

Mascoat Sound Control-dB Replaces Floating Floors in USCG Cutters

In late 2010, the United States Coast Guard contacted Mascoat concerning corrosion issues with floating floor systems on their 110-foot cutters. The issue has escalated to the point it was costing the USCG about 200,000 USD plus lost time every two years on each vessel.



WHAT IS A FLOATING FLOOR?

On a marine vessel, a floating floor is essentially a floating sheet of steel (or deck) that sits on a dampening block. These blocks are attached to the fixed deck and provide a few functions for the flooring system. First, they allow for a place for the floating deck to sit. However, since they are usually a few inches tall, they also provide an air gap that has a decoupling effect on the sound. In many cases there is also conventional insulation like fiberglass, placed in this air gap. These floating floors are used regularly in the marine industry because of their high performance to slow both airborne and structural-borne noise.

Unfortunately, this type of flooring takes up valuable space (4-6 inches or 10–15 cm). This space cannot be effectively sealed, so every day condensation easily begins the corrosion process.



Floating floor after CUI

After the initial meeting with the USCG, it was decided that, at a minimum, Mascoat Sound Control-dB (referred to as MSC-dB) could be applied to the fixed deck at 60-80 mils, along with a topcoat (there would be a possibility of pooling water on the deck areas, so a top coat would want to be considered.) The reason for this application is to stop the CUI issues, while at the same time provide some enhanced sound damping. After examining the proposed solution, the USCG wondered if it could entirely replace the floating floor system. All parties agreed that this approach would be hugely beneficial to the client. However, this is something that had never been successfully attempted in the marine industry and required more analysis to see if it would be worthwhile.

To get a more in-depth analysis, the USCG contacted Noise Control Engineering (NCE) out of Billerica, Massachusetts USA to look into using MSC-dB instead of the floating floors. NCE is a leader in acoustical testing, not only in the US, but also worldwide.

TEST CONCLUSION

The results indicate that the application of a topcoat (specified by the USCG) does not significantly alter the performance of Mascoat on the tested steel structure. The Mascoat Sound Control-dB is as effective as the floating floor below 500 Hz, which is the frequency range in which machinery noise is most influential. NCE's acoustic model shows that for the 110' cutter the damping treatment will be as effective as the floating floor for reducing noise and vibration in the compartments of interest.

After reviewing the test data, the USCG decided to immediately launch a pilot project on their 110' vessels to see the real world results. The first vessel, *The Grand Isle*, was coated in the spring of 2011. After the vessel was put back into service, NCE evaluated the effect that the coating had and determined that it was just as effective as using floating floors. Using Mascoat Sound Control-dB is now the new standard on the 110' USCG vessels. The USCG has stated they will save millions of dollars per year as the new method is rolled out on an as-needed basis to the entire fleet of USCG Cutters.

This is the first known test data available that states a sound damping coating can effectively be used to replace a floating floor system.