

STEREO

THE GERMAN HI-FI MAGAZINE

ISSUE #11 2017

**› NEXT-GEN
» NOBLE LINE «
MBL's CD/DAC
and amp:
classic style
meets digital
hi-tech**

**› MQA UNDER FIRE
The download boss
who's not sold on
the new hi-resolution
»wonder format«**



**REPORTS: HOW ELAC'S REINVENTING ITSELF ++ ALL YOU
NEED TO KNOW ABOUT MAINS CONDITIONERS +++ REVIEWS: DEVIALET'S
SMARTER PHANTOM ++ BRINKMANN'S NYQUIST MEDIA PLAYER ++ AKG'S
PRO-STYLE K 872 HEADPHONES - AND MORE!**



Burmester

Phase 3 Retrostyle

PHASE 3 is an extension to the traditional Burmester product lines, joining ultimate demands on sound quality with musical culture and modern lifestyle in a perfect blend.

"The most coveted product" at the High End show in Munich 2016.
The Absolute Sound

SORRY, NO COMMENT!



Visit us at:

facebook.com/stereo.hifi.magazine



A few days ago I received a memorable email circular from the ‘Director of Marketing’ of an American high-end manufacturer. It was brief and to the point: what he was requesting was that when products were submitted for review, his company should be notified of the results of the test before publication.

It was a short enough email, but it confirmed to me what I have known for some years – that it is open practice in some countries for some editorial offices to supply their tests to the manufacturer in advance of publication, for review or correction. It’s no secret – in fact some magazines even publish ‘feedback’ from the manufacturer or distributor in the same issue as the review appears.

Yes, some say that this allows manufacturers to correct any factual errors – for example of specifications – before the review goes to press, but it’s my view that, by demanding this access, manufacturers are trying to influence the test itself.

Give a product a less than enthusiastic review, and the company could just suggest that the review is withdrawn, or threaten no further products will be made available for review unless things are changed.

When this topic came up recently during a workshop and I emphatically stated that this questionable practice doesn’t happen at STEREO, my response was greeted by some present with a wink: “Don’t try to hide it, we know better.”

So, once and for all and in print: no manufacturer or distributor sees a STEREO test of its product until it holds the printed magazine or sees the online publication. Yes, part of our work involves the discussion of technical aspects of products with the developers in order to obtain information, but as far as our listening assessments and ratings are concerned our line is simple – sorry, no comment!

Matthias Böde

editor@stereo-magazine.com

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

MUSICAL FIDELITY

NU-VISTA CD PLAYER



State of the art design for reference level reproduction

The Nu-Vista series is a passionate labour of love for all of us at Musical Fidelity.
We hope that at least you get a chance to hear this combo because we
consider it the ultimate expression of our art.

Experience it for yourself at your local Musical Fidelity dealer.



THEOREM AND PROOF

Brinkmann's new Nyquist streamer/DAC draws on 30 years of digital expertise to spectacular – and sensational – effect



MBL N31 AND N51
The new 'Noble Line' CD player/DAC and integrated amp have traditional style and quality – but inside they're all-new

"I'M NOT GAMBLING WITH MY CREDIBILITY"

So says HighResAudio's Lothar Kerstedjian about the MQA format – developer Bob Stuart takes on his outspoken critics



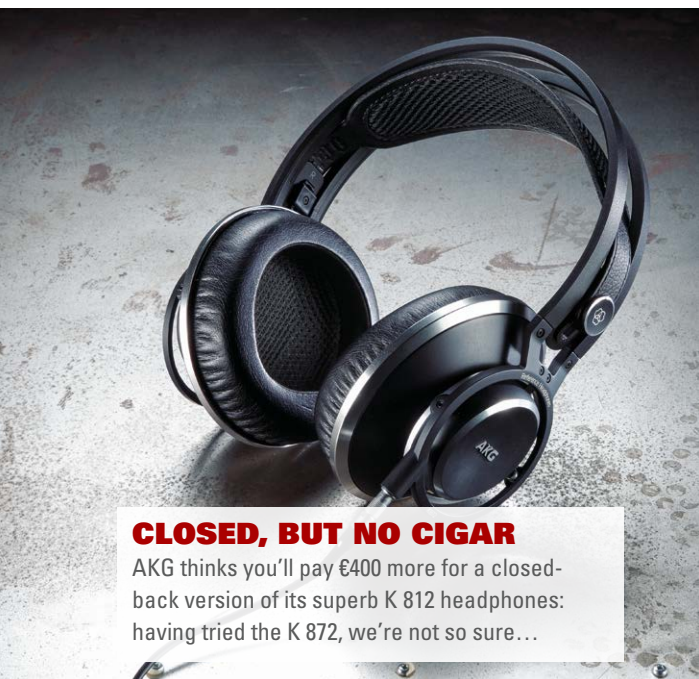


THE ELAC REVIVAL

Founded in the 1930s, ELAC has seen some tough times in recent years: under new boss Gunter Kürten all that's changing

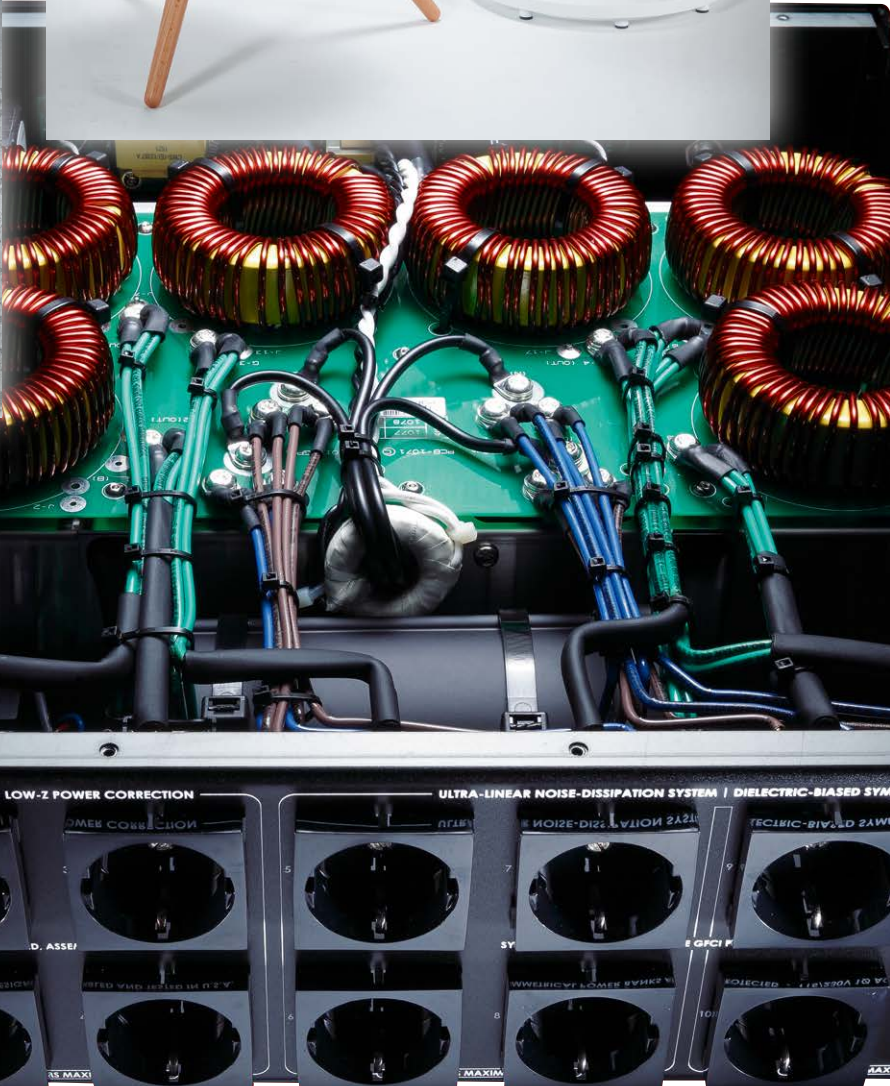
THE PHANTOM MENACE

Packing 4500W of amplifier power, Devialet's Phantom Gold speaker is even more of a threat to conventional audio systems



CLOSED, BUT NO CIGAR

AKG thinks you'll pay €400 more for a closed-back version of its superb K 812 headphones: having tried the K 872, we're not so sure...



ABSOLUTE POWER

Can improving the quality of your mains supply really make your system sound better? We discuss, listen, and decide



IN ADMIRATION OF MUSIC

SHARE THE MUSIC YOU LOVE. ANYWHERE!



DALI SOUND WITHOUT BOUNDARIES

The DALI KATCH strikes the perfect balance between portability and performance, offering true audio DNA in a handy, elegant design.

**WHAT HI-FI?
AWARDS 2016**

PRODUCT OF THE YEAR
Best portable wireless speaker £200+
DALI KATCH

www.dali-speakers.com/katch

Express yourself
Available in three colours:



Dark Blue • Cloud Gray • Green Moss

SAMPLING NYQUIST



For the new Brinkmann „Nyquist“, two specialists fully aware of digital and analogue technology worked hand in hand. The result can be seen - and heard.

„Scheibenkleister, this thing is good!“ That very polite expletive – think “Sugar!” and you’re just about there – was my first impression when I encountered Brinkmann’s brand-new Nyquist streamer/DAC, and I’m pretty sure anyone will feel the same when they slot it into a familiar system. With 30 years of digital history behind it, Brinkmann’s digital device had already staked its claim.

For this first acquaintance, I’d used the “Sounds and Silence” CD, filled with introverted delicacies from ECM, into the drive for gentle learning. Among the tracks is “To Vals Tou Gamou”, an extremely fragrant, delicately detailed instrumental number written by Eleni Karaindrous; –I’ve heard it a thousand times, but never as it sounded via the Nyquist, which created a dazzling, highly-layered air-lock of vibrating tension between the loudspeakers, much to my surprise.

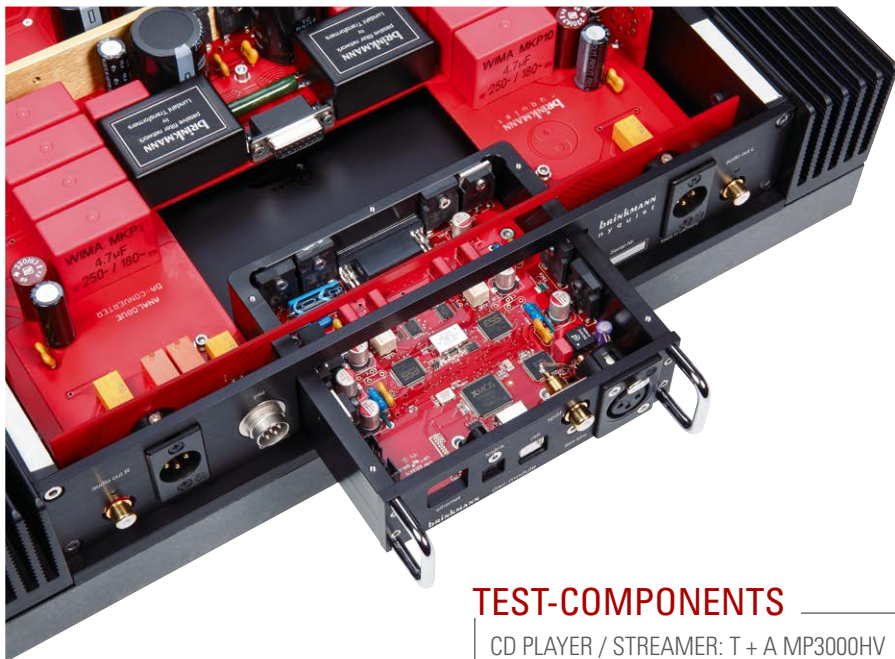
Team Brinkmann & Lück

Yet this was to prove just the overture to an experience that was to shift our standards for digital reproduction: the Nyquist, handmade by Brinkmann at Lake Constance, has a sound to drain all the colours from your face, as the blood rushes to the ears.

Named after the digital pioneer Harry Nyquist, this product was made possible by intensive collaboration between Helmut Brinkmann and Matthias Lück, who was a PhD in digital technology, worked on software development at Nokia and most recently had the same task in Harman’s automotive division. But Luck



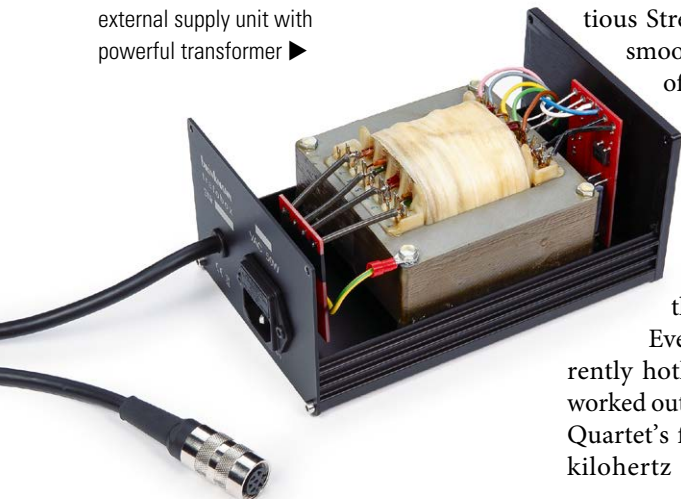
▲ The back view of the Nyquist, with the inputs integrated on the digital module and the externally placed analog outputs



is a high-end audio enthusiast at heart, and a passionate Brinkmann fan for more than 25 years: now he's with the company, Nyquist is his debut.

It was clear to Lück that precision and high-end thinking alone would not suffice: a buyer spending so much money wants to be able to reproduce all available formats in all possible ways, and also have the reassurance that their investment is futureproof. For this reason, the Nyquist's complete digital electronics package, including all inputs and interfaces, sits in a thick-walled aluminum box held in place with just two screws. Remove these and it can be taken out, to be modified or replaced. If there are new formats and / or even better chips in the future, the Nyquist will simply grows with them.

The Nyquist is fed from this external supply unit with powerful transformer ▶



TEST-COMPONENTS

CD PLAYER / STREAMER: T + A MP3000HV

D / A CONVERTERS: Accustic Arts Tube-DACII, Chord DAVE, MBL1511F

PREAMPS: Accustic Arts Tube Preamp II-MK2, Amp II-MK3

LOUDSPEAKER: B & W 802 D3, Dynaudio Contour 60

Cables: Audioquest Diamond, van den Hul Triaxial Prof. (digital), HMS Granfinale Jubilee (NF), In-Acoustics LS-2404 (LS)

Perfect in handling

Currently, the device is fully up to date, not to mention being built in resonance-free casework typical of Brinkmann, as is the thick 12kg granite slab on which it sits. The usual inputs are available for digital signals – including USB from PC or Mac – as well as network streaming, and everything from MP3 files to high-bit PCM up to 32 bits / 384 kilohertz or quad-DSD 11.2MHz can be accommodated.

Almost more importantly, this ambitious Streamer-DAC worked entirely smoothly during our various series of tests: there was no hanging or stuttering, no communication problems with our server or any other nuisances – in fact, nothing to spoil the joy of the modern media. Seemingly, Lück is 'earning his keep' in this respect!

Even streaming MQA files – currently hotly debated by audiophiles – worked out right away: the Dave Brubeck Quartet's famous "Take Five" in 176.4 kilohertz (or four times the CD

◀ The digital electronics are assembled in a screwed module, which can be exchanged in case of updates.

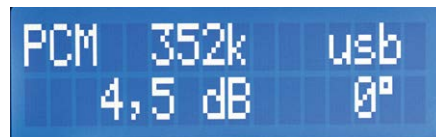
The supplied metal remote control allows switching of inputs, phase reversal and level changes. ▶



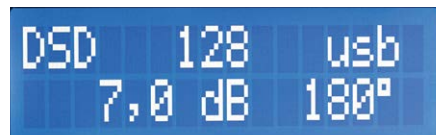
sampling-rate) played easily and smoothly, and so it proved with other MQA titles. We controlled the Brinkmann via a "Room" app, this ingenious software with its endless information about the music and the artists also being implemented.

And everything here is easy: even a module exchange was absolutely problem-free. Our test sample was supplied without a LAN socket for Ethernet, but switching over to the module with one fitted took just one minute. Then connect, switch on and listen as if nothing had happened. Simple!

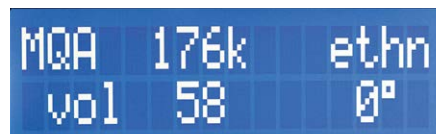
The remote control not only changes the inputs, but also controls the volume across a 10dB range, which is handy if the amplifier being used lacks remote control. Also useful is the switchable signal phase: it's amazing how many recordings have been made or mastered in reversed phase, so if a title appears to be somehow strange or disagreeable it's always worth trying this 180-degree phase invert function,



▲ Sampling rates all the way up to 384 kilohertz are possible. Here it was 352 kHz.



▲ DSD files of any size are accepted - currently in „Double DSD 128“.



▲ Roon, TIDAL, MQA - the Nyquist has it all; Finely adjustable headphone output.

Helmut Brinkmann designed the analog part of the Nyquist ...



... and Matthias Lück its elaborate digital electronics.

which could put everything back in good shape. Given that this can only really be judged by the listening position, the ability to make changes in this way speaks volumes for Brinkmann's attention to detail.

The Nyquist has eleven separate voltage stabilizers for the digital module alone, and of course uses that magic audio ingredient, "selected components". Individual optimized signal paths are created for PCM and DSD signals, the latter being handled in native form rather than being converted to PCM. In fact DSD is handled by a DAC of discrete construction after precise re-clocking, this all designed to preserve the openness and airiness of the DSD sound and being followed by gentle, exactly calculated analog filtering.

In the PCM or MQA format, on the other hand, the Nyquist operates at 352.8 or 384 kilohertz depending on the sampling rate. This is handled by a powerful 16-core processor, also responsible for MQA decoding and the re-clocking before the signal is passed on to a pair of ES9018S Sabre DACs from ESS Technology. These are channel-separated, with eight D / A converters, interconnected for the best performance, working on each channel. However, all the other benefits of the multifunctional Sabre chips have been deactivated, in order not to lose a grain of quality: even the variable clock frequency was fine-tuned to this goal, Lück speaking of the "myriad decisions and variables" that had to be considered.

The inside story here could be a long one, not least taking in Helmut Brinkmann's analogue design, including the use of strictly pair-matched NOS (new old stock) Telefunken tubes, which is wrapped around the digital core of the unit. It's technology already proven in the company's reference Edison phono pre-amp, and it's part of the reason the Nyquist will leave you no change from 15,000 Euros.

Without any artefacts

The Nyquist has an almost self-effacing holistic quality to its sound, never calling attention to itself, but instead allowing the music the flow to perfection. The delicacy and floating ease of the choir from Arvo Pärt's "Da Pacem Domine" - again from the "Sounds and Silence" set - was delivered with sufficient emotional fervor to bring tears to the eye, the sonorous music without any reference to its source. The Brinkmann is completely free from any sign of digital artefacts.

After a series of listening sessions - our reactions ranging between astonishment and admiration for the audiophile potential of this exceptional device - as well as numerous cross-checks, it's clear the Nyquist is able to set standards in terms of naturalness, extreme finesse and the way it handles voices, acoustic instruments and orchestras. Its delivers an entirely three-dimensional image, and what it can tickle out of the finest nuances is nothing short of sensational.

For this reason, the Streamer-DAC with the glass lid is the choice for those who want to get a complete view of the music.

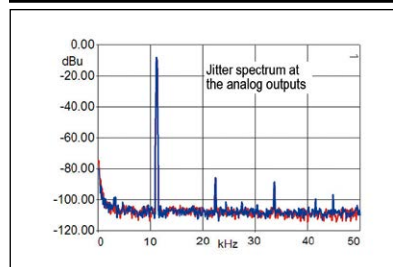
Matthias Böde

BRINKMANN NYQUIST

To € 15,000
 Dimensions: 42 x 7 x 39 cm (WxHxD)
 Warranty: 3 years
 Contact: Brinkmann Audio GmbH
 Tel.: +49 8380 981195
 www.brinkmann-audio.com

Boss Helmut Brinkmann and digital specialist Matthias Lück deliver a superlative device: in addition to a superb sound as a DAC, it also offers top-class streamer performance. Unfortunately its price is also in the top league.

MEASUREMENT RESULTS



Noise level digital zero	103 dB
Quantization noise spacing 0 dBFS	101 dB
Converter linearity at -90 dB	0.2 dB
Output impedance Cinch	16 Ohm
Output voltage Cinch 0 dBFS	2,6 V
Output Resistor XLR	32 Ohm
Output voltage XLR 0 dBFS	5.1 V
Distortion factor at -9dBFS	2.4%
Distortion Factor at -60dBFS	0.01%
Power consumption Stby / Btr	/52 W

LABORATORY COMMENT

The measured table displays truly top results. Particularly noteworthy are the high signal-to-noise ratio and low output resistance, which underlines the stability of the stage. Powerful headphone output suitable for high impedance designs



EQUIPMENT

Three digital inputs (S / PDIF, Toslink, AES / EBU) plus interfaces for USB and Ethernet, variable-level analogue outputs on RCA and XLR, headphone output with fine-level volume control, external power supply, remote control

STEREO -TEST

SOUND QUALITY STREAMER	100%
SOUND QUALITY DAC	100%

PRICE/PERFORMANCE



▲ The analog circuitry is very similar to that of Brinkmann's Phono-Pre Edison, STEREO's sole top reference in this product category.

The Foundation Comes First



Advancing the Science and Efficacy of Power Conditioning

There are many approaches to reducing the noise associated with AC power—conditioner-filters, regenerators, isolation transformers, battery inverters, and more—and all can yield meaningful results. However, some of these techniques also cause ringing, current compression, and non-linear (obnoxious) distortions. **Some cures are worse than the disease**—some are not as good as plugging straight into the wall.

Niagara Low-Z Power Noise-Dissipation Systems address the many variables and forms of interference that compromise **the very foundation upon which an entire audio/video system is built**. When power is optimized, when a system's foundation is a Rock of Gibraltar, the system is able to deliver maximum articulation and emotional stimulation.

Niagara designer Garth Powell has devoted 20 years of intense research to furthering the science of AC power. His exceptional ability to apply an insatiable thirst for knowledge, a musician's deeply personal passion for music, obvious brilliance, and many hard-won insights is clearly evident in the products he creates.

AudioQuest invites you to experience the proof that Garth has successfully advanced the art, the science, and the efficacy of power conditioning. We believe that by adding a Niagara 7000 or Niagara 1000 to your system, you'll experience **clarity**, dimensionality, frequency extension, **dynamic contrast**, and **grip** that your system was just waiting to reveal.

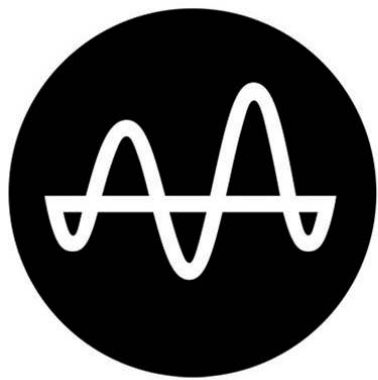
Sincerely, Bill Low

"The Niagara 7000 better resolved fine detail and threw a deeper, more expansive soundstage.... Transients of the struck notes sounded faster, less thick, more naturally expressed through the Niagara, as did the length of the notes' decays."

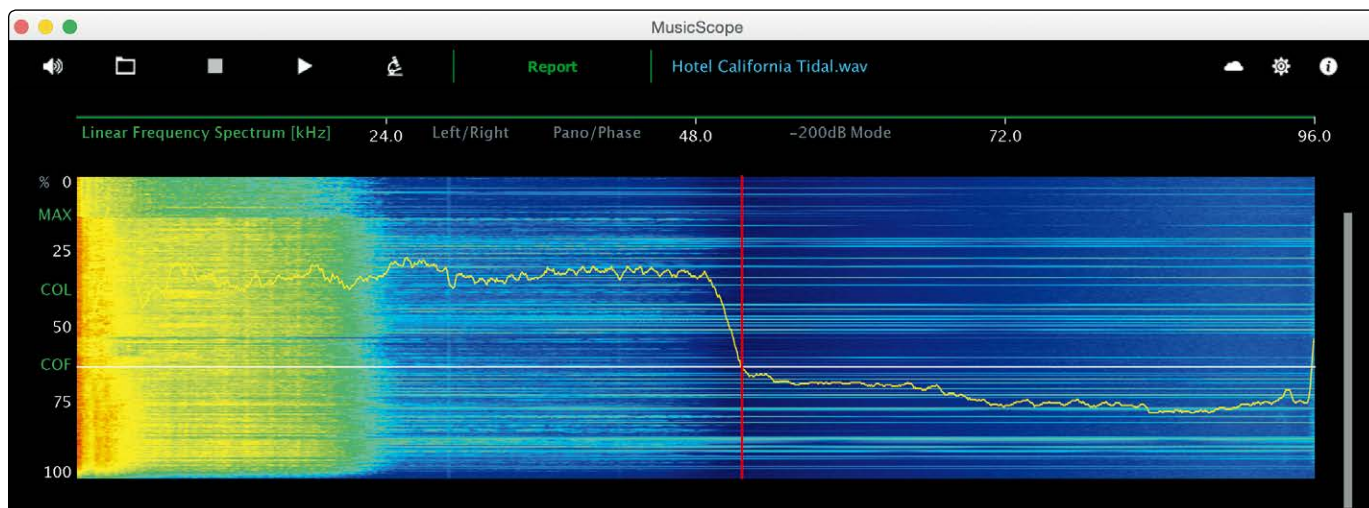
—Michael Fremer, *Stereophile*, February 2016



audioquest[®]



MQA FOR & AGAINST



The MQA sound format, which allows HiRes streaming with handily compact amounts of data, has plenty of advocates – but also critics, who argue it’s neither loss-free nor accurate when it comes to timing. We let both sides have their say.

Lothar Kerestedjian, head of the Berlin-based Highresaudio download service, was initially euphoric about MQA, but now one of its sternest critics. He says files are often charmless after passing through the MQA process, and whether they are actually from high-resolution master files remains unclear. „We can not sell HiRes, if there is no benefit to it,“ his credo says.

Kerestedjian checks classical WAV or FLAC files with the Xivero’s „MusicScope“ software to ensure they contain clearly visible spectral components beyond 20 kHz – ie beyond the “brickwall” filter used in CD mastering. With MQA files, however, this software has no access at file level to the MQA-decoded signal, because that decoding only happens in the DAC. To check those he would then have to pick up the analogue output signal and redigitize it - in real time.

▲ „Hotel California“, streamed at „Master“ quality from Tidal, MQA-decoded with Bluesound’s „Node 2“, the analog output then redigitized at 24/192 and analyzed with „MusicScope“: Spectral content beyond 48 kHz is clearly recognizable, and a cut-off frequency of 51.6 kHz (red line) detected.

KEYWORD

MQA: „Master Quality Authenticated“ can compress – or fold, as MQA would have it – 192kHz HiRes files so they are hardly larger than a CD track. A DAC with integrated MQA decoder can fully restore the high resolution, even if the result is not “bitperfect” – ie identical to the input data.

Steep theses

Xivero CEO Stephan Hotto agrees with the MQA criticism. He is an expert in digital signal processing and has one – very theoretical – „hypothesis paper“, in which he asserts:

- MQA is not lossless. The MQA encoder cuts the lower bits of a 24-bit master to hide the spectral components

from the upper frequency bands beyond 20 kHz.

- MQA distorts timing. In order to avoid the feared pre-echoes, MQA

– presumably – is based on non-phase-linear filters, and changed phase changes timing. Moreover, according to Hotto, these filters are not sufficiently steep-sided, their amplitude frequency response drops prematurely, and they do not attenuate sufficiently in the blocking range, which could lead to aliasing distortions.

KEYWORD

aliasing :

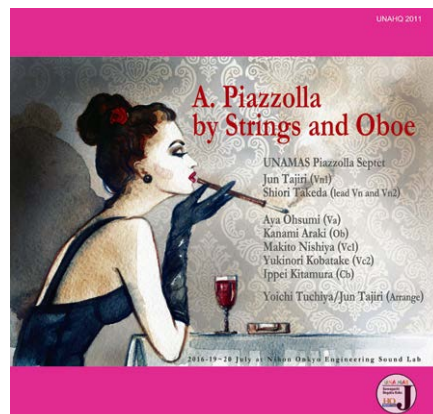
If the audio signal contains frequencies beyond half the sampling frequency, aliasing distortions occur. For example, a 30 kHz tone, sampled at 48 kHz, would produce a $48 - 30 = 18$ kHz interference.

„brickwall“ filters – if the frequency at which they act is far enough outside the audio spectrum, pre-echoes are not an issue at all. This is precisely the advantage of HiRes files – that the filters only act at very high frequencies.

MQA mastermind Bob Stuart vehemently rejects these allegations, saying that what’s

important is not bit-accurate transmission, but that the tonal result during playback corresponds exactly to the sound at the time of recording. And, he pleads for phase-linear, steep-flanked

important is not bit-accurate transmission, but that the tonal result during playback corresponds exactly to the sound at the time of recording. And, he says, the timing of the music signal is not



▲ CDs are now available with CD-Audio-MQA-encoded tracks: the first was released in Japan on the Ottava label.

„THE EAR IS A HIGHLY COMPLEX SENSORY ORGAN“



DR.-ING. MATTHIAS LÜCK

has promoted digital filter technology and is a developer at Brinkmann Audio.



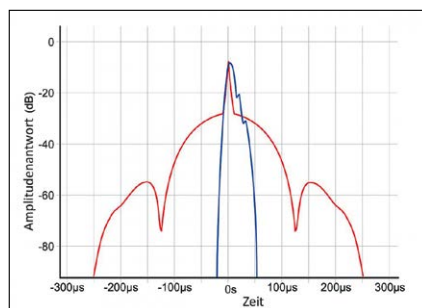
Even with complex instrumentation available, listening is essential in the development of an audio device: the ear is a highly complex sensory organ. As manufacturers with a focus on the musicality and longevity of our equipment, we are obviously skeptical about technical innovations, but a friendly loudspeaker manufacturer and analogue listener enthused to us in 2015 about of the amazing musicality of the playback at one of the first MQA demos. As a result, we took a closer look at MQA and decided to support MQA alongside conventional PCM and DSD

➤ The approach of optimizing temporal resolution seemed promising and confirmed our experience: the temporal properties of filters have a great influence on the musicality of the reproduction

➤ There is the prospect of improved sound quality for users of streaming services while maintaining compatibility with infrastructure and devices that do not support MQA.

MQA is based, amongst other things, on

the fact that our ear does not perceive actual sounds above 20 kHz, but can nevertheless distinguish sound events that are only 5 μs apart (at 20 kHz, a vibration is 50 μs long). The temporal resolution of our ear is therefore much higher than the frequency resolution. MQA optimizes the time resolution and thus achieves a



▲ The pulse response of MQA (blue) is much more precise than that of a conventional 192 kHz PCM transmission (red).

significant improvement, also for example against a conventional PCM with a 192 kHz sampling rate (see diagram)

LOSSLESS?

MQA is already working in the studio to optimize the temporal resolution during playback. It allows the signal processing in the D / A converter to be adapted individually to the processing used during recording. Since the energy of the high-

her-frequency music signal decreases greatly, MQA can pack the signal into a 24-bit / 44.1 (or 48-kHz) format, but with the premise of bringing the temporal resolution of the original analogue signal with as few losses as possible to the analog output of the D / A converter.

„Lossless“ in the mathematical-technical sense is not a process (PCM, DSD, etc.) when one considers the entire chain from studio to listening room. The use of filters and signal processing in A / D and D / A conversion means there are always some losses.

Our experience so far is that MQA has a positive effect on the musicality of reproduction: depending on the recording, the gain is more or less large. In future, more studios will probably gain experience with MQA, so further improvements can be expected.

To describe sound quality or even proving it scientifically it is a difficult undertaking, so I can therefore only encourage anyone interested person to listen to MQA once, and judge the gains in musicality for themselves. Hearing is believing.



▲ D / A converter with MQA decoder: Brinkmann Audio „Nyquist“.



◀The „Amarra Luxe“ software player will also be able to decode MQA.

distorted by MQA, but - on the contrary - corrected.

For further details on Stuart, please see the next page - and there more details on

www.stereo.de. And for the reasons why a high-end manufacturer, such as Brinkmann Audio developer Matthias Lück, relies on MQA, see the box below.

„Perceived quality“
MQA critics argue more formally and

„THE MQA ENCODER CAN DETECT SIGNS OF UPSAMPLING AND OTHER ERRORS“



Questions to **BOB STUART**, Meridian boss and Mastermind behind the MQA format. .

STEREO: *Stephan Hotto assumes in his „hypotheses paper“ that MQA uses apodizing filters that „distort the phase of the audio signal,“ „reduce the resolution in the time domain“ and even „produce aliasing“. How would you answer him?*

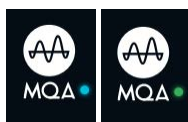
Bob Stuart: The „hypotheses paper“ is based on an outdated concept, which was developed over 20 years ago. Sampling theory and hearing research have made great progress: time and frequency are not mathematically equivalent to the human ear, and encoding based on Fourier analysis doesn't fully meet our perception processes. MQA goes beyond the loss-free concepts to deliver the highest quality. To quote Einstein: „We can not solve a problem by addressing it with the same approach of thinking that created it.“ MQA does not use apodizing filters. MQA preserves the same precision in the time domain as conventional PCM, but delivers significantly less temporal blur. Reducing this temporal „smearing“ means fixing an error, not adding a distortion. The mastering community is largely agreed that the sound is simply clearer by this cleansing. The MQA decoder avoids aliasing in the audio range, to be pedantic!

STEREO: *Stephan Hotto and Lothar Keresstedjian from Highresaudio.de complain that they can't analyze the spectral content of the decoded MQA signal because there is no access to the MQA decoded digital*

signal. How can HiRes download stores ensure that they offer real HiRes content and no up-sampled material?

Bob Stuart: With the Bluesound devices or the Audirvana software, it is already possible to analyze „MQA Core“ (up to 96 kHz sampling rate) at the digital level; otherwise the analog output signal of the decoder is used. Moreover, it is precisely our goal at MQA that customers trust the streams and downloads just as much as they do CDs or Blu-rays, which can't be changed on the way to the end user. We are driving considerable effort to find the real master and make the origin transparent.

The best quality assurance is the digital „signature“ of the artist or sound engineer. The MQA file guarantees that nothing can be changed on the distribution channel: otherwise the „MQA“ light in the decoder will go out. But we don't recordings based on parameters such as sampling rate or bit depth: sometimes the version with the



◀The blue dot guarantees the artist's „MQA Studio“ version. The green dot means the file is missing this authentication.

highest sampling rate isn't the true master. What are important for us are temporal resolution, noise stability and analogue blur.

STEREO: *At MQA, how can you ensure that the labels send you original recordings in their native sampling rate and upsampled files? After all, that's what's guaranteed by the „MQA Studio“ label. Can you tell us the difference between „MQA Studio“ and simple MQA?*

Bob Stuart: We work confidently with the labels to always get the unmodified, real master version. In addition, the MQA encoder analyzes the file: it can detect technical or human errors

in the recording, such as incorrectly formatted samples, inconsistent bit depth, or aliasing, as well as signs of upsampling or the presence of audible watermarks. It also checks whether it is a converted version for publishing on optical discs or iTunes. If all these sources of error are verified, the content is either accepted or rejected. If the MQA encoder is not secure, this can lead to the automatic downgrade of „MQA Studio“ to „MQA“.

STEREO: *Critics underline that Warner's catalog is converted to MQA in a batch process, with standard parameters used and without analyzing the content or knowing the type of A / D converter used in the recording studio. Does Warner give you any information about the „history“ of a recording?*

Bob Stuart: This assumption is wrong. Anyone who was lucky enough to visit the engineering department at Warner Music is incredibly impressed: these people have all the information available at the click of a mouse to provide us with the original for the encoding process. For each master we can examine the complete device chain, including A / D converters, and for recent recordings we even have fingerprints of the workstation used and of any analog transfer. We've had similar experiences with other major labels, and independents like 2L.

STEREO: *Can you tell us when Universal Music will release MQA titles? And what about Sony Music?*

Bob Stuart: They're working hard in the background, but we can't make pre-announcements in the name of Universal, Sony, Merlin or other labels.

Bob Stuart has answered us much more extensively. We've published the complete text in the original (English) on www.stereo.de. You can also find detailed information on MQA at www.bobtalks.co.uk.

theoretically: what they say is about native 96 or 192 kHz sampling rates, which should be maintained, and „lossless“ transmission in the sense of „bit perfect“. The MQA camp argues, on the other hand, from the psychoacoustic side: the perceived sound quality is important, not how it’s achieved. And, the supporters say, MQA is superior to the high-resolution original PCM signal, because it corrects time errors that creep in to the A/ D converters at the recording stage.

Stephan Hotto does not like that assessment. Despite his criticisms, he comes to the conciliatory conclusion that MQA is perfectly fine for streaming services because it allows HiRes transmission with handily small file sizes and bit-rates. For HiRes download services, however, he advises sticking to unmodified FLAC files with 24 Bit resolution and 192 kHz sampling frequency.

Both camps agree that it is important to get as close as possible to the original masters and not to use any possibly up-sampled or otherwise processed files from second- or third-hand sources. But while HighResAudio’s Kerestedjian doubts the MQA files, Bob Stuart describes how much effort MQA makes to verify the source of the files, and that MQA is about guaranteeing that files on the way from MQA encoder to the MQA decoder can’t be manipulated by the end user in any way.

And what’s our experience with MQA here at STEREO? We heard the format with the first available MQA decoders from NAD and Bluesound, and concluded that the sound is significantly better than lossless playback in CD resolution. However, though the difference is only noticeable with excellently-recorded albums, and files in original 24/192 PCM are, of course, a tiny bit better. Whether MQA is therefore advantageous for HiRes downloads is therefore debatable, even though streaming clearly benefits from the „Master Quality Authenticated“ process.

Ulrich Wienforth

„THE HIGHRES MARKET IS SENSITIVE“



LOTHAR KERESTEDJIAN is Managing Director of the download service HighResAudio.

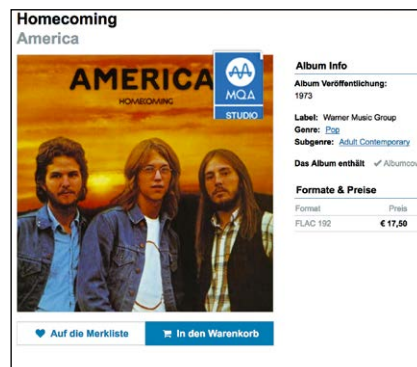
We have a clear concept at HighResAudio: We offer only native, not manipulated and pure HighRes music. MQA doesn’t meet this criterion, at least not if it is simply batch-encoded and no one is checking or blessing the source files – which is the case! There are, of course, exceptions, such as the productions of 2L.

I have nothing against Bob Stuart and the codec, but he can’t sell something as Highres that isn’t Highres, and this is the case with MQA according to current knowledge. Therefore, I have tentatively removed MQA files with uncertain „history“ from the range I offer until the facts are clearly communicated.

MQA coding is used by streaming vendors to save traffic costs, but for downloads it makes little sense. Alternative codecs

exist which are license-free and can be reproduced with 99.8% of commercially available HiFi devices, such as WAV, FLAC or ALAC.

It’s possible to talk about MQA returning to the HighResAudio offering, if the codec is described honestly as lossy. Audiophile people are willing to pay for high quality, but this makes the HighRes market a sensitive one, wanting and needing to be served honestly – otherwise we lose all credibility with the end customer. And I’m not going to gamble with the credibility of HighResAudio.



▲ Still with MQA label, but not available in MQA, but only as original FLAC: Warner album with HighResAudio.



▲ Dipl.-Ing. Stephan Hotto studied communications technology with a focus on digital signal processing, and is the managing director of Xivero GmbH.

Hypothesis Paper to support a deeper Technical Analysis of MQA (Master Quality Authenticated) by MQA Limited

Document Version

Version	Changes	Author
1.0 / 06.03.2017	Initial Version	Stephan Hotto / XiVero GmbH

Document References / Sources

#	Document/Web	Content	Publication Date	Applicant/Author
1	Patent Application: WO2013/186561 A2	Doubly Compatible Lossless Audio Bandwidth Extension	December 2013	Meridian Audio Limited

▲ In a 44-page „hypothesis paper“, Hotto has laid out his theoretical arguments against MQA.

Return of an icon.

MIRACORD 90
ANNIVERSARY

ELAC Miracord remains an iconic name from the era of the long-playing disc.

Miracord 90 Anniversary
ELAC revisits a golden era with a turntable to mark its 90th birthday.



The motor is double-decoupled from the chassis and therefore from the tonearm by rubber dampers and fabric spiders that have proven themselves in ELAC speakers. The variable pitch control allows the speed to be varied by up to 5 %



The tonearm is manufactured in Germany and was developed exclusively for this ELAC turntable. An extremely light carbon tube forms the arm, while the remaining parts are made of aluminum and brass.



Aluminum platter weighing approximately 6.5 kg sits on a sub-platter whose hardened steel spindle rotates on an 8 mm ruby bearing. The spindle is axially guided in two sintered bronze bearing bushings.



TAKEN FROM THE LIMIT

After a long development period, the N31 CD player/DAC and N51 integrated amplifier now launch a new generation of MBL's midrange "Noble Line". Both fully embrace the current state of technology, while maintaining the traditions of the Berlin manufacturer.

Were I to be asked to describe the essence of the new N31 CD player/DAC and N51 integrated amplifier from MBL's "Noble Line", I'd do no more than hand over the heavy remote control. The object of beauty shown above, with its rotating chrome-plated ring for the volume control consistent with its shiny surface, has a solidity and finesse representative of the quality of the components it controls. Approach it with your hand, and the backlight glows up, indicating that its ready to take instruction!

It's a trick the remote handset shares with the 5in color TFT displays adorning the front panels of the N31 and N51, this striking feature giving the MBLs a modern look and reminding one of the large-format screens now common in cars - including their gesture control. Tiny buttons next to the display let you navigate, with labelling next to them changing according to the functions or menu in use.

Top player – and converter

Designed in black, with gloss white and shiny metal detailing, the products of the revamped „Noble Line“ are certainly striking: the brand logo, proudly



▲ Extensive digital inputs and outputs mean the N31 is also a full-featured D/A converter.

displayed on the top panel, is surrounded by a glowing aura. When touched, it varies its brightness, as well as that of the display, in six stages, or turns both off completely. The Power/Standby button is likewise ringed with an illuminated glow.

The N31 plays CDs to reference standards, but is also a highly accomplished digital-to-analog converter. Close attention has been paid to the circuit design for both the digital inputs and outputs and the analog output section, and the slot-loading disc transport has been

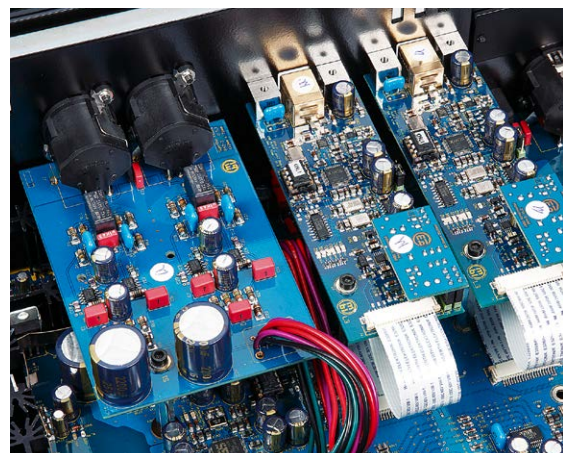
optimized to take account of the effects of air turbulence and mechanical vibration.

Fine tuning by filter

The digital inputs include two USB interfaces for PC or Mac, one of which is designed for high-bit signals up to 24 bits / 192kHz or „double DSD“ 5.6 MHz bandwidth. A narrow strip at the bottom of the CD-Text-capable display indicates the received format, which is useful as bottlenecks in the computer chain can deliver a diminished sound. If you can see the problem, rather than just having an inkling from listening that something is amiss, you can go into the computer settings and put things right.

In addition, there's a small symbol for the selected digital filter, of which the N31 has three on offer: our favourite, and that of MBL's Jürgen Reis, is „Minimum

◀ The slot-in drive is shock-resistant. Vibration-damping foils in several places demonstrate the high degree of care and fine-tuning.



▲ Questions about the concept of the N31? The complexity of the boards arranged next to each other for the analog and digital inputs and outputs demonstrate serious intent as a DAC as well as a disc-player.

TEST-COMPONENTS

CD PLAYER / D / A CONVERTER:
T + A MP3000HV

D / A-CONVERTERS:
Brinkmann Nyquist, MBL1511F

INTEGRATED AMPLIFIER: T + A PA3100HV

PRE/POWER- AMPLIFIER: Accustic Arts
Tube , Preamp II-MK2, Amp II-MK3

LOUDSPEAKER: B & W 802 D3,
Dynaudio Contour 60, MBL 116F

CABLES: HMS Granfinale Jubilee (NF),
In-Acoustics LS-2404 (LS), Purist Audio
Des. Genesis (NF + LS)

Phase“. With this everything is in the most beautiful order, the MBL sound being wide, extended and to the horizon in depth; „Slow Roll Off“ suits singer/songwriter-style music with its slightly more comfortable, slightly rounded diction, while „Fast Roll Off“ makes the bass impulses really hard-hitting, but at the expense of some superficiality in the mid-range. It’s crisp and direct, but at the same time somewhat disjointed – just the thing for techno, perhaps?

That’s almost it when it comes to adjustability: unless those manufacturers offering owners an almost limitless number of switchable parameters, MBL does (almost) everything for you. DAC-geeks will note with appreciation that the class-leading fully-balanced ESS Sabre 9018 is used, around which Reis has constructed a complex architecture in order to make the most of its quality. In addition to those digital filters, this also includes three-stage jitter reduction.

In the N51 integrated amplifier, the mu-metal-encapsulated ring core transformer occupies the front two thirds of the internal space, along with the power supply capacitor banks. On the other hand, the power amplifier section is very small, despite more than healthy output, thanks to its use of 360kHz switching stages, which are both space- and energy-efficient, and generate very little heat.

This „LASA“ concept („Linear Audio Switching Amplifier“), developed by Jürgen Reis, was seen for the first time in 2012 in MBL’s „Corona Line“ and has

since been further refined. Switching the amplifier core may be, but the power supply technology remains linear, removing the risk of RF interference from this device affecting other components.

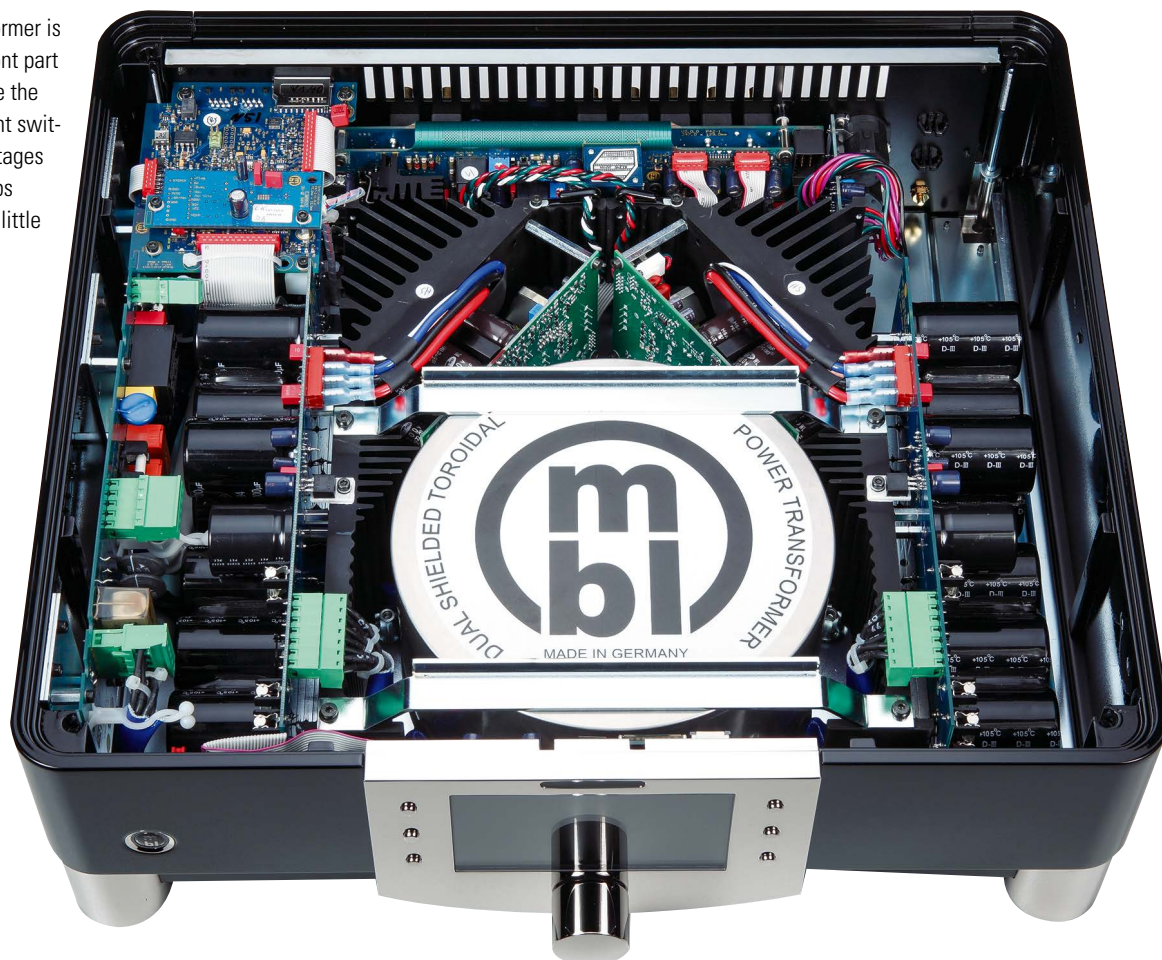
A clever counter-coupling avoids nonlinearities in the high-frequency range, which are unavoidable in connection with Class D Amps, due to the necessary output filters to match the impedance of the connected loudspeaker. Our measurements confirmed the effect of this measure.

A special feature is the ALPs potentiometer for the volume control, placed close to the inputs in the interest of shortest signal paths. Unlike most of his development colleagues, Reis does not rely on resistor ladders, but is rather a supporter of conventional potentiometers, to which he attributes a particular sonority and natural grace in the middle area. In the N51, the potentiometer is moved by the adjacent stepping motor and is so precise (see measured values) that the chip solution isn’t missed.

KEYWORD

Minimum phase filter:
This digital filter imitates an „analog“ time behavior and is therefore considered the favorite for naturally-produced recordings.

The hefty transformer is located in the front part of the amp, while the powerful, efficient switching amplifier stages on the cooling ribs behind it require little space. ▶





◀ For bi-amping, there is a controlled pre-output (pre-out); the loudspeaker terminals jacks are „NextGens“ from WBT.

lightning speed, and both devices – which can be connected via „Smart Link“, which opens the door to further functions and convenience – are also meticulously refined. Combined with the high-resolution radial radiators they are able to envelop the listener in a glamorous, yet precise, sound.

There’s no question: MBL’s new „Noble“ set draws on an abundant sound and delivers a full experience – albeit at a luxury price. And who can argue with that?

Matthias Böde

The N51 also offers „Unity Gain, ensuring that, with the N31 connected, its signal at the zero-decibel mark fully exploits the considerable power of the amp already smoothly starting clipping. If you need more amplification in the case of a low average level of the music, „Unity Gain“ simply switches off.

Another nice touch, and one often overlooked but essential for the best sound, are the vibration-protected „NextGen“ connections found here, from Essen company WBT.

A „strong“ appearance

The MBLs made a striking appearance in the STEREO listening room, where we hooked them up to the company’s 116F radial radiator speakers. We played each unit alone for our edification against various competitors, and both proved that, whether used together or severally, they delivered the “MBL sound picture”. We love this presentation, with opulence,

colourful and energetic basic tone, and sense of exuberance. In contrast to direct-radiating loudspeakers, which like to place the event directly in the listening room, MBL’s omnidirectional models project the scale of the recording space into the room: whether the atmosphere of a recording is that of a hall or a jazz cellar, this system recreates it fully.

Jürgen Reis, who has been developing the MBL products since 1983 and now has a wealth of experience in terms of sonic finesse, has equipped the 116F with a pair of 14cm bass units and two mechanically linked aluminium-cone 21cm subwoofers, meaning the speaker produces a lot of energy.

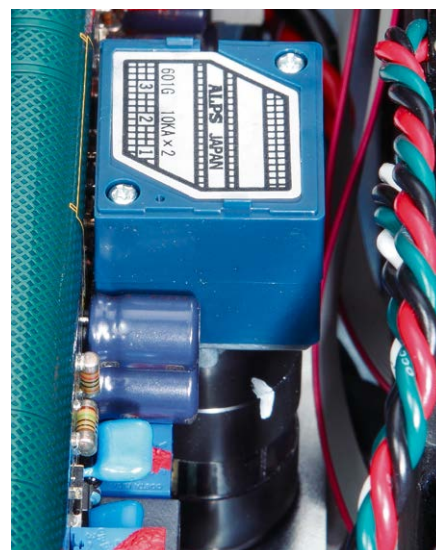
That woofers design means less of this energy is lost to resonances in the MDF enclosure, meaning that more energy is used to shift air: even though the bass section is supported with a rearward reflex opening port, the housing remains surprisingly quiet, and you can hardly feel movement under the fingers.

However, on our usual measurement, which only takes direct sound into account, the 116F sensitivity hardly exceeds 80 decibels (see diagrams), so it needs 10 times as much power as the (admittedly high-sensitivity) Focal Maestro Utopia.

From the fullness into the full

Neither the player/DAC nor the amp – nor indeed the two combined – have the smoothest sound, yet they touch the audiophile nerve with their fluent timing, a full yet flexible bass and plenty of musical tension, all the while seeming relaxed and totally in control.

The N51 certainly helps, with considerable reserves it can mobilize with



▲ Close to the inputs is the classic carbon-tracked ALPs volume potentiometer, which is moved by the stepper motor.



MBL’s masterpiece: The high-resolution radial radiator



▲ MBL developer Jürgen Reis with a „Noble“ set in white and chrome

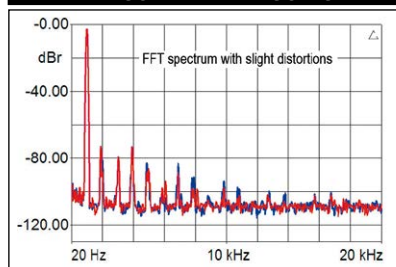
MBL N31



At €12,000
 Dimensions: 45 x16 x46 cm (WxHxD)
 Warranty: 3 years
 Contact: MBL
 Phone: +49 30/23005840, www.mbl.de

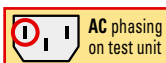
The N31 is equally convincing as a DAC and a CD player, with pronounced audiophile instinct for gripping, authentic sound. High-bit PCM and DSD files are also handled well by the MBL.

MEASUREMENT RESULTS



Quantization noise distance 0 DBFS	97 db
Output resistor cinch	100 ohm
Output voltage cinch 0 dBFS	2.3 V
Noise distance Digital Zero	102 db
Distortion factor at -60dBFS	0.6%
Linearity at -90dBFS	0.2 db
Jitter 1.1	NS
Deviation from FS	-60 ppm
Reading-in	10 s
Power consumption Stby/BTR	20 W

LABORATORY COMMENTARY



High-class values prove the technical claim of the N31.

The MBL shows no weaknesses and underlines the stability of the analogue output stage in the relatively low output resistance.

FEATURES

Five digital inputs and three digital outputs (each light guide, symmetric, coaxial plus two USB interfaces), analog output in cinch and XLR, remote control, SmartLink connection with advanced comfort functions, German user manual

STEREO -TEST

SOUND QUALITY CD	100%
SOUND QUALITY DAC	98%

PRICE/PERFORMANCE



VERY GOOD

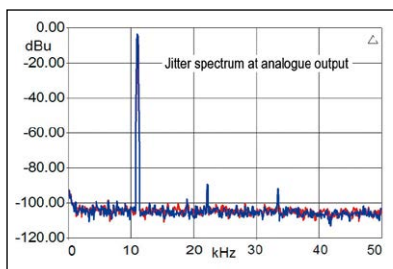
MBL N51



At €13,800
 Dimensions: 45 x16 x49 cm (WxHxD)
 Warranty: 3 years
 Contact: MBL
 Phone: +4930/23005840, www.mbl.de

The innovative integrated amplifier captivates with a noble look and is brimming with power. But it's no sledgehammer, but rather a paragon of behavior, with the sense of bright colors and potency in the background, making it a fine partner for any type of loudspeaker.

MEASUREMENT RESULTS



Continuous power (8 ohm/4ohm)	232 w/435 W
KLIRRF. At 50MW/5w/1db pmax	0.008%/0.01%/0.01%
Intermod. 50MW/5w/1db pmax	0.006%/0.004%/0.4%
Noise distance at 50MW/5w 7	9.1 db/97.7 DB
Damping factor. At 4 ohm (63hz/1khz/14kHz)	100/90/62
Upper cut-off frequency (-3db/4ohm)	52 kHz
Talk about Line 1 > Line	2:73.1 db
Synchronization error volume at-60db	0.1 db
Stereo channel separation at 10khz	75.1 db
Power consumption standby	0.8 W
Power Consumption Idle	50

LABORATORY COMMENTARY



Rich output is paired with low distortions and high interference resistance,

while also positive are the effective channel separation as well as the precise tracking of the volume control.

FEATURES

Six high-level inputs (5 x Cinch/1 x XLR), including a „processor“ looping option for AV applications, fixed and variable outputs, „SmartLink“ connection, remote control, German manual.

STEREO -TEST

SOUND QUALITY	98%
---------------	-----

PRICE/PERFORMANCE



VERY GOOD

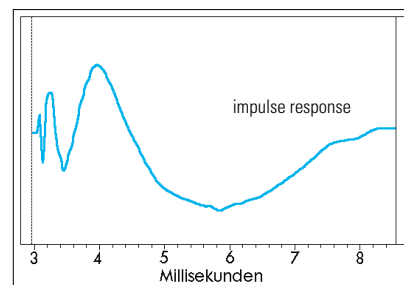
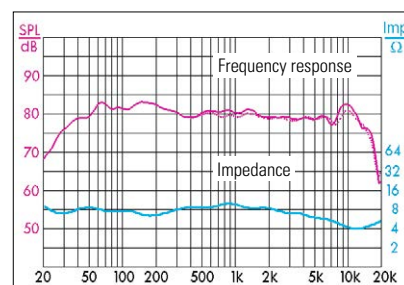
MBL 116F ELEGANCE

Couple around €18,000
 Dimensions:
 30x123x43 cm
 (WxHxD, with Hood)
 Warranty: 5 years
 Contact: MBL
 Phone:
 +49 30/23005840,
 www.mbl.de



Still a top loudspeaker with a fascinating spatial representation and free-breathing liveliness.

MEASUREMENT RESULTS



Nominal impedance	4 ohm
Minimum impedance 4 ohms at	11060 Hertz
Maximum impedance 10 ohms at	870 Hertz
Medium sensitivity (2.83 V/m)	80.3 db SPL
Power for 94 db (1 m)	21.3 watts
Lower cut-off frequency (-3 db)	35 Hertz

LAB COMMENTARY

An amazingly linear frequency response with excellent all-round dispersion (dashed line), with just a slight low bass emphasis and a little droop in the highest treble. Unusually smooth, absolutely undemanding impedance. The efficiency is moderate, so for higher levels the 116F needs powerful amps. The impulse response proves that the high, the middle and the low work closely together in time, with the bass following with a fast swing.

STEREO -TEST

SOUND QUALITY	95 %
---------------	------

PRICE/PERFORMANCE



VERY GOOD

In our opinion, music cannot be explained
it should be heard

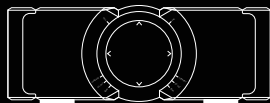


Aavik Acoustics is a joint project between the designer behind the multiple award-winning loudspeakers of Raidho Acoustics and the high performance cables of Ansuz Acoustics, Michael Borresen, and some of the best analog and digital designers that the world has to offer.

If interested, please go to our website <http://www.aavik-acoustics.com> to see product data and reviews. On our website you will also find the list of world wide dealers, feel free to contact one of them and book a demonstration.



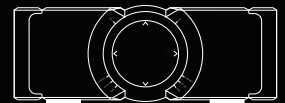
U-300 Integrated amplifier



P-300 Stereo power amplifier



C-300 Preamplifier



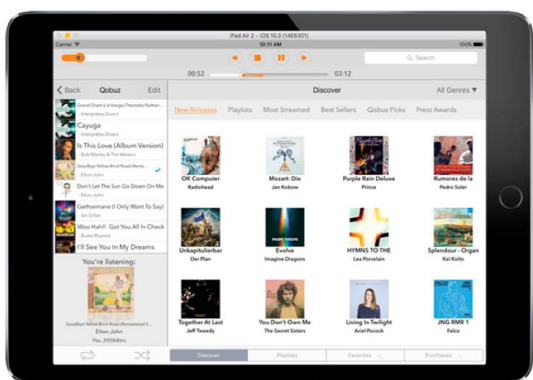
M-300 Mono power amplifier

Sony Music set to press LPs again

Almost 30 years ago, Sony Music closed its last vinyl pressing plant in Japan, as CDs had replaced the LP. However, the demand for vinyl discs is now so great that there's shortage of pressing capacity, leading Sony Music Japan to plan to start pressing again. According to reports in the „Nikkei Asian Review“, a cutting facility is being installed in a Tokyo recording studio, and Sony is looking for the right people to operate it, the old staff having long since retired - they have long since retired. Pressing will recommence in March next year, mainly producing Japanese pop albums (both current and from the back catalogue), though Sony is also looking for foreign orders.



Burmester integrates Qobuz

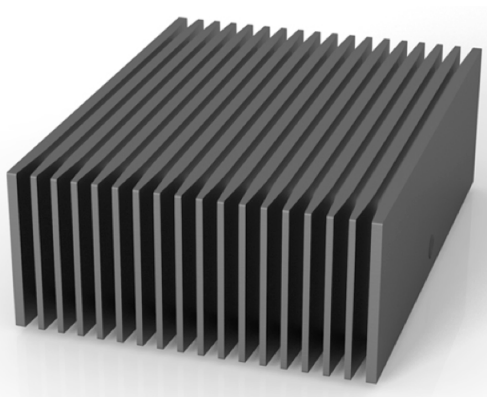


In the course of July Burmester started integrating the Qobuz streaming service into all its network products, to allow „Qobuz Sublime +“ subscribers to stream directly from the Burmester app in Hi-Res and download music tracks. A step-by-step release was planned for the various devices, with the intention of having Qobuz on all Burmester network products by the end of July.

www.burmester.de

Roon Server also supports Sonos, Airplay & Co.

First photos – or at least renderings – have reached us from Roon Labs of the planned „Nucleus“ music server, along with more details of features. It will be able to feed not just „Roon-ready“ network players (now more than 60 partner brands), but also Sonos, Devialet AIR, Meridian and Squeezebox systems, as well as AirPlay-ready devices. Alternatively, you can connect a USB DAC directly to the Nucleus server, which is then controlled from the Roon app for iOS or Android, Windows PCs or Macs. The „Nucleus“ model (around US\$1200) can manage music libraries up to 12,000 albums, and serve multiroom systems of up to five zones, while the „Nucleus +“ (around \$2000) will handle even larger collections and more zones, providing additional DSP features such as upsampling, etc. Both models have ribbed cases for fanless operation, and 2 USB 3.0 ports and a Thunderbolt 3 socket. There's also a slot for a 2.5in internal hard drive or SSD (not included in the price), or the music can be stored on external USB devices or NAS units. Thanks to the cooling rib housing, both models come without fans.



www.roonlabs.com

Tonearms from AVID



Conrad Mas, boss of British turntable company AVID, has launched a trio of tonearms for his products, with the titanium tube of the top model, the „Oxytone“, generated via 3D printing. German prices are still to be set, but in England the Oxytone, Paroxytone and Barytone models will sell for £5000, £3000 and £1500 respectively.

www.avidhifi.com

New record player at Thales

Swiss company Thales has launched a new slimline turntable, the appropriately-named TTT-Slim II. Like the model it replaces, it offers battery-powered drive, isolating it from mains disturbances, and adds to that a stabilizing flywheel. The turntable sits on three elaborate ball-shaped feet, and if you buy the TTT-Slim II with the tangential pivoted Thales Easy tonearm, you get it for a special price of 8990 Euro.

www.tonarm.ch



T + A HV series gets colorful



If you're spend a lot of money on high-end devices, you might want an individual look, which is why T + A now offers its HV series models as „HV Individual“, in the full range of colors from the standard RAL shade-chart. Housing parts, cover plates and heat sinks can be lacquered in matt, satin or gloss colors, and even the shade of the printing on the front panel

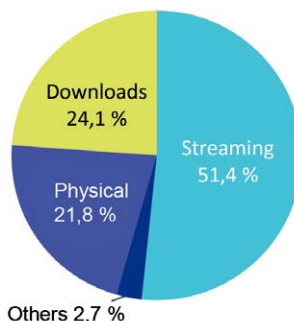
can be selected individually. The housings of the standard units - all made of pure aluminum - are usually finished in silver or titanium, with black heatsinks, but the new finishes can be ordered from T + A immediately via its specialist dealers. The prices depend on the design and type of painting.

www.ta-hifi.de

Streaming overtakes downloads and physical media in the US

For the first time in the history of the music industry, in 2016 streaming services generated more than half of US recorded music revenue, according to figures from industry association the RIAA. The lion's share of this was paid premium subscriptions, turnover from which more than doubled over the previous year, while income from advertising-financed streaming grew only 26%. Overall, streaming revenues were up 68% on 2015 levels, while download sales decreased by 22% and sales of physical media fell 16%. Vinyl sales were up slightly (+ 4%), accounting for a significant 26% share of all physical media sold.

US-Turnover 2016
Source: RIAA



2000W subwoofer from B & W

The Bowers & Wilkins „DB“ subwoofer series flagship, the „DB1D“ (4800 euros), uses two 30 cm drivers arranged back to back, thus cancelling out resonances and cabinet vibrations, driven with a 2000W amplifier. The two smaller models – the DB2D (3700 euros) and DB3D (2650 euros) – share with the top model the use of „Aerofoil“ cones, also seen in the „800 Series Diamond“ speakers, with a „wing‘ shaped cross section adding rigidity where it is most required, while minimizing weight. „Dynamic EQ“ and „Room EQ“,

running on an app for Android and iOS, allow the subwoofers to be adapted to the room and the installation location. The DB subwoofers are available in high-gloss black, satin white and rosenut (walnut red).

www.bowers-wilkins.com



ELECTROCOMPANIET

If music *really* matters...

EMC 1
MK IV

Reference CD player

Lebende Legende

Tel. +47 51 74 10 23
sales@electrocompaniet.com
www.electrocompaniet.com



Made in Norway

Lebenslänglich



unique high end audio

www.mbl.de

HEAD OF THE CLASS?



The AKG K 812 headphone is already a sumptuous pleasure at 1500 euros, but the company's new closed-back brother, the K 872, is 400 euros more. Can that be right?

As a long-standing observer of the hi-fi world, one is astonished when a traditional manufacturer such as AKG brings a new headphone to the market, which is very similar to a model produced for years, but still carries a much 'ambitious' price tag.

Home and professional use

Look at the K 812 and the new K 872, and you might wonder what's going on:

the drivers are the same, and you'll look in vain for differences in the headband and details, even if the description suggests to suggest differences are there. In fact, only when you put on the new model can you see – or rather hear – the changes, in the clear insulation from the outside world - an unmistakable sign of closed-back headphone.

Take another look at the ear-pieces, and you'll note that the porous, air

permeable structure of the K 812 has given way to a hard back without holes, sealing the rear of the drivers in, and external noise out. It should also be mentioned that the 812, which we have repeatedly used for comparisons, was produced in Austria, while „the new“ model is made in Slovakia.

The drivers themselves are unchanged between the two: 53mm diameter, they use an extremely powerful neodymium “motor”, which still delivers 1.5 Tesla of drive, while coil is double-wound, which should ensure a first-class impulse behavior. Both models have almost the same electrical ratings: high sensitivity of 112 dB on the 872 is 110 dB on the 812, and the impedance is 36 ohms, which is compatible with most amplifiers. The weight is also identical, at 390 grams.

The structure of hangers and headband show no differences, but instead of the headphone stand included with the K 812, there is only a hard plastic case - not suitable for the living room, but at the most impractical and ultimately also less valuable than the stand of the 812.

There have always been intensive discussions about whether a closed-back headphone listener in makes any sense in the domestic landscape, or merely brings with it disadvantages such as warm ears. However, in an average living room environment the family might like to watch TV, but the music-loving father prefers to spend the evening with music.

With is no second TV, nor an “evacuation room” with a music system, a closed headphone offers the solution: the music doesn’t leak from the headphones to the outside world, and the television sound no longer disturbs the music lover.

Open closed

However similar the two siblings may seem, they are so different application, and ultimately in sound, to the point that, if you want to listen undisturbed at moderate levels, the K 872 is a definite alternative to the 812. Both resolve plenty of detail, meaning that 70s disco and radio music such as Evelyn Thomas’s „High Energy „or Inner Life’s „I’m caught up“ can get quite annoying, while the new model has more powerful bass.

Things were more pleasant with Johnny Cash’s „Hurt“, but the sound of the two differs more clearly than would be expected from the many similarities. The closed K 872 sounded more sonorous and full-bodied, but sometimes to an excessive degree. The better the source and amplification, up to our reference amp from MalValve, the more questionable was the 872’s effect: with the more feeble output of the headphone jack on the MacBook the 872 was in front, but with the MalValve there was hardly any doubt that the 812 took the prize. The result with Natalie Merchant’s „Sally Ann“ is similar - with the exception of the lower ambient noise, used with the MalValve



▲ Unbalanced, but very soft and pliable upholstery pads, combined with the bracket construction, ensure good comfort.

the K 872 couldn’t provide a serious reason for its acquisition. Since it is significantly more expensive and a headphone stand is not supplied, the suspicion remains that the semi-professional customer is being exploited here.

Michael Lang



The cable with professional Lemo plug is connected to the left earpiece.

AKG K 872	
Around 1900 € Warranty: 2 years Contact: Audio Pro Tel.: +1 (888) 452-4254, www.ake.com	
Top price, high-quality closed-back earphone. High resolution. Clean, rich, sonorous sound with powerful bass. Neatly built, very comfortable. Also works on portable products.	
EQUIPMENT	
Closed model, interchangeable three-meter cable with Lemo plug, Screw-in adapter from 3.5 to 6.3mm jack plug included; Carrying case	
STEREO - TEST	
SOUND QUALITY	91%
PREIS/LEISTUNG	
★ ★ ☆ ☆ ☆ GOOD	

DSD IS THE NEW ANALOG.



"Lindemann's Musicbook makes even the most discerning music-lover happy."
STEREO

"It's a stone cold bargain - buy one today."
ENJOY THE MUSIC

"You simply have to hear this for yourself!"
FAIRAUDIO

"Perfect timing and flawless sound make it the champion of its class."
STEREOPLAY

"I cannot recall ever seeing a more beautiful hi-fi component."
AUSTRALIAN HIFI

"Everything you could possibly need!"
ALPHA-AUDIO

"Dispels any notions that bigger equals better when it comes to the search for audio ecstasy."
HI-FI+

LINDEMANN.

www.lindemann-audio.com

ELAC

FROM INVENTION TO REINVENTION...



Once very big, not so long ago Elac found itself more or less on the floor. Now, with inspired leadership, it seems the Kiel company's fortunes are again on the up.

Gunter Kürten has already had some interesting stops in his hi-fi life, including roles at LG, Sharp and Denon but the challenge he found when he joined ELAC, founded in 1926, was new to him. However, the 52-year-old has thrown himself into his firefighting task: turning the historic loudspeaker manufacturer into something future-oriented.

In the 1930s Elac was a great employer in Kiel: up to 5000 people worked for and at the company. Starting with sonar technology for seafaring, later on it moved into pretty much everything that had to do with technology. Whole blocks of flats in today's Kiel university district were formerly owned by the company, before the majority of the company premises were placed under the supervision of the

university shortly after the war. In the 1950s, the theme of music reproduction began to be explored in the flourishing republic, and in 1957 not only cartridges were produced, but whole record players. In the 1960s, the three German companies – Dual, Perpetuum Ebner and Elac – cornered some 90% of the world market for record players, unimaginable as that may seem today.

However, the analogue technology surpassed its zenith, and loudspeakers became increasingly important to the company. Forays into TVs, radios and HiFi, in particular receivers, were not very successful, so in 1980 the decision was made decided to concentrate solely on speakers.

“Made in Germany” was and is a worldwide selling label, and so for Elac

it's of great importance to produce large parts of its loudspeakers themselves in the Kiel factory halls. However, it has long been recognized that customers are only willing to pay the additional price for products made in Germany, rather than in some lower-cost country, if they also have other advantages.

Germany, United States, Far East

In fact, when Kürten joined the company, it seemed to him that almost the only selling-point was that “Made in Germany” label, even though Elac used a lot of innovative technology in its loudspeakers. Customers were increasingly less experienced in engineering, the specialist trade ignored the product to the best of their ability, it was no longer fully



▲ Air pump, record player, sonar unit - the past was not just HiFi.



▲ Even TVs, receivers and clock radios carried the Elac name.



▲ The showroom in Kiel's company headquarters. The listening room is hidden in the oval.

on the radar of the markets and distributors - the company's future looked anything but bright.

Kürten, personally chosen by Managing Director Wolfgang John to lead the company's fate and by nature an optimist and very enthusiastic, quickly developed a concept for a reboot of the company. He soon realized that loudspeakers alone would make it difficult to lead the company into a secure future, so he rolled up his sleeves, sat down with his staff in Kiel and developed a strategy based on several pillars. Moving into new production and business premises signalled a new beginning, with development and production of individual high-quality components and loudspeakers in Germany, as well as development at the Research Center in the USA under the direction of the renowned loudspeaker developer Andrew Jones

Jones had already developed for TAD loudspeakers highly appreciated worldwide, and since he came on board Elac has also offered coax chassis without a jet tweeter, and this in very moderate price classes.

But that's not all. In order to make a name for itself quickly, with new technology at a low price in the market, the Discovery was the perfect way to create a veritable, well-sounding and easy-to-use streamer (1100 Euro) as well as the small power amplifier EA 101 EQ-G for around 700 Euro, which is also an absolute highlight in sound and features in its price class. These products, made for a cost-conscious and / or younger audience, are designed according to Elac guidelines in the Far East, with an expansion to complete the model series currently on the agenda.

Digital and analogue

Analogue? Yes, you read correctly: remembering their roots and their glorious past, the people in Kiel delivered in May this year the Miracord 90 Anniversary record player, as a tribute to the company's 90th birthday. Even in this move Kürten was proved right, the originally planned number of units selling out: in order to avoid novice errors in planning and production, the chief designer from the company's analogue

prime, Wilfried Werner, had been 'reactivated' (!) and given a young, successful team to develop the 2000 euro player.

Remarkably not only the turntable motor unit, but also the tonearm is German-produced, with only the cartridge being imported - it's an Audio Technica moving magnet model. What's more, it seems Elac is almost certainly not going to rest with just the one model: it's likely a family of record players will be built piece by piece.

Bonus Buy

Kürten soon became certain that in the medium term, a separate electronics line, with which one can control the sound from beginning to end, is unavoidable. And so he surprised us last autumn with the takeover by Elac of the very innovative but financially chronically weakening US manufacturer Audio Alchemy. The first products from this liaison are soon to be seen.

Secret of the tweeter

One of the most innovative Elac technologies is also among the most invisible:



▲ The Elac company building is dedicated to the inventor of the AMT tweeter, Oskar Heil.



▲ Some pairs of Concentros await completion



▲ The Concentros are demonstrated with high-quality Burmester electronics.



▲ The film of the jet tweeters is extremely thin and light.



▲ 16 operations are required to complete a jet tweeter – it's a job for specialists.



▲ Various jet tweeters with copper and aluminum foils after drying

the “Jet” tweeters, which are painstakingly produced in Kiel, are found in the company’s loudspeakers as well as in numerous top-class cars with Burmester sound systems, where they deliver crisp high frequencies without sharpness and distortion. However, they are usually hidden behind screens.

The secret of this tweeter, which works according to the principle of the “Air-MotionTransformer” invented by Oskar Heil, is not only the hard work and the long-term development of the production processes, but also the ingredients. The films come from a European manufacture, as does the special felt, which is delivered in a defined thickness and strength. Even the silicone glue, which is applied by machine, is not a standard kind but the best the market offers, with around € 3 of glue used per tweeter set. First-class ingredients only provide the basic prerequisite to deliver the manufacturing tolerance required at Elac, of only +/- 1 decibels – this meaning that further selection or pair matching in speaker assembly isn’t required.

While other AMT tweeters make do with five or six folds, the expert hands at Elac use 22 precisely aligned folds in the copper or aluminum foils to give them the best possible sound, this taking five minutes per tweeter, and after completion, each individual one is measured for the harmonic distortion and frequency response.

Also completely in-house was the design and construction of the Concentro super-loudspeakers: developed from the first drawing to the finished product in Kiel, it is produced there by development manager Rolf Janke and his team, with each crossover carefully adapted to the individual requirements, and though the speaker weighs 175 kilos, it’s designed to be unpacked and set up by a single person - German thoroughness.

The fact that the loudspeaker is not necessarily produced for the German market, with its pair price of more than 60,000 euros, is eagerly accepted by Elac: demand is so great in Asia that we were able to admire an entire miniature series nearing completion. For a manufacturer

not significantly in these regions – either of price or geography – before, that’s certainly a compliment.

So, for anyone thinking, “if only there was a smaller and more affordable brother...,” the desire has been noted at Elac long ago. Prepare to be surprised.

About 3000 m2 of area

With the move to the company’s origin, an open corporate culture also began: the offices are glass, and viewed from a friendly atrium with a small coffee bar. The fact that Elac is not only concerned about quality and production constancy, but also a meticulous documentation of all the stages of the work, as well safety and environmental compatibility, is not least due to Elac’s original ‘rock star, Thomas Werner. The tour through the halls of the ISO certified company also clearly shows that it is a labor of love to convince visitors Elac is a company with a mission – to bring the name back to prominence on the national and international HiFi markets, and leave behind the shadows of the past.

Michael Lang



▲ The legendary 4Pi ribbon horn, with its 360-degree dispersion, is also built in Kiel.



▲ The special chassis for the Concentro midrange and bass drivers are designed for minimal distortion.



▲ Elac doesn’t build the motors for the record players: they come from specialist Allied Motion.

BEAUTIFUL & INTELLIGENT



Devialet's Phantom is one of the most extraordinary hi-fi products of the past decade – and not just because its striking style. The new „Gold“ also sounds seductively good!

Good looks never hurt - who ever found someone too pretty, or something too elegant? Yet since pictures were first released of Devialet's Phantom some four years ago, the product has had to fight off accusations of being "designer hi-fi", more about style than substance, even though it sounds excellent and has "more going on under the hood" than most hi-fi products.

Ask Devialet CEO, Quentin Sannicé about this, as we did during our recent visit to Paris, and he'll explain that the Phantom is not only a loudspeaker that meets the highest standards, but also a technology leader whose internal systems inspired the industrial design, not vice versa.

From ADH V2 to HBI

The initial plan was highly ambitious, as the intention was to build an active speaker of limited size, yet able to develop a sound until then only available from large floor-standing speakers. To achieve this, the engineers decided to use a hermetically sealed housing design, allowing the movement of the drive units to be optimally controlled, the internal pressure acting as a brake.

This creates a new problem, however,

since the bass drivers, with their long travel designed to compensate for their limited surface area, have to permanently fight against that resistance. To overcome this barrier the Parisians took the only possible path: if the slope's too steep for your car, get a bigger engine!

With 750 and 3000 watts, the first two Phantom models were hardly feeble, but for the new "Gold" model, the amplifier circuit was re-worked and inflated to an even more substantial 4500W, this enormous performance implemented in a tiny chip – Devialet's "Analog-Digital-Hybrid V2" (ADH V2). Its signal processing is fundamentally analogue, but the final power amplification is done in Class D, the new generation having – in addition to more power – lower distortion and a wider bandwidth than the amps in the original Phantoms, making the Gold more confident and clean.

Parallel to the new ADH chip, the manufacturer has implemented its own D / A converter with a resolution of 24 bits and 192 kilohertz, and also reworked the SAM (Speaker Active Matching) correction software, with which it is possible to control the drive units down to the smallest

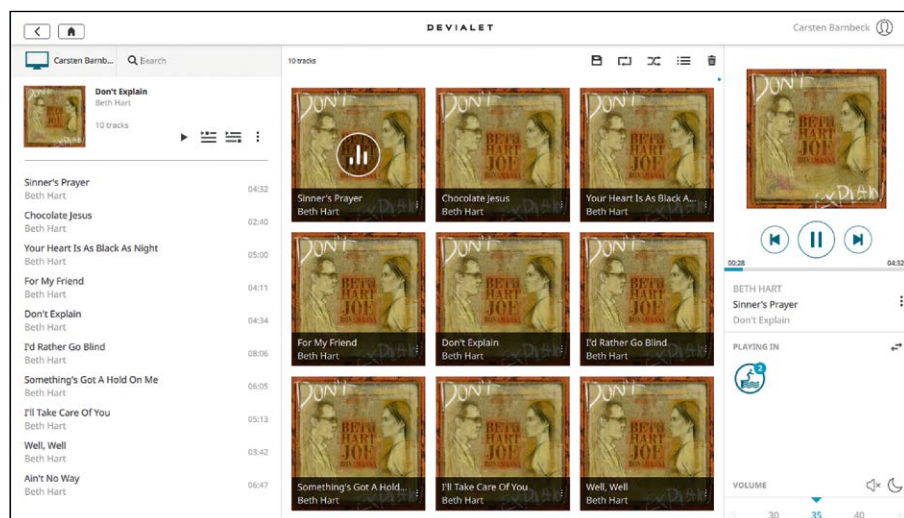


The WiFi connector „Dialog“ makes the phantom operable entirely wirelessly, and further inputs.

detail. In addition to pure frequency response equalization, this also includes processes that throttle the power supply of the bass drivers as soon as they are likely stray into distortion.

It's easy to hear this in action: choose bass-heavy music like Daft Punks "Da Funk", and the punchy and transparent Devialet will startle you with the way it powers the kickdrum and bass into the room. Increase the level, and the speaker continues 'just getting louder' for a remarkably long time, and only then – well beyond comfortable in-room listening levels – do you notice that it's started only increasing the level of the midband and treble, regulating the bass gently before it becomes unpleasant. What's just as impressive is that the speaker maintains its overall balance, and the treble remains velvety, even when working really hard, thanks to both the SAM V2 processing and a high-purity titanium tweeter.

However, the basic concept of the loudspeaker has remained unchanged. The Phantom is a flexible active loudspeaker of the latest generation, and can operate in mono or in pairs to give stereo, and once the speakers have been powered up for the first time, the free "Spark" App recognizes all the Phantoms nearby and displays a screen where you can assign them to the desired room zone and its purpose (mono / stereo). The boxes react



The Devialet „Spark“ app lists all the sources, artists, albums and songs on the left. In the large middle section you can see the selected playlist, and on the right it shows the current title and the level control.



Good disguise: The connections for current, network and optical digital data are well hidden on the case and the stand. It's an accomplished design!

with an almost hypnotic sound and occasional pulsation of the bass driver, so you always know which Phantom is being addressed and configured.

The loudspeakers offer a LAN and an optical digital input. Via the optional WiFi connector "Dialog" (around 250 euros) you can also control them wirelessly, the small box syncing with up to twelve pairs and adding a further optical input to the connectivity. Furthermore, the Gold offers Bluetooth as well as AirPlay and can access Spotify, Deezer, Tidal and the whole range of web radios, as well as playing music from networked

portables and connected computers/NAS stores. As a child of the year 2017, its BT receiver is of course AptX-compatible and reads the signals from Apple portables directly in the AAC format. You couldn't ask for more!

Plenty of accessories

The Phantom is tailor-made for a contemporary digital audience, and the design lovers will also appreciate the accessories catalog: in addition to the well-known aluminum legs, there are now wooden stands (around 400 euros / pc), wall holders (around 200 euros / pc) and the

stunningly beautiful three-leg "Treepod" (around 300 euros / piece).

Jumping for Gold

In terms of sound, this clever speaker is a full-bodied entertainer, its excellent timing giving it a jumping, punchy effect, and almost explosive dynamics at medium levels. With the Goldfinger soundtrack it succeeds in placing the listener in the midst of the huge big band, revealing every detail of the instruments, while spatially it impresses and the depth of the image is also astonishing. That's hard hardly surprising: after all this is a speaker designed to fill a room, not concentrate on one tiny listening 'sweet spot'.

The simple version? This revolutionary French design almost sounds better than it looks – and that's quite something!

Carsten Barnbeck

DEVIALET PHANTOM GOLD

Couple rate: around 5480 €

Warranty: 2 years

Dimensions: 25 x 26 x 34 cm (WxHxD)

Contact: Devialet

en.devialet.com

Conclusion: Versatile active loudspeaker with flexible connectivity, infectious sound and breathtakingly beautiful design.

EQUIPMENT

Features: Active loudspeaker with integrated level control, free remote app „Spark“ (Android, iOS, macOS, Windows), various stands and wall brackets available, WiFi connector „Dialog“ increases range and allows radio operation

Connections: LAN and optical, Airplay, Bluetooth (AptX and AAC), Spotify Conncet, Tidal
Sound formats: All common formats up to 24/192 (no DSD)

STEREO-TEST

PRICE/PERFORMANCE



EXCELLENT

THE THREE PHANTOM MODELS AT A GLANCE *

model	phantom	Phantom Silver	Phantom Gold
Few price **	To € 3680	To € 4280	To € 5480
Power (per speaker)	750 watts	3000 watts	4500 watts
Max. Sound pressure (1 meter)	99 dB	105 dB	108 dB
bandwidth	16 to 25,000 Hz	14 to 27,000 Hz	–
D / A converter	24/192	24/192	24/192
DAC chip	Texas Instruments PCM 1798	Devialet DAC	–
Digital input optical / coaxial	- / •	- / •	- / •
LAN / WLAN	• / •	• / •	• / •
Bluetooth / Airplay	• / •	• / •	• / •

* Manufacturer's specifications ** including „Dialog“

„THE PHANTOM IS ONLY THE BEGINNING FOR US “

STEREO MET DEVIALET CO-FOUNDER QUENTIN SANNIÉ IN PARIS

STEREO: *What gave the impetus to the development of the phantom?*

Quentin Sannié: HiFi is losing its importance: there are still a few classic fans, but they are getting fewer and fewer, while on the other hand younger people are no longer attracted – which actually is strange, as more music is heard than ever before. Our approach was therefore to develop a product to bridge the gap between generations.

The work on the first Phantom began in 2012: we used all the core technologies of the D-Premier amplifiers and additionally designed the SAM concept, so we could achieve a sound that satisfies even the most discerning high end enthusiast. At the same time, the Phantom is prepared for modern listening: it has a D / A converter and offers access to streaming services, airplay, Bluetooth and much more, which appeals to young listeners.

Will the Phantom family expand?

We're currently pursuing other strategies: we're planning to open a chain of stores this year, our so-called "power stores". In the beginning, there will be ten shops worldwide, of which three are in Europe – in Munich, London and Paris. These serve as a test run, hopefully to be followed in the foreseeable future by a lot more branches. We're also refining our key technologies, and many of the innovations in the Gold result from improvements to the former Phantom models. And another focus is entirely new products, in which all these technologies can be integrated.

Can you give us an example?

I can't reveal anything concrete yet, so I prefer to answer with a number of num-

bers: around the world, about 100 million audio systems have been sold, including soundbars and the like already. Include the total sales of products with sound output, including car hi-fi and TV sets, and you arrive at three billion units sold, so HiFi in a broader sense makes up just over three per cent of the market. The current efforts are aimed at establishing our technologies in this extended product area.

So, a car?

Probably not, and neither are we developing a TV – but we are working with partners in both segments, who have a great deal of know-how. SAM is proving especially helpful in this co-operation, since we can adjust each loudspeaker in software to suit its environment and application. This is particularly beneficial for the bass, which we can protect early from distortion and overload – in most cases, the full 108 decibels of the Phantom Gold aren't required.

In the end, this is about classical technology transfer.

All of our developments were directed from the very beginning: our technologies are entirely modular and can be easily transferred to other products. The focus is, of course, on ADH, our highly integrated amplifier chip, which can be produced at Foxconn: we are currently breeding the third generation of the module and want to push the development with 60 new engineers over the course of the year. The close co-operation with

the chip producer ensures that we can guarantee high quality, even when it's being produced in large numbers.

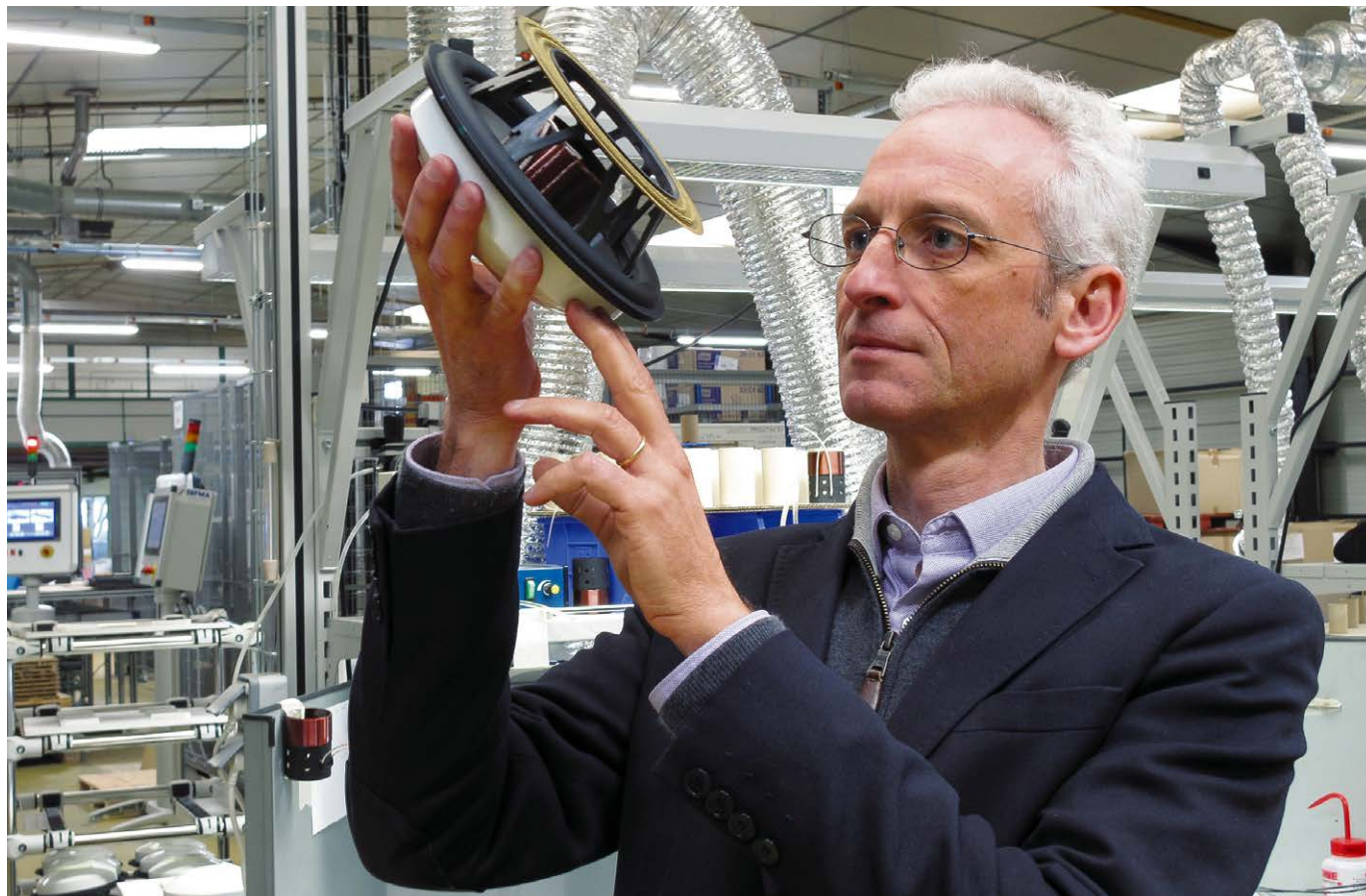
So you're turning away from HiFi?

No way! HiFi, however, is undergoing a gradual transformation: just think of all the products with voice control like Amazon's Alexa or the Apple family, and at some point we will even talk with our car and get a feedback. All this has something to do with sound and its reproduction, and our technologies can help improve the experience. With ADH and SAM we are well prepared for the future of music and sound reproduction.

QUENTIN SANNIÉ
Co-Founder/DEVIALET



QUALITY FROM OUR OWN HANDS



The drivers for the bass and the midranges of the Phantom require a complex production process. For this reason, Devialet is building them themselves, as we found out.

Without question the Devialet Phantom is a unique design with highly ambitious drive-units, in particular the opposed woofers and the annular midrange driver. Discussion with the supplier about the technical details costs time, money and, of course, especially nerves, but Devialet president and mastermind Pierre-Emmanuel Calmel commissioned the French specialist PHL Audio with the task of implementing his technical ideas and the production of the drivers.

Soon, Devialet's goals and thus the required number of items expanded so fast that the company one decided to take over

its supplier on short notice and at the same time expand the production to specialize in making drivers for its products. So, since the middle of 2014, the approximately 2,000-square-meter Devialet factory has been located in Chatelet en brie, about 50 kilometers from Paris, so the developers and management have direct access to all processes and production.

Exact to one hundredth

Approximately 50 employees assemble the drivers on two production lines, which are automated at critical points. We've seen a lot of drive-unit manufacturing around the world, but the fact that industrial robots

take important steps and complement the usual handwork is at least unusual.

For example, at the point where the bass driver's prominently bulging membrane is glued to the surround, the best possible, highly durable and permanently stable connection is required due to the unusually large excursions sometimes demanded of the unit. For this reason precisely predetermined quantity of the special adhesive must be applied with extreme accuracy, and then the parts assembled within a defined time span.

This is done by a robot more accurately than any human could do: within a Plexiglass booth an arm of the yellow monster

grasps the diaphragm, which already fitted with its voice-coil and rotates it completely 360 degrees, while a second jib brings a tiny tip from which the black, sticky liquid flows. The arms move almost cautiously, almost tenderly, and entirely precisely as the

diaphragm is inserted into the surround to exactly one hundredth of a millimetre accuracy, and the “composite part” continues to the next station.

The line on which the midrange drivers are created and finally connected to the supplied tweeter to create the finished coax system is similarly supported: here, too, the tightest tolerances are required so that the Phantom can realise its full performance.

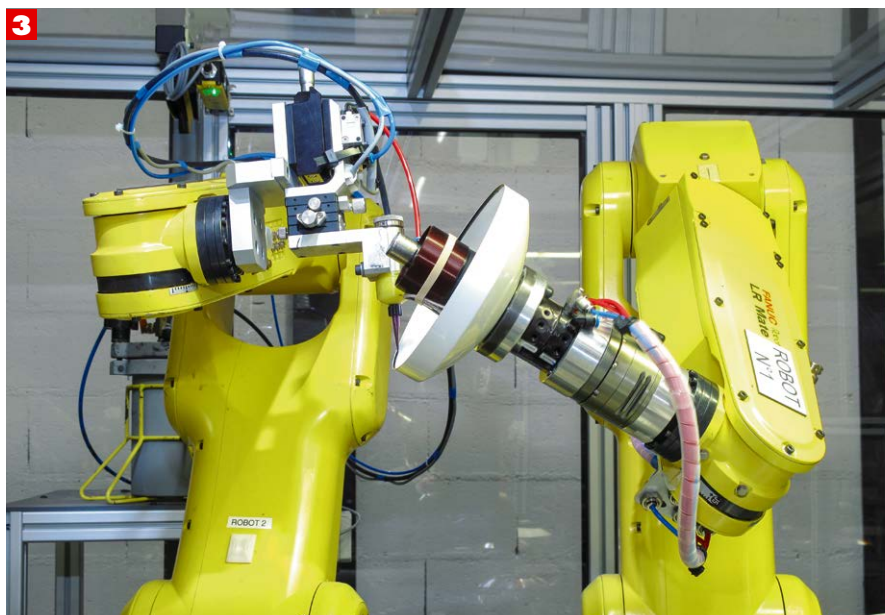
Another vital factor is that the enclosure is entirely air-tight, as in the case of saturated levels, unusually high pressures arise due to the opposed woofers mounted on either side of the speaker. Any air permeability, for example due to a defective adhesive, will create problems, so Devialet has a small pressure chamber to test each driver, which is only passed if it is able to withstand a defined overpressure or vacuum. Electrical and acoustic measurements are also carried out, with only a slight deviation permitted from the stored ideal curve.

A woofer a minute

60 subwoofers are produced every the hour - one per minute – and then they await the leak test and final installation in the rigid housing of the phantom. Every now and then, Pierre Emmanuel Calmel, who also developed Devialet’s unique ADH amplifier, takes one of the drivers from the belt, turns it like a precious jewel in the light and checks it from all sides. He seems almost in love. No wonder this quality comes from such hands.

Matthias Böde

1 The center ring is mounted on specialized workstations. **2** One woofer is produced per minute. In a row, they are waiting to be mounted in a phantom model. **3** More precise and faster than any human being, robotic arms attach the important adhesive seam to the woofer diaphragm. **4** A Since there is no space behind the bass chassis, the „motor” of the magnet and the oscillating coil is inside. **5** Each woofer must pass the leak test in the pressure chamber. **6** The final laboratory test confirms the quality.



AVID

THE WHOLE STORY



TURNTABLES - PHONOSTAGES - AMPLIFIERS - LOUDSPEAKERS - SUPPORTS - CABLES

AVIDHIFI.COM

WHAT, THE JUICE?

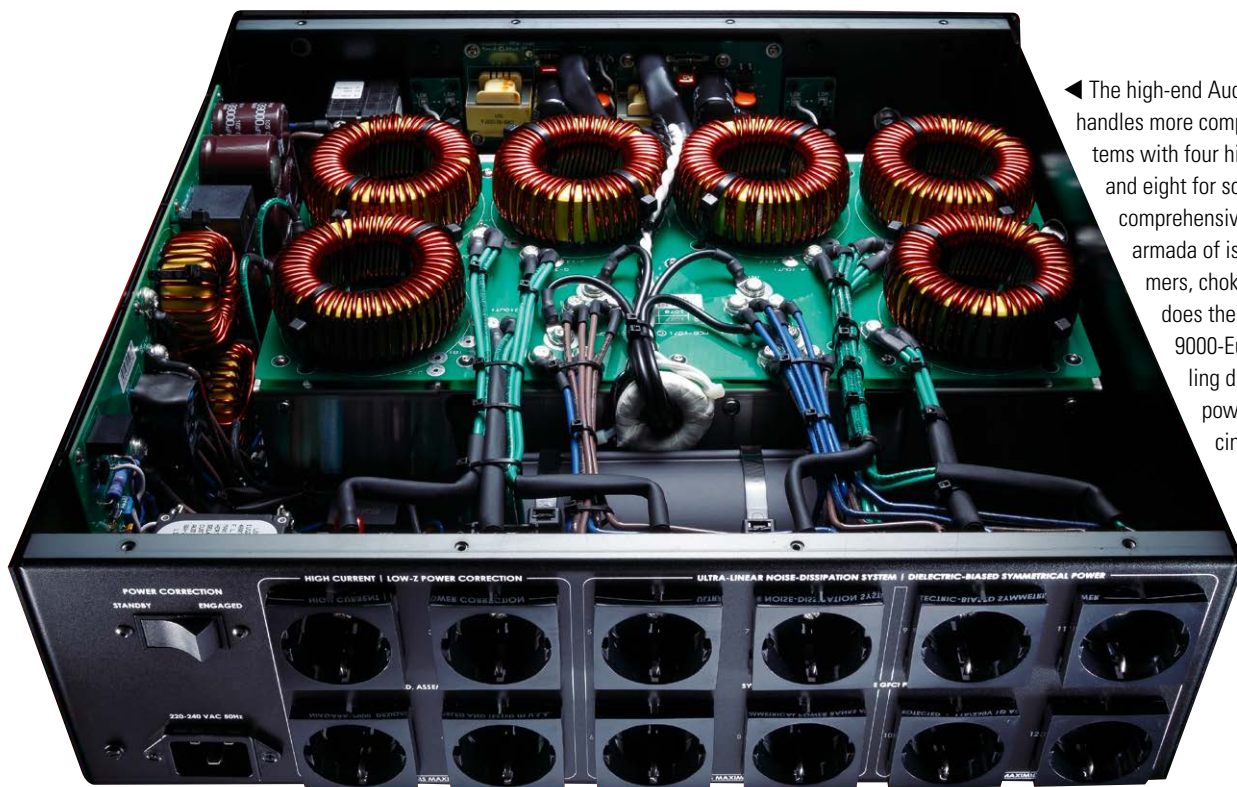


Music reproduction is all about modulating electricity. No wonder the purity of the raw material makes a difference

The electricity comes out of the socket, you can't do anything"; "50km of copper from the power station, so how can anything make a difference in the house" "It's not even in the signal path"; "Are you crazy?" That's the kind of stuff you hear from self-proclaimed experts and even hi-fi fans when it comes to power supplies, and yet the hi-fi system sometimes sounds better at night or depending on how a plug is plugged into the wall-supply. Something is happening, and it's to do with physics and "clean current". STEREO explains and tests what helps.

By Tom Frantzen

AMERICAN (MAINS) FIGHTER



◀ The high-end Audioquest Niagara handles more complex high-end systems with four high-current outputs and eight for sources, with more comprehensive filtering slots. An armada of isolating transformers, chokes and capacitors does the work inside the 9000-Euro colossus, tackling disturbances on the power supply and reducing ground noise.

The requirements for a perfect, “audiophile” powerline filter are simple: it should be as low impedance and resilient as possible and eliminate a very wide wband frequency spectrum common mode and differential mode interference and protect the system, so that the connected devices don’t “see” any disturbance, even from other devices malfunctioning. At the same time, disturbances occur as by-products / back-effects of electrical devices in the power grid, and common-mode interference is

caused by contamination from the outside (such as from radio signals).

In the Audioquest Niagara 7000 we have probably one of the most elaborate and powerful attempts to achieve the ideal passive mains treatment, even if in this case “passive” is a misnomer given how much the Niagara 7000 intervenes.

“Mr Power”

Audioquest designer Garth Powell, already a mastermind when he joined the company thanks to his designs for pro equipment maker Furman, was given plenty of time a practically an open budget to develop “Niagara”. Its looks and weight – 37 kilograms – suggest a gigantic power amplifier, and it’s designed as a component requiring its own space on a correspondingly spacious and substantial rack or shelf. And what you could easily mistake for a braided three-piece breathing tube for deep dives is actually the power supply cable, complete with an Audioquest-typical bias battery – though here we have a little criticism, because the plastic sleeves for the connectors seem comparatively delicate and sensitive to accidental tread-damage.

If we turn to the rear, we find four extremely low-impedance – or “Low-Z” – Schuko power outputs designated for high-current use and configured with simpler filter banks, plus two 4-socket banks with a considerably stronger filter design (transformers!), for buffering and cleaning the supply for source devices and preamplifiers. We also find the capacitive shielding of the Transformers extremely consistent: if only hi-fi equipment manufacturers would protect out their transformers in a similar way, high-frequency noise could hardly enter the system!

There is also a simple switch (at the front) for the “Power Factor Corrector”, operating not using the more common correction of phase shifts between current and voltage, but a switching trick that massively lowers the impedance for the fast recharging of the current storage. In other words, it provides an enormous additional storage capacity for the reproduction of transients (impulse peaks), and so should be enabled by default. The Niagara is equipped with several protection systems, including a very sensitive residual current circuit breaker.

AUDIOQUEST NIAGARA 7000

Niagara 7000, at 9000 €
 Contact: Audioquest
 Tel.: +1 (949) 585-0111
 www.audioquest.com

This device could alone fill a book on the topic of passive network filtering, and its potential was realized in the effect on the sound. A superlative choice for costly systems.

EQUIPMENT

Connections: Up to four power-hungry components (amplifier), also two extremely strong insulating quad strips



◀ Weighing a whopping 37kg, the Niagara 7000 impresses as a high-end.

Magical effect

In terms of sound, the Niagara proved to be brutally effective. The seemingly unimportant background of the sound image is suddenly black, seems completely free from artifacts, noise, HF, and the like. This is reflected in an increase in solidity, and even an almost holographically enhanced picture of the main event.

The price of the large Niagara should always be seen in relation to the system, and the effect is more complex than that of complex systems of components connected with each other, with their own

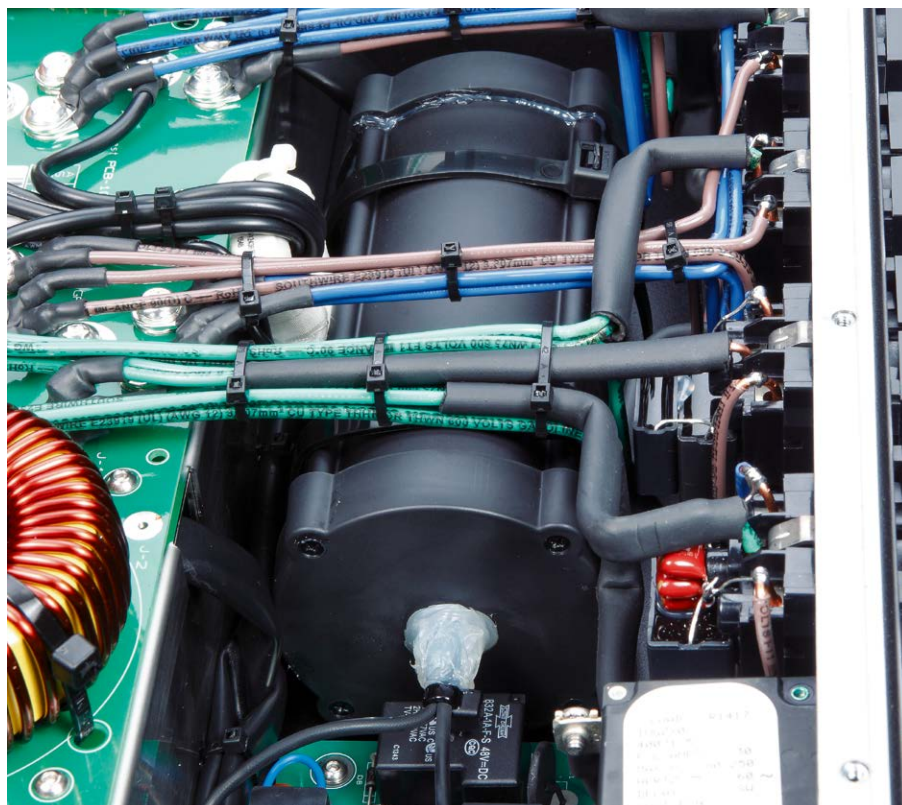
actions to be suppressed, and also with components with protective two-pole conductors. The structure of the sound appears clearer, the soundstage image larger, and bass textures clearer. The effect is very strongly pronounced, but above all here realized with comprehensive connection possibilities and practically without limitation.

In terms of lack of compromise and technical sophistication, the Niagara is a statement – and an absolutely impressive one at that. For simpler and more modest systems, smaller Niagara offshoots will

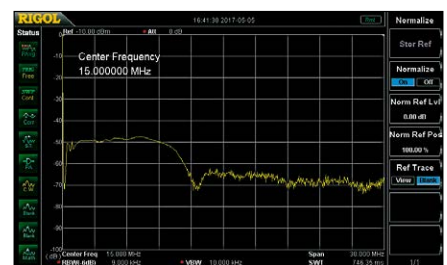
also be available, such as the 1000 model launched at the High End show, but the 7000 is absolutely top class, and worthy of a hat-tip.



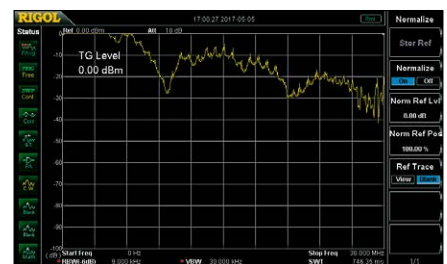
▲ The associated power cable is of enormous dimensions and technically complex.



▲ The black cylinder inside stores energy improves the pulse response of connected amplifiers.



▲ A very strong, broadband attenuation can be measured at the connections for source devices.



▲ Surprisingly, filter effects can only be detected in the high-frequency range at the high-current output.

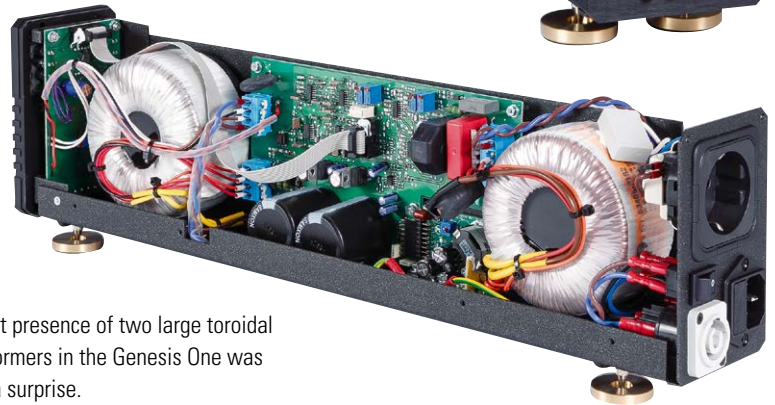
SMALL SOLUTION

Isotek, the leading European system supplier in the power sector, offers two varieties of solution, which can also be combined. In addition to the passive approach already known and recommended from an earlier test of the „Aquarius“ (see box on the right), the „Genesis“ series provides the active solution. The idea behind this device is that it completely rebuilds the 50Hz mains sine wave, which has been defaced by all sorts of low- and high-frequency interference, and combines this constant, stabilized 50 Hertz 230 Volt signal with a Class D power amplifier to feed its output.

In the case of the Genesis One, the output capacity is enough for analog or digital devices of up to 100 watts, and even record players with synchronous motors can be protected. Thanks to the design construction of the Genesis One, several units (at 2500 each) can be operated in parallel and placed in a rack – albeit quite a deep one.

The in coming mains distortion level of roughly 1.5-2% and was reduced to about one-sixth to an eighth of that when feeding the with the Marantz SA-10, and in addition, the Genesis One slightly raised the voltage of 226 volts to the nominal value of 230 volts. The good noise attenuation measurement shows that any concern that Class D is incompatible with a clean network is unfounded: 50Hz is

The elegant upright-format allows you to place several Genesis One units side by side, although they are very deep. ▶



▲ That presence of two large toroidal transformers in the Genesis One was quite a surprise.

extremely far away from any sampling frequencies, and easy to eliminate.

Top combination

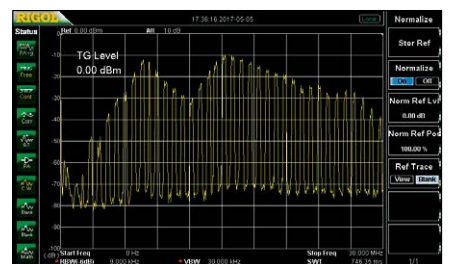
As a single solution, a single „One“ was thus excluded: the Duisburg-made integrated amplifier is too potent, and other more suitable Genesis products are made. But this is nonetheless a good solution for source devices.

Because we combined the Aquarius with the Symphonic Line RG 14 Edition at the high current output and the Genesis One for the player, they complemented each other quite wonderfully, and the combination surpassed the already clear tightening effect of the Aquarius alone used for both devices. The system simply played with even more airiness and amazing solidity, more swing and verve.

According to our experiments, it can be stated that a complete filter solution is all the more meaningful the more the system is interfered with, but also the more complex it is. This is due to the interactions between the devices and the increasingly contaminated supply they can create. The demand for a mains filter to quash these is high - and is met by Isotek.



▲ Although the claimed values before and after are somewhat optimistic - without load – the enormous magnitude of the distortion removal is accurate.



▲ Here again, the active technique shows a rather unstable picture, but a good, deep filter effect well below the normal level.

ISOTEK GENESIS / AQUARIUS

Eva 3 Aquarius: about 1400 €
 Eva 3 Genesis One: around 2500 €
 Contact: Isotek
 www.isoteksystems.com

While the Isotek Aquarius can be viewed as an all-round solution for any good system, the fine, rhythmically driving „Genesis One“ is a top add-on for your favorite source.

EQUIPMENT

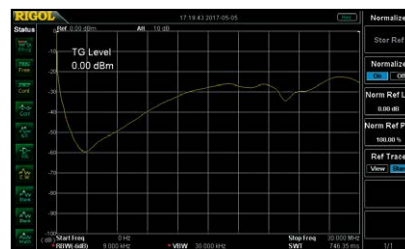
Connections Aquarius: Two high-current and four mutually buffered outputs, purely passive. **Connections Genesis One:** One output for a device to 100 watts, active sine wave generator

THE PASSIVE POWER

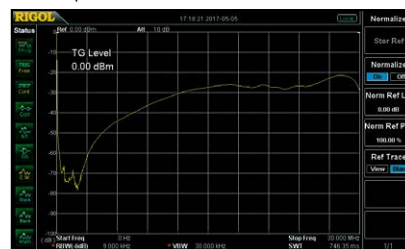
The Isotek „Aquarius“ is a passively a component design, which offers two high-current slots for amplifiers and four other filter sockets – designed for lower-consuming devices and source components –which are more highly filtered and even more isolated. If a digital device is plugged in here, not only is mains interference made harmless, but also its own effects on other system components are moderately mitigated until „invisible“. STEREO subjected the Aquarius to a detailed test five years ago, and it is still a top solution even for more elaborate audiophile systems (Isotek recommendation up to about 13,000 Euro total value). Even a sometimes-evident drone was diminished audibly, without disturbing the sound.



◀ Filter circuits with chokes characterize the source output, while at the rear of the picture is the protection device.



▲ The filter damping starts early and is quite even and wide-band.



▲ While the HF effect is very similar, deeper frequency disturbances are even more strongly reduced at the source component outputs.

SUPPRESSION FROM LEVERKUSEN

As an expert in interference suppression technology, HMS is undoubtedly one of the go-to companies in Germany and worldwide, with low-loss quality cables and network accessories at the very top of the high-end segment. Its first Energia bar sold far more than 17,000 units before being replaced with the improved Energia Mk II, which was more elaborate and better adapted to use with more power-hungry products.

HMS ENERGIA MK II

Power strip with 5/7/9/11/13 filtered outputs, overvoltage protection and 1.5 m cable, from 470 €, optional DC-suppression DCS, other filter equipment, longer cable / extension with IEC socket
 Contact: HMS
 Tel : +49 2171/734006
 www.hmselektronik.com

Sound-structuring, gently soothing and uncompromising power strip, which also protects superbly. The new standard?

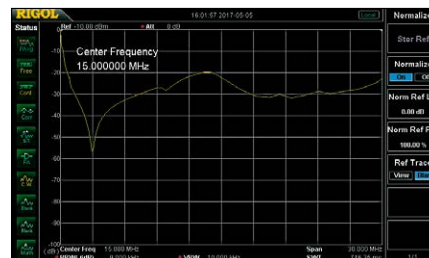
EQUIPMENT

Connections: Tried in five-output version, with five slots including one for amplifiers and surge protection



With prices starting just under 500 euros, the HMS target market is clearly the more demanding system-builder wanting to maximise an already good system and realize its full potential. The HMS filter effect is enormously uniform and reaches over a very wide spectrum, through the audible range into the listening area and far into the high frequencies, but has been designed to do its thing without incurring dynamic losses. The Energia power cord used is excellent, though the

power strip is also available with a cold-plug connection for other mains cables, and we'd also suggest the version with a built-in DC blocker, with surge-protection protection available as standard. That's a serious recommendation!



▲ The HMS filters extremely evenly and broadly. This manifests itself in serenity and tranquillity.



THE WAVE RIDER

Talk about active network regeneration and you have to mention PS Audio. The company – headquartered in Boulder, Colorado, and led by Paul McGowan – long ago had the idea of using an amplifier to provide extremely

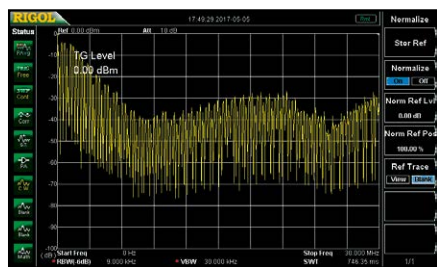
stable alternating current, a concept it has now developed and refined over several product generations.

The author has extensive experience of both the 500 Power Plant and Power Plant Premier, both predecessors of the current P5. Compared to the first Poweplant PP, it is no longer necessary to re-create the entire voltage swing of 230 V in the more recent models, but to limit the creation of the ultimately clean mains to about one-third, ie 70/80 volts. This is then brought to the required level and stabilized, which means both less effort and heat and more safety and reserves. The perfect sine is available primarily for preamplifiers and sources, while an available passive socket is used to connect more powerful devices such as the amplifier.

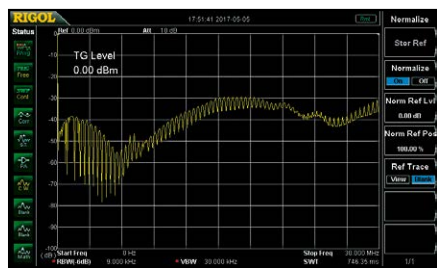
Fundamentally, the active regenerators are said to be able to fulfil the requirement for low resistance, unrestricted dynamics and HF override resistance. However, PS Audio seems to have solved the theoretical weaknesses of the concept excellently. In fact, we would not necessarily run the preamp through the sine



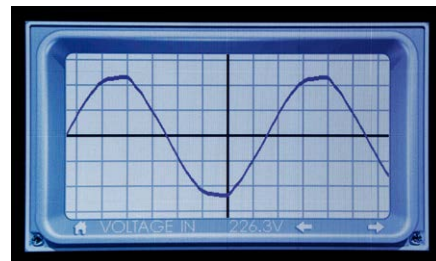
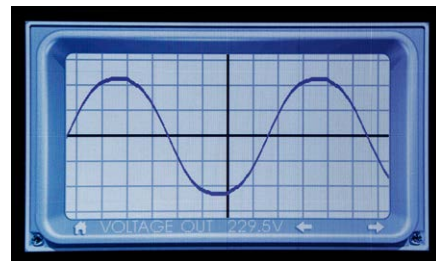
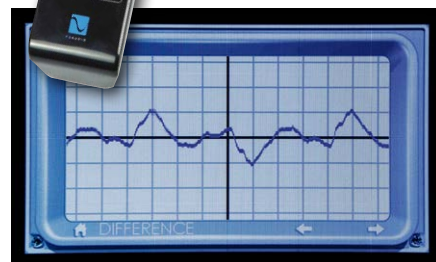
◀ The remote control gives the owner control over the current supply of the system.



▲ Switched on, the newly-built mains provides a lively but impressive result.



▲ The high current output on the device acts as a passive power strip with quite strong filtering.



▲ The PS Audio actually has an oscilloscope on board, which shows the power supply (top), the distorted input from the wall-socket (below) and the clean, newly generated output (center).



▲ PS Audio's P5 offers a high current output and three buffered sockets for source devices.



STATUS			
VOLTAGE IN	225.3V	VOLTAGE OUT	229.6V
THD IN	1.5%	THD OUT	0.1%
POWER	0W	LOAD %	0%
CURRENT	0.00A	FREQUENCY	50.0Hz

▲ The display of the PS Audio informs at a glance about the input and output data.

◀ The P5 shows that it is a power amplifier providing the cleanest 50 hertz.

generator due to a very minimal saturation of the sound image even if PS Audio sees this differently, but the P5 also filters also passively. The cleaning performance

of the PS audio, incidentally, coincides exactly with the distortion values the author's almost 2000-euro oscilloscope mains analyzer spits out.

PS AUDIO POWER PLANT P5

To 5000 €
 Contact: HiFi2die4
 Tel.: +1 720-406-8946
 www.psaudio.com

High-precision, spatially-open and powerful sound, best when used with sources and preamps in pure sinusoidal mode. Up to 1500 watts output.

EQUIPMENT

Connections: A-10A high current and three equivalent, regenerated „zone“ outputs; remote control with clean wave (degaussing) and multiwave (widened multi-sinewave for longer charging phases)

The sound proves that the PS Audio still belongs in the crème de la crème of international power network improvers: it arranges the sound image, frees it from rubbish and delivers a polished, high-quality and high-end sound experience. Excellent.

SUPRACHARGER?

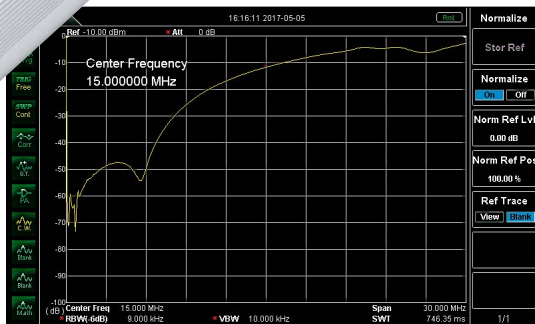
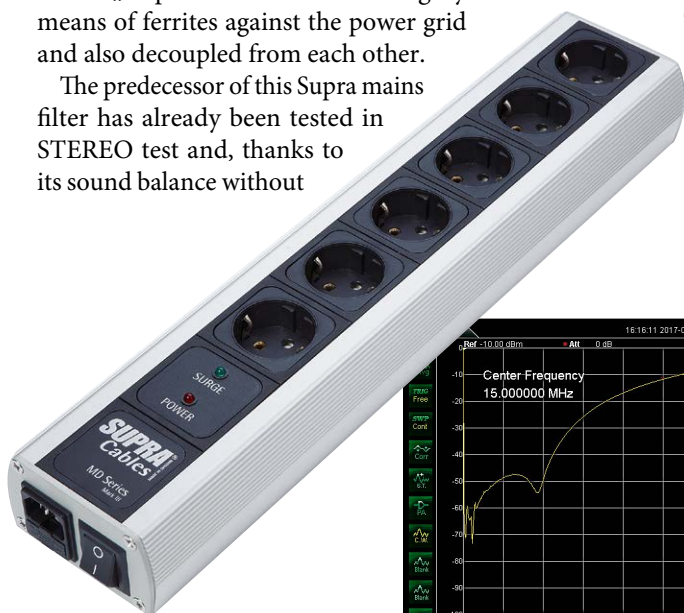
Supra Cables – from Ljungskile, Sweden – was founded in 1976 by Tommy Jenving as one of the very first providers of hi-fi cables, and has also been very active in the AV and power sectors for several years. The present power distributor has six identical outputs, which are filtered by means of a very subtle „impulse-scattered“ filtering by means of ferrites against the power grid and also decoupled from each other.

The predecessor of this Supra mains filter has already been tested in STEREO test and, thanks to its sound balance without

dynamic loss, at that time beat several competitors in the up to 300 Euro class. This new version, improved in all respects, is handmade in Sweden partly from German components. Together with a Supra Lorad cable, which is also sold by the meter for less than 20 Euro, a power supply completely shielded from the wall socket is obtained.

Tip: Make sure you buy the version with triple overvoltage protection (for phase, neutral and protective conductor) to keep your

system safe, a switch, and enough outputs: as standard the Supra-strip comes with two to 15, with even more available to special order. Alive and with a pronounced tonal consistency, it will help a wide range systems with more peace, blackness and structure in the sound image. Great – and a bargain!



SUPRA LORAD MD-06-EU/SP

2-connector strips from 165 €, 6-way with overvoltage protection 250 Euros, shielded Lorad power cable optional
 Contact: Geko HiFi
 Tel.: +46 522-698990
 www.jenving.com

Ingeniously simple and skilfully-designed power distributor, which has a positive effect even in more expensive systems

EQUIPMENT

Connections: Test version had six outputs, soft filtering, surge protection and switches

◀ The filter action of the Supra sets in amazingly early and decreases in the megahertz band

SERVO

Technical progress promises a more comfortable life. But leaving behind purely ohmic electricity consumers of the problem-free type (eg the incandescent light bulb) has given us something which was previously not known to such an extent: electrosmog.

This interference makes itself known – and heard – both through wires and in the form of an invisible, increasingly fine-tuned radio disturbance mist, which occasionally manages to sneak into the music reproduction by modulating additional information into the mains cabling and the devices. Most devices aren't so well prepared to resist this invasion. In the worst case, the high-frequency interference is processed together with the useful signal and can, for example, push an amplifier above its frequency range. Such distortions or overlays are detectable and even heard - and certainly not as a sound enhancement – as evidenced by many discussions on Internet forums.

They are the reason why the same system can sound better in the middle of the night or at the weekend than at industrial peak times at noon, when all machines and domestic devices are running flat out. Even energy-saving lamps and electric motors of all kinds are anything but harmless, while – to a great extent – elements of the hi-fi system can also impinge on the sound. After all,



◀ Indispensable accessories help stream the jumps, which can be almost as important as the room acoustics.

what is a hi-fi system other than a complex alternating current circuit with rectifiers and pulsating power consumption as well as its own resonance frequencies? It's more than capable of disturbing itself, and those around it.

What to do

In the design of the entire electrical installation, low inductance and lowest transition resistances must be strictly observed for high acoustic requirements. Like low-inductance cables, the entire system is considerably less „susceptible“ to penetrating disturbances on the one hand, and also places less resistance to the energy supply. It is therefore necessary to eliminate the bottlenecks.

Starting at beginning means getting the devices connected with the correct mains phase (at least for systems in

countries without three-pin plugs to force correct orientation). You can do this, for examples with the Oehlbach Phaser (picture, from 53 Euro in the STEREO shop). One looks for that of two plug positions, in which the housing potential of each individual device is the lowest. This is because potential differences (voltages) tend to balance, and this takes place across all ground connection.

The use of good power cables, which allow the components to remove the remainders of the compensating currents as quickly as possible, is helpful.

This does not have to cost a fortune, but the mains cables supplied with some products, while fine to deliver 10-16amps without any voltage drops, might struggle when an amplifier, for example, draws more for an instant when handling the transients of music. This can affect the sound, so replacing the mains cable for an amplifier even with a modest step-up cables such as the shielded Supra-Lorad with a cross-section of 3 x 2.5mm², is worth doing. And given this cable will only cost you 20 Euros or so a meter, you will probably want to equip other devices with this experience. Of course Isotek, HMS or Viablue and many more highly developed online sellers also offer similar product.

DC VOLTAGE IN THE AC NETWORK?

Mainly due to industrial processes, but also devices with strong electric motors such as (circular saws) or phase control (hot plate, energy saving lamp), the power grid is

loaded asymmetrically, due to DC voltages in the network. The usual 50-Hertz mains then deviates from the ideal, one of the two half-waves being smaller than the other. In fact, even small amounts of DC drive even in the millivolt to lower voltage range can drive transformers into saturation at an early stage. Although admittedly rare, this can create loss of performance, distortions and transformer hum in amplifiers. DC-blockers such as the Isotek Syncro (pictured left), PS Audio with the „Humbuster“, that used by HMS in some Energia products, and Supra (right), can solve the problem. Also devices

such as Burmester's „Power Conditioner“, the sine-correcting (Accuphase) or actively completely newly-designed devices can also provide a remedy, by ensuring the two half-waves are symmetrically balanced.



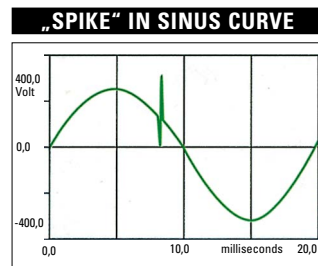
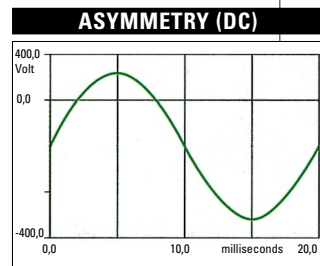
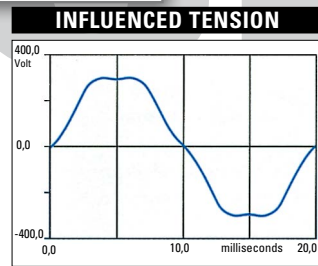
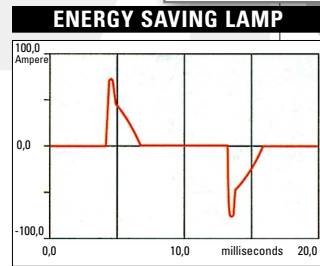
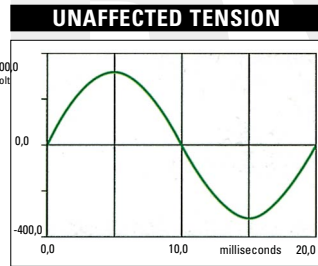
IT'S ON THE GRID!

ON OR OFF: ENERGY SAVING LAMPS, DIMMERS, PCS AND HALOGEN TRANSFORMERS IN THE LISTENING ROOM

Disturbances in the power grid can have many faces and causes

However much energy suppliers strive to ensure freedom from interference in their supply, there's little they can do to tackle the potential for local interference. In the diagram at the top left we see the ideal, a 50 Hertz alternating current waveform, while in red we see the „dirt“ produced by a energy saving lamp - technically a folded fluorescent tube with high-frequency gas discharge - by phase bleeding, and in blue the result. In the lower row we see an asymmetrical sinusoidal current (see also the left side box) and a spike, ie a short surge voltage pulse. The examples from the VVEW-Verlag, which are mainly based on „current-based knowledge“, show just how consumers' returns can have a lasting effect on the voltage. In addition, voltage drops, for example, due to the switching-on pulses of large loads, „high-frequency“ ripples and flickers play can affect the mains frequency.

It's quite an „opponent“ to master, so in the listening room, it is important to avoid or mitigate local effects as far as possible - by means of good basic principles as well as by suitable filtering.



From our experience it's also recommendable to have a fuse – or better still a „sound module“ such as this one from AHP (picture, around 100 euro), specially created for A / V requirements – in the fuse box to protect the circuit powering the system. Normal fuses can hold back the sound of your system.

It may seem unbelievable, but paying attention to these things will ensure your HiFi system will then sound bigger and more fluid, more energetic and more powerful. Ensure that the entire system is connected to one circuit to avoid ground loops (hum).

A standard wall socket can also hold back your system, and here there are much better replacements with better screw contacts, higher loadings and improved conductor materials from the likes of Furu-tech, Groneberg, HMS, Oyaide (picture, 160 Euro) or Phonosophy. There are

differences between them, but all offer a big jump over standard sockets.

If you are a homeowner, we have a more elaborate yet important tip for you: get your electrician to use a 3 x 2.5mm2 installation cable Ultimate3 (picture, www.hifi-tuning.de, from 15 Euro / m) between the control box and the electrical outlet, and check whether you have an advanced TN-S electrical installation with a separate protective conductor in accordance with the „Electromagnetic Compatibility“, as required by new buildings. A TN-C installation with a combined neutral and protective conductor (PEN), often still available thanks to the availability of stock, is no longer state of the art! So-called functional grounding is today immensely important and cannot be replaced by anything, even if even the older TN-C network also ensures the protection of the person – that is, protective grounding.

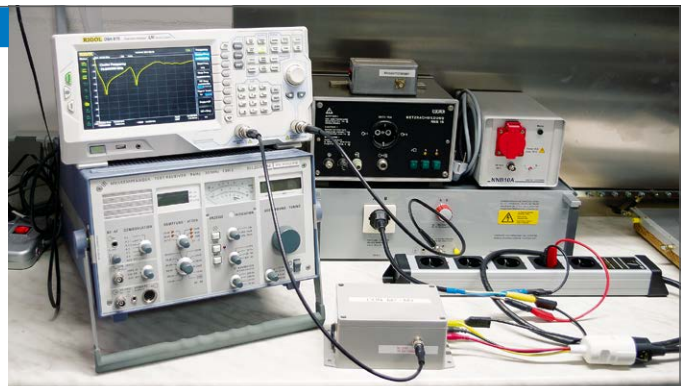
Because current flows back into the building's three-phase current network are no longer (almost) eliminated by modern consumers, operating currents flow on the neutral and thus also on the protective conductor and even affect the ground connections of a hi-fi system. These are bad basic conditions for the sound - and also for mains filters.

LINKS

- www.aaronia.de
- www.audiophiles-hifi.de
- www.fisch-audiotechnik.de
- www.hifi-tuning.com
- www.mudra-akustik.de
- www.phonosophie.de
- www.viablue.de
- <http://www.verpennte-installation.de/Plakat%202015.pdf>

SO STEREO MEASURED

In an electromagnetically shielded test space, as prescribed for EMC standard measurements, we were kindly supported by the former STEREO laboratory director Dipl.-Ing. Rolf Hähle and our partner laboratory Kolter Electronic in Erfstadt (www.kolter.de) in developing a test set-up that shows how much the interference from the network is attenuated by the respective test object. Thus, the so-called insertion loss of cable-bound disturbances in comparison to the network without filter (upper diagram limitation) is immediately recognizable in decibels at each frequency. Contrary to the standard measurement between 150 kilohertz and 30 megahertz, we extended the measuring range of the high-quality spectrum analyzer even down to the listening range (nine kilohertz).



STEREO

STEREO-MAGAZINE.COM

REINER H. NITSCHKE Verlags-GmbH

Eifelring 28, 53879 Euskirchen
Telefon: +49 2251 65046 0
Telefax: +49 2251 65046 49

Herausgeber und Chefredakteur:
REINER H. NITSCHKE

Sonderaufgaben:
MATTHIAS BÖDE

Geschäftsführender Redakteur:
MICHAEL LANG

Redaktion:
CARSTEN BARNBECK, ANDREAS KUNZ,
TOM FRANTZEN, Dipl.-Ing. ULRICH WIENFORTH

STEREO-Messlabor:
Dipl.-Ing. ULRICH APEL

STEREO-Fotostudio:
JOACHIM ZELL

Grafische Gestaltung:
DANIEL SCHIEPE

Objektleitung:
VOLKER PIGORS

Anzeigenleitung:
ILHAMI DÜZGÜN
Telefon: +49 2251 65046 20
Telefax: +49 2251 65046 29
email: marketing@stereo-magazine.com

Anzeigenabwicklung:
ANDREA ENGELS
Telefon: +49 2251 65046 22
Telefax: +49 2251 65046 29
email: andrea.engels@nitschke-verlag.de

Mediadaten:
Media-STEREO-Magazine-2015/2016_EN
Media-STEREO-Magazine-2015/2016_DE

Copyright für alle Beiträge, Messdaten, Diagramme und Fotos bei der REINER H. NITSCHKE Verlags-GmbH.
Das Magazin und alle in ihm enthaltenen Beiträge, Messdiagramme und Abbildungen sind urheberrechtlich geschützt. Mit Ausnahme der gesetzlich zugelassenen Fälle ist eine Verwertung ohne schriftliche Einwilligung des Verlags strafbar. Für unverlangte Einsendungen keine Gewähr. Namentlich gezeichnete Beiträge unserer Mitarbeiter stellen nicht unbedingt die Meinung der Redaktion dar.

Weitere Verlagsobjekte:
In der Reiner H. Nitschke Verlags-GmbH erscheinen die Zeitschriften STEREO, FONO FORUM, drums & percussion, TOURENFAHRER, MotorradABENTEUER und Motorradfahrer

STEREO ist
exklusives
deutsches
Mitglied im
Audio-Panel
der EISA

