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## Extraordinary acoustics on the outskirts of Berne

SE Musiclab is a remarkable new audio facility near Berne. Its founder and creator Jürgen Strauss has spared no expense in equipping a former brewery with next-level acoustics. We paid him a visit.



SUSANNE WENGER

SE Musiclab is situated in a seven-metre-high concrete hall nestled at the foot of the Gurten hill at Wabern station in the Berne suburb of Köniz. The former Gurten brewery used to bottle and store its beer at these spacious premises until 1996. According to the mastermind behind SE Musiclab, Jürgen Strauss, such suitable venues as this are few and far between. Strauss, a 57-year-old from Berne, had a clear vision of what he wanted, namely to bring music and other sounds to life in an optimal space with high ceilings and a high

area load. “We installed one hundred tonnes of material to create the best possible acoustics.”

The material went into building the “Lab”, a soundproof cylindrical structure housed inside the repurposed brewery. Five metres in height and 11 metres in diameter, with a double shell made from 60 tonnes of clay and 40 tonnes of wood, this free-standing rotunda is the centrepiece of the project. The outer shell, consisting of 32,000 soft mud bricks, was built in situ by a mobile robotic system developed at ETH Zurich, which needed three months to complete the job. It

Sound pioneer Jürgen Strauss in front of the centrepiece of his sound lab. In the background, the wall made from 32,000 clay balls can be seen.

Photos: Remo Neuhaus, supplied

was a pioneering and painstaking construction process – but worth the effort, because the finished interior is deathly quiet. “Quieter than the most secluded Swiss mountain valley covered metres deep in snow”, says Strauss.

### Three-dimensional soundscape

No exterior sounds can enter the Lab – not even the rumble of passing trains. Swiss Federal Railways (SBB) went as far as re-laying the rail tracks at Wabern to prevent ground vibrations from affecting the sound qual-

“It is quieter inside the Lab than in the quietest Swiss mountain valley buried under heavy snow.”

Music lab creator Jürgen Strauss

ity. The Lab itself was built on springs for the same reason, and combines organic outer materials (clay and wood) with state-of-the-art audio technology and a futuristic interior. With its white panelled walls, yellow lighting, monitors, computer system, and mixing desk, the noiseless rotunda looks like a space capsule.

The facility has a built-in 24-channel sound system that Strauss developed himself – an area of technology in which the SE Musiclab creator has excelled for years. This surround-sound speaker system generates a three-dimensional soundscape, mimicking the acoustics that we hear every day through our ears, says Strauss. “Unlike what we see through our eyes, human hearing is 360-degree audio.” The direct sound and its reverberations give us an impression of totality, he adds. Humans can also focus on specific things like conversations and block out other sounds – a sensation that Strauss wants the sound system to recreate.

### Music and other sound recordings

Besides the soundproof structure and modern audio technology, the interior acoustics are another key aspect. All sounds inside the rotunda resonate quickly and evenly. “There is no distorting echo,” says Strauss. Everything has been well thought out. Strauss chose yellow lighting because he says it creates a neutral atmosphere. Red lighting would be different because it gives more warmth to the audio experience. Evidently, there is a lot more to sound than meets the ear. The effect is at its most striking exactly in the middle of the room, as Strauss begins to play a few audio recordings – electro, classical, 1960s folk. It envelops you from every angle. Every individual tone feels tan-

gible and amplified – a pleasantly comforting experience that both concentrates and relaxes the mind.

Some people have shed tears in this space-age pod, says Strauss. “The experience always induces some sort of reaction.” It is immersive listening in its purest form. Strauss believes that SE Musiclab can potentially add greater depth to musical recordings, bring audio dramas and film scores to life, and take videogame aural effects to the next level. Anyone can rent the facility. SE Musiclab also includes a recording studio with a six-metre-high ceiling. This room is wired to the Lab and has been acoustically fine-tuned just like

The outer shell made from 60 tonnes of clay was built by a mobile robotic. No exterior sounds can enter the Lab – not even the rumble of passing trains.

its counterpart, with angled walls and adjustable cloth blinds – the latter allowing acts to vary their sound.

### Reconstructing Haydn

The OPC, or one-person cinema, constitutes the third element in Strauss’s audio concept. Sleekly designed in the vague shape of a boat, the OPC is an intimate audio-visual entertainment interface designed for use by amateurs and professionals alike. Strauss, who developed the OPC in collaboration with architects, is particularly interested in the relationships between music, architecture and acoustics. He is currently looking at acoustic simulation in 3-D virtual spaces – a digital technique called auralisation, incorporating vocals and instruments.

Auralisation can produce acoustic renderings of a variety of spaces, from cultural venues to apartments, as well as spaces that no longer exist. SE Musiclab is now being used to do a 3-D reconstruction of the opera house at Eszterháza Palace, the former summer residence of the Hungarian noble family Esterházy. It was





here that Joseph Haydn served as court composer in the 18th century, writing and performing many of his works. A fire destroyed the music room at Eszterháza in 1779, but the actual room plans still exist. “These plans allow us to reconstruct the room and then recreate its acoustics,” explains Strauss, who is a fan of classical symphonies and is looking forward to hearing the results.

### From physics expert to audio pioneer

Strauss wants SE Musiclab to be a place where people engage in production work, R&D, further education and team-building events. In particular, there is still a lot to discover in the area of psychoacoustics, the scientific study of sound perception and audiology, he says. The facility has attracted great interest since it opened

Clay on the outside, cutting-edge audio technology on the inside. The central listening spot in the music lab.

Photo: Roger Huber

last spring. According to experts, there is nothing like it anywhere else in the world. Strauss manages SE Musiclab in a private capacity, with funding coming from a joint-stock company in which he and four other locally based individuals own all the shares. He comes across as a knowledgeable, busy, ambitious but easy-going guy. By his own admission, he is constantly drawn to the beauty of audio. “Even just a sonorous string instrument sends me into raptures.” When you listen, you enter into your own little world.

Strauss, who is qualified to work in a physics laboratory, founded his own audio electronics company at a young age. Not only does he now advise and supply international customers, but he also lectures at Swiss universities. Creating the perfect soundproof wall while sharing the larger philosophical-historical context. One

of the pictures at the entrance to SE Musiclab is a painting dating back to 1753. Called “La Serinette”, it depicts a lady sitting and playing a small barrel organ, or serinette, while looking at her pet canary. Strauss says that the work is a metaphor for culture, the natural world, reciprocal interactions, and the relationship between humans and machines. “SE Musiclab is state-of-the-art, but these themes are even more relevant 270 years later.”

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