Tackling Shock and Vibration Challenges in Unmanned Guidance and Drive Systems

As defense and commercial markets accelerate the integration of advanced AI and autonomous technologies, manufacturers face new engineering challenges. High-performance unmanned platforms increasingly rely on sophisticated electronic and optical guidance systems, coupled with advanced drive system components. **Without effective shock and vibration control, these systems cannot achieve their full operational potential.**

A rapidly growing technology innovator entering the autonomous defense drone market approached Hutchinson with a critical problem: their guidance system was failing to meet the performance standards required by a key defense customer.

Identifying the Problem and Delivering the Right Solution

Under significant time pressure, Hutchinson partnered closely with the customer to diagnose the issue. Applying advanced system modeling, dynamic analysis and full-scale testing, Hutchinson determined that the isolator design supplied by a competitor was unnecessarily complex, cost-prohibitive and ineffective in stabilizing the guidance system during operation.

Hutchinson's engineering team designed a simplified, robust and cost-efficient isolator solution that provided greater vibration attenuation and improved system stability. The new design streamlined integration, reduced weight and manufacturing complexity, and delivered higher value at a lower cost.

The Results

Customer validation testing confirmed the performance improvements predicted by Hutchinson's analysis. **With the new isolator system in place, the drone's guidance capability exceeded specification, enabling the customer to meet and surpass the defense program's performance requirements.**

When failure is not an option, Hutchinson delivers engineered solutions that ensure mission success—even in the most extreme environments.

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

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