

# IS VINYL CHANGING TRACKS?

Records have always been made according to the same process.

Now a company from Austria wants to completely reorganize production and thus perfect the good ol' black disc. So what's the story behind

„HD Vinyl“ and when does it start?

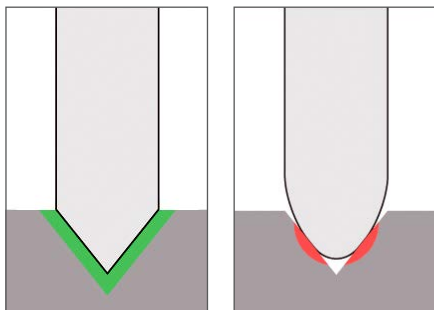
**W**hat the company Rebeat Digital, based in Tulln not far from Vienna, announces under the term “HD Vinyl” is nothing less than a revolution. Already next year, the first records of a new generation, which will run longer, transmit higher frequencies, show no pre-echoes and even compensate for the misalignment angle of rotary tone arms, could be available. A laser-assisted cut is supposed to make the dream come true and catapult the record, which has been produced almost identically for 60 years now, into a higher orbit.

There were hardly ever any innovations in LP production, with the exception of the DMM-cut (Direct Metal Mastering) developed by Teldec and Neumann at the end of the 1970s, in which the stylus scribes the information into a hard copper foil instead of the soft, varnish-coated one, hence significantly reducing cutting errors and the necessary, potentially quality-reducing, electroplating steps from three to one. However, even DMM was not particularly successful, while other supposed improvements, such as increasing the press mass to 180 grams, were more of a cosmetic nature.

HD Vinyl wants to radically change this! The innovation mainly relates to the process of cutting. Instead of the stylus, a laser will process a ceramic die in such a way that it can be directly used for pressing. Instead of “cutting” a groove, which should probably rather be called “burning” to be accurate in this case, the intention is to remove the surrounding material so that the information remains as an elevation. With this stamp, it would then be possible to press directly. And almost as often as you want, because unlike the usual process, where the polyvinyl chloride enriched with other ingredients chemically

	Rebeat HD Vinyl	Traditional Vinyl
		
Frequency response	20 Hz–100 kHz	20 Hz–20 kHz
Playing time	70 min	50 min
Numbers of copies per stamper	10,000	max. 1,000
Stamper life circle	Stable quality throughout	Decreasing quality throughout
Environmental-friendly	No chemicals	Toxic chemicals
Process	Simple manufacturing process	Complex production process
Angle-error	No angle-error (tangential/radial)	Angle-error
Ratio	80 dB s/n ratio	60–70 dB s/n ratio
Production capacity	Scaleable	Limited

◀ Frequency range, running time, the number of very nearly identical records pressed with just one die, as well as the track alignment errors and the signal-to-noise ratio – „HD Vinyl“ is supposed to improve practically all LP parameters.



reacts with the chrome-plated surface of the die and damages it in the process, limiting it to around 1000 copies per matrix, the ceramic plate should remain free of such influences as far as possible.

### It sounds like science fiction

The decisive factor for the development of this process was the frustration of Guenter Loibl, who founded Rebeat in 2001 as a distributor for CDs and DVDs and has since expanded his logistics services for music distribution in various ways. He always had his customers' complaints about eternal delivery times in record production and increasingly poor press quality in mind. Also, he was aware of the bottlenecks and delivery problems with regard to cutting tools and lacquer matrices. Why, Loibl asked himself, are vinyl discs still made according to the old-fashioned principles, anyway? This was the start for his considerations about a laser-assisted process.

Guenter Loibl is, however, not a technician, but found a competent partner for the "HD Vinyl" project in Joanneum Research, Austria's largest non-university research institute. After having succeeded in creating the necessary structures in small format – Loibl: "Creating perfectly smooth groove flanks is a challenge even

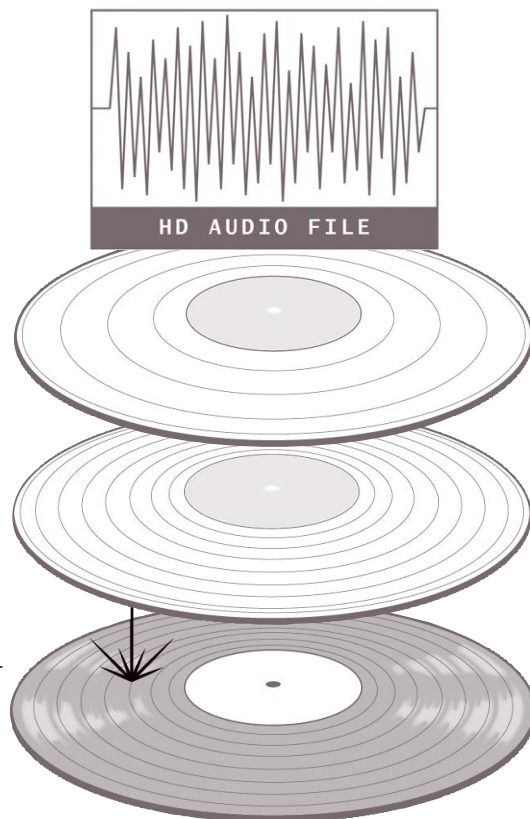
◀ Today's needles contact only a part of the groove flank (r.). The laser cut is supposed to allow precise cuts with a large contact zone (l.), which could drastically reduce distortions.

In the HD vinyl process, the digital audio file is transformed into a 3D model of the groove, which is then optimized for the individual conditions of runtime and finally burned as a negative by the laser. ▶

for the most modern laser technology. We are at the limits of what is possible and are going down to two nanometers" – they even managed to raise around 4.3 million euros for further development.

Thanks to fully digital information processing, a smaller groove spacing is required, which results in a longer play time per side. Even the distortion-prone track alignment errors can be compensated by HD vinyl. They occur when the tangentially cut record is scanned radially, i.e. as usual by a rotating tonearm. The angulation of the arm reduces the misalignment of the pickup, but it cannot be completely avoided. When burning the stamp matrix, the angle of the information could be adjusted to the respective position of the needle above the record. This has never before been possible.

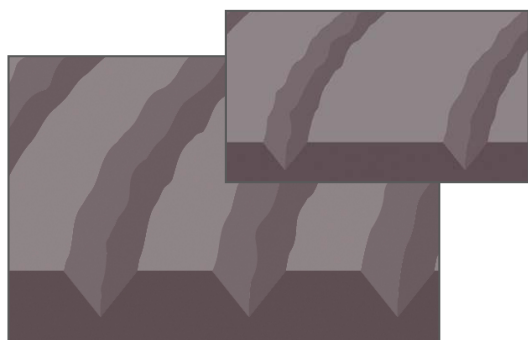
Now, Guenter Loibl is waiting for the ordered special machine for laser cutting of the record matrices, which cost almost



600,000 euros. Then, after the necessary setup work, there are going to be pressed a few sample discs with measurement and test signals. In five large pressing plants in Europe, the USA and Asia, it will then be checked whether and how these stamps have to be adapted to the existing presses.

All of this takes time, but Loibl is optimistic that the first high-tech records will be available in 2019. Then we should be able to get an impression of the technology on site in Tulln. We are very excited, because we probably won't believe in the science fiction-like HD vinyl until we've seen – and of course heard – it ourselves.

**Matthias Böde**



▲ Thanks to precise control, the laser discs should allow smaller groove spacing (u.). Thus, the running time per plate side could increase to up to 35 minutes.



On [www.hdvinyl.org](http://www.hdvinyl.org) Rebeat boss Guenter Loibl shows himself heroically in a pilot's jacket. If he succeeds in the HD vinyl project, which already has a logo (above), he would indeed be a hero. ▶

