

We make it **possible**

Shipping Out an Elastomeric Shock Protection Solution

Problem:

A customer came to Hutchinson seeking a shock protection solution for their client's shipboard "friend or foe" detection electronics box. The client wanted to use a Cabledmount solution, but modeling showed that its output was too close to limits with little to no safety factor.

Solution:

Through extensive modeling and analyses, we demonstrated that our VHC (Very High Capacity) elastomeric solution was a much safer and more robust choice for shock protection than the Cabledmount.

Results:

Reality matched our analyses and theories, as the Cabledmount system failed quickly during an in-person shock test. We then tested the VHC system, which passed with flying colors—allowing our customer to keep their program on schedule and on budget. The part is now in production.

Ensuring that military technology continues to function properly under stressful and dangerous situations can be the difference between a mission's success and failure. So, when a customer asked Hutchinson to help develop a shock protection solution for a shipboard "friend or foe" detection electronics box for the United States Navy, we were ready to assist.

Our extremely knowledgeable and experienced engineering, analyst and materials teams ultimately designed an elastomeric solution that proved to be much safer and more robust than the shock protection system the U.S. Navy initially wanted to use, allowing our customer to keep their program on schedule and on budget.

Uncovering the Problem

The shipboard "friend or foe" detection device was to be used on U.S. Navy vessels, and our customer needed a shock protection solution that could perform optimally under very specific circumstances, so they reached out to Hutchinson for help. From the outset, the Navy was dead-set on using a Cabledmount system, which is made up of coiled cables laid on their sides, to protect the 2'x2'x2' electronics box from shock.

Using our proprietary BarrySoft Advanced 6 Degree of Freedom, rigid body shock, vibration and static force analysis software, we ran models of the Cabledmount solution under different levels of shock and found that it was too close to shock limits with little to no safety factor—in other words, it did not leave any room for possible error. Since modeling showed that the Cabledmount solution was almost sure to fail in real-life shock testing, our experienced team decided to test other solutions as potential alternatives.



Finding a Solution

Again using BarrySoft Advanced, our team determined that our existing VHC (Very High Capacity) elastomeric solution was a much safer alternative for providing shock protection than the Cabledmount system. We also used finite element analysis (FEA) to demonstrate the structural integrity of both the Cabledmount and elastomeric solutions to the customer.

Once we explained the properties of both solutions, our customer procured our alternate VHC system for testing, along with the Cabledmount system that the Navy wanted.

Getting Results

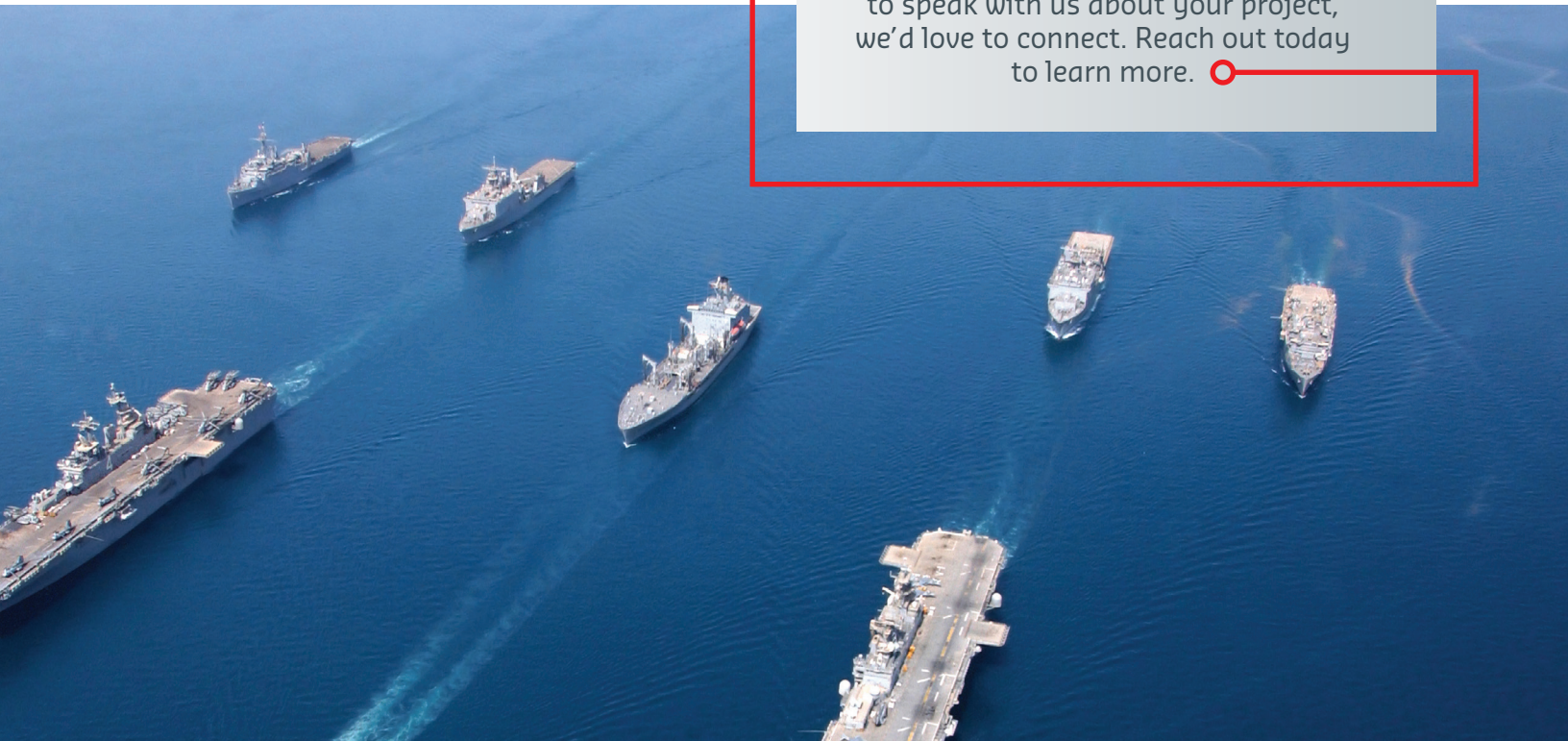
Our team attended Deck Simulating Shock Machine (DSSM) testing at National Technical Systems (NTS) in Virginia to provide on-site support and expertise to those running the shock tests.

It didn't take long for our concerns about the Cabledmount system's durability under shock to become real during testing; it quickly broke and failed the test. Since we had the VHC elastomeric solution on deck, we were able to test it right away. As we expected, the VHC elastomer mounts provided positive results during shock testing and were ultimately chosen over the Cabledmount system by our customer.

Since the project did not require us to create a brand-new elastomer from scratch, our customer saved time and money that would have otherwise been spent on research and development. In fact, we were able to essentially pull our existing VHC-series mount off the shelf for turnkey use in this application, keeping the customer's program on schedule and on budget.

Our customer was also able to provide the Navy with a workable solution to reduce shipboard shock levels in their electronics that was backed up with analyses and test data. The custom base system using the VHC elastomer part is now in production.

At Hutchinson, we leverage our combined years of industry knowledge and experience to provide high-quality and customizable shock and vibration solutions that will exceed customer expectations.



If you are interested in learning more about our capabilities, or if you want to speak with us about your project, we'd love to connect. Reach out today to learn more.