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Noise - Sounds like a big issue for cruise ships



Special Report
International Cruise Ship Industry

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Disturbing a person's sleep or quiet time on board a cruise ship could lead to that person never stepping foot on a vessel again.



Jacco van Overbeek, Bolidt Maritime Division Director

Cruise ship passengers have many different needs but one thing they generally agree on is that their on-board enjoyment should not be disturbed by excessive noise, whether that be from other guests, the crew, or the ship's engines.

Dutch synthetic flooring and decking manufacturer, Bolidt, continues to innovate and refine its products to develop soundproofing solutions to meet this demanding requirement, with considerable success.

Droning engines, the footsteps of crew and passengers, lifts going up and down, music from nightclubs and moving gym equipment: the pace of life never stops on board a cruise ship, but neither does the noise. And yet passengers want to be able to enjoy peace and quiet in their cabins and above all else to have a good night's sleep.

Over the years many leading cruise ship operators have come to rely on the experience and expertise of Bolidt to address this issue. The Dutch company's flooring solutions are not only anti-skid, durable, hard-wearing and environmentally friendly, they also provide excellent sound insulation qualities.

Popular products in the portfolio such as the patented Bolideck Future Teak and Bolideck Select Soft are making an important contribution to reducing the impact of noise on board many of the world's leading cruise ships.

Jacco van Overbeek, Bolidt Maritime Division Director, said, "The sound-insulating properties of our decks mean passengers in their cabins barely hear the noise coming from spaces above them. No one hears the joggers doing their early morning rounds on the Bolideck Select Soft jogging track. And if you sleep underneath one of the restaurants on board, you won't hear a thing thanks to Bolideck Future Teak, no matter how long the

diners are burning the midnight oil. With Bolidt's systems, even the sound of a ball bouncing on the basketball court is reduced to an acceptable level."

In Bolidt's experience, cruise lines are setting ever more demanding targets when it comes to noise reduction. van Overbeek added, "We are responding to these requirements and are constantly pushing the boundaries of what is possible. By continuing to innovate, we have managed to succeed time and again in fulfilling the wishes of both passengers and cruise companies alike."

The development of sound-proofing systems was largely a matter of evolution rather than revolution. Bolidt had been working to enhance the sound abating qualities of its decking and flooring technology for almost 25 years.

Material refined

For example, Bolideck Future Teak is a material that is widely used amongst cruise operators, both for newbuildings and also when undertaking major refits. Bolidt has refined this material to ensure that it meets tough sound inhibiting tests, as well as cruise lines' environmental protection requirements.

van Overbeek explained, "This material allows cruise ship owners to replace real teak with a more durable hard-wearing alternative that also protects the ship better. In fact, Bolideck Future Teak presents some additional challenges in terms of noise generation, because the top layer is flat and extremely hard, qualities that tend to increase impact noise.

"We have addressed this challenge by using soft underlays with very specific noise-insulating properties, and also by varying thicknesses. This means we can achieve significant noise reduction levels, whilst maintaining the other operational benefits of this material," he said.

'Comfort' notation

Many new cruise ships today are designed to deliver benchmarks as per the classification societies' 'Comfort' class notation. These include setting maximum decibel levels in different parts of the ship, such as the open decks, public spaces

and cabins. To ensure the ship meets the desired 'Comfort' class requirements, cruise companies often approach Bolidt at an early stage in the ship's design and construction process for their advice and support.

According to van Overbeek: "The starting point is generally a simple question - how many decibels of noise reduction must be achieved at specific locations on the ship? We then look at what synthetic systems we can employ to achieve these challenging targets and develop the optimum mix of top layer and various underlays for every part of the ship."

Working in close collaboration with the client, Bolidt frequently tests decks during the construction phase using various compositions, to see whether the required noise reduction levels can in fact be met. Based on the findings, the cruise company decides which systems will be fitted in each part of the ship. "This means the client gets the best of both worlds: a hard-wearing and aesthetically pleasing top layer, as well as the desired noise reduction level," van Overbeek added.

The interaction between Bolidt and its clients has been crucial to building noise reduction knowledge within the cruise sector over the course of more than two decades. Paul de Ruijter, Bolidt's Senior Technical Support Specialist, said, "Every time we have developed new solutions for the cruise industry, we have been able to test them out extensively in shipyards in Germany and France, with the co-operation of our clients.

"For this process we use a life-size model of part of the ship, with the cabins fitted out exactly as

they would be on the actual vessel, including the wall, floor and ceiling insulation. This allows us to fit various systems to the deck above the cabin and test them in situ and then to map out how our systems contribute to reducing impact noise in the spaces below," he said.

Shoreside testing

These trials are complemented by computer-based testing ashore. To achieve this, Bolidt collaborates with Lloyd's Register (LR), which performs calculations around various decking permutations using its own sophisticated computer modelling techniques.

de Ruijter added, "We then test the output from the computer-generated testing against the results of the physical testing that we have carried out above the full scale cabins. Using the computer model, we can vary the construction of the decks almost endlessly and determine the ideal mix of top layer and underlay to achieve the desired noise reduction. This has thrown up material mixes that we could not have found without using LR's computer system, which has allowed us to predict noise levels accurately in cabins for several cruise ship projects."

While considerable progress has been made, the process of reducing noise levels never really ends, de Ruijter pointed out. He concluded, "Of course it gets harder and harder to achieve significant reductions. In many ways it is like telling an athlete to keep improving on their best time. At Bolidt it is always about continuous improvement: after all, that is the way elite athletes set new world records!"



Celebrity Edge's pool deck is fitted with Bolidt's soundproofed decking

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