

# 2515

huge wedges\* line the walls of the Anechoic Room Wechloy Campus. These 1.5 metre-long sound absorbers are covered in a special fabric and ensure that almost all sounds in the room are absorbed. The Anechoic Lab is one of the quietest rooms in Oldenburg. The background noise level in the recently renovated acoustics laboratory is well below the absolute threshold of human hearing for all frequencies. When the door is closed you hear absolutely nothing – a state that can feel strange or even unpleasant. “Some people experience a sense of pressure in their ears because we are not used to our eardrums not vibrating,” explains acoustician Dr Stephan Töpken, who oversees the lab together with technician Christoph Scheicht (photo). Anyone who spends any time in the eight-meter-high anechoic chamber begins to hear their own heartbeat, digestive sounds or the blood coursing through their veins. The lab is a key research facility for the scientists in the Hearing4all Cluster of Excellence, the Collaborative Research Centre Hearing Acoustics and other research projects. They use it to measure as pre-

cisely as possible the acoustic properties of the devices required for their research, such as loudspeakers and microphones. But the lab is also used for listening experiments with test subjects, particularly experiments on spatial hearing. In order to achieve the greatest possible precision for measurements, no background noise whatsoever should penetrate the room from outside, and any sound waves generated inside the room should not be reflected. For this reason, the cuboid laboratory is a “room-in-room” construction, with the inner room resting on metal springs, which isolate it from the outer environment. There is a one-metre gap between all walls and the outer shell of the building, and the ventilation and lighting systems can be operated almost silently. The sound-absorbing wedges on all six walls are key to ensuring that there are no noticeable echoes whatsoever. The result is an acoustic “free-field condition” – similar to those experienced on the top of a mountain when there is not wind.

*\*plus or minus 10 to 15 – depending on how you count some of the foam absorbers which are divided into sections*

## 6.7 decibels

or more precisely: 6.7 dB(A) – this is the background noise level in the renovated acoustics lab according to official measurements. The noise sources include ventilation and the railway line behind the campus. The sound is so quiet that it can only be measured with special microphones.

## 50 hertz

The sound absorption system in the anechoic chamber soaks up sounds all the way down to this frequency – a very low hum. This is due to the huge size of the absorbers, whose geometry ensures that even very long-wave sound waves cannot propagate.

## 916 cubic metres

The anechoic chamber has the volume of a large family house. Two-thirds of it is filled with sound absorbers.