Polyurethane proves effective in wooden grandstands

Polyurethane proves effective in wooden grandstands It doesn't always have to be concrete. Based in the French town of Les Roches de Condrieu to the south of Lyon, the Guillon joinery company erects wooden grandstands for cinemas, theatres, auditoriums and conference rooms, working with highly regarded architects such as Renzo Piano. Wooden seating presents special requirements when it comes to sound damping and protection against vibration. Angst+Pfister came up with the solution.

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Interesting prospects: With effective damping of sound and vibrations, the idea of making grandstands out of timber can easily be extended to other areas of application – like cinema seating, for instance.

Jean-François Guillon, a third-generation manager in this family business, did not take long to enumerate the advantages of the wooden steps: less planning time involved, highly efficient assembly, no moisture and no drying time – so renovation will not be a problem either. "This kind of dry construction is also recommended if you need to live in a place or use it while the work is going on." On the other hand, wood is an elastic medium; so you need insulation against the vibrations.

Jean-François Guillon's team started by using rubber strips. They then switched to more durable, slow-ageing polyurethane. But putting the polyurethane lengths in place took time, and time was at a premium. "We suggested using a product with greater density which could be laid at intervals," said Sébastien Dubet of Angst+Pfister France. His specific solution – after a thorough study of the plans, and careful calculations – was 25-millimetre buffers made of a special polyurethane foam.

It takes a specialist to size it The further detailed sizing that was required again called for specialist skills, this time on the part of application engineer Régis Vignolles: "We responded to the different loads with different lengths and widths. Absorbing the sound and the vibrations, on the other hand, was a different story. The target was something in the order of magnitude of 14 Hz. We achieved this with a thickness of 25 mm. But when the acoustic engineers upped their game and asked for a lower frequency of around 9 Hz, we raised the thickness to 37 mm."

A solution well received After the material had been given its first trial at a cinema in Nevers, Jean-François Guillon again chose the foamed polyurethane buffers for a project in Mâcon. The advantages of the buffers, in comparison with the strips used previously, are in his view clearly evident: "We need less material, which makes the solution more appealing in economic terms, even if polyurethane foam is an upmarket product and actually more expensive. In fact, the buffers can be installed more quickly and they are easier to handle – also they minimize the risk of the wooden floor's later developing a creak."

Monsieur Guillon is highly appreciative of the technical support and commitment of Angst+Pfister. "For every kind of application they supply us with a product that is ideal in terms of both quality and costs."

Good for the books Thanks to Angst+Pfister's calculations, it proved possible to optimize the dimensions of the bearings as well as the materials used. Together with the reduced assembly time, this has a very positive effect on the costs overall. As a result, Sébastien Dubet sees prospects of further applications being used in future: "Our solution is capable of being reproduced elsewhere." He is already thinking aloud about transferring the idea – suitably adapted, of course – to the construction of wooden houses, where you may need to minimize the vibrations of the roof beams, for instance.

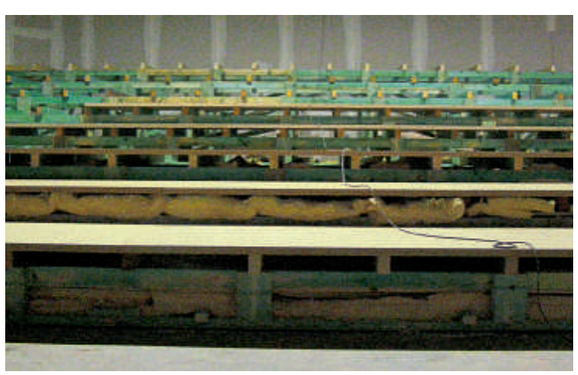
Thanks to Angst+Pfister's calculations, it proved possible to optimize the dimensions of the supports as well as the material. This helps speed up installation.

Expertise backed up by service Application engineer Régis Vignolles visits the building site when required to give Guillon's employees his support in the installation of the specified bearings. Professional design advice and follow-up actions on site help the customer to get ahead – as does the fact that the product is delivered on time directly to the construction site. The exceptional material qualities of Angst+Pfister's recommended solution do the rest. Apart from polyurethane foam in this related application, there is probably no elastomeric material capable of absorbing so much load over such a limited surface.

"I very much appreciate Angst+Pfister's commitment. For every kind of application they supply us with a product that is ideal in terms of both quality and costs."

Jean-François Guillon, Guillon S.A.,
Les Roches de Condrieu, France

Your contact:
Régis Vignolles
Product Application Engineer
Antivibration Technology
Angst+Pfister France
+33 1 49 38 20 02
regis.vignolles@angst-pfister.com



Efficient installation and no drying time – wooden grandstands have advantages to offer.

Buffers of varying thickness made of foamed polyurethane are effective in absorbing sound and vibrations.