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VC INTERVIEW | Tom Trones on Minuendo's Lossless Hearing Protection Earplugs

The acoustic earplugs provide high-quality, no-loss sound for musicians and live music lovers

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The Violin Channel recently discussed the revolutionary hearing protection earplugs for musicians with **Tom Trones**, Co-founder and Chief Product Officer from **Minuendo**.

Tell us about the special Minuendo hearing protection earplugs for musicians. When and where were they invented?

Minuendo was founded in Oslo, Norway in 2018 to commercialize three years of research at one of Europe's largest research institutions, SINTEF. We started off with some fundamental technology but incorporating it into a product that fit the needs of the market and our own quality ambitions was a huge undertaking.

Why were you so passionate about creating something like this especially for musicians?

We are very focused on helping people retain their sense of hearing and are deeply concerned about the amount of hearing damage in our society. We hope to bring awareness around the importance of hearing protection. We want to improve people's perception of hearing protection as something important to consider over the long term, and also become perceived as cool. For that to happen, the products need to sound better and be more user-friendly, more comfortable, aesthetically pleasing, and lighter than previously available.

Experiencing music physically is very emotionally powerful. When I've done live sound engineering at concerts, sometimes concertgoers may not be happy when the sound level is too low, even if I want to make the listening levels safe. Certain percentages of concertgoers also cannot tolerate loud sound, or have tinnitus, and want to experience the sound the way it is supposed to be heard, just at a lower volume. So, there is a definite need for earplugs that are as transparent as possible, to meet the needs of both the performers and the concertgoers who choose to protect their hearing.

How are the Minuendo different from the other products on the market such as regular foam earplugs and custom-made earplugs?

Cheap and simple foam earplugs are effective at blocking sound coming into the ear canal, for those that manage to fit them well. The problem is that they ruin the sound experience. A key benefit of Minuendo is the adjustable membrane. The Minuendo membrane is six microns thin, only a tenth of a human hair. Still, it is robust and well-protected by acoustic meshes that are placed on the inlets and outlets.

Most other universal-fit earplugs use ports/vents which is basically the same as putting your fingers in your ears and varying the seal. This simple approach of venting is the same as a low pass filter — coloring the sound, removing high frequencies and naturalness, and decreasing speech intelligibility. The low-pass characteristic of vented earplugs is perceived as wooly or bass-heavy, without brightness or life.

Singing, chewing, or any movement of the jaw often introduces leaks and thereby audible and annoying changes of the sound. Even newly molded earplugs can have bass leaks, decreasing the protection and perceived flatness. Ear canal anatomy changes with age and is quite sensitive to weight fluctuations, thereby compromising fit. Compared to other earplugs, Minuendo in the open position almost feels like you're wearing nothing, since the sound is so natural.

How do they differ from those currently designed specifically for industrial workers?

The design goal for classical earplugs and earmuffs is to attenuate as much as possible for the lowest price, natural sound not being an objective. We wanted to create something that was as transparent and open as possible and providing the best possible product for our target users.

Can you tell us about the testing and development process you undertook?

In our user research, we interviewed and tested prototypes with dozens of Norway's most prominent professional musicians. We also performed sound level measurements of a violin player and were surprised to learn that levels can reach up to 110 dB in the closest ear.

Also, it can be hard to avoid sitting next to very loud instruments like drums or trumpets. The need to finely adjust the attenuation of each ear became apparent. There were also musicians in the orchestras that had multiple sets of custom molds with different attenuation that they used dynamically throughout pieces. The user research supported that there was a definite need for transparent and adjustable earplugs.

3D printing was essential to our development process, and the printing technology had just been able to reach the precision and accuracy that we needed. After close to one hundred prototypes, we had managed to create a design that was miniaturized, simplified, more robust, elegant, and designed for manufacturing.

How durable are the Minuendo earplugs?

We are very confident in the durability, and therefore provide a 10-year warranty on the earplugs themselves. We are also so confident that people will like and be able to fit the product, that we offer a liberal 30-day return policy. The environmental impact with Minuendo earplugs is considerably reduced. The neck leash, magnet snap, and protective case prevent them from being lost as easily, so that helps as well.

Does one size suit and fit all?

Yes, data so far suggests that 99 percent of customers are able to fit the earplugs. We deliver 11 sets of different sizes and types of ear tips, more than any other that we have come across. If you are one of the 1 percent that struggles with out-of-the-ordinary ear canal anatomies, it is also possible to create a custom-molded tip with some of our partners.

For which musicians would you recommend the use of Minuendo earplugs?

I would say almost everyone would benefit from them. I don't know of any musicians that never go to any concerts, or go to bed with ringing ears or hearing fatigue. Moderate sound levels in practice situations can also be harmful over time, including for acoustic instruments such as violins. For those who have continued this practice regimen for years or decades, it often results in hearing damage and tinnitus. The daily exposure over time is what creeps up on most of us and takes away years of healthy hearing and enjoying music. I think we all could be kinder to ourselves and give our older self the gift of hearing a bit better, a bit longer.

Enter now to 1 of 5 Minuendo Musicians' Lossless Hearing Projection Earplugs

Entries close Wednesday, May 19th, 2021.

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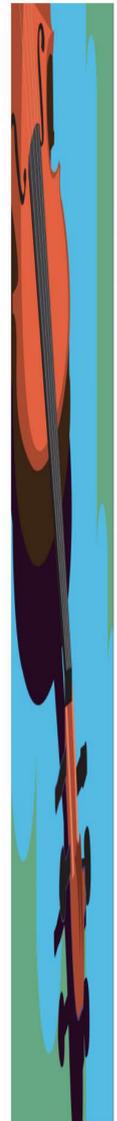
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