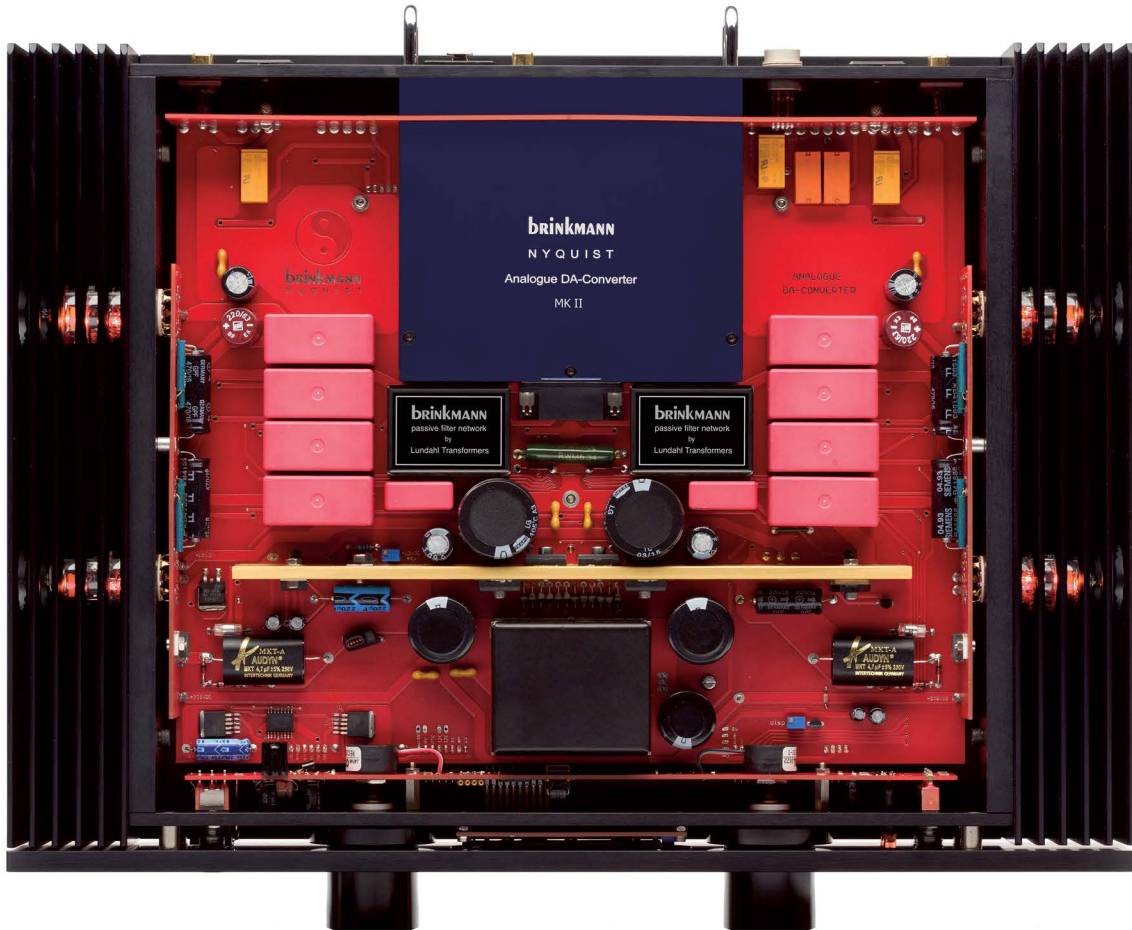


Photo © MichaelRasche.com 2018

*„If after all these years, digital has still left you slightly cold,  
I assure you the Brinkmann Nyquist will not.“*

*- Jeff Dorgay, Tone Publications  
Review of the original Nyquist*

*„But best of all, the Nyquist is extremely compelling musically...“*

*- Robert Harley, The Absolute Sound, December 2017  
Review of the original Nyquist*

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# RENEWABLE RESOURCE

AVM's new PA 8.2 premium preamp is a modular design, whose expandability can keep pace with the requirements of its owner.

**W**hat would your dream preamp look like? We don't just mean how many inputs it should have, but something more fundamental: should it be of a purist analog construction, or with a DAC onboard? Does it need a phono stage, and if so should that be MM, MC or both? And finally, there is the absolutely basic question of preamplifier technology: should it use transistors or tubes? All these tormenting aspects require careful consideration, and especially so as you move higher up the price spectrum.

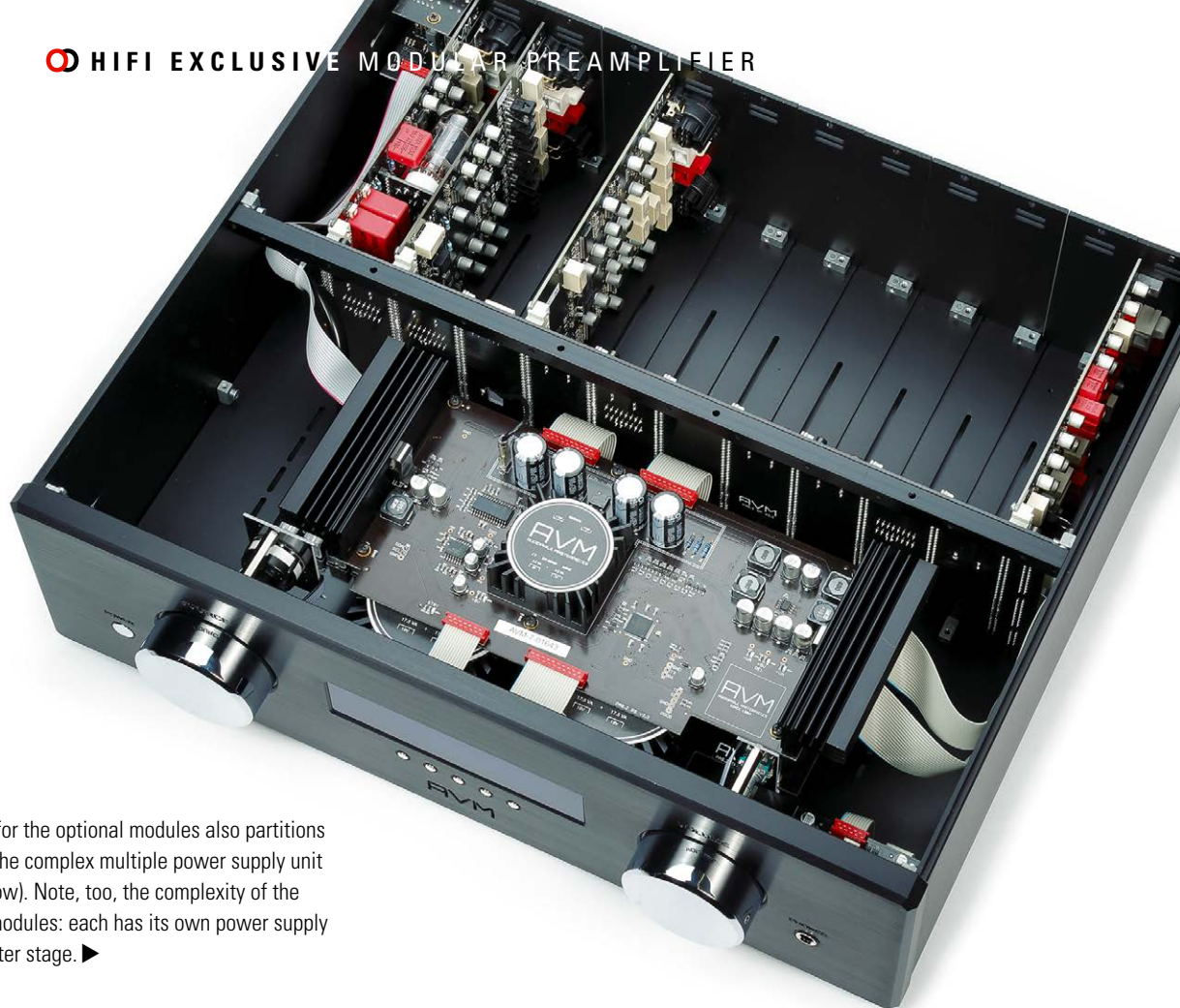
Or you could simply opt for AVM's new PA 8.2 preamp, which has all the bases covered...

You see, the team led by AVM supremo Udo Besser has come up with an ingenious trick for this omnipotent preamp, the top model in the company's flagship Ovation series. That means that, in its most basic form, the PA 8.2 is more or less an empty 'rack', selling for €5990 in its aluminum casework, on whose front there are two large detented potentiometers, running smoothly on ball-bearings, and an easily readable display.

Of course, you shouldn't take the term "empty" too literally: the generously-sized multiple power supply unit contains two toroidal transformers with complex filter stages, which can supply analog and digital circuits separately and are also optimally insulated from each other. A third power supply unit is mounted above, supplying the peripherals – display and system control – and this triple power station takes up half the volume of the housing and is shielded from the signal processing by a partition wall.

However, this partition wall is also literally the backbone of the PA 8.2: eleven narrow plug-in rails on its rear side can accommodate expansion boards. And fitting them is easy: remove two small Allen screws on the back of the housing, take off the cover plate and push the extension into the housing in the correct orientation, AVM providing a narrow groove in the bottom of each slot as a guide rail for the plug-in modules. It's a neat design, and it took us therefore less than a minute to install our chosen DAC plug-in.





The “rack” for the optional modules also partitions them from the complex multiple power supply unit (shown below). Note, too, the complexity of the individual modules: each has its own power supply including filter stage. ▶

Each board is equipped with its own micro operating system, meaning it's ready to go as soon as it's installed. Five small buttons below the display allow access to the individual functions, their operation reconfiguring to suit the currently selected input. For example, if one of the line inputs is activated (using the analog module at around €1290), the set-up offers a balance and simple bass/treble tone controls with “True Bypass” option. The analog modules each have one RCA and one XLR connection pair, these being listed as two separate connections in the source selection, so that two components can be connected per module.

Similarly the DAC module (around €2490), which has one optical and two electrical digital inputs in addition to asynchronous USB, extends the PA 8.2 by a total of four inputs. This module uses the same focused and agile high-bit converter also found in the flagship Ovation series CS 8.2 streaming CD receiver and the MP 8.2 media player and,

as the DAC chip is mounted on a small sub-board, it could later be exchanged to update the digital section without replacing the entire board.

The digital menu also allows the user to choose a fast, impulse-oriented filter, or the clean and linear frequency-optimized one, and you can also specify whether incoming signals are processed **natively** or with fixed upsampling.

**KEYWORD**

**Native:** Incoming signals are processed with their own clocking, and in the format in which they are received, without sampling or format conversion.

Even more complex is the optional phono module (around €1750), switchable between MM and MC mode via the menu. In further submenus you can activate a sub-sonic rumble filter and fine tune the equalization, with capacitance and gain settings instantly transferred to the phono circuits. That means you can actually adjust this detailed and extremely open-sounding equalizer by ear – a feature that's unfortunately far too rare.

Analog radio fans will also be happy to know there's an FM RDS tuner card available, selling for €1290, and those with a range of sources will be pleased

that the input sensitivity of each input can be adjusted by +/- 10 decibels, and this value stored.

**Transistor vs. tube**

There's choice, too, when it comes to the output stage, with an option of two boards, which ultimately also determine the charm and character of the preamplifier, AVM offering one with transistor output stages (around €1290) and one with tube technology (around €2490). We have to admit we'd find them hard to choose between: the transistor board sounds gnarlier, more controlled and extremely direct in the bass, while the tubes have an unbelievably velvety charm, more color and a deeper and wider soundstage.

With the tube stage in place, the floating, billowing, panoramic wandering soundscapes in the intro of Jean-Michel Jarre's “Oxygène II” seemed to leave behind the bounds of the listening room when played via the B&W 800 D3 speakers, creating an effect that would hardly be more dramatic with a surround system. Then again, David Bowie's vocals

on “Space Oddity” had even more focus, sharpness and bite via the transistor stage.

As long as slots are still available, these modules can be combined as desired, so vinyl extremists could equip their PA 8.2 with three differently-tuned phono modules, while customers with a comprehensive digital set-up could use several DAC modules in parallel. Incidentally, the number and plug-in order of the modules has no influence on the sound: each expansion board is equipped with its own voltage stabilization, a complete miniature power supply unit with an additional filter stage, making the boards completely electrically independent.

This is an effort that AVM could have saved itself, since only the module that is currently in use as input is active: all the others automatically go into standby mode, making this preamp set new standards when it comes to discrete design.

Such subtleties are controlled by a communicative operating system, which carries out a quick inventory and system check of the individual slots during start-up. This process was indicated on our tube-loaded sample with the lower-case “warming up tubes” message gradually increasing to an upper-case

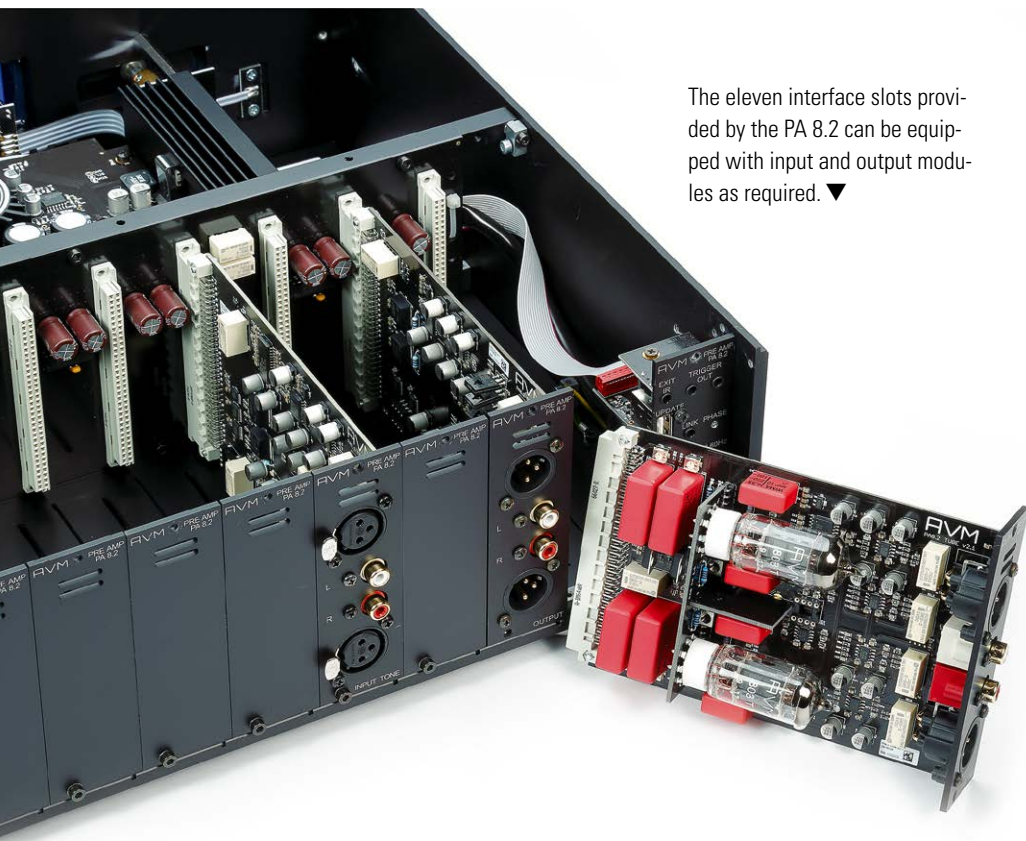
“WARMING UP TUBES” until the PA 8.2 was good to go.

In just under two weeks of intensive testing with the AVM, it delivered exactly what we appreciate about the company’s Ovation products: it has a powerful character with a silky fine timbre, sometimes perceived as “creamy”, and delivers even the smallest tonal details into the listening room with an exceptional clarity. Its agility means it succeeds in dissecting complex ensembles such as the RCA Victor Symphony Orchestra playing Liszt’s “Hungarian Rhapsody No. 2”, fanning them out and clearly distributing the individual instrument groups on a huge soundstage, a trick in which it excels even our editorial reference Acoustic Arts Tube Pre II.

Or then again, you could just use the transistor output, with compact and focused imaging, or even both valve and solid-state stages – just as you please.

And if you are confused by all the options offered by this extraordinary preamp, AVM also offers a starter package pre-fitted with a line module, phono input and the tube stage for €9490, which is a tempting €2000 saving compared to the individual modules.

*Carsten Barnbeck*



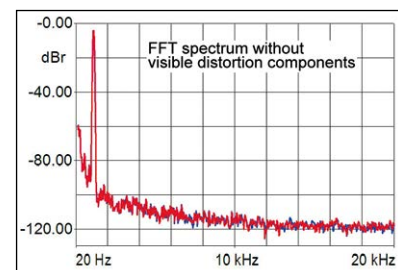
The eleven interface slots provided by the PA 8.2 can be equipped with input and output modules as required. ▼

**AVM PA 8.2**

from €5990  
 (incl. phono, line and tube module €9490)  
 Dimensions: 43 x14 x 39 cm (WxHxD)  
 Warranty: 3 years  
 Contact: AVM  
 Phone: +49 7246 309910,  
 www.avm-audio.com

Exciting modular concept, with superb processing and a sound, especially via the tube output, that’s excellent and able to break entirely free from your speakers. In short, AVM has done everything right with this flagship preamplifier.

**MEASUREMENT RESULTS**



Maximum output voltage (1% THD)	5.6 V
Gain from high level input	23.7 dB
Distortion factor at 0.03/0.3/1 V	0.01 %/0.002 %/0.001 %
Intermodulation at 0.03/0.3/1 V	0.006 %/0.0004 %/0.001 %
Signal to noise ratio at 0.3/0.03 V	94.0 dB(A)/76.7 dB(A)
Input sensitivity for 1 V output	62.5 mV
Output resistance RCA/XLR	47 Ohm/90 Ohm
Output voltage RCA/XLR	5.6 Volt/5.6 Volt
Upper cut-off frequency	>80 kHz
Volume control tracking error at -60 dB	0.1 dB
Stereo channel separation at 10kHz	89.2 dB
Standby power consumption	<2 W
Power consumption idle	26.2

**LAB COMMENTS**



„Clean as a measuring instrument,” our measurement technician said. The PA 8.2 excels, with its good lab results attesting not only to its low distortion, but also its high bandwidth of over 80kHz.

**FEATURES**

Aluminum remote supplied as standard with base model; line inputs (€1290), phono (€1750), DAC (€2490) and FM tuner (€1290) can be fitted, along with tube (€2490 €) and transistor (€1290) output stages.

**STEREO-TEST**

**SOUND QUALITY 100%**

**PRICE/PERFORMANCE**

★★★★☆

**EXCELLENT**



40 YEARS EXCELLENCE



Loving music

# The best active concept



Turntable: concept active  
Tonearm: concept  
Cartridge: concept MM



Turntable: concept active wood  
Tonearm: concept  
Cartridge: concept MC



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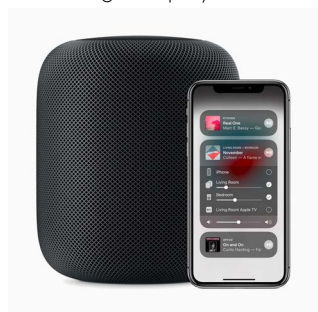


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## Finally: with iOS 11.4 Airplay 2 comes

Apple has announced that with iOS 11.4 for iPhone & Co. it will finally introduce the second generation of Airplay. Among other things, Airplay 2 allows music to be streamed from the handheld to several Airplay-compatible devices. So far, this is only possible from the iTunes software on the computer. Airplay 2 will also enable stereo pairing of two wifi-speakers. However, this only works if the speakers also support Airplay 2 - a firmware update might be necessary. This is of course the case with Apple's voice-controlled „HomePod“. Bang & Olufsen, Bluesound, Bose, Bowers & Wilkins, Denon, Libratone, Marantz, Marshall, Naim, Pioneer and Sonos have also announced their support for Airplay 2. However, this will not be possible for all older models by update. iOS 11.4 will be available for download shortly.



## Naim updates its streamer range

During the summer Naim will launch three new network players: ND 5 XS 2 (2800 Euro, from end of August), NDX 2 (6000 Euro, from end of July) and the new top model ND 555 (16.000 Euro + power supply 555 PS for 8700 Euro, from end of June).



Streaming functions and connections (except for the power supply) are the same on all three models: UPnP streaming with up to 32 bit/384 kHz on PCM and DSD up to 5.6 MHz, Roon ready, access to Tidal and Spotify Connect, Chromecast integrated (up to 24 bit/192 kHz), AirPlay, Bluetooth with aptX HD, WLAN ac, S/PDIF inputs optical, coax and BNC. The new streaming platform NP 800 developed by Naim is based on the Uniti-series. The two top models also have a display on the front panel and come with bi-directional-wireless-Zigbee-remote control. For the ND 5 XS 2, it is available as an optional upgrade. The power supply is integrated in the two smaller models, while for the 555 the external power supply 555 HP must be purchased separately. Naim offers a 5-year warranty on all three models.

## Hard disk player with VU meters

It creates an analogue feeling: The standalone hard disk player „Model 2“ (around 13,000 Euro) from the German-Austrian manufacturer „Digitale Audio Systeme“ („DAS“) not only has the classic drive buttons with colour display on the front, but also two physical VU meters. Inside, two hard disks with a total of 4 terabytes store the music in all common sound formats with clock



frequencies up to 192 kHz at PCM and 5.6 MHz at DSD. However, DSD files are converted to PCM. The converter architecture deliberately dispenses with oversampling and digital filtering. For an additional charge, the device is also available with SSDs as music storage. Operating system and player software are always stored on a separate SSD. Music is transferred from PC to Model 2 via home network or USB hard drive. Playback is controlled via the front keys or via LAN/WLAN on the tablet. UPnP server function and access to Tidal and Qobuz should be provided later via software update. Inside, Model 2 is fully balanced, with separate power supplies for each channel. The headphone output has its own Class A amplifier on board. Analog outputs are provided by Model 2 as XLR and RCA, digital outputs as S/PDIF coax and AES/EBU. For about 9000 Euro the same device is available as „Model 3“ without analog outputs. Those who do not need the front panel operation and are satisfied with a simpler electronic design, can choose the compact „Model 4“ for around 8000 euros. All models have aluminum fronts like from a tank. For the time being, they are only sold directly, but will also be available in specialized shops in the future.

## Ultrasonex times two

As a summer promotion, when you buy Ultrasonex's Edition 8 EX closed headphones (1800 Euro), you can also get the compact Pyco in-ear, worth 169 Euro, for free. The promotion period starts on June 1st and ends August 31st 2018. Simply send a proof of purchase from your dealer of choice to Ultrasonex and the Pyco will be delivered immediately. It is even easier when purchasing from the Ultrasonex-Online-Shop: if you order the Edition 8 EX there, you will automatically receive the Pyco.





## Great weather, but not for a **trade-fair**

As expected, the number of visitors suffered somewhat from the summer-like weather during the High End: A total of almost 20,000 visitors came to the M.O.C. in Munich, which is a decrease of 7 percent compared to the previous year, but still an increase compared to 2016. Also the number of visitors from the trade (7557) decreased slightly. 70 percent of them came from outside Germany, above all from Great Britain, Switzerland, Italy and the Netherlands. The numerous workshops and lectures on the technology stage - which will soon be available on the organizer's website - were particularly popular with the audience. The most popular topics were music servers & streaming, room acoustics, electrosmog, etc. The next High End will take place from 9 to 12 May 2019 again at the M.O.C. in Munich.



## Sony acquires EMI Music Publishing

When the traditional British EMI Group was crushed at the end of 2011, music publisher EMI Music Publishing was taken over by a consortium of Sony, the asset management firm of Michael Jackson and an Arab investment fund. Now it wants to sell his 60 percent share in EMI to Sony. If the cartel guards agree, the Japanese will then hold around 90 percent of EMI Music Publishing. The remaining 10 percent will remain with Michael Jackson's heirs. EMI-Musikverlag holds the rights to more than 2 million songs by artists such as Queen, Carole King, Kanye West, Alicia Keys, Pink and the Motown catalogue. The lyrics and compositions of the Beatles, which were already part of Sony Music Publishing, are not affected by the takeover, while the recordings of the Beatles are today owned by Universal Music.

**SONY MUSIC™**

## New active speakers from **Quadral**

Two new active floorstanding speakers are coming from Hanover this autumn: Aurum Alpha (16,000 Euro/pair) and Aurum Gamma (12,000 Euro/pair). Both models operate according to the 3-way principle and are equipped with the proven drivers from the passive Aurum series: a ribbon tweeter, two mid-range drivers and a



bass driver on the side. Midrange and bass drivers are powered by Class D amplifiers, while Quadral has an analog output stage for the tweeter range. The frequency ranges are divided by a digital-signal-processor, which also enables acoustical room adaption. The speakers are controlled via S/PDIF optically or analog via

RCA or XLR. Music from the home network can be played from a PC or NAS via LAN or WLAN, and the built-in network electronics in the master box can also access Tidal or the web radio. The slave box is supplied with music via a lossless wireless connection. These sources are controlled by the Aurum app for iOS and Android. The two new models will be available in black or white finish.

## Gunter Kürten buys **Thorens**

Gunter Kürten, until the end of last year managing director of ELAC in Kiel, is now an entrepreneur and has bought the traditional company Thorens. Previously Kürten held senior executive positions at Denon, LG, Loewe, Sharp and Sony. Now he has founded the „Thorens GmbH“ in Bergisch Gladbach, which took over the business today. It's not the first time in Thorens' 125-year history that the owner

**THORENS®**



is changing. The company was founded in 1883 in the Swiss town of Sainte-Croix by Hermann Thorens, who initially produced Edison roller phonographs. In 1966, the Swiss company Thorens-Franz AG took over the Thorens brand and, together with the German EMT Wilhelm Franz GmbH, founded a development and production center in Lahr in the Black Forest. Thorens filed for bankruptcy in 1999 and relaunched in 2003 under new ownership and management. Highlights of the company history were in 1957 the studio turntable TD 124 with quick coupling and 1965 the TD 150, for the first time with belt drive and sub-chassis.

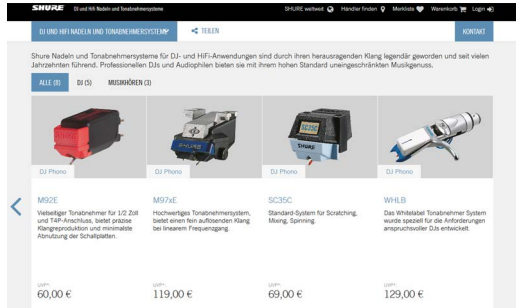
## Lightning to mini-jack cable from **Belkin**

How can you connect an iPhone without a mini-jack output to the analog input of a car radio? Apple's Lightning to mini-jack adapter has a mini-jack connector on the analog side, no plug. So you'd have to extend from here with another cable. Belkin now offers a all-in-one solution: a cable with a Lightning plug on one side and a mini-jack plug on the other. The cable contains a D/A converter, which is even supposed to convert high-resolution signals. It is available in lengths of 90 cm (30 Euro) and 1.80 m (35 Euro) at [www.belkin.com](http://www.belkin.com) and in the future also at Apple's Online Store.



## Shure gets out of the pickup business

The older ones will remember: the „Shure V15“ was the mainstream pickup in the still young (west) german hi-fi scene of the 70s and 80s. It is therefore to be



considered an absolute classic. Now, the US based company Shure announced that it would shut down the production of phono products by the summer of this year. The reasons are cryptic: „In the recent past, our ability to maintain high standards in pickups has been put to the test. This has had a negative

impact on Shure’s brand promise and cost delivery.“ Amazingly, a manufacturer withdraws from this segment in times of booming vinyl and record player sales. So, if you run a Shure cartridge and want to get a replacement needle slot, you should do it now - the parts are still available at the Shure-Online Store.

## Shared future of Garrard and SME

SME, the British engineering and specialist Hi-Fi company, has acquired the rights to the Garrard audio brand from IGB Gradiente S.A. of Brazil. A British brand synonymous with the design and manufacture of class-leading Hi-Fi products throughout the 1950’s, 60’s, 70’s and early 80’s, including the iconic 301 and 401 transcription turntables, Garrard is a much-admired audio brand whose products are eagerly sought out and traded worldwide. To support owners of existing Garrard idler drive turntables, SME has also acquired Loricraft Audio, the only authorised Garrard service agent. Responsible in many ways for keeping



## Rest in Peace David Wilson



After long struggles, David Wilson lost the fight against cancer last Saturday. David Wilson, has distinguished himself with his loudspeaker company Wilson Audio since the eighties, and indeed has, with his in every respect ultimate quality standards, almost occupied a special position at the top of this segment. With him the hi-fi and high-end industry loses one of its most distinguished representatives. Hardly any other manufacturer made such an effort, plunged deeper into the field of technology and acoustics as David Wilson did at his company headquarters in Provo, Utah. Some time ago David Wilson transferred the management of the company to his son Daryl, who continues to work exactly in line with and in the spirit of his father. The photo shows the two of them during the presentation of their super loudspeaker Alessx at the CES 2016. David Wilson died at the age of 73.

the Garrard legacy alive, Terry O’Sullivan, Managing Director of Loricraft, and his team has serviced and re-built Garrard products since 1997, along with manufacturing support products, including its renowned range of vinyl record cleaning machines. There will be further announcements regarding the development of the Garrard audio brand in the near future. For the time being, Loricraft Audio, now supported by SME, will continue offering its re-build and repair service for Garrard 301’s and 401’s, along with the supply of its accessories and record cleaning machines, from its facility in West Berkshire, England.

## Focal renews the top-Utopias

In September Focal will present its top Utopia models „Stella Utopia EM“ and „Grande Utopia EM“ in the further developed „Evo“ version. Both floorstanding speakers now use Focal’s new midrange driver with patented TMD („Tuned Mass Damper“) surrounds, which use a ring-shaped thickening to suppress natural resonances and reduce distortion. The tweeter with inverted beryllium dome is identical on both models. Crossover and internal cabling have been improved as well as the damping material inside the cabinet. The three-way Stella Utopia EM Evo model costs 100,000 euros per pair, while the four-way Grande Utopia EM Evo model is your’s for 180,000 euros per pair. Both speakers are available in white, black, green, blue and grey - on request also in other versions.





# R

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