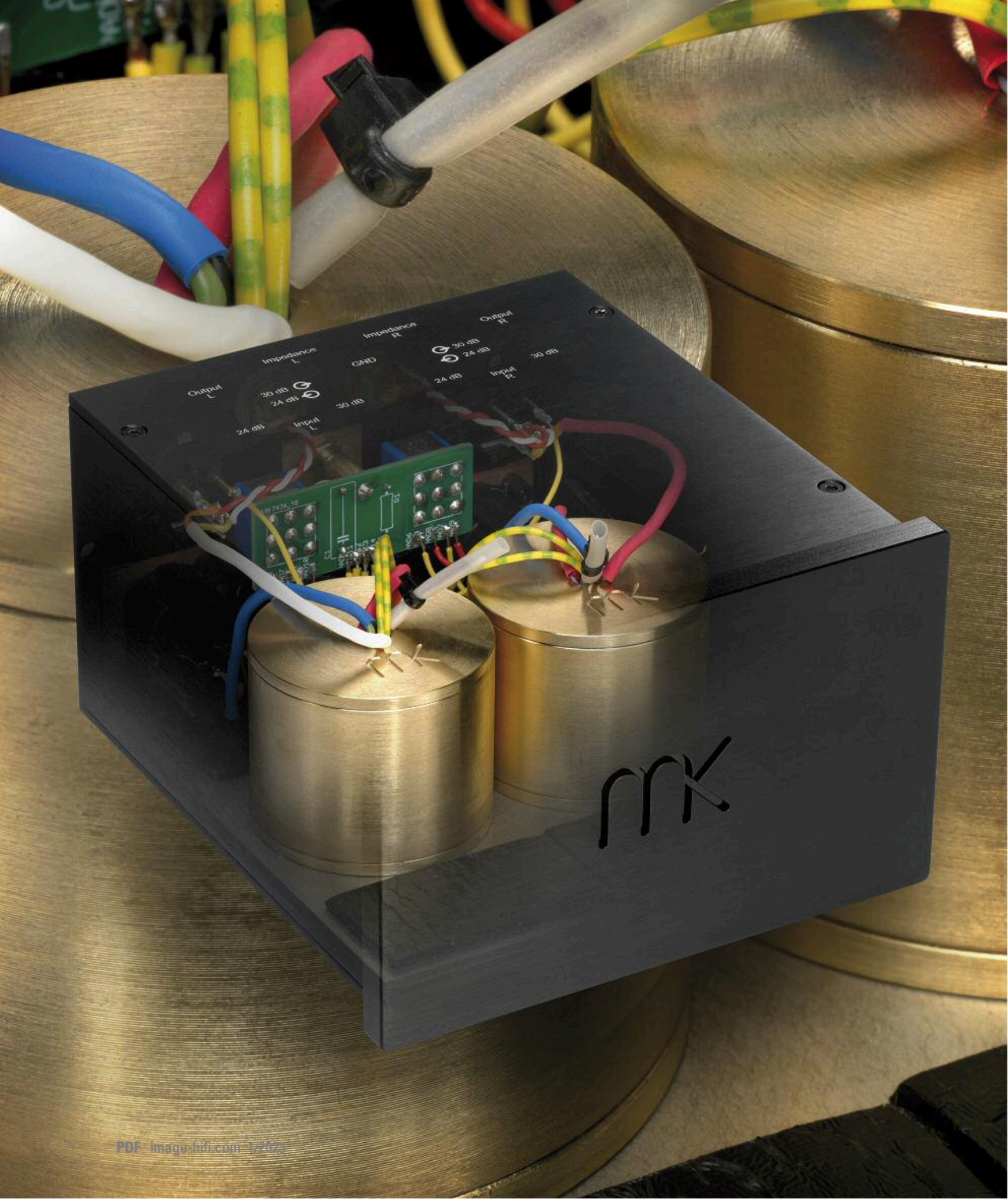
Output L
Impedance L
GND
Impedance R
Output R
30 dB
24 dB
Input L
Input R
rrk

TRANSFORMATION QUALITIES

HAVE YOU EVER ASKED YOURSELF HOW IT IS POSSIBLE THAT SUCH AN ADDITIONAL BOX, SPECIFICALLY AN MC-TRANSFORMER, CAN DETERMINE THE WEAL AND WOE OF A GOOD ANALOGUE CHAIN? ANSWERS ARE PROVIDED BY THE NEW TRANSFORMER FROM AN OLD HAND.

What does an MC transformer actually do? - It converts the tiny signals of an MC pick-up to a level that an MM phono stage can handle. The ideal level is about 5 mV. What kind of transformer you need depends on the cartridge and the impedance of the pick-up and its output voltage. There are rules to guide the choice of transformer, but the calculations are only an approximation of the complex electrical interactions between the pick-up, the transformer and phono stage and their construction details. Matej Kelc (MK), whose transformer is the subject of this article, told me a basic rule: "The internal resistance of the pick-up should be equal to the DC resistance of the input winding of the transformer. If it is higher, there is a drop in treble. If the internal resistance of the pick-up is lower, there is a treble boost that goes down to 15 kHz." His SUT-1L is wound for pick-ups with a primary impedance up to 10 ohms. The transmission ratio is selectable at 24 or 30 db, which corresponds to a ratio of 1:16 or 1:32. For this, however, you have to change the plugs of the tonearm cable.

Matej Kelc prefers the shortest possible signal paths and therefore has wired both pairs of connectors directly to the transformers. Depending on the output voltage adjustment of the impedance may be necessary, but don't worry, I won't bore you with model calculations. I often don't really understand it myself. Two connectors are included, more can be ordered. The main thing that helps here is trial and error. Sometimes I don't hear any difference, but the adjustment can also decide about the sonic weal and woe and namely, as Kelc states: "... if the impedance of the pick-up is higher than that of the transformer ...". But before I go into further details of the transformer, I want to reveal to you who this Matej Kelc is.

Kelc was born in Slovenia and moved with his family to the Ruhr area. Like all good developers, he was crazy about music from an early age. Even as a he played the DJ when visitors came. When he was 12 years old, he wanted his own stereo, but the family budget didn't allow it.

So he built his own amplifiers and loudspeakers, supplied some of his classmates with them and annoyed the neighbours, that's how it has to be. After his training at the Max Planck Institute in Mülheim and a brief intermezzo in industry, he was drawn professionally to the hi-fi scene. He was a salesman at HiFi Pawlak in Essen for six years, specialising in record players, preamplifiers and modifications. There he learned the importance of the preamplifier in a chain and the value of a MC transformer: The seed was sown. His first transformer as early as 1982.

After a first attempt at self-employment he went to the University of Essen, but hi-fi always ran parallel, and he also supported art projects with sound technology. In 2000, he moved to his old homeland of Slovenia and worked in the metalworking industry. In 2005 he started his own business in the field of engineering for production processes and since 2013 he has been a supplier of turned and milled parts made of metal, plastic or wood for the machine and audio industry. And of course the hi-fi virus struck again. He remembered his old passion for transformers and successfully modified various customer devices. Thus he also met the "audio-freak" Markus Wierl, who gave him the decisive impetus: "Let's do something with your transformers."

So Kelc reactivated his contacts to an experienced producer of transformers according to his ideas. The core of his transformer consists of a nano-crystalline silicon-iron alloy, which is characterised by a very low distortion factor, an immensely high dynamic range and low noise. The number of windings can be smaller than usual, which also increases the efficiency. The wire thickness of the individual, solid copper windings (Cu) is 0.2 mm on the primary side and 0.09 mm on the secondary side. The transformers have free ends that are soldered directly to the input and output sockets.

The internal wiring of the transformer (whether 16- or 32-fold) is made with 0.2 mm^2 stranded copper wire (consisting of 102 individual strands of 0.05 mm). The transformers are housed in a classic, extremely mu-metal capsule, which is then placed into a brass box. This is damped on the inside, but the the mu-metal capsule is not firmly mounted, but only held in place at certain points, so that there is no "hard" transmission of vibrations. The whole construction is then mounted on a damped 3-mm stainless steel plate, which shields a little better than the aluminium of the the cabinet, which is also damped. The shielding is extreme, as Kelc explains: "The housing serves as a shield, i. e. it is directly connected to the earth terminal. The input does not come into contact with this earthing at all at the output, the shield winding of the transformer is softly connected to this earth and connected as shield/ground to pin 1 of the XLR output. At the transition from XLR to Cinch, the negative signal is put together with the shielding to the ground of the phono input. This configuration guarantees hum-free operation with virtually all phono preamplifiers.

Mitspieler

Plattenspieler: PTP Audio Solid 9 „Special Stadshout“ **Tonarm:** Schröder No2 SQ **Tonabnehmer:** Lyra Delos, Koetsu Black **MC-Übertrager:** Consolidated Audio Nano/Kupfer 1:20, Air Tight ATH-3 (1:20) **CD-Player:** Holfi Aria NFB **Vorverstärker:** Air Tight ATC-1 **Endverstärker:** Air Tight ATM-4, Acoustic Masterpiece M-101 **Lautsprecher:** Rogers LS3/5a Classic (15 Ohm), Greenwall Ivy **Kabel:** Black Cat 3232, Isenberg Audio (LS-Kabel); Black Cat 3202, Isenberg Audio, silvercore space cable (NF-Kabel); Audioquest Niagara 1200, PLiXiR Elite BAC 150 (Netz) **Zubehör:** Acoustic Revive ECI-100 Kontaktspray, Acoustic System Resonatoren, bFly-audio Master Absorber / PURE / PURE-Tube / Gerätebasis BaseOne, Critical Mass Center Stage 2M Gerätefüße, Levar Resonance Magnetic Absorber, Levar Twin Plattenwaschmaschine

Absolutely right, that's exactly how it is, and and even if, like me, you don't have your preferred connections, it works perfectly. Kelc has also supported the ground connection on the connection plate with a copper plate and connected the enclosure ground directly to the earth terminal without a cable. Honestly: Practically no one makes such an effort, and you can hear it. Until he reached this point, Matej Kelc spent five years testing a wide variety of materials and constellations for five years. In doing so, he paid particular a linear phase response from 10 Hz to 25 kHz. But why should you actually use a transformer and not actively amplify the MC signals electronically? Kelc has a clear opinion on this: "With many current phono preamplifiers, the MM-MC switching is done by a single gain increase. This cannot work: With a higher gain of one and the same amplifier stage, the bandwidth automatically decreases, even dramatically at the usual +20 dB."

Another exciting topic is the play-in. At the beginning, the MK Analogue SUT-1L sounded quite sounded rather muffled, had little resolution and a narrow sweet spot. It seemed particularly lacking in the mids, the timbres and especially the coarse namics to be underexposed. However, the light became brighter with every hour of music, the midrange energy increased, the dynamic gradations became audible, the sound became more and more natural. Matej Kelc wrote me a very enlightening email: "From a purely physical point of view, the core of the transformer is a magnetisable material without permanent magnetic properties. The alignment of individual atoms of such a material has an effect on its magnetic behaviour and can be influenced from the outside, by a permanent magnet or a coil through which current flows. With a music signal on the coil can thus generate an alternating magnetic field in the core of the transformer, which in turn induces an identical signal on the output coil.

The special thing about an audio transformer is the tiny input signal to which the core should react very sensitively. The sensitivity of the core material can, however, be massively reduced when the atoms in the core are not ideally aligned in the nucleus. The ideal would be a completely non-uniform alignment of the atoms, so that no preferred alignment can form, i.e. a total chaos among the individual atoms. The actual manufacturing process, external influences or control measurements always leave a certain pattern in the atomic arrangement, a signature, so to speak. And the more pronounced this signature is, the more difficult it is to overcome it with the small signal of an MC sound pickup. The result is different dynamic behaviour over the entire frequency range and poorer phase linearity. In addition, spatial imaging and resolution suffer. Depending on subjective perception, the sound may sound coarse, rough, dull. If you want to accelerate the process artificial 'burning in' with white noise, in which all frequencies are present in equal proportions. If a transformer is not used for some time, depending on the set-up, it can become a small signature that is noticeable, but this disappears again after one or two records. disappears again. My SUT-1L is largely protected against this, but it can never succeed. So I cannot guarantee that the transformer, for example, will not be exposed to strong magnetic fields during shipping. And the copper wires also need to be run in". That's why Kelc, together with Markus Wierl has developed an effective method for this „burn-in". As you can see, the topic is highly complex and the effort of the construction of the capsules in the housing is extreme. But does it "sound"? It sure does. I love uncomplicated devices and the MK Analogue SUT-1L is definitely one of them.

Left side: Actually, I could also write: Without words. Because you can see this in this constructive effort of the SUT-1L very clearly: The brasscups, the damping, the individual cabling. Everything I have described in the text can be reproduced excellently

Left: A beautiful back. Matej Kelc relies consistently on symmetrical connections for good reasons. The two cinch sockets
on the top serve for impedance correction


Impedance
L
Impedance
R
Output
L
Output
R
GND
30 dB
24 dB
30 dB
24 dB
24 dB
30 dB
24 dB
30 dB
Input
L
Input
R

Although I don't have XLR connectors, the connections fit perfectly thanks to the plugs and adapters provided. In addition, the SUT-1L is just as well shielded as my Consolidated Audio transformer, i.e. zero hum, zero interference. We've already done the recording, then we're ready to go. I listened to the SUT-1L with my Lyra Delos and especially with my Koetsu Black, with which it made a perfect marriage at 1:16 gain and with the blue matching resistors. So the title track of Bobby Watson's album "Love Remains" (Red Records NS 212, Italy 1987, LP) sounds so smooth, as if Bobby was sitting on my sofa and playing just for me. So direct, so personal, so involving. He tells me a story in person, as the famous clarinettist Giora Feidman was once instructed by his teacher: "Read the paper and play me what you've read." Hampton Hawes' All Night Sessions may have been recorded in the late 1950s, but they sound timelessly good, tight, present and stirring. Vol.1 (Contemporary S7545, RE USA circa 1963, LP) opens with ,,Jordu", the Duke Jordan classic. Hawes' unique touch, his boppy-bluesy style is immediately recognisable, plus a great flow, a homogeneity, shimmering timbres - it sounds fantastic.

Well, let's do an endurance test in terms of dynamics and resolution. I discovered Velvet Underground late in life, and only with my improving equipment, which over the years has been able to unite emotion and intellect. "I Heard Her Call My Name" from their second album White Light / White Heat (Republic Records / Verve 00602577440069, RE Europe 2019, LP) bangs out abruptly and very directly with sheer outrageous sawing guitar riffs, Reed's recitative vocals and the absurdly obtuse drumming of Moe Tucker. But there's so much more to discover, and that's what I'm hearing now with the help of this transducer: a background vocal that almost reminds me of the sometimes naïve pop of the Beach Boys, or the soulful squeals of Reed's voice, spiced up with crazy distorted guitar solos.

Don't worry, what looks like a tangle of cables here is actually a highly professional tool: adapter plugs for XLR inputs and outputs as well as a selection of different adaptor plugs, which you can of course also get for "your" system. It is simply a joy to work with.

This is rock'n'roll and primordial punk, and the transformer delivers with full energy. Finally, Nat Adderley is allowed to take a breather. "Denise" from his '68 album "You, Baby" (A&M Records SP-9-3005, RE USA 1983, LP) is so beautifully casual and smooth - and that's how it sounds now. Joe Zawinul's Fender Rhodes piano comes wadded, organic and flowing, and I instantly recognise Grady Tate's broom work without having known he was playing: This is what MK's transformer allows me to do. The MK Analogue SUT-1L MC transformer performs brilliantly, catapulting it straight into the top class of the transformer guild. Between the juicy sound of my Air Tight ATH-3, which reminds me of a good glass of red wine, and the incredible neutrality and transparency of the Consolidated Audio, it finds its place. As long as new products like this come onto the market, I'm not worried about the analogue future.

MC-Übertrager MK Analogue SUT-1L

Prinzip: vollsymmetrischer MC-Übertrager **Eingänge:** XLR 24 dB (1:16); XLR 30 dB (1:32) **Anschlüsse:** Neutrik **Abschlussimpedanz:** 45 Ohm für Tonabnehmer mit einer Ausgangsspannung zwischen ungefähr 0,1 und 0,2 mV (30 dB); 175 Ohm für Tonabnehmer mit einer Ausgangsspannung zwischen ungefähr 0,3 und 0,5 mV (24 dB) **Frequenzgang:** 10 Hz – 65 000 Hz (-3 dB) (24 dB); 10 Hz – 25 000 Hz (-3 dB) (30 dB) **Geräuschsspannungsabstand:** 115 dB (-10 dB V) **Verzerrungen:** K3 < 0,1 % (f = 40 Hz –10 dBm) **Zubehör:** zwei Paar Anpassungsstecker für 24 dB = 100 Ohm und 30 dB = 11,5 Ohm inklusive **Ausführungen:** schwarz, silber **Maße (B/H/T):** 14,5/8,6/16,0 cm **Gewicht:** 2,75 kg **Garantie:** 2 Jahre **Preis:** 2990 Euro

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